Positive and Negative Transfers in the Pronunciation Learning of Japanese *Onyomi Kanji* by Native Cantonese Speakers

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1. Introduction

The Japanese vocabularies consist of 3 different kinds of words, the native Japanese words, the Sino-Japanese words and loanwords. The native Japanese words are either shown by *hiragana*, the orthography used by Japanese people, or *kunyomi kanji*, the Chinese character with Japanese pronunciations which cannot be traced back to the origins in Chinese. The Sino-Japanese words are shown by *onyomi kanji*, the Chinese character with Japanese pronunciations which can be traced back to the origins in Ancient Chinese. The loanwords are shown by *katagana*, the orthography used by Japanese people to represent words borrowed from other countries other than China.

Many Cantonese speakers who are learning Japanese may observe a phenomenon that the pronunciations of the Japanese *onyomi kanji* are very similar to the pronunciation of Cantonese words. For example, the pronunciation of the Japanese vocabulary 大学 (だいがく) *daigaku* is very similar to the Cantonese pronunciation of the vocabulary 大學 *daai6 hok6* "university"[1]. The pronunciation of the Japanese vocabulary 両親 (りょうしん) *ryoushin* is very similar to the Cantonese pronunciation of the Chinese characters 兩親 *leong5 can1* "parents".

Lee (1992) made a comparative analysis between the pronunciation of the Japanese *onyomi kanji* and the Cantonese pronunciation of the corresponding Chinese character. His research was based on 1945 most frequent used *kanji* words announced by the National Language Council of Japan. He figured out the onset, rhyme and coda corresponding rules between the pronunciation of Cantonese words and Japanese *onyomi kanji* words. Table 1 present the coda corresponding rules between the pronunciation of the Cantonese and Japanese *onyomi kanji*.

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[1] All Romanized words in Cantonese follow the "jyutping" Cantonese Romanization Scheme developed by the Linguistic Society of Hong Kong in 1993.

Cantonese Rhyme		Corresponding Japanese Rhyme	Number of Chinese characters	Percentage
~ /p/	→	~う (long vowel)	41	75.9%
(include ~aap, ~ap, ~ip)	→	~ others	13	24.1%
~ /t/	→	~つ (tsu)	99	78.6%
(include ~aat, ~at, ~eut, ~it, ~ot, ~ut, ~yut)	→	~ち (chi)	11	8.7%
	→	~ others	16	12.7%
~ /k/	→	~く (ku)	194	77.6%
(include ~aak, ~ak, ~euk, ~ok, ~uk, ~ik, ~ek)	→	~き (ki)	42	16.8%
	→	~ others	14	12.7%
~ /m/	→	~ん (n)	86	97.7%
(include ~aam, ~am, ~im)	→	~ others	2	2.3%
~ /n/	→	~ん (n)	347	99.1%
(include ~aan, ~an, ~eun, ~in, ~on, ~un, ~yun)	→	~ others	3	0.9%
~ /ng/	→	~う (long vowel)	311	75.0%
(include ~aang, ~ang, ~eng, ~eung, ~ing, ~ong,	→	~e＋い (long vowel)	84	20.2%
~ung)	→	~ others	20	4.8%

Table 1. Coda corresponding rules between the pronunciation of Cantonese and Japanese *onyomi kanji*

(Adapted from Lee (1992). *A Guide to Japanese Pronunciation for Cantonese Speakers*. P.97.

The Chinese University of Hong Kong.)

From the table we notice that there is a one-to-one correspondence between the Cantonese coda and Japanese coda for most of the *onyomi kanji*. Using the Japanese vocabulary 中国 "China" as an example, its Japanese pronunciation is *chuugoku* and the Cantonese pronunciation of these 2 Chinese characters is *zung1gwok3*. The Cantonese coda /ng/ in 中 corresponds to the Japanese long vowel *uu* and the Cantonese coda /k/ in 国 corresponds to the Japanese syllable *ku*.

