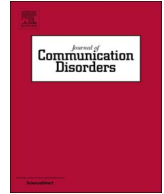


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# Speech sound disorders or differences: Insights from bilingual children speaking two Chinese languages

Kitty K.Y. Lam, Carol K.S. To\*

*The University of Hong Kong, Hong Kong Special Administrative Region*

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## ABSTRACT

The study investigated how Putonghua-Cantonese bilingual children differ from monolinguals in their acquisition of speech sound and phonological patterns. Fifty-four typically developing Putonghua-Cantonese bilingual children aged 3;6–6;0 were recruited from nurseries in the North District of Hong Kong. The Hong Kong Cantonese Articulation Test (Cheung et al., 2006) and a Putonghua picture-naming task (Zhu & Dodd, 2000) were used to elicit single-word samples of both languages. Acquisition of speech sound and phonological patterns exhibited by  $\geq 20\%$  of the children in an age group were compared to the normative data on children who were Cantonese native or Putonghua monolingual speakers. The bilingual children demonstrated smaller sound inventory in both languages and more delayed and atypical phonological processes. The atypical patterns could be explained by phonological interference between Putonghua and Cantonese. The findings serve as a preliminary reference for clinicians in differentiating language difference from true speech sound disorders in Putonghua-Cantonese bilingual children in Hong Kong.

## 1. Introduction

Bilingualism or multilingualism has become part of the norm worldwide. For example, in the U.S., more than 60 million people (around 21% of the population) speak a language besides English, among whom more than 37 million people (around 13% of the population) speak Spanish as a second language (U.S. Census Bureau, 2013). Similarly, over 4 million people in the U.K. (around 8% of the population) speak a language besides English as their main language (Office for National Statistics, 2013), and 18.1% of the households in Australia speak a language in addition to English (Australian Bureau of Statistics, 2011). Increasing research attention is therefore being devoted to speech and language development in bilingual children.

The growth trajectory of the speech and language skills of bilingual children is quantitatively and qualitatively different from that of monolingual children (S. Hemsley, Holm, & Dodd, 2014; Li, Miller, Dodd, & Zhu, 2005). Although bilingual advantages in cognitive functions and attenuation of the negative effects of aging have been well documented (Bialystok, Craik, Klein, & Viswanathan, 2004), evidence of the influence of bilingualism on early speech sound acquisition is generally mixed. This influence can be described as either positive transfer, where bilingual children show comparable or even advanced development when compared to monolingual peers, or negative transfer, where development lags behind monolinguals (Goldstein & McLeod, 2012). Both positive and negative transfer are evident in the phonological development of bilingual children (Goldstein & Bunta, 2012). In a systematic review of bilingual speech sound acquisition in typically developing children and children with speech sound disorders, Hambly, Wren, McLeod, and Roulstone (2013) located 66 studies that examined the speech acquisition of bilingual children speaking English as one

\* Corresponding author at: Division of Speech and Hearing Sciences, The University of Hong Kong, MW760 Meng Wah Complex, Pokfulam Road, Hong Kong Special Administrative Region.

E-mail address: [tokitsum@hku.hk](mailto:tokitsum@hku.hk) (C.K.S. To).

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of their languages. The majority of studies examined Spanish-English bilinguals (36.3%), followed by Cantonese-English bilinguals (10.6%). Much inconsistency was noted among the studies regarding the rate and order of acquisition and the frequency and types of error patterns. For example, when comparing the rate of speech sound acquisition with monolingual children, a number of studies revealed a delayed development in bilingual children, some studies showed no difference, and a small number of studies demonstrated accelerated acquisition (Hambly et al., 2013).

Qualitatively, bilingual children showed phonetic and phonological features different from those of monolinguals or native speakers of each language as a result of cross-language interaction between their native language and second language (L1-L2) (e.g., Holm & Dodd, 2006; Oh et al., 2011). The qualitative phonetic differences between bilingual and monolingual children in specific vowel and consonant production have also been widely discussed in many acoustic and perceptual studies (e.g., Best, 1994; Flege, 1995). With reference to the overall phonological skills, Goldstein and Washington (2001) noted more error types and substitution patterns in Spanish-English bilingual children than in the matched monolingual children. Similarly, Dodd, So, and Li (1996) identified substantial differences between the phonological patterns of Cantonese-English-speaking bilinguals and their monolingual peers. The phonological performances resembled delayed and atypical development compared to the native and monolingual norms (Dodd et al., 1996).

