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Perception of English Word-Final Contrasts by Korean EFL Learners*

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The present study investigates how Korean EFL learners perceive the English word-final contrasts of /ʃ/ vs. /ʃi/, /tʃ/ vs. /tʃi/, and /dʒ/ vs./dʒi/with a particular focus on perceptual error patterns. Twenty university students were divided into high- and low- proficiency groups. The results showed that Korean EFL learners' perception was affected by their L1 phonology and their current level of English proficiency. Since the word-final contrasts are not attested in Korean, learners—especially those in the low proficiency group—failed to perceive them accurately, often leading to a failure to distinguish between consonant-final and vowel-final forms. Participants frequently perceived consonant-final words as ending in an illusory vowel /i/, with perceptual patterns varying significantly across the consonant types involved. Notably, the specific /ʃ/-/ʃi/ contrast was found to be most challenging due to interference from L1 allophonic patterns. In addition, individual perceptual differences were observed across different contrasts within both proficiency groups. The findings indicate that the perception of English word-final contrasts may not be fully resolved through proficiency gains alone, suggesting that pedagogical instruction may benefit from explicitly directing learners' attention to word-final positions and contrast-specific perceptual patterns, particularly for the consonant types that remain challenging even at higher proficiency levels.

[L2 perception/word-final contrasts/Korean EFL learners/individual variation]

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I. INTRODUCTION

One of the persistent difficulties Korean EFL learners face when acquiring native-like pronunciation can be found in English word-final phonological contrasts that are absent in their L1. These include fricative- and affricate-final forms and pairs distinguished by the presence or absence of a final vowel /i/ (e.g., ash vs. ashy, botch vs. botchy, budge vs. budgie, etc.). Due to the L1-L2 difference in that Korean syllable structure restricts the range of consonants (i.e., fricatives and affricates) to be realized in the coda position, Korean EFL learners often face challenges in the production of English word-final phonological contrasts (Seo & Lim, 2011).

Previous research has shown that L2 phonological development is complex, in that accuracy at the segmental level does not guarantee nativelikeness at the acoustic level. To be specific, advanced Korean EFL learners who showed accuracy at the segmental level produced forms with vowel ratios, frication, or F1/F2 (acoustic cues for vowel height and backness) values that deviate from those of native English speakers (Seo & Lim, 2024). Analyses of production data have also shown substantial within-group and individual variation. While proficiency is related to overall accuracy, learners showed individual variation within the same proficiency group. In addition, some showed significant influence of L1, whereas others revealed influence according to consonant types (Seo & Lim, 2025).

These production findings raise an important question: What are Korean learners' perception patterns of the word-final consonant and word-final vowel distinction (e.g., ash-ashy, botch-botchy, budge-budgie)? Korean EFL learners may perceive the unfamiliar L2 sound sequences as mediated by their existing L1 system, thereby incorrectly perceiving vowel /i/. This may lead to a failure to distinguish between consonant-final and vowel-final words. At the same time, their perception may differ across consonant types, and learners' proficiency in English may mediate this perception. In addition, when perceiving consonant-final and vowel-final words, Korean learners may exhibit individual variation within the same proficiency group as they did in the production (Seo & Lim, 2025).

Investigating Korean EFL learners' perception is also pedagogically relevant. An explicit account of error types produced by learners will provide insights beyond the accuracy issue toward cue-based instruction. For instance, if learners inaccurately perceive consonant-final as vowel-final in a consistent manner, then instruction needs to emphasize perceptual reorganization for word-final positions by highlighting the acoustic absence of /i/ and contrasting it with the presence of the vowel. If learners disregard /i/ in vowel-final words, then instruction can target vowel detection and vowel-consonant boundary cues.

To this end, this study aims to answer the following research questions:

1. To what extent do Korean EFL learners perceive the word-final contrasts of /ʃ/–/ʃi/, /tʃ/–/tʃi/, and /dʒ/–/dʒi/?
2. What are the effects of consonant type and proficiency on Korean learners' perception of the contrasts?
3. Are there individual differences that interact with proficiency and consonant types?