The purpose of his research was mainly for pedagogy. He hoped that native Cantonese speakers may use these corresponding rules to facilitate their learning of the pronunciation of the Japanese *onyomi kanji* vocabularies.

In this paper, I am going to look at the strategies that are being used by native Cantonese speakers to learn Japanese *onyomi kanji* vocabularies. I will approach this issue from a psycholinguistic point of view through the phonemic awareness of the Cantonese codas by native Cantonese speakers. Below are the main research questions in this study.

1. Will native Cantonese speaker have the Cantonese-Japanese *onyomi kanji* pronunciation corresponding rules in their mind implicitly even they have not heard about the rules before?
2. Moreover, it is reported that Cantonese speakers have difficulties in distinguishing Chinese words with /n/-/ng/ pairs and /t/-/k/ pairs in the coda position (Zee, 1999). Will this problem have a negative transfer when they learn the Japanese pronunciation of the same Chinese character?

2. Methodology

Questionnaires were distributed to participants to test their knowledge about the pronunciation of some Japanese vocabularies. Accuracy rates and error distribution for each item were computed and an error analysis was carried out to find out their source of error by contrastive analysis between Cantonese and Japanese.

2.1. Participants in the Study

A total of 76 participants were recruited in this study. They were mainly Japanese major and minor students who were taking Japanese Language courses of various levels at the Chinese University of Hong Kong.

The participants were partitioned into 4 groups according to their proficiency in Japanese. Participants in Level 1 (n=38) were studying in the Beginner Japanese Language course in the university. Participants in Level 2 (n=16) either passed the Level 3 exam in the Japanese Language Proficiency Test (JLPT) or were currently studying in the Intermediate Japanese Language course in the university. Participants in Level 3 (n=11) passed the Level 2 exam in the JLPT. Participants in Level 4 (n=11) either passed the Level 1 exam in the JLPT or had an experience of studying abroad in Japan for at least one year.

2.2. Choices of Stimulus Items

Twenty four Chinese characters which have their Japanese *onyomi kanji* counterparts were being chosen for the current study (please refer to Appendix 1). There were 4 different characters for each of the following Cantonese coda (/m/, /n/, /ng/, /p/, /t/ or /k/). These characters were then used to form vocabularies which were being used in the questionnaire for the study. For each of the 6 coda conditions, we balanced the position of the characters in the vocabularies such that half of characters would appear as the first character in the vocabulary while the other half of the characters would appear as the second character in the vocabulary.

The items were carefully chosen so that they vary in their levels of difficulty. For students in the beginner levels (Level 1 or 2), we assume that they know the pronunciation of almost none of the words. For students in the intermediate level (Level 3), they may know the pronunciation of some of the words but not all. For students in the advanced level (Level 4), we assume that they know the pronunciation of almost all of the words.

2.3. Design of the Questionnaire

There were three main parts in the questionnaire. An extract from the questionnaire was shown in appendix 2.

In part one of the questionnaire, we want to test their knowledge of the pronunciation of Japanese kanji words. There were 24 Japanese vocabulary items in the list. The participants were told to choose the correct pronunciation of the Japanese vocabularies. There were four choices for each vocabulary item (~ long vowel, ~ *ku*, ~*n*, ~ *tsu*). Afterwards, they needed to read through all the four choices and chose the one that they thought was the most probable answer. We want to see the choices and the strategies they used if they had not learnt the vocabularies before. They were told not to turn over to the next page before they finished all the answers in this part. This was to ensure that they would not be sensitive to what we were testing in the questionnaire.

In part two of the questionnaire, we want to test their knowledge of the pronunciation of the coda of the Cantonese characters. They were given choices of six Cantonese codas （/m/, /n/, /ng/, /p/, /t/ or /k/）and were asked to fill in the Cantonese coda for the same 24 Chinese characters that appeared in part one of the questionnaire. They were told not to turn back to the previous page to correct their answers in part one, since this would invalidate our results in this study.

