

Loanword-Induced Phonological Influence in Children's Foreign Language English Learning: Evidence from Cantonese in China

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Abstract. Guangzhou, where English education receives substantial attention and its mother tongue, Cantonese, has developed a rich repertoire of English loanwords due to historical contact, provides a suitable context for examining how loanwords affect children's acquisition of English stress at ages 8–10. However, this role has not been sufficiently addressed in existing research. This study will recruit 45 primary school students and employ 20 Cantonese-English loanwords together with sentence materials. Speech will be recorded, and stress patterns will be analyzed through both native-speaker judgments and acoustic measures, including F0, duration, and intensity. The research hypothesizes that the English stress production of Cantonese-Mandarin bilingual children (CME) will be native-like than that of Mandarin-English bilinguals (ME) and closer to that of English native speakers (ENS). The results are expected to reveal how the tone system of Cantonese influences English stress production in the case of loanwords, and how that task type jointly affects children's ability to acquire stress patterns in English.

Keywords: Loanwords, phonological influence, children second language acquisition, Cantonese, stress

1. Introduction

1.1. Background

Cantonese holds an important position as one of the most widely spoken dialects in China. It originated in Guangzhou and has a strong influence not only in the Chinese mainland but also in overseas Chinese communities, being the first language of millions of people.

Modern Cantonese has been deeply influenced by its long interaction with English, which began in the early 19th century, before the British colonization of Hong Kong in 1842, through trade between British merchants and Chinese entrepreneurs in Guangzhou [1-5]. English loanwords were mostly phonologically adapted to fit Cantonese's phonetic structure [6]. These loanwords gradually

integrated into daily usage, becoming a permanent part of Cantonese vocabulary and reflecting the dialect's adaptability to external linguistic interactions.

In the decades following 1955, Mandarin has been gradually popularized across the country. Its promotion in public services, formal education, and national media created more opportunities for the language integration between Cantonese and Mandarin. Therefore, people in Guangdong usually grow up to be bilingual learners of Cantonese and Mandarin as well as English as a foreign language. This makes the investigation of its impact on English acquisition among children aged 8 to 10, who are in the critical period of foreign language learning [7], highly significant in practical terms. Moreover, the wide use of English loanwords in Cantonese gives children early exposure to English sounds. These loanwords may help or hinder their later learning of English pronunciation and stress, depending on how closely the Cantonese forms match the original English words.

1.2. Literature review

1.2.1. Tone and stress

Cantonese, as a typical tonal language, encodes lexical distinctions through tone, whereas English is a stress-timed language that relies on stress patterns rather than tone to mark prosodic structure [8]. The contrast between the two prosodic systems makes Cantonese-speaking children prone to transfer effects in acquiring English stress, manifesting as variable perception and production of stress placement and prosodic features [7].

Lexical tone is the fixed pitch pattern carried by the syllables of a word, which can distinguish the meaning or grammatical function of the word in a language. In standard Cantonese, there are six tones, with three having additional abbreviated versions that are only implemented on short syllables and have a silent ending [9], while only four tones in Mandarin.

Word stress refers to the relative stress of one syllable in a single word composed of two or more syllables. Similar to tones, stress also mainly occurs in the portion of syllables where F0, amplitude and duration change [9]. English is an example of free stress language, where the main stress is not fixed on a certain syllable.

1.2.2. English loanwords in Cantonese

When words are borrowed from one language to another, they undergo transformation to conform to the phonetic patterns of the borrowed language [10-12].

Studies have been done to discover the history and development, and the characteristics of the invention. Most of the English loanwords commonly used in Cantonese are bisyllabic, while monosyllabic and trisyllabic words are relatively rare. For long words with four or more syllables, the first two to three syllables are often taken. According to the Cantonese custom, each syllable of loanwords has a tone, which is related to the original English stress [13]. Research has found that English stressed syllables, due to their higher pitch, often become the highest-pitched 1 tone in Cantonese. Unstressed syllables become the sixth tone of the low, medium and level tone or the second tone of the high and rising tone [13].