II. LITERATURE REVIEW

1. Interlanguage Phonology and the Role of L1

Interlanguage phonology conceptualizes L2 learners' speech as an internally systematic system that diverges from target norms while reflecting rule-governed developmental patterns (Major, 1998; Selinker, 1972). As argued by Flege (1995), adult learners rely on equivalence classification, mapping new L2 sounds onto the nearest L1 categories when exact correspondence is unavailable. Consequently, contrasts not in the L1 phonology—such as English word-final fricatives or affricates—pose difficulties to Korean learners, whose syllable structure restricts fricatives and voiced stops in final position (Sohn, 1999). To compensate, learners often insert an epenthetic vowel or neutralize final consonant place distinctions, resulting in systematic deviations at both the segmental and acoustic levels (Kang, 2003; Kim & Rhee, 2019).

Claims made from these studies suggest a central role of L1 transfer in L2 perception and production. The transfer effect not only results in lower accuracy at the segmental level but also affects how learners categorize and process L2 sound contrasts. Especially with contrasts that are not present in L1, learners were more likely to assimilate to L1 sound categories and less likely to develop an independent category of novel contrasts (Best & Tyler, 2007; Seo & Lim, 2010). Such a categorical transfer is particularly salient in contexts such as English word-final, where L1 syllable restrictions exist. Consequently, L2 production may only partially overlap with the sound categories of the target language, yet manifest systematic deviance. From an interlanguage perspective, L1 transfer thus constitutes an important basis for understanding Korean EFL learners' acquisition of English word-final contrasts.

2. Interlanguage Phonology and Proficiency

While proficiency improvements generally produce higher segmental accuracy and reduced L1 interference, such effects are not uniform across all aspects of speech. Perceptual

developments are often non-linear, with different phonological properties developing at different rates. In a previous study, Kong and Kang (2023) demonstrated that the perceptual accuracy of Korean EFL learners with higher English proficiency improved, with their proficiency perceptual strategies shifting away from L1-dominant patterns toward more target-relevant information. Llompart and Reinisch (2019), in a study on learners' recognition of spoken words containing difficult L2 vowel and consonant contrasts, found that accurate word recognition was associated with phonetic flexibility rather than categorical proficiency. The result indicates that perceptual learning continues even when learners have mastered segmental accuracy.

Evidence from L2 production studies further supports this non-linear aspect of development. Acoustic analyses by Seo and Lim (2024) revealed that high proficiency Korean EFL learners may sometimes exhibit non-target-like phonetic patterns despite their accuracy at the segmental level, whereas some low proficiency learners occasionally produce target-like phonetic values. Taken together, the findings suggest the pattern of non-linear acquisition, where proficiency gain occurs differently across acoustic dimensions. The present study extends this by examining whether similar non-linear tendencies appear in the perception of word-final contrasts. That is, the study investigates whether higher proficiency in L2 is related to the perceptual accuracy of L2 sounds.

3. Interlanguage Phonology and Individual Variation

A growing body of research on perception has demonstrated that individual variation plays a critical role in shaping L2 phonological development. L2 perception studies have demonstrated that learners showed substantial differences in how they attend to and encode phonetic details, even under similar learning conditions (Kartushina et al., 2016; Suzukida, 2021). Cognitive factors such as inhibitory control are known to shape learners' phonetic processing. Learners with compact L1 vowel systems, higher inhibitory control, or stronger phonological short-term memory demonstrate higher accuracy in both perception and production of L2 sounds. Learners with higher inhibitory control more effectively suppress such L1-based articulations, producing more target-like L2 segments even at lower proficiency levels (Darcy et al., 2016). The results indicate that perceptual sensitivity and inhibitory control may interact. That is, learners capable of attending to subtle acoustic cues (e.g., fricative noise duration or final-vowel onset) are better at restructuring their phonological representation.

Evidence from production research supports the findings. In a study of Korean learners' production of English word-final contrasts, Seo and Lim (2025) showed that even within the same proficiency groups, Korean EFL learners employed systematic, consonant-specific strategies across words. Taken together, these findings indicate that individual variation in

L2 phonology persists beyond proficiency levels, reflecting systematic differences in how learners attend to and encode phonetic detail rather than differences in overall proficiency. What remains less clear is whether such variation is realized in the perception of the word-final contrasts.