The substantial variations observed among the studies in the systematic review are due not only to the methodological differences but also to the types of bilingual participants examined and the distance (similarity) of the language pairs (Hambly et al., 2013). The authors pointed out the differences in defining and categorizing bilingual children among the studies in their review and the impact on the results. Some bilinguals are proficient in both languages they speak, while others show dominance in one language. True balanced bilinguals with native-like proficiency in both languages are rare (Culter, Mehler, Norris, & Segui, 1992). Many studies investigated sequential bilinguals who acquire a second language (L2) after complete or relatively complete acquisition of the first (L1). Individuals who acquire two languages from birth or before their first birthday are regarded as simultaneous bilinguals (De Houwer, 2005). Simultaneous bilinguals without a dominant language are not common. Bilingual children's type often relates to their ultimate proficiency and therefore affects the interpretation of results (Hambly et al., 2013). Some studies defined bilingualism based on the estimation of language exposure in the environment, while others based it on the estimation of language use as reported by caregivers using language background questionnaires. Regardless of the measures used in categorizing bilingualism, a detailed description of language background is necessary for comparison of findings across studies and languages (Hambly et al., 2013).

Another source of differences across bilingual studies is the language distance between L2 and L1. For speech sound acquisition, L1 often serves as the base for the development of the L2 phonetic system (Watson, 1991). Bilinguals often produce a target L2 sound by assimilating it to a phonetically similar L1 sound. The degree to which an L2 sound is assimilated to the L1 sound is heavily determined by the perceptual similarity between the L1 and L2 sounds (Perceptual Assimilation Model; Best, 1994). The patterns produced by bilingual children speaking specific language pairs have appeared to be predictable.

From a clinical perspective, the patterns exhibited by bilingual children may present a challenge to speech-language pathologists (SLPs), who mainly serve children who speak a native language that is often the common language used in society. In the past, in countries that speak English as the primary language, there appeared to be overreferrals of bilingual children from teachers for speech-language therapy service, as these children often showed reduced English proficiency and struggled in school (Roseberry-McKibbin, 1994). However, Stow and Dodd (2005) reported significant underreferrals of suspected speech sound disorders among bilingual children. The challenges in differentiating typically developing bilingual children from those with disordered speech or language may lie in the similarity between the language performances of these two groups (Roseberry-McKibbin, 1994). Unlike children with speech disorders, typically developing bilingual children are able to master speech sounds in both languages eventually without direct intervention given adequate input (Holm & Dodd, 1999). With increasing exposure to L2, the influence of L1 on L2 may become smaller, and bilingual children become more able to refine their speech proficiency relative to adult norms of the native language. The practices of over- and underreferral are clearly both far from ideal. To ensure that public resources are dedicated to clients with real needs and to prevent stigmatization due to overdiagnosis, it is imperative for SLPs to distinguish disorders from differences.

## 2. The Hong Kong context

Hong Kong was a British colony before 1997, and English was one of the official languages in the territory in addition to Chinese. Even after the return of sovereignty to China in 1997, Chinese and English were both official languages in Hong Kong. About 90% of Hong Kong residents speak Cantonese as their usual language (Hong Kong Census & Statistics Department, 2011), and English is learned at school as an academic subject. The 'biliteracy and trilingualism' policy was widely promoted in 2001 by the Hong Kong special administrative region (SAR) government to produce citizens who are biliterate in written Modern Standard Chinese and English and trilingual in Cantonese, English, and Putonghua (Hong Kong SAR Government, 2001). Putonghua, often known as Mandarin, is the official language of mainland China. The importance of Putonghua in Hong Kong has increased substantially since the handover. According to Societas Linguistica Hongkongensis, about 70% of local primary schools and 40% of secondary schools in Hong Kong have adopted Putonghua as the medium of instruction in Chinese subjects (Yau, 2014). Yet Cantonese still remains the default language in the community.

The language composition of the Hong Kong population has been changing because of the increase in immigrants from mainland China to Hong Kong and cross-border marriages. By 2011, 48% of the population could speak Putonghua, and 1.4% of the citizens used Putonghua as their usual language (Hong Kong Census & Statistics Department, 2011). Cross-border marriage, where one spouse is a permanent resident of mainland China, has become more common. Such marriages comprised 39% to 56% of the total marriages

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