In part three of the questionnaire, we collected some basic personal information from the participants including their age, major of study, grade of Cantonese transcription test in the university, years of learning Japanese and number of hours learning Japanese per week, including lessons and revision time. Moreover, we also collected information about the Japanese language course they were currently enrolling in the university, their experience of studying abroad in Japanese and the length of stay, their level in the Japanese Proficiency Test and their vocabulary score. These information were used to partition the participants into different levels in our study.

Apart from that, we also asked them about their vocabulary learning strategies (Japanese comics, novels, website, newspaper, songs, dramas, games, by repetition, find out the corresponding rules between Cantonese and Japanese etc.). One of the purposes was to check how many participants actually used some kinds of corresponding rules when they were learning Japanese pronunciation.

3. Results

The overall result shows that most participants can correctly choose the correct pronunciation for the Japanese items (accuracy rate all above 50%) and the Cantonese codas (accuracy rate above 60% for all the 6 Cantonese codas). When we compare the results of participants in different levels, we observe that there is no significance difference across the 4 levels in the accuracy rate of the 6 codas in the Cantonese items (Please refer to appendix 3). However, we observe a significance difference in

the accuracy rate of the Japanese items across the 4 levels. The accuracy rate of the participants in level 3 and 4 is significantly higher than the accuracy rate of the participants in level 1 and 2. Except for the Japanese items with corresponding Cantonese /ng/ codas, all the categories in level 3 and 4 have an accuracy rate of over 80%, while none of the categories in level 1 and 2 achieved an accuracy rate of 80%. This maybe explained by the fact that the participants in level 3 and 4 had already learnt most of the vocabularies in the test.

Apart from the accuracy rate, we can also observe some interesting phenomenon from the distribution of errors made by the participants. In the overall result, we found out that the errors were not evenly distributed among all the other categories. Some categories were chosen by more participants than other categories. Among the participants who got a wrong answer in the Japanese section, there was a high preference of choice of ~*ku* with Cantonese coda /t/, ~*tsu* with Cantonese coda /k/, ~*long vowel* with Cantonese coda /n/ and ~*n* with Cantonese coda /ng/. In the Cantonese section a similar phenomenon was also observed. There was a high preference of choice of ~/k/ with Cantonese coda /t/, ~/t/ with Cantonese coda /k/, ~/ng/ with Cantonese coda /n/ and ~/n/ with Cantonese coda /ng/. Apart from that, a preference of choice of ~/n/ for Cantonese coda /m/ was also observed. Although the percentage of errors in the Japanese section diminished as participants moved from level 1 and 2 to level 3 and 4, the pattern about the preference of choices was still observed in level 3 and 4. The patterns and the percentage of errors in the Cantonese section were persistent among the 4 levels.

Regarding their vocabulary learning strategies, 29% of all the participants (29%, 25%, 27% and 36% respectively for the participants in level 1, 2, 3 and 4) mentioned that they had used some kinds of corresponding rules as one of their strategies in learning Japanese vocabularies. This shows that the vast majority of the participants did not have any knowledge of the corresponding rules prior to the study. Over 70% of the participants mentioned that their main strategies in learning Japanese vocabularies were watching Japanese dramas and reading Japanese comics, novels, website, newspaper etc. Over 50% of the participants said they learnt vocabularies through listening Japanese songs and pure repetition. About 34% of the participants mentioned that they use Japanese video games as a mean to increase their vocabularies.