1.2.3. The phonological influence of Cantonese to English speech production

Phonological influence has always been a topic of concern for linguists and is also one of the most core parts in second language acquisition. The definition of phonological influence has always been

controversial. Odlin's definition is widely recognized as phonological influence, which is caused by the commonalities or differences between learned and unlearned languages [14].

Phonological influence between Cantonese and English has been extensively studied, with findings spanning segmental, suprasegmental, and prosodic levels. At the segmental level, Cantonese speakers often adapt English segments to fit their native phonotactics [11,13]. At the suprasegmental level, having mastered the knowledge of the tone system shows both positive effects [7,15] and negative effects in stress acquisition [7,13,16]. However, research still rarely touches upon the positive transfer effect of dialects on English learning, and few studies have explored the transfer effect on the acquisition of loanwords.

Besides, existing studies often focus on the Cantonese ESL learners (especially adult learners), but do not fully consider the influence of age. Lenneberg's hypothesis states that the critical period for language learning is around the age of 11 [17]. Related studies on Thai children learning English stress indicate that native prosodic patterns significantly affect second language stress acquisition [18], offering a useful reference for research on Cantonese children. Therefore, investigating how Cantonese loanword input influences English stress acquisition not only addresses a gap in the literature but also contributes to a deeper understanding of cross-linguistic prosodic transfer mechanisms.

2. Research questions and predictions

2.1. Research Question 1 (RQ1) and Prediction 1 (P1)

Do English loanwords in Cantonese influence the stress production of English disyllabic and polysyllabic loanwords among Cantonese EFL children?

It is predicted that the mean F0 difference, lengthening proportion, and mean intensity will indicate that the acoustic properties and positional accuracy of stress production in English disyllabic and polysyllabic loanwords among Cantonese-background EFL children are shaped by their exposure to Cantonese-English borrowings. In contrast, Mandarin-speaking EFL children without such borrowing experience will show less native-like patterns, whereas Cantonese-background children will produce stress in English loanwords in a manner more closely aligned with that of native English-speaking children.

2.2. Research Question 2 (RQ2) and Prediction (P2)

How do Cantonese disyllabic and polysyllabic loanwords affect Cantonese EFL children's stress production?

Cantonese disyllabic and polysyllabic loanwords are expected to influence the English stress production of Cantonese-background EFL children through a mechanism of phonetic association transfer, manifested in the way that phonetic similarity between Cantonese loanwords and their English source words regulates stress production.

2.3. Research Question 3 (RQ3) and Prediction (P3)

What is the effect of task formality (word-reading vs. sentence-reading) on the accuracy of English stress placement in child learners?

It is expected that task formality will affect children's accuracy in English stress placement. In the more formal word-reading task, children focus only on the phonology of single words, while the

sentence-reading task requires simultaneous attention to syntax, meaning, and context. This higher cognitive load is likely to reduce stress accuracy in sentence reading compared with word reading.

3. Method

3.1. Participants

The study will involve 45 primary school students aged 8 to 10 in Grades 3 and 4, recruited from three public schools in Guangzhou, China, and two in the United States through stratified random sampling. Participants will be evenly divided into three groups of 15 according to language background: Cantonese and Mandarin bilingual EFL children (CME), Mandarin monolingual EFL children (ME), and English native speakers (ENS). Each group will also maintain an approximately balanced gender ratio.

3.2. Materials

3.2.1. Cambridge pre A1-A2 Young Learners Exams (YLE)

To ensure participants met the English proficiency requirement for the experiment, the Pre A1-A2 Young Learners (YLE)—a standardized language assessment developed by Cambridge Assessment English—was adopted as the screening tool.

YLE is a series of authoritative exams designed to assess the English language skills of children aged 7 to 12, which offers a consistent measure of a child's proficiency in listening, speaking, reading, and writing.

This study selected the YLE Movers level (A1 Movers), to minimize ceiling or floor effects.

