Project Title	**:**	Cantonese Abilities of Chinese Mainland University Students in Hong Kong: Testing Their Grammatical and Communicative Competence
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Final Report

by

Principal Investigator

Cantonese abilities of Chinese mainland university students in Hong Kong

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Abstract: This study examines the Cantonese abilities of mainland university students in Hong Kong who learn Cantonese as an additional language (CAL). Two tests were administered: a grammatical test and a communicative test. The former consisted of 68 questions concerning five linguistic domains of Cantonese: grammatical categories, lexical categories, morphology, pragmatics, and structure. The questions were categorized into 3 difficulty levels, based on their typological similarities and differences with other Transitional，Central and Northern Sinitic languages. The communicative test consisted of two role-play questions and three interview questions. There were 113 CAL mainland university students, both undergraduate and postgraduate, and 39 native speakers of Cantonese from Hong Kong, who participated in the tests. The results indicate that these students possess limited grammatical competence and lower moderate proficiency in Cantonese communication. There is a significant proficiency gap when compared to native Cantonese speakers, making effective communication challenging. The research suggests that CAL mainland university students should attain a minimum threshold of grammatical competence at 82.54% and a communicative competence level of 80.58% to become communicatively adequate in Cantonese. Students speaking Southern Chinese languages generally exhibit higher Cantonese abilities compared to those speaking Northern, Central, and Transitional Chinese

languages. However, no significant advantage in learning Cantonese was observed for those speaking Central and Transitional Chinese languages. The duration of stay in Hong Kong does not impact Cantonese proficiency among CAL mainland university students. This finding suggests the presence of social fragmentation between local and non-local students. Finally, recommendations are made to address the challenges and enhance the Cantonese language proficiency of CAL mainland university students in Hong Kong.

Keywords: Cantonese abilities, grammatical competence, communicative competence, Chinese mainland university students, Cantonese as an additional language, Hong Kong

1. Introduction

The number of non-local students from the mainland of China, who are studying in post-secondary programs in Hong Kong, has been increasing, see Table 1, according to University Grants Committee (2023). Meanwhile, the percentage of mainland university students has also been on the upswing, from 68.22% in 2018 to 74.76% in 2022. The statistics encompass four levels of education, with the corresponding normative length of full-time study indicated in parentheses: sub-degree programs (2 years), undergraduate programs (4 to 6 years), taught postgraduate programs (1 to 2 years), and research postgraduate programs (2 to 5 years). Upon graduation, these individuals from mainland China will become potential contributors to Hong Kong's workforce. The recent implementation of the *Admission Schemes for Talent, Professionals, and Entrepreneurs* by the Hong Kong Government in 2022 reflects the city's demand for manpower so as to bolster Hong Kong's competitiveness in the global marketplace.

Table 1. Non-local Student Enrolment from the Mainland of China

	2018/19	2019/20	2020/21	2021/22	2022/23
Mainland of China (headcount)	12322	12912	13605	14825	16231
Total non-local student enrolment	18061	19213	19488	20398	21710
Mainland of China (percentage)	68.22%	67.20%	69.81%	72.68%	74.76%

Moreover, language use in Hong Kong is biliteracy and trilingualism (or 兩文三語). Hong Kong is officially recognized as a bilingual territory, as stipulated by Article 9 of the *Hong Kong Basic Law*, known as Hong Kong's mini-constitution. Both Chinese and English are designated as equal official languages within the territory. Biliteracy refers to the skill of being able to read and write proficiently in Standard Chinese and English, while trilingualism refers to the ability to speak and understand Cantonese, Putonghua and English. Proficiency in biliteracy and trilingualism holds significant importance in Hong Kong's multicultural environments. It empowers individuals to communicate and participate effectively in a wide range of social, professional, and cultural settings. Mainland university students often possess strong Chinese language skills due to their Chinese education background, and high English language proficiency which is one of the admission requirements by Hong Kong's universities, typically measured by the TOEFL or IELTS exam. Therefore, they generally do not encounter significant challenges in terms of their Chinese and English language abilities when studying or seeking employment in Hong Kong. However, mainland university students often consider Cantonese as a local "dialect" of lesser importance (Gu and Tong, 2012). Their attitude towards Cantonese learning is either lukewarm or negative (Zhang, 2015, Li et al., 2016, Gu, 2018, Bauer and Wakefield, 2019). Additionally, some university programs, especially the one-year full-time self-financed taught master programs, are heavily populated by mainland students, limiting the non-local students' opportunities to engage with Cantonese-speaking locals. Therefore, the lack of interest and learning environment impedes Cantonese learning of the mainland university students.

While they are able to manage their university studies in English and Standard Chinese, many soon realize the practical value of learning Cantonese when they get in contact with the job market. According to Li and Liu (2021) and Li (2022), Hong Kong's local companies still

prioritize Cantonese proficiency in college graduates. Besides, since Cantonese serves as the primary language used in daily interactions within Hong Kong communities, it plays a positive and crucial role in facilitating social integration among individuals (Li, 2023). Therefore, their Cantonese incompetence becomes a barrier to both career and socio-cultural integration of the mainland university students in Hong Kong (Chan and Chen, 2023).

In contrast to those who have little interest in learning Cantonese, there are still some mainland university students who are motivated to learn the language, although they do not represent the majority. According to Chan and Chen (2023), only six out of their 30 interviewees are able to use Cantonese, while the remaining participants lack proficiency. Our survey identified two main methods of Cantonese learning: self-study using audio-visual resources and real-life interactions, and formal classroom learning. Universities in Hong Kong often offer Cantonese courses specifically tailored for non-local students, such as “Cantonese for Chinese Language Background Students” offered by Hong Kong University of Science and Technology (HKUST) and “Elementary Cantonese (Taught in Putonghua)” provided by The Hong Kong Polytechnic University (PolyU). However, the level of Cantonese proficiency attained through these methods remains uncertain, leaving unanswered questions about whether this proficiency can enhance job prospects and facilitate improved socio-cultural integration in Hong Kong.

Although universities administer tests for their Cantonese courses, these assessments may not be objective indicators of mainland university students’ Cantonese abilities. Firstly, the assessments focus on evaluating students’ mastery of course content and often include advanced academic and literacy components for educational purposes. For instance, the assessment for “Cantonese for Chinese Language Background Students I” at HKUST allocates 20% of the evaluation to Cantonese cultural studies (Centre for Language Education, 2020). While this design aligns with the educational goals of the university, the

assessment results primarily reflect students' achievement within the course and extend beyond pure language competence. Additionally, Yu and Zhang (2016) indicate that students often fail to contextualize the use of Cantonese in their daily life even with classroom training.

Therefore, the primary objective of this study is to evaluate the Cantonese proficiency of mainland university students in Hong Kong, who learn Cantonese as an additional language, or called CAL by Li et al. (2016). The corresponding research question is:

(1) How proficient are these students in Cantonese grammatical competence and communicative competence?

Furthermore, the current Cantonese courses in Hong Kong's universities are designed on the basis of communicative teaching approach, which emphasizes interaction as the learning means as well as goals (see Hymes, 1972; Littlewood, 1981; Nunan, 1991). It appears that the goal of these courses is to achieve a level of proficiency as high as possible (Chinese Language Centre, 2011; Centre for Language Education, 2020). While having an open-ended achievement is not inherently incorrect, it fails to consider the individual needs of learners. This approach can impose unnecessary workload on students who simply aim to develop adequate communicative abilities, such as on-campus and community communication for everyday tasks like shopping or group discussions, rather than engaging in academic arguments and presentations (Li et al., 2016; Lee, 2019). The current Cantonese training may set goals that are higher than necessary, resulting in less satisfactory learning outcomes (Wang, 2014; Yu and Zhang, 2016; Li et al., 2016).

Hence, the second objective of this study is to determine the threshold level of Cantonese grammatical competence required for mainland university students to attain communicative adequacy. Similar threshold approaches to additional language learners have been widely employed in Europe for various Indo-European languages since the 1970s (see

van Ek 1975, 1977, van Ek et al. 1998). The corresponding research question is as follows:

(2) What level of competence is necessary for these students to meet their communicative needs effectively?

The Cantonese courses currently offered in universities in Hong Kong often categorize non-local students based on their background language, such as Chinese language background vs. non-Chinese language background, such as English. However, as Chinese languages can vary, typologically grouped as Northern Chinese languages (Mandarin and Jin), Central Chinese languages (Xiang, Hui, Gan, Wu), and Southern Chinese languages (Yue, Hakka, Pinghua, Min) (Norman, 1988), or a quadruple division with an additional group of transitional Chinese by Szeto (2019), mainland speakers of different Chinese languages may approach Cantonese learning differently from one another. Therefore, the third objective of this study is to examine the variations among learners based on their background language. The corresponding research question is as follows:

(3) Will students with specific background languages demonstrate better Cantonese learning outcomes compared to those with other background languages?

Finally, the current study aims to offer suggestions for teaching Cantonese in Hong Kong. It aims to identify strategies and measures that Cantonese teachers can use to enhance the effectiveness of Cantonese courses in local universities so as to enhance social integration.

2. Defining Cantonese abilities

Cantonese abilities are conceptualized in the present study as grammatical competence and communicative competence.

Grammatical competence covers knowledge in phonology, morphology, syntax, lexicon, semantics and pragmatics. It is not disputable that grammatical competence is the foundation of one's communicative competence; it is an obligatory component in all frameworks of

language proficiency (e.g., Hymes, 1972; Canale and Swain, 1980; Bachman, 1990). Without it, a speaker is unlikely to communicate no matter how proficient he/she is in other components of communicative competence (e.g., discourse competence, strategic competence).

Hulstijn (2011, 2015) further distinguishes the grammatical competence into basic linguistic cognition, compared with extended or higher linguistic cognition (e.g., making use of low-frequency lexical items and uncommon morphosyntactic structures). The former refers to speakers' knowledge of the basic linguistic system of a language, or its central core (Lado, 1961: 20; Chomsky, 1965); it is implicit to native speakers, learned without conscious efforts. The latter, contrarily, must be learned explicitly by most of the native speakers, such as through school education (Chomsky, 1965; Purpura, 2004; Chelliah and de Reuse, 2011). Any native speaker should have enough natural exposure to the implicit knowledge; ideal native speakers should have all the implicit knowledge. But ideal native speakers are also likely to lack explicit knowledge if they have not participated in any formal learning. In descriptive linguistics, native competence in implicit grammatical knowledge is the most important factor of selecting L1 speakers for consultancy since most of the world's languages are without writing systems and their speakers do not have formal training in their ethnic languages (e.g., archaic varieties of the same language) (Chelliah and de Reuse, 2011; Aikhenvald, 2015).

