Perception of Korean Coda Consonants /p, t, k/ by Chinese Learners of Korean in Taiwan

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A previous study has investigated the production patterns of Korean obstruent coda consonants by Chinese learners of Korean in Taiwan and found that the "supposedly unreleased" Korean obstruent coda consonants were mostly pronounced with a release by Chinese learners [1]. To further explore the perceptual confusion of Korean obstruents /p, t, k/ in the coda position among Chinese L2 learners of Korean, this study examines the effects of preceding vowel contexts and learning experience on the perception of obstruent coda consonants. It is hypothesized that both preceding vowel contexts and learning experience will affect Chinese learners' perception of Korean obstruent coda consonants [2, 3, 4].

In this study, a perception experiment was conducted with Chinese learners of Korean, who were divided into two groups based on their learning experience: beginners and intermediates. There were 30 participants (9 males, 21 females; mean age: approximately 20; age range: 19-22) in this study, 17 at the beginning level and 13 at the intermediate level. The participants completed an identification task, in which they were presented with stimuli containing three Korean obstruent coda consonants /p, t, k/ and one filler /l/ with three preceding vowels /a, i, u/. The stimuli were recorded by two Seoul Korean speakers, one male and one female. This study used a Kruskal-Wallis one-way analysis of variance to analyze the correctness rate of each coda consonant and each coda consonant with different preceding vowels, and a Wilcoxon rank sum test to analyze the effect of learning experience.

The results showed that Chinese learners perceived /p/ better than /t/ ($p<.001$), and /t/ better than /k/ ($p<.001$) (as shown in Figure 1). The relatively high correctness rate of /p/ perception is in line with the high accuracy of /p/ production found in the previous study [1].

In addition, the effect of the preceding vowel context differed between /p/, /t/, and /k/ (see Figure 2). For the preceding vowel /a/, there was no statistically significant difference in the correctness rate of /ap/ and /at/ ($p=.71$), while both /ap/ and /at/ had higher correctness rates than /ak/ ($p<.001$). For the preceding vowel /i/, the correctness rate of /ip/ was higher than /it/ ($p<.001$) and /it/ was higher than /ik/ ($p<.05$). For the preceding vowel /u/, there was no statistically significant difference in the correctness rate of /up/ and /ut/ ($p=.08$), while both /up/ and /ut/ had higher correctness rates than /uk/ ($p<.001$). That is, the preceding vowel /i/ made it easier to perceive /p/ compared to the other preceding vowels. The pattern of errors in the perception of Korean coda consonants was also related to the preceding vowels. The coda consonant /p/ tended to be perceived as /t/ when preceded by a low vowel (/a/), and as /k/ and /t/ when preceded by a high vowel (/u, i/). The coda consonant /t/ was mostly misperceived as /k/ when preceded by a back vowel (/a, u/), and as /p/ when preceded by a front vowel (/i/), similar to the production error shown in the previous study [1]. The coda consonant /k/ was misperceived as /p/ when preceded by a back vowel (/a, u/), and as /t/ when preceded by a front vowel (/i/). This suggests that the perception of the coda /p/ is influenced by the height of the preceding vowel, whereas the perception of the coda /t/ and /k/ is influenced by the backness of the preceding vowel.

Finally, the learning experience did not show any effect as there was no significant difference between the correctness rates of beginning-level learners and intermediate-level learners (shown in Figure 3). (/p/: $p=.59$; /t/: $p=.26$; /k/: $p=.59$). The current findings did not show the effect of learning experience, as can be probably attributed to several factors: (1) L1 background: Chinese has only two coda consonants — /n/ and /ŋ/. The lack of /p, t, k/ in coda position in Chinese may make it not easy to perceive those in Korean [5]. (2) Insufficient inputs: the quantity and quality of L2 inputs greatly influence L2 speech learning. The participants in this study learned Korean with a non-Korean teacher and in a non-Korean language environment [6]. (3) The relative unimportance of these coda consonants in perception: since people mostly perceive words through contexts, and the contexts will certainly help L2 learners to understand the meaning of the given sentence. That is, whether L2 learners correctly perceive Korean coda consonants may not greatly affect the understanding of the