III. METHODOLOGY

1. Participants

The perception experiment was conducted by 20 Korean learners of English recruited from two universities in Seoul and Daejeon, representing various majors. Of the participants, ten (five males, five females) with TOEIC scores in the 900s were considered to have high English proficiency. Among the other ten (five males and five females), nine had TOEIC scores in the 500s and one in the 600s, and they were considered to have low English proficiency. All participants were in their 20s and reported no hearing impairments. Written informed consent was obtained from all participants before participation, and they were paid for their participation in the perception experiment.

2. Materials

The test words for the perception experiment were 18 pairs of English words with the word-final contrasts of /ʃ/ vs. /ʃi/, /tʃ/ vs. /tʃi/, and /dʒ/ vs./dʒi/. A full list of 36 test words is illustrated in Table 1.

TABLE 1
Words for the Perception Experiment

Contrasts	Words
/ʃ/ vs. /ʃi/	ash-ashy, marsh-marshy, mesh-meshy, mush-mushy, push-pushy, wash-washy
/tʃ/ / vs. /tʃi/	botch-botchy, bunch-bunchy, catch-catchy, munch-munchy, punch-punchy, touch-touchy
/dʒ/ vs./dʒi/	budge-budgie, dodge-dodgy, edge-edgy, podge-podgy, pudge-pudgy, wedge-wedgy

The words in Table 1 were recorded by a male native speaker of American English in a sound-attenuated room and digitized at a 44,100 Hz sampling rate and 16 bit quantization. The native English speaker was in his 20s and a university student in the U.S.

3. Procedure

The perception experiment was run in a quiet room using the *E-prime* 2.0 program (Schneider et al., 2002). In the perception experiment, the Korean participants were asked to determine whether or not each stimulus presented contained the final vowel /i/. The participants were instructed to press the 'yes' button if they perceived the stimulus to end in the vowel /i/ and the 'no' button if they did not. The participants were instructed to respond as accurately and quickly as possible. To ensure the participants understood the task, a practice session was conducted with four trials using English words that did not contain a word-final sibilant or a word-final sibilant plus /i/ sequence. Following the practice session, each participant was presented with a total of 36 stimuli in a randomized order through headphones. A total of 360 pairs of tokens (i.e., 720 tokens; 36 words × 20 participants) were obtained from the perception experiment.

4. Data Analysis

In analyzing the perception data, related stimuli (e.g., wash–washy, touch–touchy, wedge–wedgy, etc.) were paired to examine Korean learners' perceptual patterns of the contrasts under investigation. Then, each pair of stimuli perceived by each participant was categorized into four types according to perception patterns, as illustrated in Table 2 with the examples of "wash" and "washy".

TABLE 2
Perception Types

Stimulus	wash	washy	Type	Accuracy
Perception	wash	washy	1	Correct
	wash	wash	2	Incorrect
	washy	washy	3	Incorrect
	washy	wash	4	Incorrect

When a pair of stimuli was correctly perceived, it was categorized as Type 1. Incorrect perceptions were classified into three types according to the patterns of the contrasts. If related stimuli were both perceived as containing no final vowel /i/ (e.g., both "wash" and "washy" as "wash"), the pair was categorized as Type 2. The incorrect perception categorized as Type 3 indicates no perceptual contrast, as both related stimuli were perceived as ending with the vowel /i/ (e.g., both "wash" and "washy" as "washy"). Thus, Type 2 and 3 indicate no perceptual contrast. Finally, Type 4 represents an incorrect perceptual contrast, where both stimuli in a pair were misperceived (e.g., "wash" as "washy" and "washy" as "wash").

IV. RESULTS

Table 3 presents a crosstabulation of Korean learners' perception types according to their English proficiency level. In Table 3, "observed" refers to the observed number of tokens and "expected" the expected number of tokens.