Therefore, in the present project, Cantonese knowledge which is also explicit to native speakers is excluded from the test, such as literary readings of Cantonese words. The grammatical test is all about the central core of Cantonese. This also theoretically guarantees the reliability and validity of the tests since native speakers are expected to have (near-) perfect performance in the grammatical test. Admittedly, to additional language learners, native speakers' implicit knowledge must also be learned explicitly, with conscious efforts;

but it is still the most foundational component for them to converse in the target language.

Communicative competence, according to Canale and Swain (1980), is identified as four components. Other than grammatical competence, the other three are sociolinguistic competence which includes knowledge of sociocultural rules of use (e.g., abilities to handle topics and contexts), discourse competence which is about dealing with cohesion and coherence in different types of texts, and strategic competence (e.g., paraphrase, repetition, clarification, slower speech, etc.). According to Li et al. (2016) and Lee (2019), to cope with basic on-campus and community communications is the core need of CAL mainland students, such as shopping, banking, and group discussion. These abilities are precisely what communicative competence is about, namely the integrative knowledge of language use, and hence the target of the test.

Since Brown (2005) indicates that communicative test should be based on communication meaningful to examinees' needs, the communicative abilities defined in the present study are tailor-made to reflect faithfully mainland university students' needs as CAL learners. If they can successfully respond to their need-based real-world situations, it means that they have achieved communicative adequacy.

3. Review of literature of the project

The present review raises two key considerations: (1) Are there any existing evaluations of Cantonese proficiency specifically focusing on mainland students or individuals in Hong Kong? (2) Is there an available measurement instrument that aligns with the objectives of the current research?

3.1 Indirect evaluation of Cantonese abilities and course-based assessments

There are few scholarly reports about Cantonese abilities of CAL mainlanders in Hong Kong. Through self-evaluation, CAL mainlanders in Wang (2014: 149) report that their Cantonese proficiency is "bad" with better listening ability than speaking. According to

Bacon-Shone, Bolton and Luke (2015: 22), 7.9% of the population in Hong Kong has only “a little” oral Cantonese ability. Although the data is inclusive of all non-locals, we can infer that most of them should be from mainland China. However, it is known that self-reports are often under- or overestimated relative to direct observation (Zaller, 1992; Ayers, 2010). Thus, to understand their Cantonese abilities more accurately, we need a study based on direct measurement.

Assessment constitutes a component of the Cantonese courses offered to CAL mainland students studying in Hong Kong's universities, as discussed in Section 1. However, it is important to note that while the results of these course assessments provide a direct measurement, they may not accurately represent the Cantonese abilities of mainland students in Hong Kong. The primary issue lies in the fact that course-based assessments tend to underestimate the Cantonese abilities of CAL mainland students due to the inclusion of advanced components, such as using Cantonese for academic purposes. The assessment not only evaluates language proficiency but also encompasses the acquisition of knowledge related to the course content.

3.2 Existing Cantonese tests

Consequently, we need to ask if the existing Cantonese tests can serve the purpose of the current project. The survey below offers no positive answer to this inquiry.

Regarding grammatical competence, a common kind of test is for (bilingual) first language acquisition (Li and Lee, 2001; Barry and Blamey, 2004; Yip and Matthews, 2007). They often focus on one or several linguistic features. These features are studied since certain developmental signs have occurred to the learners, such as Cantonese tone production (Barry and Blamey, 2004) and Cantonese classifiers and quantifiers (Li and Lee, 2001). Evidently, it is not appropriate to generalize grammatical competence based on specifically tailored linguistic features. The current design of grammatical test aims to represent the entire core

grammatical knowledge of Cantonese.

There are other Cantonese proficiency tests available that focus on specific modules, such as vocabulary and pronunciation, within the realm of grammatical knowledge. For example, the Hong Kong Cantonese Receptive Vocabulary Test (Cheung, Lee and Lee, 1997) aims to understand how far 2 to 6-year-old Hong Kong children can reach when acquiring Cantonese vocabulary, and what problems they may have. Cantonese Read-Aloud Test (CRAT) (The Linguistic Society of Hong Kong, 2020), “Reading aloud of written text” in the Chinese subject of HKDSE (Hong Kong Examination and Assessment Authority, 2011) and Hong Kong Cantonese Articulation Test (HKCAT) (Cheung and To, 2006) focus on accurate pronunciation of Cantonese, including segments and suprasegmentals. HKCAT is often used with children having language disorders. However, all of them are only parts of the grammatical competence (e.g., lexical semantics and phonology) and hardly generalizable. Moreover, in the present project, the accuracy of pronunciation is expected to be downplayed, as long as the pronunciation is intelligible.

More integrative Cantonese proficiency tests which are related to communicative competence include the US-based Oral Proficiency Interview (OPI) under ACTFL, Hong Kong Test of Preschool Oral Language (TOPOL), RDLS-HK and Hong Kong Cantonese Oral Language Assessment Scale (HKCOLAS) (see T’sou et al., 2006; Shong and Cheng, 2007; Chan, 2014; Wong et al., 2018). The latter three can also be used for language therapy. Grammatical competence is included in all of the tests, either as an independent section or as a criterion in evaluating comprehension and expression (ACTFL, 2012; T’sou et al., 2006; To et al., 2010). Other abilities to be assessed are metalinguistic skills, cohesion and coherence, referencing, turn-taking, narrative skills, stylistic manipulation, etc. (ACTFL, 2012; T’sou et al., 2006; To et al., 2010; Wong et al., 2018).

Therefore, firstly, no stand-alone grammatical test is found. Although the independent

grammar sections in some Cantonese proficiency tests (e.g., the Hong Kong Cantonese Grammar subtest in HKCOLAS, the grammar and vocabulary sections in TOPOL) are consistent in conceptualization with the design in the current project, these subtests are developed for children, often with language disorders, aged from 1 to 12, making them unsuitable for normal adults (see Shong and Cheng, 2007; T'sou et al., 2006; Wong et al., 2018).

Secondly, since the communicative test in the present study is tailor-made on the basis of the communicative needs of CAL mainland university students, the communicative abilities (e.g., referencing, narrative skills) assessed in the existing tests are beyond the scope of the current communicative competence.

Therefore, a grammatical test targeting the core Cantonese knowledge and a need-based communicative test should be designed for the study.

4. Theoretical and/or conceptual framework of the project

This section will delve into the theoretical framework that underlies the design of both the grammatical test and the communicative test.

4.1 Cantonese grammatical test

We will discuss the content of the tests, outline the process of selecting test features and present sample questions.

4.1.1 "The central core of language" as the test content

Practically, test of native core competence seems unnecessary, if not with language disorders (Lado, 1961; Valdés and Figueroa, 1994). This is also why the Cantonese proficiency tests in Hong Kong are used mainly for language therapy of local children. Since ideal native speakers know the language perfectly, their core competence should be constant or too close to be detected (Chomsky, 1965; Taylor, 1988). The vertical line of Figure 1 stands for the competence level. The ceiling of the box in Figure 1 represents the theoretically

constant core competence that ideal native speakers should reach. The solid dots stand for the distribution of the actual core competence of L1 speakers. Even though not everyone can reach the ideal level, their core competence should be close to the ideal level and similar to each other; the individual variations among native speakers should be hard to tell.

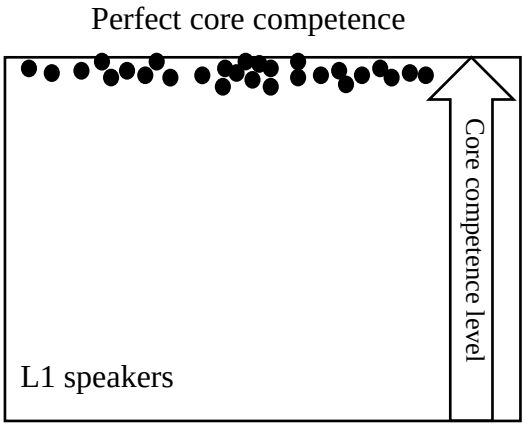


Figure 1. Distribution of L1 core competence

However, while adult native speakers' competence is stable, learners are not (Ellis, 1994; Shirai and Vercellotti, 2013). The distribution of their competence should be more varied as is represented by the solid dots in Figure 2. It is, therefore, possible to divide additional language learners' knowledge of the core linguistic system into low, intermediate and advanced levels or more detailed classifications if possible. This attribute has been applied to L2 proficiency tests (e.g., TOEFL and IELTS).

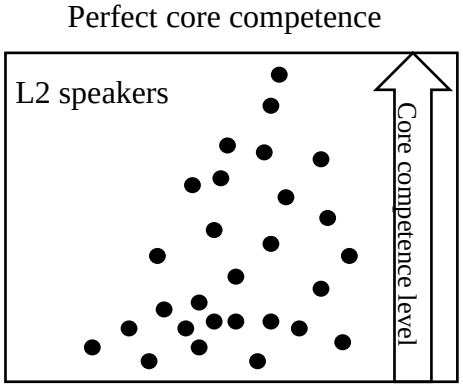


Figure 2. Distribution of core competence of L2 speakers or additional language learners

4.1.2 Selecting the test features and sample questions

Since one test cannot exhaust Cantonese grammatical features, language features are sampled from diverse linguistic domains with equal weight, i.e., phonology, morphology, phrasal, clausal and sentence structures, grammatical categories, lexicon, semantics and pragmatics. We sample comparative number of features from each domain.

To guarantee the test features belong to the core Cantonese knowledge, the following criteria are used and native speakers are referenced (Ding, 2019):

- *Frequency*: the linguistic feature should be frequently used and easily acquired by native Cantonese speakers;
- *Context*: the feature is contextually general, since contextually restricted feature is also difficult for native speakers;
- *Variation*: there is usually only one way to express the feature, since knowledge which can be expressed alternatively (English word ‘endeavor’ versus ‘try’) is often also explicit and difficult for native speakers;
- *Closure*: the feature set is closed, hardly acquiring new members, since features which are open can also be new to native speakers.

Moreover, since the grammatical test should maximally reveal the examinees’ language knowledge, the design should minimize the non-linguistic abilities, mainly the more advanced cognitive skills, such as inference-making, argumentation, and literacy skills. Therefore, discrete-point approach, instead of extended-production tasks (e.g., essay questions), is used to design the questions, namely multiple-choice questions with one best answer, sentence correction questions, and sentence-making questions with given syntactic constituents. This approach measures one point of the grammar at a time and makes each item independent of the other. Another advantage is that they are all objective test tasks which, according to Purpura (2004), do not require subjective judgment when being marked.

Please see the sample questions with reference answers. The question stems were taken from natural contexts such as Cantonese newspapers, conversations and novels.

