

FREQUENCY OF OCCURRENCE OF CANTONESE WORD INITIALS, FINALS, AND TONES

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ABSTRACT

Thirty 10-minute spontaneous speech/dialogue were recorded from live radio and TV programs broadcast in Hong Kong. The speech samples were carefully transcribed by two experienced investigators. Only those speech samples transcribed consistently by the two investigators were used to measure the frequency of occurrence of all Cantonese word initials, finals, and tones. Results indicated a similar pattern of distribution of Cantonese initials and finals to that reported by Fok [1] in 1979, with the exceptions of [v] and [λ], [κΩH] and [κH], and [κΩ] and [κ]. Such differences are believed to be related to the sociolinguistic change of the speech pattern in the current generation. Findings in tones also revealed a similar distribution as reported by Fok [1].

1. INTRODUCTION

Standardized speech protocols such as the "Rainbow Passage" and the "My Grandfather" passage have been shown to be important in clinical speech evaluation. They serve as standards for speech-language pathologists to reference to. These speech protocols were developed based on careful statistical analyses of the phonetic inventories, including both consonants and vowels in English. In the case of a tone language, tonal inventory should also be considered. However, all the speech protocols being used by speech-language pathologists in Hong Kong nowadays are not standardized; they are neither phonetically balanced nor tonetically balanced. A reveal of the literature also indicates a lack of a formal statistical analysis of the occurrence of Cantonese word initials, finals, and tones. The most current report available was published in the late 1970s by Fok [1], which was based on an insufficient number of individuals (n = 6) who were informed of the experiment.

The purpose of the present study is to establish the frequency of occurrence of current phonetic and tonetic inventories of Hong Kong Cantonese. Based on the data from the present study, future effort can be gathered to develop the first phonetically-balanced and tonetically-balanced Cantonese speech protocol.

2. METHOD

2.1 Speech Materials

Thirty segments of 10-minute spontaneous speech and dialogues were randomly recorded from radio and TV programs broadcast in Hong Kong. The recorded programs included spontaneous conversation between hosts, during news and weather reports, and host-guest telephone conversations. The recorded speech samples were produced by both male and female speakers. Speech samples were recorded on high-quality tapes.

2.2 Analysis

The speech samples were analyzed and transcribed by two investigators who were experienced in transcribing Cantonese language using the IPA. Only those speech samples consistently transcribed by both investigators were used to measure the occurrence of the Cantonese word initials, finals, and tones.

The transcribed Cantonese speech samples were statistically analyzed to reveal the frequency of occurrences of the Cantonese word initials, finals, and tones. Word initials and finals instead of the actual consonants and vowels were used to reduce the complexity of the analysis.

2.3 Cantonese Initials, Finals, and Tones

Similar to Fok's study [1], 21 Cantonese word initials, 51 word finals, and 9 distinctive tone levels were identified in the present study. This is slightly different from the studies reported by Wang [2] and Kao [3] where 19 word initials and 53 finals were considered. This is due to the fact that, in the latter studies, the Cantonese vocalic consonants [μ̄] and [N̄] were considered as word finals.

/π/	/τ/	/κ/	/κΩ/
/πH/	/τH/	/κH/	/κΩH/
/μ/	/ν/	/N/	
/μ̄		/N̄	
	/φ/	/σ/	/η/
		/τσ/	
		/τσH/	
/ω/	/φ/		
	/λ/		

Table 1. Cantonese initials.

/α/	/E/	/v/	/ /	/Δ/	/υ/	/ψ/
/αI/	/εI/	/ /	/ I/	/Δψ/	/υI/	
/αY/	/ Y/	/IY/	/oY/			
/αμ/	/ μ/	/Iμ/				
/αν/	/ ν/	/Iν/	/ ν/	/Δν/	/υν/	/ψν/
/αN/	/ N/	/EN/	/ IN/	/ΔN/	/YN/	
/απ/	/ π/	/Ip/				
/ατ/	/ τ/	/Iτ/	/ τ/	/Δτ/	/υτ/	/ψτ/
/ακ/	/ κ/	/Eκ/	/ Iκ/	/Δκ/	/Yκ/	

Table 2. Cantonese finals.