TABLE 3
Proficiency by Perception Type Crosstabulation

Proficiency		Perception Type				Total
		1	2	3	4	
Low	Observed	20	20	122	18	180
		(11.1)	(11.1)	(67.8)	(10.0)	
	Expected	66	21	82	11	180
High	Observed	112	22	42	4	180
		(62.2)	(12.2)	(23.3)	(2.2)	
	Expected	66	21	82	11	180
Total	Observed	132	42	164	22	360
	Expected	132	42	164	22	360

Note. Percentage in parentheses

According to a chi-square test, a strong relationship was found between the two variables, proficiency and perception type (χ^2 (3) = 112.15, $p < .05$). The low group perceived the contrasts under investigation as Type 3 (i.e., perceiving both stimuli in a pair as ending with /i/) most frequently (122 pairs, 67.8%), followed by Type 1 (i.e., correct perception) (20 pairs, 11.1%) and Type 2 (i.e., perceiving both stimuli in a pair as containing no final /i/) (20 pairs, 11.1%), and Type 4 (i.e., misperceiving both stimuli in a pair) (18 pairs, 10.0%). Thus, the low group showed a predominant tendency not to perceptually contrast /ʃ/ vs. /ʃi/, /tʃ/ vs. /tʃi/, and /dʒ/ vs./dʒi/ by perceiving C-final words as ending with the vowel /i/. In the high group, Type 1, which is the correct perception, was most frequently observed (112 pairs, 62.2%), followed by Type 3 (42 pairs, 23.3%), Type 2 (22 pairs, 12.2%), and Type 4 (4 pairs, 2.2%). The high group illustrated a much higher rate of correct perception than the low group. Notably, Type 3 was the most frequent incorrect perception type in the high group.

A chi-square test was conducted to investigate the influence of the consonant involved (/ʃ/ vs. /ʃi/, /tʃ/ vs. /tʃi/, and /dʒ/ vs./dʒi/) in relation to proficiency and perception type. The crosstabulation in Table 4 illustrates the perception types of Korean learners for /ʃ/-/ʃi/ according to their English proficiency level.

TABLE 4
Proficiency by Perception Type Crosstabulation for /ʃ/-/ʃi/

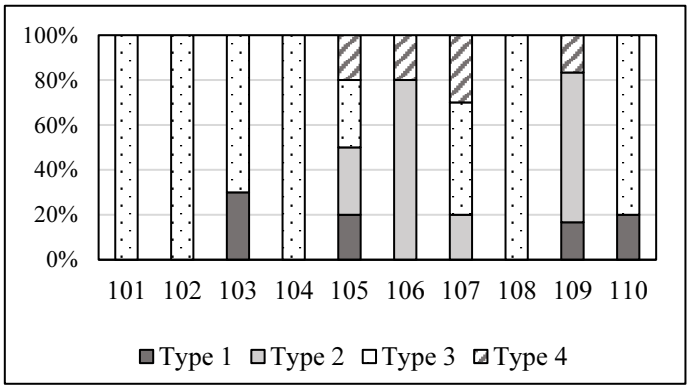
Proficiency		Perception Type				Total
		1	2	3	4	
Low	Observed	5	12	38	5	60
		(8.3)	(20.0)	(63.3)	(8.3)	
	Expected	19.5	13.5	24.5	2.5	60
High	Observed	34	15	11	0	60
		(56.7)	(25.0)	(18.3)	(0)	
	Expected	19.5	13.5	24.5	2.5	60
Total	Observed	39	27	49	5	120
	Expected	39	27	49	5	120

Note. Percentage in parentheses

According to a chi-square test, for /ʃ/-/ʃi/, there was a strong relationship between the two variables, proficiency and perception type (χ^2 (3) = 41.775, $p < .05$). In the low group, Type 3 (i.e., perceiving both /ʃ/ and /ʃi/ as [ʃi]) was the most frequent (38 pairs, 63.3%), followed by Type 2 (i.e., perceiving both /ʃ/ and /ʃi/ as [ʃ]) (12 pairs, 20.0%), and Type 1 (5 pairs, 8.3%) and Type 4 (5 pairs, 8.3%). In the high group, Type 1 (34 pairs, 56.7%) was most frequently attested, followed by Type 2 (15 pairs, 25.0%), and Type 3 (11 pairs, 18.3%). Incorrect perception of both stimuli in a pair (i.e., Type 4 perceiving /ʃ/ as [ʃi] and /ʃi/ as [ʃ]) was not observed in the high group.