Question 1, an MC question, tests the semantic feature of Cantonese bare classifier phrase (BCP). BCP in preverbal subject or topic position of Cantonese clauses renders definiteness. The head noun is identifiable in a given context as the old information. Languages with similar features include Suzhou, Shanghai and Wenzhou Wu (吳語), and Tunchang Min (閩語). However, BCP is prohibited from the subject or topic position and only allowed in object position for indefiniteness in most Mandarin, Jin (晉語), Gan (贛語), Hakka (客家語) and northern Xiang (湘語) (see Cheng and Sybesma, 1999; Matthews and Yip, 2011; Wang, 2015). See Wang (2015) for a typological study of BCP in Sinitic languages. Therefore, 隻貓 (literally: classifier cat, 'the/a cat') at the subject position of the clause 隻貓就行咗入黎 'the cat came in' is a definite expression in Cantonese. The only context where the head noun 貓 'cat' is identifiable is B, namely the cat named 金仔 'gold boy'.

Question 1. Please select the BEST context for the sentence "隻貓就行咗入黎".

A. 「我鍾意貓多過狗嘅。」 佢啱啱講完呢句之後，_____，佢嚇到面都青埋，真係好好笑。("I like cats more than dogs". After she finished saying this sentence, _____. She turned pale with fright, which was really funny.)

B. 「金仔」係得利樓街市一間菜檔嘅貓店長，佢 3 個月大個陣被菜檔一家收養，當咗貓店長已兩年半，我嘅鋪頭喺隔鄰，朝早 7 點一開檔，_____，好似打招呼。("Golden Boy" is the cat manager of a shop in Tai Lee Building Market. He was adopted by the shop owner when he was three months old and has been the shop's cat manager for two and a half years. My stall is next door, and when the shop opens at 7

o’clock in the morning, _____, he always comes over to say hello.) (answer)

C. 今時今日仲有好多人浪費食物，食唔曬又唔打包拎走，我就攞來餵啲流浪貓，一收檔，_____，打算食餃子。(Nowadays, many people still waste food. They can't finish it and don't take it away. I use it to feed stray cats. As soon as I close the stall, _____, intending to eat dumplings.)

D. 有一日好夜喇，我無喇喇聽到門口有一兩聲貓叫，我就起身去開門。一開門，_____，嚇死我啦。(One night, I heard a cat meowing at the door, so I got up to open it. When I opened the door, _____, which scared me to death.)

Question 2, a sentence correction question, tests the pragmatic knowledge of sentence final particles. 喎/*wo3* [wɔ:^{33}] is to inject the attitude of noteworthiness of the information or counter-expectation into the clause, while 啫/*ze*^{1} [tsɛ:^{55}] is to play down the information or idea (Matthews and Yip, 2011; Yap, Chor and Wang, 2012). Since the context requires the latter attitude, i.e., the goods are very cheap, 喎/*wo*^{3} should be replaced by 啫/*ze*^{1}.

Question 2. Please correct the ONLY mistake of the following sentence if there is any.
近排仲有間叫「U購」嘅舖賣得好平，沖涼液加埋都係幾十蚊喎。(Recently, there is a shop called “U-Select” that sells items at very affordable prices. Even shower gel and other products are priced at several dollars.)
Corrected sentence:
近排仲有間叫「U購」嘅舖賣得好平，沖涼液加埋都係幾十蚊喎啫。(Recently, there is a shop called “U-Select” that sells items at very low prices. Shower gel, along with other products, is priced at just a few dollars.)

In Question 3, a multiple-choice format is utilized to assess the fundamental lexical knowledge of classifiers. In Putonghua, the classifier “把/ba3 [pa^{214}]” is employed for a

bunch of bananas, indicating a spherical shape. However, in Cantonese, a different classifier "梳/so1 [sɔː^{55}]" is utilized, signifying a horizontal shape.

Question 3 Please select the BEST answer.
屋企仲有_____，你食啦。(There is still _____ at home, you can have it.)

A. 一球蕉 (literally: a ball-shaped bunch of bananas)

B. 一串蕉 (literally: a bunch of bananas)

C. 一梳蕉 (literally: a comb-shaped bunch of bananas) (answer)

D. 一把蕉 (literally: a handful of bananas)

4.2 Cantonese communicative test

The current test examines the basic on-campus and community communicative abilities of CAL mainland university students. Cantonese communicative test is designed upon the five requirements for setting up a communicative test by Brown (2005: 21), including meaningful communication, authentic situation, unpredictable language input, creative language output, and integrated language skills. Therefore, the test tasks should be based on examinees' needs to reflect authentic situations (Li et al., 2016; Lee, 2019). They should be interactive so as to make the language use unpredictable and creative. The test task should also have its purpose (e.g., to persuade, to inform, to establish social relations) (Morrow 1977; Canale and Swain, 1980).

Thus, the test tasks are designed according to the real-world situations where Cantonese is most frequently used by mainland university students, and selected from Lee (2019) on the basis of frequency. The weight is decided by the proportion of Lee's (2019) sorting, namely 29% of the situations should be from the "always" category, 43% from "most of the time",

and 29% from “sometimes”.

Always (6)

- Using Cantonese related to study or work
- Buying things in the market
- Taking a taxi
- Talking to children
- Talking to electricians, plumbers, etc.
- Traveling within Guangdong Province

Most of the time (9)

- Buying things in stores and supermarkets
- Ordering food
- Having casual talks
- Talking to colleagues and neighbours
- Asking directions
- Watching movies
- Visiting friends
- Traveling inside Hong Kong
- Renting a house, doing business

Sometimes (6)

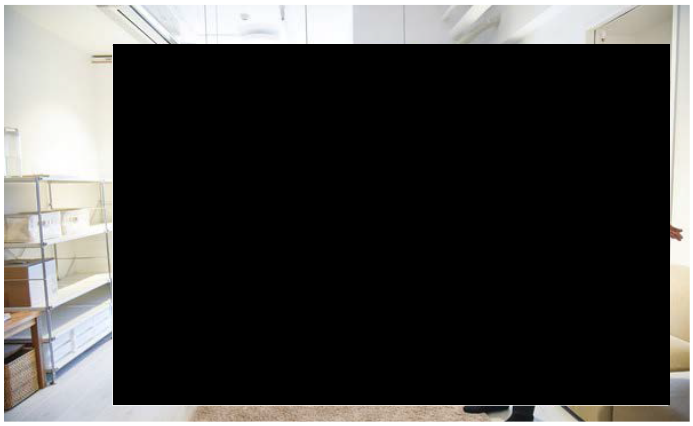
- Taking public transport
- Talking to students
- Making phone calls
- Playing sports
- Making travel arrangements
- Visiting doctor or in hospital

Moreover, we use the role-play and interview method, a common approach to assess speaking abilities, to interact with the examinees (Foreign Service Institute, 1979; Bachman, 1990; ACTFL, 2012). The questions asked by the examiners elicit the most common

language use from the examinees in the given situation.

Sample interview question is as below. Question 4 assesses the Cantonese abilities of "renting". All questions and answers should be in colloquial Cantonese, although the sample interview outlines are written in Standard Chinese.

Question 4: Using Cantonese related to "renting"



a) 請描述這張圖片。(Please describe this picture)
b) 你喜歡一個人住還是跟室友合租？(Do you prefer living alone or sharing an apartment with roommates?)
c) 你喜歡居所距離工作／上學地點近一點還是遠一點？為什麼？(Do you prefer your place of residence to be closer or farther from your work/school? Why?)
d) 你覺得香港的房子住宿條件好嗎？為什麼？ (Do you think the housing conditions in Hong Kong are good? Why?)
e) 你覺得香港的鄰里關係好嗎？為什麼？(Do you think the neighborhood relationships in Hong Kong are good? Why?)

Basic communication abilities of native speakers should also be quite stable and similar, just like the grammatical competence. It should also be difficult to differentiate native speakers' performance into various levels. But again, learners' performance is not constant (Ellis, 1994; Shirai and Vercellotti, 2013). Their levels can be stratified.

It should be noted that although CAL mainland university students can be communicatively adequate, they may lack certain core grammatical competence. Similarly, in

first language (L1) acquisition, children's L1 is usually fully developed around age 12 (Collier, 1989; Herschensohn, 2007; Köpke and Schmid, 2013). But children can adequately express themselves around age 5 (see Brown, 1973; Baker and Jones, 1998; Luinge et al., 2006). Both language learners and native speakers do not need to develop full grammatical competence before they can communicate adequately.

Ten native speakers were administered with the communicative test, with an average performance close to 100%. Their performance, as native speakers, was similarly high and stable, like their grammatical test. Native speakers of a language typically have a deep understanding of its grammar, vocabulary, and pronunciation, as they have been exposed to and immersed in the language from an early age. This extensive exposure and linguistic background result in native speakers demonstrating a high level of proficiency and fluency in their language skills.

5. Method

In this section, we will discuss the test subjects, the test procedure, the test format, the duration of the test, and the marking scheme. Additionally, we will address the literacy issue concerning Cantonese writing.

5.1 Test subjects and test procedure

All the participants in the study were CAL students from mainland China, who had been studying in Hong Kong for a minimum of one year, including both undergraduate (24) and postgraduate students (89). The one-year requirement was set because it needed at least one year for mainland university students to develop merely the listening ability (Wang 2014). Therefore, we excluded the subjects whose duration of stay in Hong Kong was less than a year. We also excluded students from programs related to languages and linguistics. On average, our subjects' duration of stay in Hong Kong was 27.7 months.

There were 163 volunteers joining the tests. Data from 152 of them were used in the

analysis. All participants voluntarily signed up after seeing our subject recruitment advertisements. All participants gave their consent and signed the consent form. Among them, there were 39 native speakers of Cantonese from Hong Kong, while the remaining 113 participants were CAL mainland university students. All 113 subjects participated in the grammatical test. However, 2 subjects withdrew from the communicative test due to a lack of confidence, resulting in a total of 111 CAL subjects participating in the communicative test.

Table 2. Subjects recruited for the study

	Male	Female	18-25 years old	26-33 years old	34-41 years old	Above 41
Native Cantonese speakers	19	20	17	6	5	11
CAL mainland university students	33	80	69	44	0	0

Additionally, we also recruited another 15 Cantonese native speakers for 3 rounds of trial tests to revise the test content. Their performance was not included in the statistics.

5.2 Language background of the test subjects

All CAL mainland university students were welcome to transfer the knowledge in their local language(s) and Putonghua to complete the tests. Shared features between Cantonese and their known languages can be their advantages of being a Chinese language speaker in Cantonese learning, unlike the non-Chinese CAL learners who have to start from scratch.

Among the non-Cantonese subjects, 40 of them were Northern Chinese speakers, 39 of them Transitional/Central Chinese speakers (e.g., Wu, Gan, Xiang, Southwest Mandarin and Jianghuai Mandarin), and 34 of them Southern Chinese speakers (e.g., Hakka and Min).

5.3 Literacy issue, the test format, test procedure and test length

To address the potential literacy issues experienced by mainland university students in recognizing Cantonese characters, the test format was adjusted. The modification aimed to enhance comprehension of the question stems by allowing examinees to listen to them instead of relying solely on written text. Additionally, examinees were required to respond by speaking into the integrated recorder within the testing interface.