3.2.2. Screening materials

Materials used for participant screening includes parent questionnaires and teacher recommendations to verify each students' language background. Additional screening materials consist of academic records, Child Behavior Checklists, and health checks, which are used to confirm typical cognitive and physical development.

3.2.3. Loanword selection

Firstly, the 20 target polysyllable transliteration loanwords that will be served as the target items for both tasks were selected based on the following criteria.

(1) They are frequently used in spoken and written Cantonese or Mandarin among children in Guangzhou and Beijing.

(2) The English words have been learnt in the previous lesson.

The selected loanwords were organized by two variables (see Table 1), distributed randomly in the research instruments.

Table 1. Categories of the target loanwords

Classification Dimension	Word Type	Quantity	Examples
Stress Pattern	Initial-stress disyllables	13	salad, sandwich
	Final-stress disyllables	3	cartoon, hello
	Trisyllabic initial-stress words	4	microphone, strawberry
Dialectal Distribution	Cantonese-specific items	3	number, fashion
	Shared Cantonese–Mandarin items	17	coffee, cookie

The process of selection of these loanwords was carried out according to the following steps.

An initial pool of 30 loanwords (25 two-syllable and 5 three-syllable) was compiled from online resources and prior studies [11,19]. An English phonetics expert then excluded uncommon or age-inappropriate vocabulary for 8–10-year-old EFL learners.

The researchers ultimately identified frequently used words within each broad category. These words have the following English stress patterns, where 'O' represents a stressed syllable, and 'o' an unstressed syllable:

Two-syllable words: O o = 13 words o O = 3 words

Three-syllable words: O o o = 4 words

For task 1 sentence reading (R1), twenty example sentences with one target loanword in each were made according to the English Curriculum Standards for Compulsory Education (primary level) so that the participants are able to read on their own during the test. Each sentence employs simple present tense, high-frequency vocabulary, and basic syntactic structures appropriate for primary school students. The 20 sentences are arranged in a random order so that the target words could not be easily recognized by the participants while performing the task. Task 2 is an oral-reading of the 20 target loanwords listed in isolation and in a random order (R2). Thus, the two tasks are kept in one-to-one correspondence (e.g., “She likes fruit salad” with “salad”), so as to enable direct comparison of contextual and isolated production. Sentences were placed first to provide semantic support, reduce task difficulty, and prevent unnatural prosody transfer from isolated words to sentences, while the following task increases cognitive demand and tested stress production more independently.

3.3. Apparatus

Recordings will be made with a Zoom H5 digital recorder (44.1 kHz, 16-bit) to ensure clear quality without background noise. Speech samples will later be presented through Sennheiser HD 25 headphones at a standardized 65 dB, minimizing perceptual bias. Acoustic analyses will be carried out in Praat 6.3.07, with A timer with 0.01-second accuracy will regulate three-second inter-sentence intervals, ensuring consistency.

3.4. Procedure

The data collection process will be conducted in a language laboratory with 15 participants of each group present at once so that no participant would have a chance to know about the test or the words on the test before actually performing. Each group of 15 participants will enter the lab and will be seated by assigned numbers with 1.5 m spacing to avoid interference.

The experiment consists of four stages.

(1) Informed consent and early communication (5 min): For the CME and ME groups, the lead researcher (a senior phonetician) will read aloud the key points of the consent form in Chinese, while a English-speaking co-investigator will read the English version for the ENS group, confirm approval from both children and parents, and then collect signed paper copies for archiving.

(2) Pre-test and task familiarization (8 min): The lead researcher will introduce the tasks, demonstrate Praat recording, and emphasize that assistance will be available if needed. Each child will receive a task sheet with 20 sentences and will be given 5 minutes of silent familiarization (no speaking, questions, or external tools). The researchers will supervise the procedure on site.

(3) Main test (15 min):

Task R1 (7 min)

Participants will read the sentences shown on the computer screen one by one at natural speed, pausing two seconds between items, and recordings will be saved as Task R1.

Task R2 (8 min)

Participants will read each word once in sequence with a one-second pause and saved their recordings as Task R2.