whole sentence. However, this study did not investigate the influence of Taiwanese Southern Min (widely spoken in Taiwan), which has /p/, /t/, /k/ coda consonants. Whether the Taiwanese Southern Min has an impact on the perception of Korean coda consonants needs further research.
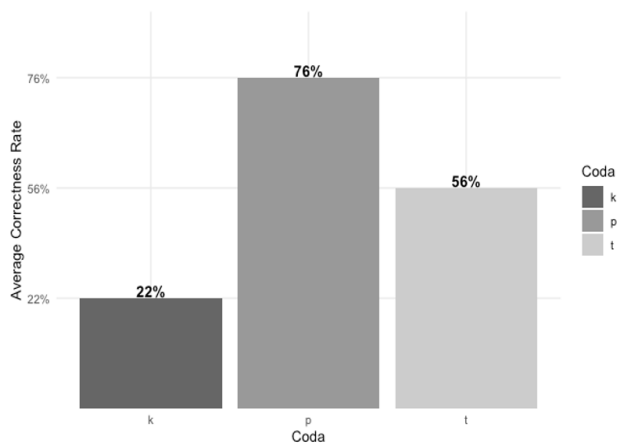

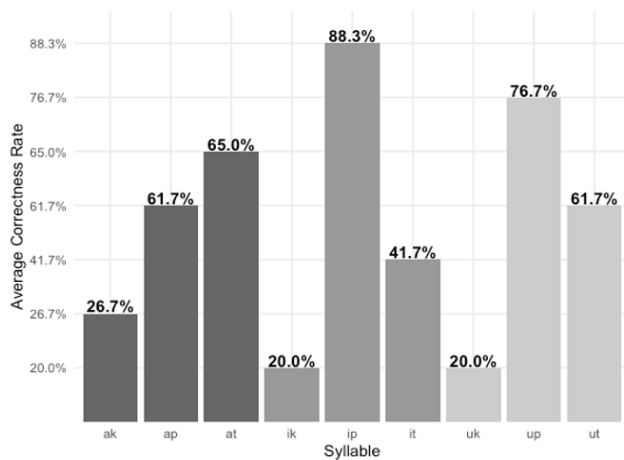**Fig. 1** Average correctness rate of Korean coda consonant /p, t, k/

Fig. 2 Average correctness rate of Korean coda consonant /p, t, k/ with different preceding vowels
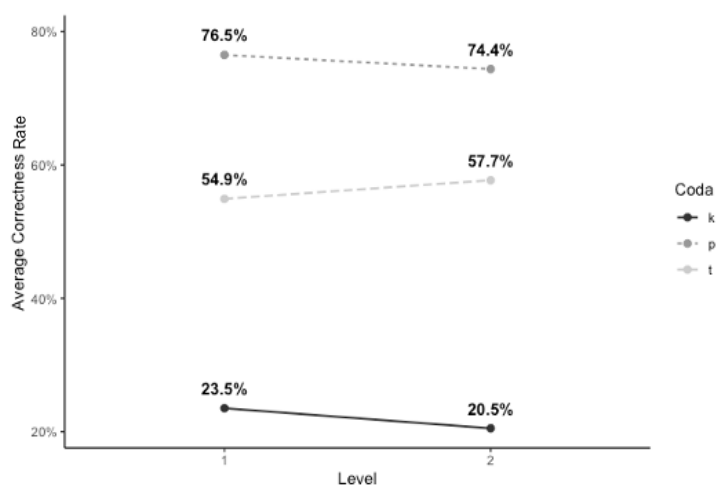

Fig. 3 Average correctness rate of Korean coda consonant /p, t, k/ by different levels of Korean proficiency
(1: Beginning; 2: Intermediate)

References

[1] Chang, R. R. (2015). A Study on Korean Pronunciation Teaching for Taiwan Learners-focused on Final Consonant-, MA dissertation, Keimyung University.
[2] Oh, M. R. (2002). Place Perception in Korean Consonants, *Speech Sciences*, 9(4), 131-142.
[3] Cardoso, W. (2011). The development of coda Perception in Second, language phonology: A variationist perspective. *Second Language Research*, *27*(4), 433–465.
[4] Kim, J. Y. (2016). Perception of Korean coda consonants by Chinese learners of Korean: A one-year longitudinal study. Phonetics and Speech Sciences, 8(4), 79-87.
[5] Best, C. T. & Tyler, M. D. (2007). Nonnative and second-language speech perception: Commonalities and complementarities. In: Bohn, O.-S. & Munro, M. J. (eds.), Language experience in second language speech learning: In honor of James Emil Flege, 31-52. Amsterdam: John Benjamins Publishing Company.
[6] Flege, J., & Bohn, O. (2021). The Revised Speech Learning Model (SLM-r). In R. Wayland (Ed.), Second Language Speech Learning: Theoretical and Empirical Progress, 3-83. Cambridge: Cambridge University Press.
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