To provide visual aids and support comprehension, the question stems were still displayed in written Cantonese, as the examinees are generally expected to possess a certain level of literacy in Chinese. The question stems were designed to be concise, reducing the cognitive load on their memory. In order to facilitate better performance, the use of slang in the question stems was avoided, and more commonly shared colloquial expressions between Cantonese and Putonghua (Mandarin) were utilized. The testing interface was computerized by using HTML, embedded with a recording module for answering questions.

The question stems were written based on natural corpora of Cantonese, such as Cantonese novels, Cantonese audio-visual programs, and Cantonese forums. Three question types, presented as how they were displayed on the test interface, are exemplified as below: MC questions (see Figure 3), sentence correction (see Figure 4) and sentence re-ordering (see Figure 5).

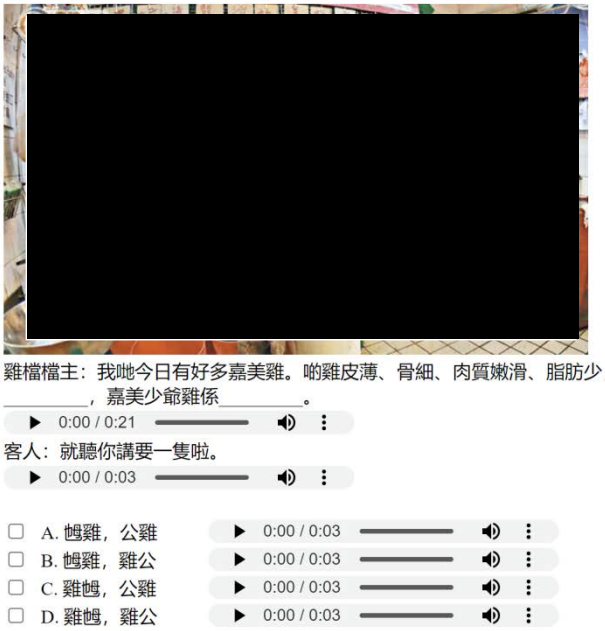


Figure 3. MC question

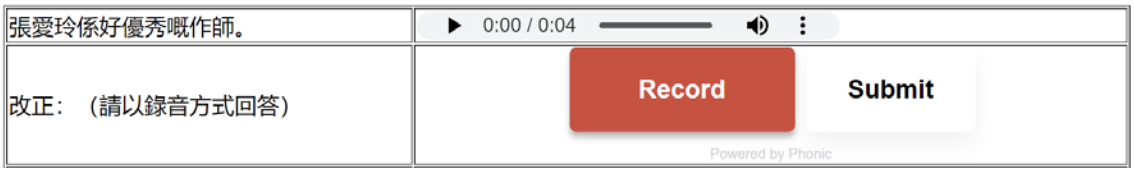
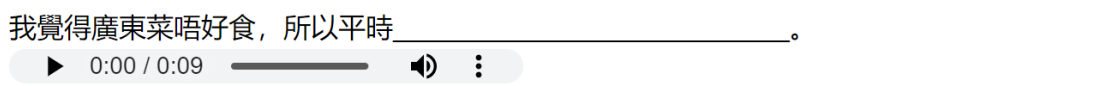
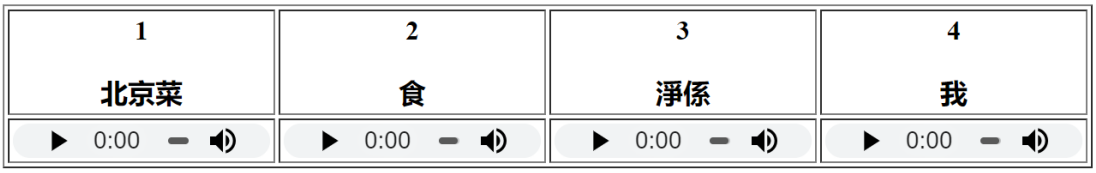


Figure 4. Sentence correction





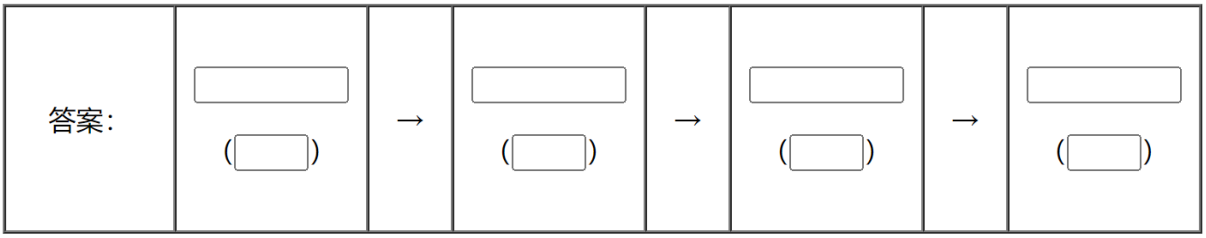


Figure 5. Sentence re-ordering

Prior to the actual test, a pre-test training session lasting approximately 10 minutes was conducted to provide instructions and familiarize the examinees with the test format. Following the training, a brief personal information survey lasting around 5 minutes was administered to gather relevant data such as age and family language. Subsequently, the Cantonese grammatical test was administered, allowing approximately 30 minutes for completion. This was followed by the Cantonese communicative test, which lasted approximately 25 minutes. The entire testing procedure typically concluded around one hour. However, examinees were given the flexibility to utilize additional time if needed. This approach aimed to avoid the time limit becoming a potential factor that could negatively impact performance. All the experiments were conducted face-to-face.

5.4 Marking scheme

Regarding the grammatical test, since the design of the tests used discrete-point approach and each feature was equally important, the general rule to score was to assign each feature with the same weight, namely one point as the full mark for a correct item and zero for a wrong answer.

Regarding the communicative test, a marking scheme was developed based on the speaking marking scheme of IELTS. See Appendix 1. Four factors are considered: fluency and coherence, lexical resource, grammatical range and accuracy, intelligibility and appropriateness. The responses were unacceptable if it is not in Cantonese, such as being English only except common loanwords (e.g., friend, office) and formulaic expressions (e.g., thank you, say sorry), or Cantonese being the embedded language and English the matrix language in code-switching. In terms of appropriateness, it refers to the social acceptability between the information and form of the information, such as appropriate degree of

politeness and formality (Morrow, 1977; Canale and Swain, 1980; Rivera, 2016). The communicative test of each subject was rated by two Cantonese native speakers, and the average was used for data analysis.

According to Ding (2016: 11), a language, if its use is for all domains (excluding the written domain) in the community, is the strongest in its functionality, called vernacular language. A feature of such a speech community is that it can tolerate dialectal variations and accents. Cantonese in Hong Kong is such a language (Li, 2006, 2016; Bauer, 2015). Without an accurate mastery of the phonological system, such as tones, CAL learners should be able to communicate adequately under the help of the accent-accommodating power of Cantonese speech community in Hong Kong. Note that in speech communities where the local language is not so robust in functionality, its speakers will switch to a lingua franca with little tolerance of learners' accent (Ding, 2016). Therefore, CAL learners may find it easier to achieve communicative adequacy in Cantonese in Hong Kong. Some scholars (e.g., Sachs and Li, 2007; Li et al., 2016; Lee, 2019) indicate that CAL learners have few chances to practice Cantonese since local people, upon hearing inaccurate Cantonese, will respond in English or Putonghua. This can be true when the Cantonese abilities of the CAL learners are still limited. But when their Cantonese abilities increase to be capable of reducing dysfunctional communication, the sociolinguistic environment of Hong Kong can actually facilitate their Cantonese abilities. Therefore, the current marking scheme downplayed the accuracy of Cantonese pronunciation. Recently, scholars realize that phonology-focused CAL teaching and learning is not effective and helpful, and may be over-rated (Li et al., 2016; Wee, 2019; Wakefield, 2019). Favourable sociolinguistic factors for CAL learners should not be neglected. Otherwise, CAL learners are facing excessive barriers in learning achievement.

CAL learners in Hong Kong are given the opportunity to utilize compensatory communicative strategies, including code-switching and using longer expressions, to aid in

their conversations. These strategies are recognized as valuable tools for CAL learners to enhance comprehension and convey their intended messages within the local linguistic context. Note that compensational communicative strategies such as code-switching may be hostilely treated or even disallowed in monolingual societies (Holms and Wilson, 2017); but it is considered favorably in Hong Kong.

5.5 Levels of the test questions

Firstly, 128 Cantonese grammatical features were selected. They belong to 5 linguistic domains: grammatical categories, lexical categories, morphology, pragmatics, and structure. They are classified into 3 difficulty levels, based on their typological similarities and differences with other Transitional/Central and Northern Sinitic languages. Shanghainese and Southwest Mandarin, as the Transitional/Central Chinese, and Beijing Mandarin (Northern Chinese) are thus used as the reference languages. Cantonese features which are typologically similar with Northern and Transitional/Central Chinese are classified as level-1 features, or the easiest features; those which are similar with Transitional/Central Chinese, but different from Northern Chinese, are classified as level-2 features, or the intermediate features; and those which are different from Northern and Transitional/Central Chinese are classified as level-3 features, or the hardest features. So the following distribution is summarized:

Table 3. The levels of the Cantonese grammatical features

grammatical categories	21	level 1	9	level 2	4	level 3	8
lexical categories	35	level 1	20	level 2	8	level 3	7
morphology	23	level 1	15	level 2	3	level 3	5
pragmatics	13	level 1	7	level 2	1	level 3	5
structure	36	level 1	24	level 2	5	level 3	7
	128		75		21		32

The hypothesis is that CAL mainland university students who speak transitional/Central

Sinitic varieties (e.g., Wu, Hui, Southwest Mandarin) will perform better in the Cantonese grammatical test than those from northern China or the north of the Yangtze River. Moreover, CAL mainland university students who speak Southern Chinese languages (e.g., Hakka, Min) will perform even better than those speaking transitional/Central Sinitic languages.

Next, the weight of the features with different difficulty levels being used in the Cantonese grammatical test was decided. The major reference is *Typological variation across Sinitic languages: Contact and convergence* by Szeto Pui Yiu (2019), where 32 features in 213 Sinitic languages/dialects are investigated. Therefore, the similarities of the Sinitic languages are calculated by using Cosine Similarity. This is a measure of the similarity between two vectors, A and B:

$$\text{Cosine Similarity} = \Sigma A_i B_i \,/\, (\sqrt{\Sigma A_i^2}\sqrt{\Sigma B_i^2})$$

The following results are obtained as below.

Table 4. Cosine Similarity among Northern Chinese, Transitional/Central Chinese and Southern Chinese

Language group 1	Language group 2	Similarities
Northern Chinese	Transitional/Central Chinese and Southern Chinese	48.7%
Northern Chinese and Transitional/Central Chinese	Southern Chinese	67.6%

Therefore, the weights of the features with different difficulty levels are determined. Since a questionnaire with 128 questions may be fatiguing for the examinees regarding the testing time (e.g., Galesic and Bosnjak, 2009; Knoch and Elder, 2010), 68 questions were used in the finalized version of the grammatical test to keep the test around 30 minutes. See Table 5.