(4) Sampling and native-speaker evaluation: Three valid samples will be randomly drawn from each group (nine in total) using Excel, anonymized, and stored in WAV format. Two trained native raters, calibrated on three practice samples, will evaluate recordings independently in a quiet room (<30 dB). A five-point scale (1–5) will be applied, where 1 indicates incorrect or absent stress and low overall accuracy, and 5 indicates fully correct stress placement with accurate pronunciation. Raters will be able to replay each sample twice, but will have to assign scores immediately without revision. Results will be submitted within one hour and will be entered into Excel by the researchers.

3.5. Data analysis

The data will be analyzed in four stages. First, two native English-speaking raters will assess stress placement on Tasks R1 and R2. To ensure reliability, 20% of recordings will be double-rated, with percentage agreement and Kappa coefficients calculated. Second, the transcriptions of students' stress patterns will be checked and systematically categorized. Third, acoustic data will be analyzed using Praat 6.3.07. Duration, mean F0 difference, and mean intensity will be extracted for each token. ENS values will serve as baselines for cross-group comparison. Group means will be tested with mixed ANOVAs in SPSS 26.0, followed by post-hoc analyses. Effects will be classified as positive (CME approaching ENS and surpassing ME), negative (deviation from ENS and reduced accuracy relative to ME), or non-significant.

4. Discussion

4.1. Prediction

Prediction 1: Prior studies also indicate that long-term exposure creates phonological links between loanwords and their English originals, reducing cognitive load and supporting accurate stress and pronunciation [20]. Thus, it is expected that the CME group will show larger differences in F0, duration, and intensity between stressed and unstressed syllables than the ME group, though still smaller than those of the ENS group. Teacher ratings are also expected to support this trend, indicating that the CME group's stress production is perceived as more natural and overall closer to the ENS group than the ME group.

Prediction 2: Soisithorn Isarankura suggested that when the target language's tone or stress alignment matched English stress patterns, their production will be more accurate and facilitate stronger transfer effects [18]. Therefore, the logistic regression may show that the effect of Cantonese loanwords is predicted to vary depending on the phonological similarity between the loanword and its English source under the influence of the phonological links between loanwords and their English originals. When the Cantonese loanword closely matches the English original, with the stressed syllable in English corresponds to the 1 tone in Cantonese (e.g., coffee, cookie), CME children are expected to achieve significantly higher stress accuracy than ME children and approach ENS performance. Transfer effects will weaken when the tonal difference increases, while still outperforming the ME group but remain farther from the ENS group, showing a gradient transfer effect modulated by phonological similarity.

Prediction 3: Evidence approves that sentence reading requires integrating prosody, syntax, and meaning, which increases cognitive load and may reduce accuracy [21]. Additionally, participants will be immediately aware of the words being tested during the word reading task, and therefore pronounce these words more carefully and consequently achieve a higher accuracy [18]. Based on these findings, the accuracy rate of the word reading task (R2) is expected to be higher than that of sentence reading (R1) among the three groups.

4.2. Limitations

Limitations exist in research subjects, variables, and materials.

First, the sample size was constrained by the participants' age and recruitment limits. A small or age-restricted sample may reduce statistical power. Second, the study did not account for children's exposure frequency to Cantonese loanwords. Frequent loanwords may show stronger transfer effects, which the current design could not capture. Future studies could address this with parent questionnaires. Moreover, although restricted to General American English, accent variation across speakers may still have introduced variability. Finally, materials were limited to disyllabic nouns. Other word types, including verbs, adjectives, monosyllables, and longer polysyllabic items, were excluded. Expanding these categories in future research would clarify how part of speech and syllable structure influence transfer effects.

5. Conclusion

5.1. Implications

If successfully conducted, this study will clarify the role of Cantonese loanwords in children's English phonological acquisition, enriching the theoretical framework of dialectal loanwords and second language learning. It may also offer practical insights for primary English education in Cantonese-speaking regions, suggesting a loanword-assisted teaching approach. Such findings could guide the development of concrete instructional strategies, helping children benefit from their native language experience to improve English pronunciation.