Individual variation in the perception of the /ʃ/-/ʃi/ contrast was examined by analyzing each subject's perception pattern within each proficiency group. Figure 1 presents the mean response ratio for each subject in the low group for /ʃ/-/ʃi/, categorized by perception type.

FIGURE 1
Mean Response Ratio for /ʃ/-/ʃi/ by Low Group Subject * Perception Type

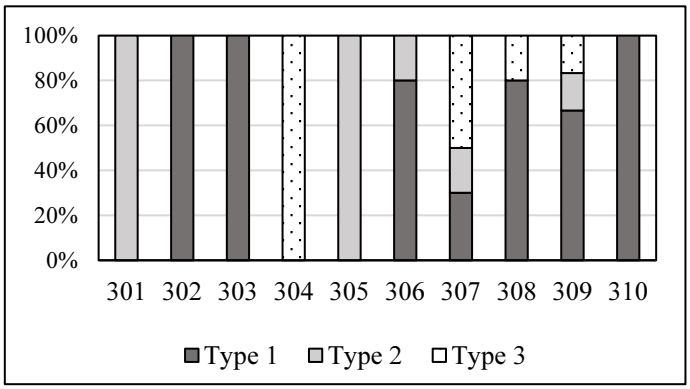


According to a chi-square test, a strong relationship was observed between the two variables, low group subject and perception type (χ^2 (27) = 58.439, $p < .05$). As can be seen

from Figure 1, no subject in the low group perceived the /ʃ/-/ʃi/ contrast with 100% accuracy. Four subjects (i.e., 101, 102, 104, and 108) incorrectly perceived all the stimuli with the contrast as Type 3 (i.e., perceiving both /ʃ/ and /ʃi/ as [ʃi]). Type 3 responses were high in subjects 110 (80%), 103 (70%), and 107 (50%). Two subjects (i.e., 106 and 109) did not show a Type 3 response. Type 2 responses (i.e., perceiving both /ʃ/ and /ʃi/ as [ʃ]) were the highest in 106 (80%), followed by 109 (66.7%), 105 (30%), and 107 (20%). Correct perception was attested in 103 (30%), 105 (20%), 110 (20%), and 109 (16.7%). Type 4 responses (i.e., perceiving /ʃ/ as [ʃi] and /ʃi/ as [ʃ]) were observed in 107 (30%), 105 and 106 (20% each), and 109 (16.7%). Subject 105 exhibited an interesting perception pattern by displaying all four types of perceptual responses.

Figure 2 illustrates each high group subject's mean response ratio for the /ʃ/-/ʃi/ contrast, categorized by perception type.

FIGURE 2
Mean Response Ratio for /ʃ/-/ʃi/ by High Group Subject * Perception Type



According to a chi-square test, there was a strong relationship between the two variables, high group subject and perception type (χ^2 (18) = 85.080, $p < .05$). Three subjects (i.e., 302, 303, and 310) perceived the /ʃ/-/ʃi/ contrast with 100 % accuracy. Type 1 responses (i.e., correct perception) were relatively high in 306 and 308 (80% each), and 309 (66.7%). Three subjects showed 0% perceptual accuracy. Among them, two subjects (i.e., 301 and 305) perceived both /ʃ/ and /ʃi/ as [ʃ] (i.e., Type 2) while 304 perceived them as [ʃi] (i.e., Type 3). There was no subject misperceiving both /ʃ/ and /ʃi/ in the high group (i.e., Type 4). Three types of perceptual responses were attested in subjects 307 and 309.

The crosstabulation in Table 5 illustrates Korean learners' perception types for the /tʃ/-/tʃi/ contrast according to their proficiency level.