Table 5. Weight of Cantonese grammatical features with different difficulty levels

Weight	Difficulty	Questions	Rounding
48.72%	level 1	33.1296	33
18.84%	level 2	12.8112	13
32.44%	level 3	22.0592	22

5.6 Cut scores for grammatical competence

Besides finding out the Cantonese proficiency of the overall population, the threshold grammatical competence for communicative adequacy should be set. A threshold grammatical competence is the lowest level of Cantonese grammatical competence which can adequately support the basic communicative abilities of mainland university students. The procedure is as follows (Brown and Hudson 2002, Brown 2013):

a) identify the borderline test-takers (Livingston and Zieky 1982);
b) estimate the measurement errors, namely X (each person's observed score) = T (true score) + E (measurement errors) (Lord and Novick 1968), by calculating the margin of error.
c) set the cut score, namely "borderline test-taker result +/– margin of error".

Firstly, borderline test-taker for threshold grammatical competence should be based on the lowest performance of those who are communicatively adequate. These subjects were threshold setters.

However, decisions about the performance, not well above or below, but close to the borderline result are error-prone (Brown 2013). Since language abilities form a continuum, it is risky to categorize absolutely someone's performance close to the borderline. Thus a transitional zone was set by estimating the measurement errors. The CONFIDENCE.T function in Excel can be used to calculate the measurement errors for the dataset, given a

specific confidence level: =CONFIDENCE.T(alpha, standard_deviation, sample_size). Alpha represents the significance level or confidence level. It is usually expressed as “1 minus confidence level”. For example, if the confidence level is 90%, alpha would be 0.1. Standard deviation refers to the measure of how spread out the data is. It indicates the variability or dispersion within the dataset. Sample size represents the number of observations or data points. The calculated result, or margin of error, quantifies the uncertainty or range of possible error associated with sample-based estimates. It represents the maximum expected difference between the estimate obtained from a sample and the true value in the population. It is typically expressed as a plus or minus (+/-) value.

6. Validation of the tests

Reliability and validity of the grammatical test and the communicative test were validated.

6.1 Reliability

According to Peter (1979), reliability refers to the degree to which a test is free from errors and yields consistent results. Split-half test was used to examine the reliability. The assumption is that if the complete test is reliable, a subset of the test should also be reliable. We split the tests into one half with all questions of odd numbers, and another half with those of all even numbers.

To assess the reliability of the two halves, we calculated the correlation coefficient between the scores obtained in the odd-question paper and the even-question paper. The correlation coefficient calculated using Pearson’s correlation coefficient is 0.877. The closer the correlation coefficient is to -1 or +1, the stronger the linear relationship between the variables. A correlation coefficient closer to +1 indicates a higher positive linear relationship between the variables, meaning that the scores obtained in one half are consistently related to the scores obtained in the other half. Therefore, based on the provided data, we can conclude

that the grammatical test exhibits a high level of reliability.

Since the communicative test is shorter in terms of test items, namely 5 tasks, split-half reliability was not a suitable means. Therefore, we used inter-rater reliability to check the consistency of the test, estimated by using the Cohen's kappa (see Cohen 1960), with a target kappa above 0.60 indicating adequate agreement among the raters. Since there were two Cantonese native-speaking raters, Cohen's kappa tells us if the two raters' agreement is better than what we would expect by chance alone. Therefore, we need to know two figures: the observed agreement or A_o (how often they agree) and the expected agreement by chance or A_e (how often they would agree just by random chance).

The observed agreement, namely calculating how many times rater A and rater B's ratings match and then dividing it by the total number of cases, was 0.8714. The expected agreement, namely calculating the chance of the two raters agreeing for each rating category and adding them up by chance, was 0.1364.

Then the following formula was used to calculate Cohen's kappa (κ): $\kappa = (A_o - A_e) / (1 - A_e)$. The Cohen's kappa was 0.8011, which indicates substantial agreement between the two raters' ratings for the communicative test. This means that their agreement is more than what we would expect by chance alone.

6.2 Validity

The test validity of the grammatical test was justified by content validity, namely how well the test measures the intended content. Since the grammatical features to be tested were selected from published grammatical descriptions of Cantonese, mainly Cheung's (2007) *A grammar of Cantonese as spoken in Hong Kong* and Matthews and Yip's (2011) *Cantonese: A comprehensive grammar*, it is self-evident that the test items can adequately represent the knowledge being measured. It is equivalent to inviting a panel of experts to do the rating about the relevance of the test items.

Since the validity of the grammatical test is self-evident, it can be used as a reference to measure the validity of the communication test, which is similar to practicing criterion-related validity. Criterion-related validity assesses how well the test scores correlate with an established criterion or outcome. It can be seen in Figure 4 that if the CAL speakers had low grammatical competence, their communicative competence was also low. Pearson's correlation coefficient equals 0.8911, indicating a very strong positive correlation between the correctness rate of the Cantonese grammar test and the Cantonese speaking test.

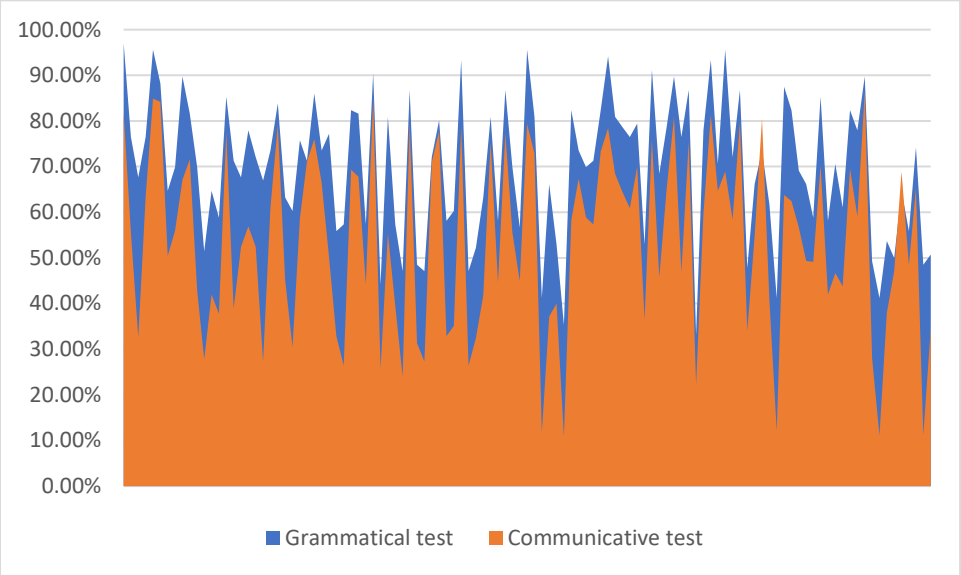


Figure 6. Comparing the result of grammatical competence and communicative competence of CAL subjects

7. Results and Discussion

In this part, the findings related to the three research questions are presented.

7.1 How proficient are these students in Cantonese grammatical competence and communicative competence?

The results show that the average performance of CAL mainland university students was 69.7%, with a standard deviation of 0.153. This suggests that the data points have some variability around the average performance. The median for CAL mainland university students was 71.3%. The minimum performance observed was 33.1%, while the maximum

was 97.1%.

Turning to the Cantonese native speaker variable, the average performance was 98.7%, with a very low standard deviation of 0.017. This indicates that the data points have very little variability around the average performance. The median for native speakers was 99.3%. The minimum performance observed was 94.1%, while the maximum was 100%.

Table 6. Descriptive data of CAL mainland university students and Cantonese native speakers regarding Cantonese grammatical test

	CAL	native speaker
average performance	69.7%	98.7%
standard deviation	0.153	0.017
median	71.3%	99.3%
minimum	33.1%	94.1%
maximum	97.1%	100%

Therefore, the CAL mainland university students' variable demonstrates a wider range of performance, while the native speaker variable shows a stable range and very little variability. See Figure 7.

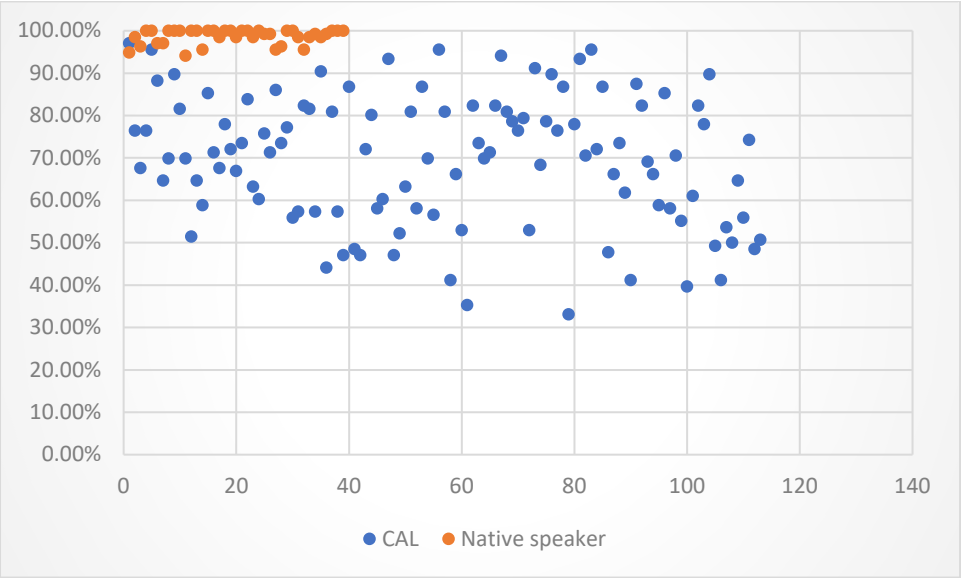


Figure 7. Performance comparison in Cantonese grammatical test of the native speakers and

CAL mainland university students

Regarding the communicative test, the data reveals that the average performance of CAL mainland university students was 53.96%. The standard deviation of 0.197 indicates that the performance scores exhibit variability, suggesting that the scores were not tightly clustered around the mean, but rather exhibit some instability. The median value was 56.00%. The minimum performance observed was 10.89%, representing a very poor performance, while the maximum performance observed was 86.44%, showing a large range of variation. See Figure 8.