5.2. Further study

Provided that the predictions are confirmed, future research could examine how the duration of exposure to Cantonese loanwords affects English acquisition, such as comparing children with three versus six years of exposure. It could also investigate differences between children who actively use loanwords and those who are passively exposed. Further studies might explore how Cantonese

syllable structure and grammar specifically influence stress patterns, revealing the mechanisms of loanword impact on English learning. Additionally, research could extend to other dialect regions with loanword phenomena, such as the Wu-speaking area of Shanghai, to assess their effects on children's English acquisition.

Author contributions

Ruiyi Xu and Shiya Lin contributed equally to this work and should be considered co-first authors.

References

- [1] Bolton, K. (2003). *Chinese English: A Sociolinguistic History*. Cambridge: Cambridge University Press.
- [2] Bauer, R. S. (2006). The stratification of English loanwords in Cantonese. *J. Chin. Linguist*, 34, 172-191.
- [3] Liu, B., & Baxter, W. (2013). When the West Met Shanghai. Retrieved from <https://deepblue.lib.umich.edu/bitstream/handle/2027.42/98936/bxliu.pdf?sequence=4>
- [4] Yao, Y., & Chang, C. B. (2016). On the Cognitive Basis of Contact-Induced Sound Change: Vowel Merger Reversal in Shanghaiese. *Language*, 92(2), 433–467. <https://doi.org/10.2307/44164096>
- [5] Li, J. (2017). Tracing the heritage of Pidgin English in mainland China. *English Today*, 33(3), 46-53. <https://doi.org/10.1017/s0266078416000638>
- [6] Chan, M., and Kwok, H. (1982). *A Study of Lexical Borrowing From English in Hong Kong Cantonese*. Hong Kong: Centre of Asian Studies, University of Hong Kong.
- [7] Xie, Y. (2024). Phonological Transfer from Cantonese to English for Cantonese-English Bilingual Children: A Scoping Review. *English Language and Literature Studies*, 14(4).
- [8] Chan, A. Y. W., & Li, D. C. S. (2000). English and Cantonese Phonology in Contrast: Explaining Cantonese ESL Learners' English Pronunciation Problems. *Language, Culture and Curriculum*, 13(1), 67–85. <https://doi.org/10.1080/07908310008666590>
- [9] Cutler, A., & Chen, H. C. (1997). Lexical tone in Cantonese spoken-word processing. *Perception & Psychophysics*, 59(2), 165-179.
- [10] Kang, Y. & Katsuda, H. (2011). Loanword Phonology. *The Blackwell Companion to Phonology*, 4, 1003-1026.
- [11] Silverman, D. (1992). Multiple Scansions in Loanword Phonology: Evidence from Cantonese. *Phonology*, 9(2), 289-328.
- [12] Yip, M. (1993). Cantonese Loanword Phonology and Optimality Theory. *Journal of East Asian Linguistics*, 2(3), 261–291. JSTOR. <https://doi.org/10.2307/20100642>
- [13] Kiu, K. L. (1977). Tonal rules for English loan words in Cantonese. *Journal of the International Phonetic Association*, 7(1), 17-22.
- [14] Odlin, T. (1989). *Language Transfer: Cross-linguistic Influence in Language Learning*. Cambridge: Cambridge University Press.
- [15] Tong, X. , He, X. , & S. Hélène Deacon. (2016). Tone Matters for Cantonese-English Bilingual Children's English Word Reading Development: A Unified Model of Phonological Transfer. *Memory & Cognition*, 45(2), 320-333.
- [16] Mok, P. P. K., & Albert, L. E. E. (2018). The acquisition of lexical tones by Cantonese–English bilingual children. *Journal of Child Language*, 45(6), 1357-1376.
- [17] Beardmore, H. B. (1986). Bilingualism: basic principles. *Multilingual Matters*, 1.
- [18] Isarankura, S. (2018). The effects of stress and tones in Thai on the pronunciation of English polysyllabic loanwords among Thai EFL students. *LEARN Journal: Language Education and Acquisition Research Network*, 11(2), 66-83.
- [19] Chen, K. (2016). Characteristics and variation of English loanwords in Cantonese dialects. *Journal of Language and Literature (Foreign Language Education and Teaching)*, (11), 50-52, 176
- [20] Zhao, Y. (2024). A study on phonetic transfer from the view of loanwords and its influence on cross-cultural communication. *Routledge EBooks*, 62–70. <https://doi.org/10.1201/9781032676043-9>
- [21] Kuhn, M. R., & Stahl, S. A. (2000). *Fluency: A review of developmental and remedial practices*. Center for the Improvement of Early Reading Achievement (CIERA), University of Michigan. <https://www.ciera.org/ciera/publications/report-series>