TABLE 5
Proficiency by Perception Type Crosstabulation for /tʃ/-/tʃi/

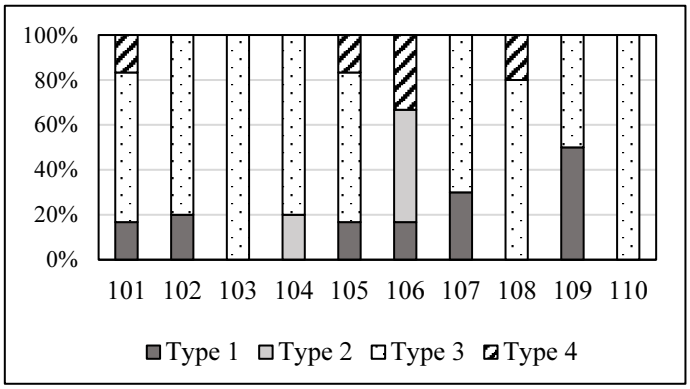
Proficiency		Perception Type				Total
		1	2	3	4	
Low	Observed	9	4	42	5	60
		(15.0)	(6.7)	(70.0)	(8.3)	
	Expected	24	5	27.5	3.5	60
High	Observed	39	6	13	2	60
		(65.0)	(10.0)	(21.7)	(3.3)	
	Expected	24	5	27.5	3.5	60
Total	Observed	48	10	55	7	120
	Expected	48	10	55	7	120

Note. Percentage in parentheses

According to a chi-square test, for /tʃ/-/tʃi/, there was a strong relationship between proficiency and perception type (χ^2 (3) = 35.727, $p < .05$). In the low group, Type 3 (i.e., perceiving both /tʃ/ and /tʃi/ as [tʃi]) was the most frequent (42 pairs, 70%), followed by Type 1 (9 pairs, 15%), Type 4 (i.e., misperceiving both /tʃ/ and /tʃi/) (5 pairs, 8.3%), and Type 2 (i.e., perceiving both /tʃ/ and /tʃi/ as [tʃ]) (4 pairs, 6.7%). Compared to /ʃ/-/ʃi/, the low group's Type 2 responses decreased for /tʃ/-/tʃi/ while Type 1 and 3 responses increased. In the high group, Type 1 (39 pairs, 65%) was most frequently observed, followed by Type 3 (13 pairs, 21.7%), Type 2 (6 pairs, 10%), and Type 4 (2 pairs, 3.3%). The high group exhibited fewer Type 2 responses for /tʃ/-/tʃi/ in comparison to /ʃ/-/ʃi/. In addition, unlike with /ʃ/-/ʃi/, Type 4 responses were also attested.

To examine individual variation in the perception of the /tʃ/-/tʃi/ contrast, each subject's perceptual pattern was analyzed within the two proficiency groups. Figure 3 displays the mean response ratio for each subject in the low group for the /tʃ/-/tʃi/ contrast, categorized by perception type.

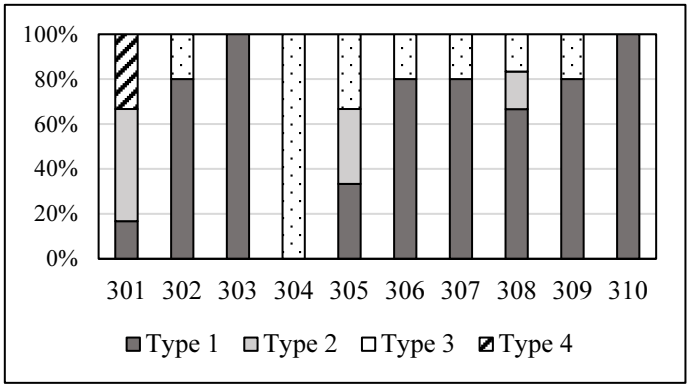
FIGURE 3
Mean Response Ratio for /tʃ/-/tʃi/ by Low Group Subject * Perception Type



According to a chi-square test, a strong relationship was attested between the two variables, low group subject and perception type (χ^2 (27) = 46.460, $p < .05$). As with the /ʃ/-/ʃi/ contrast, none of the subjects in the low group demonstrated 100% accuracy in perceiving the /tʃ/-/tʃi/ contrast. Two subjects (103 and 110) displayed Type 3 responses for all stimuli. Type 3 responses were also relatively high among the other subjects (80% for 102, 104, and 108; 70% for 107; 66.7% for 101 and 105; 50% for 109). Type 2 responses were attested with two subjects (104 and 106). Type 4 responses were observed with four subjects (101, 105, 106, and 108).

Figure 4 shows each high-group subject's mean response ratio for /tʃ/-/tʃi/, categorized by perception type.