Table 7. Descriptive data of CAL mainland university students regarding Cantonese communicative test

	CAL
average performance	53.96%
standard deviation	0.197
median	56.00%
minimum	10.89%
maximum	86.44%

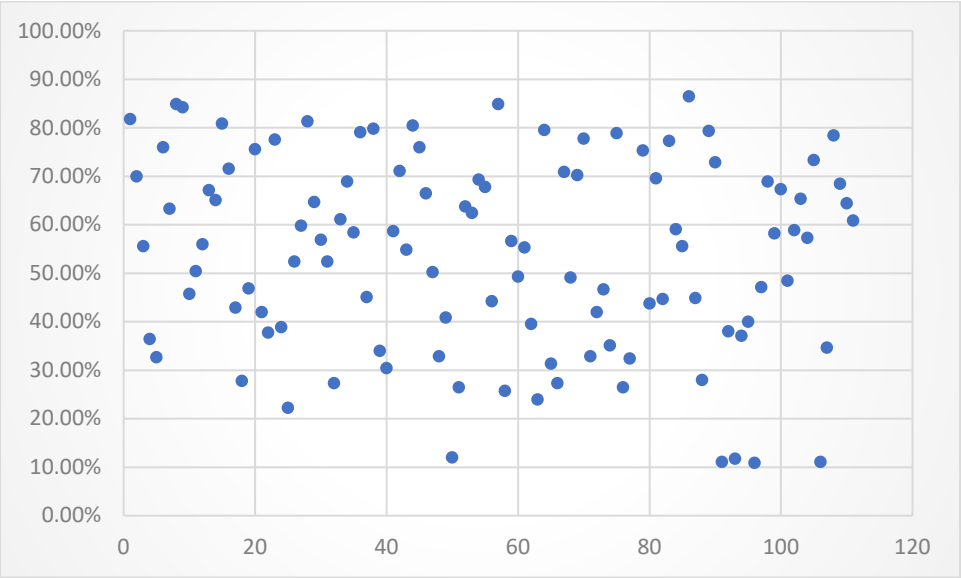


Figure 8. Performance in Cantonese communicative test of CAL mainland university students

Figure 7 and 8 also show that if the CAL mainland university students had low grammatical competence, their communicative competence was also low (also see Figure 4). But their Cantonese grammatical competence was higher than their communicative competence.

7.2 What level of competence is necessary for these students to meet their communicative needs effectively?

Since the marking of the communicative test is based on the marking scheme of IELTS Speaking Test, the borderline result for communicative adequacy was set to 77.78%. In other words, if an individual can surpass 77.78% in communicative test, he/she is a likely proficient Cantonese speaker who is communicatively adequate in a Cantonese environment, assuming the tests have no measurement errors. The borderline level 77.78% was set to be an equivalence of a band score of 7 in IELTS speaking test, which typically represents a “good user” level of proficiency on the IELTS scale. At this level, the individual can communicate effectively in most situations, with occasional errors or inaccuracies. They can understand and express complex ideas, engage in discussions on various topics, and present arguments coherently.

Therefore, the following 15 subjects were candidate threshold setters. See Table 8. But we dropped the performance of Subject 20220722-02s. There are two reasons. Firstly, the score of 73.53% obtained in the grammatical test by Subject 20220722-02S is more likely attributed to performance errors rather than a lack of competence. All candidate threshold setters, except Subject 20220722-02S, had better performance in grammatical test than that in communicative test. Secondly, statistically, 73.53% is an outlier from the given list of data. To determine if 73.53% is an outlier, we need to consider the magnitude of deviation in relation to the standard deviation. Typically, a common criterion for identifying outliers is

using a z-score. A z-score measures the number of standard deviations a data point is away from the mean, namely z-score = (73.53% - mean) / standard deviation. Hence, the z-score is -2.70, suggesting that 73.53% deviates from the mean by approximately 2.70 standard deviations below the mean and 73.53% can be considered as a potential outlier. Verified by the interquartile range method, another approach of looking at the "middle" range of the data and checking if any values are far away from that range, 73.53% is also an outlier of the given dataset. Therefore, 80.15%, gained by subject 20220830-01C, was the borderline level of grammatical test, meaning that if an individual wants to be communicatively adequate, he/she should have a minimum competence of 80.15% in Cantonese grammatical knowledge.

Table 8. Performance of candidate threshold setters for Cantonese adequate users

Subject	Scores in communicative test	Scores in grammatical test
20220923-01s	86.44%	89.71%
20220808-02C	84.89%	90.44%
20220601-02C	84.89%	95.59%
20220601-03C	84.22%	88.24%
20220525-01C	81.78%	97.06%
20220628-01S	81.33%	93.38%
20220610-02S	80.89%	89.71%
20220722-02S	80.44%	73.53%
20220713-01S	79.78%	86.76%
20220822-01C	79.56%	86.76%
20220924-01C	79.33%	95.59%
20220711-01C	79.11%	83.82%
20220903-02C	78.89%	93.38%
20221023-01C	78.44%	94.12%
20220830-01C	77.78%	80.15%

However, it is acknowledged that any set of test scores contains measurement errors.

According to the classical test theory (Lord and Novick, 1968; Allen and Yen 1979), each person's observed score X consists of a true score T and the measurement errors E (e.g., resulted from the test environment, administration procedure, testing instrument), formulated as follows: X (observed score) = T (true score) + E (error). The true score can hardly be obtained; it is often the observed score which is used to make decisions. The statistics that can help to estimate the measurement errors can be performance in EXCEL with the formula =CONFIDENCE.T(alpha, standard_deviation, sample_size). Apha represents the significance level, which is set to 0.1, meaning that there is a 10% chance of making an error by rejecting the null hypothesis when, in reality, it is true. In other words, there is a 10% probability of concluding that there is a significant effect or relationship when there isn't one in the population. The standard_deviation is calculated as 0.153. The sample size is 113. Therefore, the measurement error is 0.0239. The measurement error of 0.0239 signifies that the subjects have a 90% level of confidence that an examinee's score would typically fall within plus or minus 2.39% of their observed score if the test were administered to the same person multiple times. Considering the measurement error, a transitional zone is set to be 77.76% ~ 82.54%, meaning that if a subject obtains a result within this range in Cantonese grammatical test, he/she may not be an adequate Cantonese user. Therefore, the threshold scores or cut scores for adequate Cantonese users regarding grammatical competence is 82.54%. In this study, to maintain stricter criteria and a clear distinction between different levels, individuals whose performance falls in a transitional zone are not promoted to a higher level but stay with the lower level.

Moreover, it is possible to estimate the level of limited speakers. By referencing with band score of 4 on the IELTS speaking test, an indicator of "limited user" level, the borderline level to distinguish limited speakers and moderate speakers is set to be 44.44%. The following subjects were considered limited speakers of Cantonese, based on their

communicative test, and also candidate threshold setters for limited grammatical competence. See Table 9.

Table 9. Performance of candidate threshold setters for Cantonese limited users

Subject	Scores in communicative test	Scores in grammatical test
20221003-01C	10.89%	35.29%
20220927-01s	11.11%	41.18%
20221019-01s	11.11%	48.53%
20220928-01C	11.78%	41.18%
20220729-02s	12.00%	41.18%
20220625-01s	22.22%	33.09%
20220818-01C	24.00%	47.06%
20220809-01C	25.78%	44.12%
20220801-01C	26.44%	57.35%
20220909-01C	26.44%	47.06%
20220702-02C	27.33%	66.91%
20220823-02C	27.33%	47.06%
20220616-01C	27.78%	51.47%
20220923-02s	28.00%	49.26%
20220715-01C	30.44%	60.29%
20220823-01C	31.33%	48.53%
20220909-02C	32.44%	52.21%
20220527-01C	32.67%	67.65%
20220727-01C	32.89%	55.88%
20220831-01C	32.89%	58.09%
20220713-02s	34.00%	47.79%
20221019-02s	34.67%	50.74%
20220903-01C	35.11%	60.29%
20220525-02s	36.44%	52.94%
20220929-01C	37.11%	66.18%
20220619-01C	37.78%	58.82%
20220927-02s	38.00%	53.68%

20220625-01C	38.89%	71.32%
20220816-01C	39.56%	57.35%
20220930-01C	40.00%	52.94%
20220729-01s	40.89%	61.76%
20220618-01C	42.00%	64.71%
20220902-01s	42.00%	58.09%
20220612-02C	42.89%	69.85%
20220915-01s	43.78%	61.03%
20220808-01C	44.22%	57.35%

After performing the interquartile range method, two outliers regarding the grammatical test were identified, namely 33.09% by Subject 20220625-01s, and 71.32% by Subject 20220625-01C, and thus were removed from the candidate list. Therefore, the highest performance among this candidate list, namely 69.85% by Subject 20220612-02C, is the borderline level to distinguish between moderate and limited users of Cantonese. Considering the measurement error 2.39%, the transitional zone is set to be 67.46% ~ 72.24%. Therefore, the threshold scores for "limited users" are below 67.46%. This also means that if a subject obtains a result within this range in Cantonese grammatical test, he/she may be a limited Cantonese user, consistent with the above-mentioned no-promotion treatment.

After we calculated the measurement error of the communicative test, namely 2.8%, the threshold level of both tests can be summarized as below.

Table 10. A threshold scale of Cantonese abilities

Level	Types of users	Grammatical competence	Communicative competence
Adequate	Adequate users of Cantonese	⩾82.54%	⩾ 80.58%
Moderate	Transitional zone	77.76% ~ 82.54%	74.98% ~ 80.58%
	Moderate users of	72.24% ~ 77.76%	47.24% ~ 74.98%

	Cantonese	(inclusive)	(inclusive)
Limited	Transitional zone	67.46% ~ 72.24%	41.64% ~ 47.24%
	Limited users of Cantonese	⩽ 67.46%	⩽ 41.64%

Moreover, it is more difficult to achieve communicative adequacy than to possess adequate grammatical competence. See Table 11. At the same time, it is more difficult to have moderate grammatical competence than to have moderate communicative competence. This means that at the more advanced level, being able to use the language appropriately in real-life situations can be more difficult than having a solid understanding of the grammatical rules. As language learners progress to more advanced levels, achieving communicative adequacy requires not only understanding and using grammatical structures accurately but also being able to effectively convey meaning, understand context, and adapt to different communicative situations.

Meanwhile, at the beginning level, it can be harder to achieve a decent grasp of the intricacies of grammar than to achieve a moderate level of communicative ability. On the one hand, learners may rely on simplified language structures and vocabulary to convey their messages, even without having a deep understanding of complex grammatical rules. On the other hand, this may be due to the foundational knowledge of subjects' background Chinese language. Despite their limited Cantonese grammatical competence, they can draw upon their knowledge of the grammar in their background language to engage in basic communication. A characteristic of this stage is the emphasis on functional communication, which allows for more flexibility and leniency in terms of grammatical accuracy. This is the overall Cantonese proficiency of CAL mainland university students. While their grammatical competence was limited, namely 69.7%, their communicative competence was moderate, namely 53.96%.

These observations also highlight the varying levels of difficulty associated with

different aspects of language proficiency.