Appendix

Table 2. Twenty loanwords and their corresponding Cantonese and mandarin words

English word	English pronunciation	Jyutping	Written Cantonese	Hanyu Pinyin	Written Mandarin
Two syllable words					
number	/ˈnʌmbə(r)/	lam1 baa1	𩺰把	hào mǎ	号码
fashion	/ˈfæʃn/	fe1 sin1	啡神	shí shàng	时尚
jelly	/ˈdʒeli/	je1 lei2	啫喱	guǒ dòng	果冻
salad	/ˈsæləd/	saa1 leot6	沙律	shā lā	沙拉
sandwich	/ˈsænwɪtʃ/	saam1 man4 zi6	三文治	sān míng zhì	三明治
cookie	/ˈkʊki/	kuk1 kei4	曲奇	qǔ qí	曲奇
party	/ˈpɑːti/	paa1 ti4	派对	pài duì /jù huì	派对/聚会
sofa	/ˈsəʊfə/	so1 faa3	梳化	shā fā	沙发
taxi	/ˈtæksi/	dik1 si2	的士	chū zū chē	出租车
motor	/ˈməʊtə(r)/	mo1 tok3	摩托	mó tuō chē	摩托车
cherry	/ˈtʃeri/	ce1 lei4 ji2	车厘子	yīng táo /chē lí zi	樱桃/车厘子
coffee	/ˈkɒfi/	gaa3 fe1	咖啡	kā fēi	咖啡
pudding	/ˈpʊdɪŋ/	bou3 din6	布甸	bù dīng	布丁
cartoon	/kɑːˈtuːn/	kaa1 tung1	卡通	kǎ tōng	卡通
hello	/həˈləʊ/	haa1 lou3	哈啰	hā luō	哈啰
guitar	/ɡɪˈtɑː(r)/	git3 taa1	结他	jí tā	吉他
microphone	/ˈmaɪkrəfəʊn/	mai1	咪	mài kè fēng	麦克风
strawberry	/ˈstrɔːbəri/	si6 do1 be1 lei2	士多啤梨	cǎo méi	草莓
hamburger	/ˈhæmbɜːɡə(r)/	hon3 bou2 baau1	汉堡包	hàn bǎo bāo	汉堡包
chocolate	/ˈtʃɒklət/	zyu1 gu1 lik1	朱古力	qiǎo kè lì	巧克力

Table 3. Twenty target loanwords and their example sentences

Target words	Sentences
number	What's your phone number?
fashion	Fashion changes every year.
jelly	The jelly is sweet.
salad	She likes fruit salad.
sandwich	I make a sandwich.
cookie	My mum is baking cookies.
pudding	The pudding is soft and sweet.
party	We join a birthday party.
sofa	She is sitting on the sofa.
taxi	The taxi is here.
motor	There is a cool motor.

Table 3. (continued)

cherry	The cheery is small and red.
coffee	He drinks coffee every morning.
cartoon	The cartoon is funny.
guitar	I can play guitar.
hello	She says hello to me.
microphone	My teacher has a microphone.
strawberry	I like eating strawberries.
hamburger	Hamburger is my favourite food.
chocolate	She likes chocolate ice cream.