4. Discussion
4.1. Positive transfers from Cantonese into Japanese

For most of the items in the Japanese section, the percentage of correct response far outweighs the other 3 choices in all levels. This is not surprising for the

participants in level 3 and 4 since they are advanced learners of Japanese already. However, even for the participants in level 1 and 2, there is also an unexpectedly high accuracy rate of over 50% for all the categories except for the Japanese items with corresponding Cantonese /ng/ codas in level 2. This is much higher than 25% where the participants were expected to choose the answer by random guessing if they had not learnt the vocabularies before. Therefore, they may be using some strategies in deducing the correct answer. In our questionnaire, the participants were instructed to read through all the choices before they guess the correct answer if they had not learnt the words before. This may have a priming effect on the participants. As mentioned by Lee (1992), there are some corresponding rules between the Japanese pronunciation and the Cantonese coda on *onyomi kanji*. I argue that the corresponding rules may lead to positive transfer from Cantonese into Japanese and the Cantonese speakers may use this implicit knowledge in deducing the correct pronunciation of the Japanese words. This can justify for the high accuracy rates among the participants in level 1 and 2.

4.2. Negative transfers from Cantonese into Japanese

From the results, we discovered that there were also some negative transfers from Cantonese into Japanese by the native speakers of Cantonese. For the Japanese items with lower accuracy rates, most of the incorrect choices they made are related to their problems in Cantonese.

In the Cantonese section, we observed that native speakers of Cantonese have difficulties in distinguishing /t/-/k/ pairs and /n/-/ng/ pairs in Cantonese coda position. For example, some participants cannot distinguish the differences between 突 *dat6* and 特 *dak6*. Some others cannot distinguish the differences between 文 *man4* and 盟 *mang6*. They may treat the two words as having the same pronunciation in the sound perception or production processes.

The difficulties in differentiating these codas may be due to low phonemic awareness by the use of logographic scripts instead of alphabetic scripts, or due to the interactions between front/back vowel and the place of the articulations of the coda consonants. However we are not going to dig into these linguistic issues here. The point we want to make is that there is a correlation between the errors in the Cantonese and Japanese pronunciations. For example, if the participants perceived the Cantonese word 突 *dat6* as having a Cantonese coda /k/ instead of /t/, they will have a high tendency to choose *~ku* instead of *~tsu* in the Japanese section. This further supports the argument that native speakers of Cantonese have an implicit knowledge about the corresponding rules between the Japanese pronunciation and the Cantonese coda on *onyomi kanji*. We also observe that there is also a high error rate to treat

Cantonese coda /m/ as /n/ in the Cantonese section. However, we cannot say what portion of the correct response in Japanese are due to the correct discrimination of Cantonese /m/ against /n/, as these two Cantonese codas both correspond to ~*n* in the Japanese counterparts.

5. Conclusion

Based on the result of this study, there is evidence to prove that native Cantonese speakers may have the phonemic awareness of the Cantonese-Japanese *onyomi* kanji pronunciation corresponding rules in their mind implicitly. However, if they want to make use of this phonemic awareness in facilitating their learning of Japanese vocabularies, they need to make more effort to differentiate /t/-/k/ pairs and /n/-/ng/ pairs in the coda position of the Cantonese pronunciation. As shown from the results in the study, difficulties in discriminating /t/-/k/ pairs and /n/-/ng/ pairs in the native language will have an adverse effect in their learning of the Japanese language. Furthermore, learning the Cantonese-Japanese *onyomi kanji* pronunciation corresponding rules explicitly can increase the efficiency of learning Japanese vocabularies.

6. References

1. Lee, Wood Hung. *A Guide to Japanese Pronunciation for Cantonese Speakers* 日語發音：香港人學習日語指南. P.97. (Hong Kong: The Chinese University Press, 1992).
2. Zee, Eric. (1999). Change and variation in the syllable-initial and syllable-final consonants in Hong Kong Cantonese. *Journal of Chinese Linguistics*, 27, 120-165.