Table 11. Distribution of grammatical and communicative competence levels

Level	Adequate	Moderate	Limited
Grammatical competence	22	29	62
Communicative competence	7	60	44

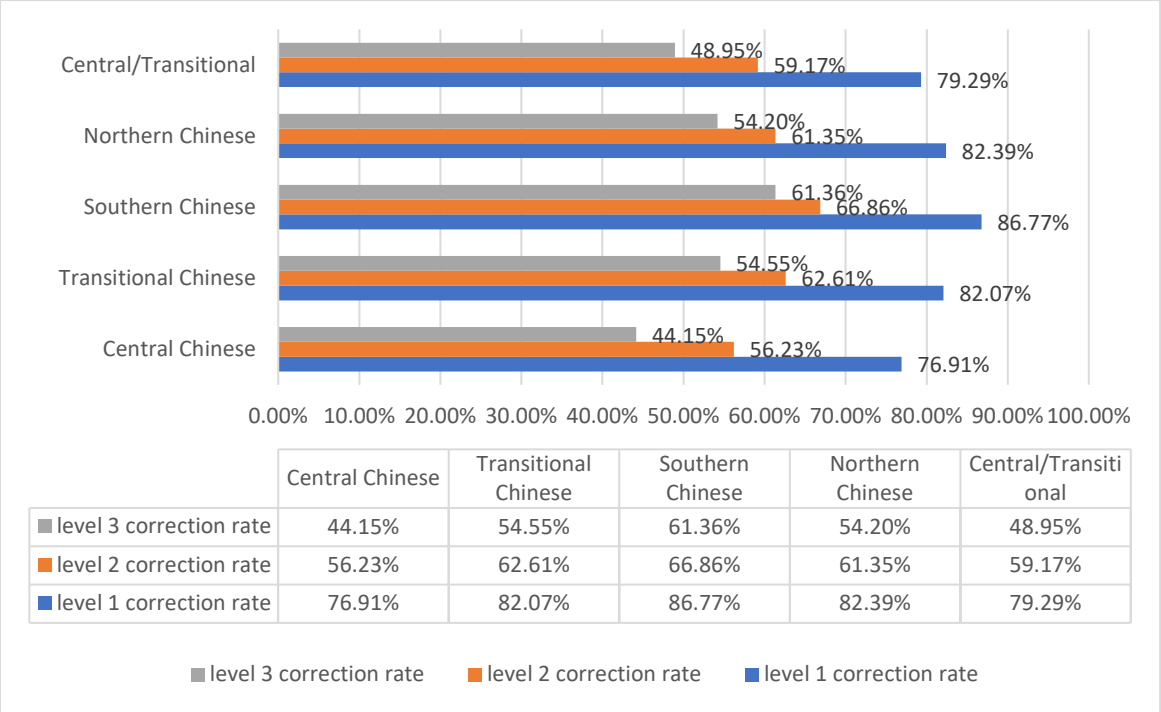
7.3 Will students with specific background languages demonstrate better Cantonese learning outcomes compared to those with other background languages?

Since the Cantonese grammatical features are classified into 3 difficulty levels, based on their typological similarities and differences with other Transitional, Central and Northern Sinitic languages, results show that there is a correctness rate of 82.64% for the “easiest” level-1 features, namely Cantonese features which are typologically similar with Northern, Central, and Transitional Chinese, and a correctness rate of 62.25% for “intermediate” level-2 features, namely those Cantonese features which are similar with Central and Transitional Chinese, but different from Northern Chinese, and a correctness rate of 54.54% for the “hardest” level-3 features, namely those Cantonese features which are different from Northern, Central and Transitional Chinese.

Moreover, it was found that CAL mainland university students who speak Southern Sinitic varieties (e.g., Min and Hakka) performed better in the Cantonese grammatical test at all three levels than those from northern and central China. It is against our hypothesis that speakers of Central Sinitic languages (e.g., Wu, Hui, Xiang) performed worse in the Cantonese grammatical test at all three levels than those from northern China or the north of the Yangtze River. This may be due to the fact that Central Chinese languages are severely endangered, such as Hui and Wu. These so-called Central Chinese speakers are not aware of their attrition of their mother tongue. Linguistically, they may have, at least partially, shifted

to Mandarin.

On the contrary, Transitional Chinese, such as Southwest Mandarin, is better maintained than Central Chinese. There was a slight advantage among the Transitional Chinese speakers, namely 66.41%, in grammatical test, from Northern Chinese speakers, namely 65.98%.



	Central Chinese	Transitional Chinese	Southern Chinese	Northern Chinese	Central/Transitional
level 3 correction rate	44.15%	54.55%	61.36%	54.20%	48.95%
level 2 correction rate	56.23%	62.61%	66.86%	61.35%	59.17%
level 1 correction rate	76.91%	82.07%	86.77%	82.39%	79.29%

Figure 9. Cantonese grammatical competence of CAL mainland university students with different background languages

Regarding the communicative test, similarly, Southern Chinese speakers performed better than the other Chinese language speakers. Once again, even though Central and Transitional Chinese are typologically closer to Cantonese than Northern Chinese, Central and Transitional Chinese speakers performed worse than Northern Chinese speakers.

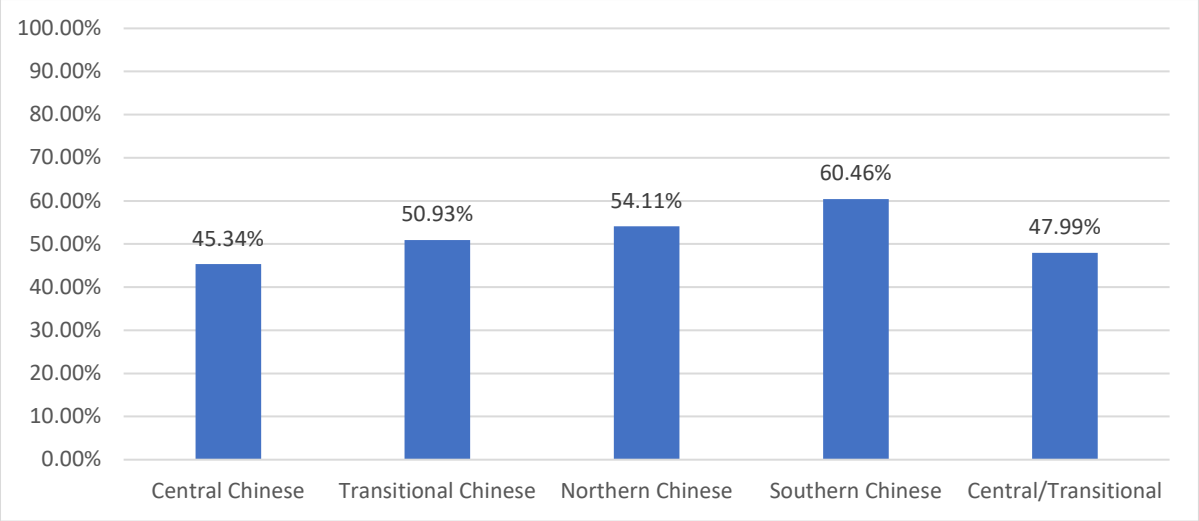


Figure 10. Cantonese communicative competence of CAL mainland university students with different background languages

7.4 No correlation between the length of stay and Cantonese abilities

After calculating the Pearson's correlation coefficient, it is found there is no significant correlation between the length of stay and the competence. Therefore, this means that there is social fragmentation among the local and the non-local students.

Language learning often involves social interaction, communication, and exposure to the cultural contexts. When there is social fragmentation, it typically means that there are barriers or divisions within a society that impede social cohesion and interaction. Because of the barriers, individuals may have limited access to language immersion and opportunities to practice and interact with native speakers or proficient language users. Furthermore, social fragmentation can create a sense of isolation, exclusion, and lack of belonging, which can negatively impact motivation and confidence in language learning.

Table 12. No correlation between the length of stay and Cantonese abilities

Background language	months of stay and grammatical competence	Correlation	months of stay and communicative competence	Correlation
Central	0.1476	weak	0.0542	weak

Chinese				
Transitional Chinese	0.3074	moderate	0.4789	moderate
Southern Chinese	0.5808	moderate	0.4637	moderate
Northern Chinese	0.2212	weak	0.2376	weak

7.5 Self-evaluation and measured competence

There is a match between self-evaluation and measured grammatical competence, but a mismatch between self-evaluation and measured communicative competence. There are five levels of self-evaluation: Level 4-close to native speaker level, level 3-quite fluent, although not as proficient as a native speaker, but able to handle most situations, level 2-not fluent, but still able to manage in some situations, level 1-can understand, but unable to communicate, and level 0-cannot understand and unable to communicate. While there is a high positive correlation between self-evaluation and grammatical competence, there is no such correlation between self-evaluation and communicative competence. The subjects could not make correct prediction about their communicative abilities in Cantonese. This suggests that although grammatical competence is the pillar of communicative competence, the latter also involves various other factors such as fluency, pronunciation, vocabulary retrieval, and coherence. These factors complicate the assessment of communicative competence and make it more difficult to be predicted by the subjects accurately.

This also suggests that communicative competence is highly context-dependent and more difficult to master than grammatical competence.

Table 13. Correlation between the length of stay and Cantonese abilities

self-evaluation	average grammatical competence	correlation	average communicative competence	correlation
Level 0	49.01%	0.802	53.77%	-0.059

Level 1	63.84%	53.28%
Level 2	76.03%	58.44%
Level 3 & 4	86.13%	47.54%

7.6 Gender differences in performance

Male students had better performance than female students in both tests. After having a two-sample independent t-test, it is known that the observed difference in grammatical competence between the female and male students is statistically significant, with a p-value of 0.04667, at a significance level of 0.05. But with a p-value of 0.09938, we do not consider the observed difference in communicative competence between the two groups to be statistically significant at a significance level of 0.05.

Table 14. Comparison of average competence between females and males

	Female	Male	T-value
Average grammatical competence	67.81%	74.11%	0.04667
Average communicative competence	52.00%	58.79%	0.09938

7.7 Levels of study and performance

Undergraduate students had better performance than postgraduate students in both tests. After having a two-sample independent t-test, it is known that the observed differences in both grammatical competence and communicative competence between the two groups are statistically significant, with a p-value of 0.00174 and 0.00128, respectively, at a significance level of 0.05. This suggests undergraduate students adopt to Hong Kong society better than postgraduate students. Undergraduate students may have more exposure to the local environment as they typically have a broader range of interactions with local students. This exposure can facilitate the development of language skills, cultural understanding, and social integration, contributing to better adaptation.

Table 15. Comparison of average competence between undergraduates and postgraduates

	Undergraduate	Postgraduate	T-value
Average grammatical competence	78.22%	67.34%	0.00174
Average communicative competence	65.20%	50.86%	0.00128

8. Conclusions and Recommendations

Firstly, based on our sample of 113 CAL mainland university students, their grammatical competence fell into the transitional zone from limited user to moderate user. As per the no-promotion criterion, CAL mainland university students are categorized as having limited grammatical competence in Cantonese. Their proficiency in Cantonese communication is lower moderate, aligning with the characteristics of Cantonese beginners outlined in section 7.2. Due to the intricacies of Cantonese grammar, these students may rely on simplified language structures and vocabulary to convey their messages. Additionally, they may draw upon the knowledge of grammar from their background language to engage in basic communication. A notable proficiency gap exists when comparing their Cantonese abilities to those of native speakers, posing challenges for effective communication within the context of Hong Kong. The findings highlight the need for further language support and training to bridge this competence gap and enhance their Cantonese language skills.