Word initial	Occurrence (%) (as reported in the present study)	Occurrence (%) (as reported by Fok [1])	Word initial	Occurrence (%) (as reported in the present study)	Occurrence (%) (as reported by Fok [1])	Word initial	Occurrence (%) (as reported in the present study)	Occurrence (%) (as reported by Fok [1])
/κ/	15.37	14.1	/v/	0.18	5.2	/τH/	2.60	2.3
/η/	9.76	11.6	/μ/	3.94	4.7	/φ/	2.20	2.1
/φ/	11.56	10.1	/μ̄/	1.92	3.2	/κΩ/	0.59	2.0
/τ/	8.82	8.9	/π/	2.60	3.1	/κH/	2.16	1.9
/τσ/	9.80	8.4	/ω/	3.50	3.1	/πH/	0.86	0.6
/σ/	8.00	6.3	/N/	1.91	2.9	/κΩH/	0.04	0.3
/λ/	10.94	5.8	/τHσ/	3.04	2.6	/N̄/	0.21	0.2

Table 3. Frequency of occurrence of Cantonese word initials.

Word final	Occurrence (%) (as reported in the present study)	Occurrence (%) (as reported by Fok [1])	Word final	Occurrence (%) (as reported in the present study)	Occurrence (%) (as reported by Fok [1])	Word final	Occurrence (%) (as reported in the present study)	Occurrence (%) (as reported by Fok [1])
/ /	8.37	10.6	/tv/	1.36	1.6	/Δv/	0.49	0.5
/α/	7.06	10.1	/ψ/	1.22	1.5	/Yκ/	0.70	0.5
/ I/	7.03	7.9	/ΔN/	2.12	1.5	/ π/	0.64	0.5
/εI/	5.70	7.2	/ κ/	1.11	1.4	/ττ/	0.39	0.4
/oY/	6.34	6.0	/ακ/	0.76	1.3	/αN/	0.25	0.3
/v/	6.93	5.9	/μ/	0.72	1.2	/v/	0.42	0.3
/ μ/	3.28	4.5	/Eκ/	0.16	1.0	/v/	0.82	0.3
/ Y/	5.48	4.1	/ I/	1.08	1.0	/Δτ/	0.24	0.3
/εI/	6.54	3.3	/Iκ/	1.41	1.0	/απ/	0.15	0.3
/Δψ/	2.95	3.2	/ κ/	1.07	0.9	/ατ/	0.58	0.2
/ v/	3.36	2.7	/ N/	0.93	0.9	/Δκ/	0.16	0.2
/ τ/	2.76	2.7	/ψv/	1.09	0.8	/ψτ/	0.21	0.1
/ N/	1.97	2.6	/αμ/	0.56	0.7	/ιπ/	0.15	0.1
/tv/	2.67	2.4	/vv/	0.57	0.7	/vτ/	0.08	0.05
/αv/	1.72	2.1	/EN/	0.78	0.7	/ v/	0.00	0.03
/IN/	3.03	1.7	/vN/	2.46	0.7	/Δ/	0.15	0.008
/αI/	1.57	1.6	/αY/	0.40	0.6	/ τ/	0.02	0.0

Table 4. Frequency of occurrence of Cantonese word finals.

Tone level	Occurrence (%) (as reported in the present study)	Occurrence (%) (as reported by Fok [1])
High-rising (HR)	16.63	19.0
High-level (HL)	19.38	16.8
Low-level (LL)	16.14	15.8
Mid-level (ML)	14.65	14.9
Low-falling (LF)	12.56	12.6
Low-rising (LR)	10.41	11.4
High (H)	3.86	4.4
Low (L)	3.76	2.8
Mid (M)	2.62	2.2

Table 5. Frequency of occurrence of Cantonese tones.

All the Cantonese word initials and finals are shown in Tables 1 and 2. The nine Cantonese tones are: the high-level (HL), high-rising (HR), mid-level (ML), low-falling (LF), low-rising (LR), low-level (LL), and the glottalized high, mid, and low (H, M, L, respectively).

3. RESULTS

The measured frequency of occurrence of all Cantonese word initials, word finals, and tones are shown in Tables 3, 4, and 5 respectively. To ensure precision, numbers were corrected to two decimal places. The word initials, finals and tones are listed in the same order as that used by Fok [1]. The data reported by Fok was included for comparison.

4. DISCUSSION

The present investigation attempted to measure the frequency of occurrence of various Cantonese word initials, finals, and tones. In an effort to trace the possible change in the use of Cantonese in the current generation, the results were compared with the data reported by Fok [1].

As discussed in Zee [4], the Cantonese word initial sibilants /σ/, /τσ/, and /τσH/ have been divided into [σ] and [♣], [τσ] and [τ], and [τσH] and [τ]H respectively by Karlgren in the early 1900s. These allophones mainly differ from each other in the exact place of articulation – the lingua-palatal contact. However, recent experimental studies revealed that there is no significant articulatory difference between these allophones among different Cantonese speakers [4]. Therefore, in the present study, these allophones are considered as only three distinctive sounds.