FIGURE 4
Mean Response Ratio for /tʃ/-/tʃi/ by High Group Subject * Perception Type



According to a chi-square test, a strong relationship was found between the two variables, high group subject and perception type (χ^2 (27) = 67.436, $p < .05$). Two subjects (303 and 310) perceived the /tʃ/-/tʃi/ contrast with 100% accuracy. The two subjects also demonstrated perfect accuracy in perceiving the /ʃ/-/ʃi/ contrast. Subjects 302, 306, 307, and 309 showed 80% Type 1 responses. In contrast, subjects 301 and 305 exhibited comparatively low Type 1 response ratios. Type 2 (i.e., perceiving both /tʃ/-/tʃi/ as [tʃ]) responses were observed in subjects 301 (50%), 305 (33.3%), and 308 (16.7%). Interestingly, subject 304 perceived all stimuli as Type 3 (i.e., perceiving both /tʃ/-/tʃi/ as [tʃi]) for /tʃ/-/tʃi/ and for /ʃ/-/ʃi/ as well. Type 3 responses were also observed in six other subjects, albeit at relatively low rates. While Type 4 (i.e., misperceiving both /tʃ/ and /tʃi/) responses were not observed for the /ʃ/-/ʃi/ contrast, subject 301 exhibited Type 4 responses for the /tʃ/-/tʃi/ contrast.

Table 6 provides a crosstabulation of Korean learners' perception types for the /dʒ/-/dʒi/ contrast based on their proficiency level.

TABLE 6
Proficiency by Perception Type Crosstabulation for /dʒ/-/dʒi/

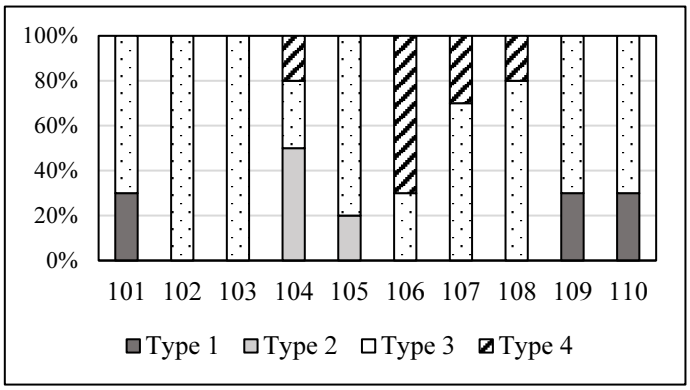
Proficiency		Perception Type				Total
		1	2	3	4	
Low	Observed	6	4	42	8	60
		(10.0)	(6.7)	(70.0)	(13.3)	
	Expected	22.5	2.5	30	5	60
High	Observed	39	1	18	2	60
		(65.0)	(1.7)	(30.0)	(3.3)	
	Expected	22.5	2.5	30	5	60
Total	Observed	45	5	60	10	120
	Expected	45	5	60	10	120

Note. Percentage in parentheses

According to a chi-square test, for /dʒ/-/dʒi/, there was a strong relationship between proficiency and perception type (χ^2 (3) = 39.2, $p < .05$). In the low group, as in the case of /ʃ/-/ʃi/ and /tʃ/-/tʃi/, Type 3 (i.e., perceiving both /dʒ/ and /dʒi/ as [dʒi]) (42 pairs, 70%) was the most frequent. Type 4 (8 pairs, 13.3%) was the next most frequent response, followed by Type 1 (6 pairs, 10%) and Type 2 (4 pairs, 6.7%). Notably, the low group's Type 2 responses were less frequent for /dʒ/-/dʒi/ and /tʃ/-/tʃi/ (6.7% each) compared to /ʃ/-/ʃi/ (20%). In the high group, Type 1, which is the correct perceptual contrast, was the highest (39 pairs, 65%), followed by Type 3 (18 pairs, 30%), Type 4 (2 pairs, 3.3%), and Type 2 (1 pair, 1.7%). The high group exhibited higher correct perception rates for /dʒ/-/dʒi/ and /tʃ/-/tʃi/ (65% each) compared to /ʃ/-/ʃi/ (56.7%). Additionally, the high group's Type 2 responses were lower for /dʒ/-/dʒi/ (1.7%) than for /ʃ/-/ʃi/ (25%) or /tʃ/-/tʃi/ (10%), while their Type 3 responses were relatively higher for /dʒ/-/dʒi/ (30%) compared to /ʃ/-/ʃi/ (18.3%) or /tʃ/-/tʃi/ (21.7%).