Appendix 1. List of Stimulus Items

Cantonese Coda	Japanese *Onyomi Kanji*	Japanese Vocabulary	Japanese Romanization	Cantonese Romanization
/p/	協	協調 (きょうちょう)	*kyouchou*	*hip3 tiu4*
	吸	吸収 (きゅうしゅう)	*kyuushuu*	*kap1 sau1*
	集	採集 (さいしゅう)	*saishuu*	*coi2 zaap6*
	塔	鉄塔 (てっとう)	*tettou*	*tit3 taap3*
/t/	突	突然 (とつぜん)	*totsuzen*	*dat6 jin4*
	脱	脱落 (だつらく)	*datsuraku*	*tyut3 lok6*
	結	連結 (れんけつ)	*renketsu*	*lin4 git3*
	刷	印刷 (いんさつ)	*insatsu*	*jan3 caat3*
/k/	握	握手 (あくしゅ)	*akushu*	*aak1 sau2*
	特	特徴 (とくちょう)	*tokuchou*	*dak6 zing1*
	索	捜索 (そうさく)	*sousaku*	*sau2 sok3*
	泊	宿泊 (しゅくはく)	*shukuhaku*	*suk1 paak3*
/m/	添	添付 (てんぷ)	*tenpu*	*tim1 fu6*
	暫	暫定 (ざんてい)	*zantei*	*zaam6 ding6*
	減	増減 (ぞうげん)	*zougen*	*zang1 gaam2*
	陥	欠陥 (けっかん)	*kekkan*	*him3 ham6*
/n/	繁	繁雑 (はんざつ)	*hanzatsu*	*faan4 zaap6*
	旋	旋律 (せんりつ)	*senritsu*	*syun4 loet2*
	韻	音韻 (おんいん)	*onin*	*jam1 wan5*
	憲	違憲 (いけん)	*iken*	*wai4 hin3*
/ng/	並	並立 (へいりつ)	*heiritsu*	*bing6 laap6*
	荘	荘重 (そうちょう)	*souchou*	*zong1 zung6*
	盟	連盟 (れんめい)	*renmei*	*lin4 mang4*
	増	急増 (きゅうぞう)	*kyuuzou*	*gap1 zang1*

Appendix 2. Extract from the Questionnaire (in Chinese)

　　本問卷調查是希望調查以粵語為母語的人士學習日語發音時的問題和學習策略。請花 5-10 分鐘的時間完成這份問卷，謝謝。是次問卷以不記名方式進行，您的參與將對我們研究日語學習有莫大的幫助。

　　請選出下列日語詞彙的正確讀音，並圈出其英文字母代號。

　　如果該詞彙是您不認識的詞彙，亦請您把四個選擇看一遍，選出一個您認為讀音最相似的答案。

<u>日語發音</u>

1.採<u>集</u>　　a.さいしゅう　　b. さいしゅく　　c. さいしゅん　d. さいしゅつ

2.印<u>刷</u>　　a. いんさあ　　b. いんさく　　c. いんさん　　d.いんさつ

3.<u>並立</u>　　a. へいりつ　　b. へくりつ　　c. へんりつ　　d.へつりつ

4.<u>握</u>手　　a. ああしゅ　　b. あくしゅ　　c.あんしゅ　　d.あっしゅ

<u>粵語發音</u>

請填上下列漢字的粵音韻尾（/m/、/n/、/ng/、/p/、/t/ 或 /k/）。

例：　　　　　文 <u>man___</u>　　　曲 <u>kuk___</u>

1.<u>盟</u>　　ma___　　　　2.<u>集</u>　za___　　　　3.<u>繁</u>　　faa___

4.<u>刷</u>　　ca___　　　　5.<u>添</u>　ti___　　　　6.<u>握</u>　　aa___

<u>個人資料</u>

年齡：_____　　學系：_____

學習日語年資：_____年_____月

每星期學習日語時數（包括上課和平時溫習時間）：_____小時

現在在中大修讀的日語課程：_____

曾否在日本留學?（有/沒有）*　如有的話，請註明年數：____年

日語能力考試（如適用）：____ 級　語彙分數：_____

粵語語文精修課程成績：（ DN / CR / PASS / FAIL ）*

語彙學習策略（可選多項）：

□多看日語讀物（漫畫、小說、網頁、報章雜誌等）

□聽日語歌曲

□看日語劇集

□玩日語電子/電腦遊戲

□反複記憶

□找出粵語和日語之間的對應關係

□其他：_____

*請刪去不適用者

Appendix 3. Accuracy rates of the Japanese and Cantonese vocabularies by speakers with different levels of proficiency