Secondly, our research suggests that to become proficient Cantonese users in Hong Kong, CAL mainland university students need to attain a minimum threshold of grammatical competence estimated at 82.54%. Additionally, a communicative competence level of 80.58% is required. These benchmarks serve as important indicators of the proficiency levels needed for effective communication in Cantonese within the local context.

Having well-defined proficiency benchmarks is crucial for CAL mainland university students as it enables them to assess their language proficiency and establish attainable objectives. These benchmarks suggest that they do not need to aim for native-like abilities so

as to cope with the communication in Hong Kong. The minimum thresholds of grammatical competence and communicative competence serve as realistic reference points for both students and educators. By having these benchmarks in place, curriculum development can be guided, including instructional activities, materials that align with the learning objectives, and assessment standards that have been set for the Cantonese language programs.

Thirdly, our findings reveal that CAL mainland university students who spoke Southern Chinese languages generally exhibited higher Cantonese abilities compared to those who spoke Northern, Central, and Transitional Chinese languages. The influence of linguistic similarities between Southern Chinese languages and Cantonese may provide an advantage in acquiring Cantonese proficiency. However, it is worth noting that no significant advantage in learning Cantonese was observed for those who spoke Central and Transitional Chinese languages when compared to Northern Chinese speakers. This suggests that factors other than linguistic proximity may play a role in the development of Cantonese skills among CAL mainland university students.

By recognizing the influence of linguistic similarities between Cantonese and Southern Chinese languages, it is recommended to tailor language support programs to account for the linguistic backgrounds of CAL mainland university students. While it is a common practice to separate non-Chinese CAL from Chinese-speaking CAL, it is recommended that Southern Chinese language speakers, such as Min and Hakka, should be separated from other Chinese language speakers in Cantonese teaching and learning. Meanwhile, educators should provide additional resources and support for students who speak Northern, Central, and Transitional Chinese languages.

Meanwhile, it is important to train Cantonese language teachers with linguistic knowledge, particularly about Chinese language typology. Understanding Chinese language typology can provide teachers with insights into the phonetic, morphological and structural

features of Cantonese and other languages, allowing them to compare the features among different Chinese languages, and understand the advantages and challenges of their students. The students may not be aware of their advantages as speakers of particular Chinese languages. The teachers can help them to make their advantages explicit. The teachers should be encouraged to integrate typological insights into their lesson planning and instructional materials. This can involve designing activities and exercises that highlight typological features of Cantonese, as well as incorporating comparative analysis with other languages. For instance, teachers can create exercises that contrast the word order patterns of Cantonese with those of other languages to enhance students' understanding and awareness of language structures.

Fourthly, our research indicates that the duration of stay in Hong Kong does not have a notable impact on Cantonese proficiency among CAL mainland university students. Regardless of the length of their stay, there is no significant advantage in Cantonese abilities for those who have been in Hong Kong for a longer period compared to those who have stayed for a shorter duration. This finding suggests the presence of social fragmentation between local and non-local students.

To address the lack of impact of the duration of stay on Cantonese proficiency, efforts should be made to foster social integration and cultural immersion among CAL mainland university students. Encouraging interaction and collaboration between local and non-local students can create opportunities for language practice and cultural exchange. Language partnerships, community engagement programs, and extracurricular activities can be organized to facilitate meaningful interactions and create an inclusive environment that supports language acquisition and cultural understanding. The CAL students can be paired with native Cantonese speakers who are interested in learning each other's native language. This reciprocal arrangement allows learners to practice Cantonese with native speakers while

also sharing their own language and culture. The CAL students can be encouraged to participate in community activities and events. This can include joining local interest groups, volunteering for community projects, or attending cultural festivals and celebrations. It is also possible to offer short-term homestay programs or language immersion programs where CAL students live with local Cantonese-speaking families or participate in language-intensive activities. The educators can also organize cultural workshops and activities that introduce Cantonese learners to various aspects of Hong Kong's culture. This could include calligraphy workshops, traditional music or dance classes, cooking demonstrations, or guided tours to historical and cultural sites. These interactive experiences allow learners to explore different facets of the local culture and develop a deeper appreciation for its richness and diversity. To promote participation in language and cultural events, events such as language fairs, cultural showcases, or language competitions can be organized.

Fifthly, while students demonstrated relatively accurate self-assessment of their grammatical competence, they faced challenges in accurately evaluating their communicative competence. This discrepancy suggests that students may have a better understanding of the formal aspects of the language, such as grammar and syntax, but struggle to evaluate their ability to effectively use Cantonese in real-life communicative contexts. This highlights the importance of providing students with opportunities for practical language usage and authentic communication experiences to bridge the gap between their self-perception and actual proficiency.

It has been observed that male students generally exhibit better Cantonese abilities compared to their female counterparts. Additionally, undergraduate students tend to have better Cantonese abilities than postgraduate students. These findings indicate a need for special attention and the allocation of additional resources to support female postgraduates in Hong Kong in improving their Cantonese proficiency.

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Appendices, if any

Appendix 1

Speaking Band Description	Fluency and coherence (role play)	Fluency and coherence (interview)	Lexical resource	Grammatical range and accuracy (role play)	Grammatical range and accuracy (interview)	Intelligibility	Appropriateness
Speaking band 9	Speaks fluently with details; Uses only rare repetition or self-correction; Any hesitation is content-related rather than to find words or grammar;	Speaks fluently with only rare repetition or self-correction; Any hesitation is content-related rather than to find words or grammar; Develops topics fully and appropriately	Uses vocabulary with full flexibility and precision in all topics	Produces fully-developed accurate structures with no or rare minor inaccuracies	Uses a full range of structures naturally and appropriately Produces consistently accurate structures apart from 'slips' characteristic of native-speaker speech	Fully intelligible Is effortless to understand	Communication is pragmatically comfortable (appropriate) with no or rare signs of wrong attitude, wrong code-switching, wrong turn-taking, or wrong styles. Examiner effort is not needed to advance the conversation.
Speaking band 8	Speaks fluently with details; Uses only occasional repetition or self-correction; Hesitation is usually content-related and only rarely to search for language	Speaks fluently with only occasional repetition or self-correction; Hesitation is usually content-related and only rarely to search for language Develops topics coherently and	Uses a wide vocabulary resource readily and flexibly to convey precise meaning Uses less common vocabulary skilfully, with occasional inaccuracies	-	Uses a wide range of structures flexibly Produces a majority of error-free sentences with only very occasional inappropriate or basic/non-systematic errors	-	-

		appropriately					
Speaking band 7	Speaks with details without noticeable effort or loss of coherence May demonstrate language-related hesitation at times, or some repetition and/or self-correction	Speaks with details without noticeable effort or loss of coherence May demonstrate language-related hesitation at times, or some repetition and/or self-correction	Uses vocabulary resource flexibly to discuss a variety of topics Uses some less common vocabulary and shows some awareness of style and collocation, with some inappropriate choices	Produces fully-developed accurate structures with occasional inaccuracies	Uses some range of complex structures with some flexibility Frequently produces error-free sentences, though some grammatical mistakes persist	Mostly intelligible	Communication is pragmatically comfortable (appropriate) with occasional signs of wrong attitude, wrong code-switching, wrong turn-taking, or wrong styles. Examiner effort is needed to advance the conversation, but not much.
Speaking band 6	Is willing to speak with details, but sometimes not successful, may lose coherence at times due to occasional repetition, self-correction, or hesitation	Is willing to speak with details, but sometimes not successful, may lose coherence at times due to occasional repetition, self-correction, or hesitation	Has a wide enough common vocabulary to discuss topics at length and make meaning clear in spite of inappropriate	-	Uses a mix of simple and complex structures, but with limited flexibility May make frequent mistakes with complex structures though these rarely cause comprehension problems	-	-

Speaking band 5	Usually maintains the flow of speech, with fewer details Uses repetition, self-correction, and/or slow speech to keep going	Usually maintains the flow of speech, with fewer details Uses repetition, self-correction, and/or slow speech to keep going Produces simple speech fluently, but more complex communication causes fluency problems	Manages to talk about all topics but uses vocabulary with some mistakes	Makes some structural mistakes with fully-developed sentences or just basic simple responses with reasonable accuracy	Produces basic sentence forms with reasonable accuracy Uses a limited range of more complex structures, but these usually contain errors and may cause some comprehension problems	-	Communication is pragmatically marginally comfortable (inappropriate) with some signs of wrong attitude, wrong code-switching, wrong turn-taking, or wrong styles. Examiner effort is significantly needed to advance the conversation.
Speaking band 4	Cannot respond without noticeable pauses and may speak slowly, may have frequent repetition and self-correction Links basic sentences but there may be some breakdowns in coherence	Cannot respond without noticeable pauses and may speak slowly, may have frequent repetition and self-correction Links basic sentences but there may be some breakdowns in coherence	Is able to talk about some topics and makes frequent errors in word choice	-	Produces basic sentence forms and some correct simple sentences but subordinate structures are rare Errors are some and may lead to misunderstanding	Mispronunciations are frequent and cause some difficulty for the listener	-

Speaking band 3	Speaks with long pauses Has limited ability to link simple sentences Gives only simple responses and is frequently unable to convey the basic message	Speaks with long pauses Has limited ability to link simple sentences Gives only simple responses and is frequently unable to convey the basic message	Uses simple vocabulary to convey only simple information Has insufficient vocabulary for many topics	Attempts basic sentence forms but with little success, or relies on apparently memorized utterances Makes numerous errors except in memorized expressions	Attempts basic sentence forms but with limited success, or relies on apparently memorized utterances Makes numerous errors except in memorized expressions	-	Communication is pragmatically marginally comfortable (inappropriate) with frequent signs of wrong attitude, wrong code-switching, wrong turn-taking, or wrong styles. Examiner effort is significantly needed to advance the conversation.
Speaking band 2	Pauses lengthily before most words Little communication possible	Pauses lengthily before most words Little communication possible	Only produces isolated words or memorized utterances, or mostly repeats the speech of the test raters	Only produces words or phrases and cannot produce basic sentence forms	Only produces words or phrases and cannot produce basic sentence forms	Speech is often unintelligible	-
Speaking band 1	No communication possible No rateable language	No communication possible No rateable language	No communication possible No rateable language	No communication possible No rateable language	No communication possible No rateable language	No communication possible No rateable language	Communication is not pragmatically appropriate at all.
Speaking band 0	Does not attend	Does not attend	Does not attend	Does not attend	Does not attend	Does not attend	Does not attend