Level 1

Cantonese coda	Japanese pronunciation				Cantonese pronunciation						
	~long vowel	~ く (~/ku/)	~ ん (~/n/)	~ つ (~/tsu/)	~/p/	~ t/	~/k/	~/m/	~/n/	~/ng/	~ others
/p/	**68%**	15%	3%	13%	**72%**	5%	5%	9%	1%	5%	2%
/t/	13%	25%	5%	**57%**	2%	**51%**	38%	1%	5%	3%	1%
/k/	4%	**65%**	7%	25%	7%	14%	**70%**	1%	2%	3%	3%
/m/	11%	9%	**76%**	4%	3%	2%	1%	**80%**	11%	3%	0%
/n/	19%	9%	**69%**	3%	1%	7%	1%	2%	**71%**	18%	1%
/ng/	**55%**	12%	29%	4%	1%	2%	3%	1%	40%	**53%**	1%

Level 2

Cantonese coda	Japanese pronunciation				Cantonese pronunciation						
	~long vowel	~ く (~/ku/)	~ ん (~/n/)	~ つ (~/tsu/)	~/p/	~ t/	~/k/	~/m/	~/n/	~/ng/	~ others
/p/	**69%**	19%	5%	8%	**70%**	3%	11%	11%	2%	2%	2%
/t/	11%	28%	8%	**53%**	2%	**55%**	41%	0%	2%	0%	2%
/k/	2%	**77%**	5%	17%	2%	13%	**77%**	0%	0%	6%	3%
/m/	19%	6%	**70%**	5%	5%	2%	6%	**61%**	23%	3%	0%
/n/	19%	3%	**72%**	6%	2%	2%	3%	3%	**80%**	8%	3%
/ng/	**39%**	14%	41%	6%	6%	3%	3%	0%	13%	**73%**	2%

Level 3

Cantonese coda	Japanese pronunciation				Cantonese pronunciation						
	~long vowel	~ く (~/ku/)	~ ん (~/n/)	~ つ (~/tsu/)	~/p/	~ t/	~/k/	~/m/	~/n/	~/ng/	~ others
/p/	**86%**	11%	0%	2%	**77%**	5%	0%	9%	2%	5%	2%
/t/	0%	2%	5%	**93%**	2%	**55%**	34%	0%	2%	5%	2%
/k/	0%	**84%**	2%	14%	0%	16%	**80%**	0%	2%	2%	0%
/m/	5%	9%	**84%**	2%	0%	0%	0%	**91%**	5%	5%	0%
/n/	7%	5%	**84%**	5%	0%	0%	0%	0%	**86%**	14%	0%
/ng/	**73%**	2%	23%	2%	0%	0%	2%	0%	25%	**73%**	0%

Level 4

Cantonese coda	Japanese pronunciation				Cantonese pronunciation						
	~long vowel	~ く (~/ku/)	~ ん (~/n/)	~ つ (~/tsu/)	~/p/	~ t/	~/k/	~/m/	~/n/	~/ng/	~ others
/p/	**91%**	2%	0%	7%	**80%**	5%	0%	5%	0%	0%	11%
/t/	0%	2%	2%	**96%**	0%	**73%**	18%	0%	0%	0%	9%
/k/	0%	**93%**	0%	7%	0%	25%	**66%**	0%	2%	0%	7%
/m/	2%	5%	**91%**	2%	0%	2%	0%	**80%**	7%	2%	9%
/n/	5%	5%	**89%**	2%	5%	2%	2%	0%	**77%**	5%	9%
/ng/	**91%**	2%	5%	2%	0%	0%	2%	0%	34%	**57%**	7%

Remarks: The correct answers are shadowed in grey.