Figure 5 shows the mean response ratio for each subject in the low group with respect to the /dʒ/-/dʒi/ contrast, categorized by perception type.

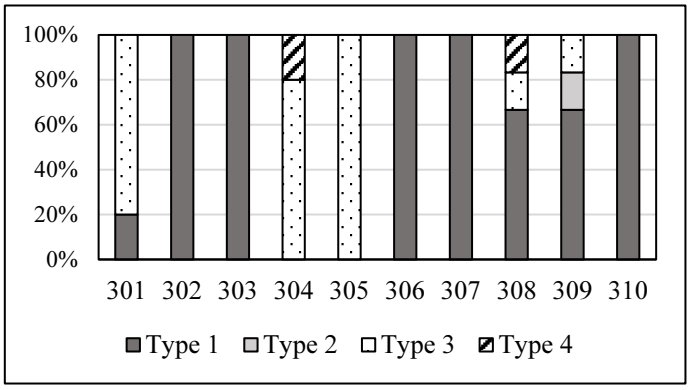
FIGURE 5
Mean Response Ratio for /dʒ/-/dʒi/ by Low Group Subject * Perception Type



According to a chi-square test, there was a strong relationship between low group subject and perception type (χ^2 (27) = 58.69, $p < .05$). Type 1 responses were attested in three subjects (101, 109, and 110), with a relatively low frequency of 30%. Subjects 104 and 105 exhibited Type 2 responses at the frequencies of 50% and 20%, respectively. Type 3 responses were observed in all subjects. Two subjects (102 and 103) consistently perceived all stimuli with the /dʒ/-/dʒi/ contrast as Type 3, perceiving both /dʒ/ and /dʒi/ as [dʒi]. In particular, subject 103 consistently misperceived the /tʃ/-/tʃi/ contrast as Type 3 and subject 102 misperceived the /ʃ/-/ʃi/ contrast as Type 3 for all stimuli. Six other subjects (101, 105, 107, 108, 109, and 110) also demonstrated relatively high frequencies of Type 3 responses. In contrast, two subjects (104 and 106) exhibited relatively low Type 3 responses. Three subjects (101, 109, and 110) showed Type 4 responses.

Figure 6 illustrates each high group subject's mean response ratio for /dʒ/-/dʒi/, categorized by perception type.

FIGURE 6
Mean Response Ratio for /dʒ/-/dʒi/ by High Group Subject * Perception Type



According to a chi-square test, a strong relationship was observed between high group subject and perception type (χ^2 (27) = 63.504, $p < .05$). Five subjects (302, 303, 306, 307, and 310) showed perfect perceptual accuracy (i.e., Type 1). More high group subjects exhibited perfect accuracy for /dʒ/-/dʒi/, compared to /ʃ/-/ʃi/ and /tʃ/-/tʃi/. Only two subjects (303 and 310) demonstrated perfect perceptual accuracy across all three contrast types under investigation. Type 2 (i.e., perceiving both /dʒ/ and /dʒi/ as [dʒ]) responses were attested in only one subject (309) with a relatively low rate of 16.7%. Type 3 emerged as the most common incorrect perception type, largely attributable to the responses of three subjects. Subject 305 consistently misperceived all stimuli as Type 3, whereas subjects 301 and 304 exhibited this misperception for 80% of the stimuli. Type 4 responses were observed in only two subjects (304 and 308), and at a low frequency (20% and 16.7%, respectively).

V. DISCUSSION

According to the results of the present study, Korean EFL learners' ability to perceive word-final contrasts–/ʃ/ vs. /ʃi/, /tʃ/ vs. /tʃi/, and /dʒ/ vs. /dʒi/–was systematically influenced by their level of English proficiency. In general, the high group demonstrated significantly greater perceptual accuracy than the low group. For most stimuli, the low group failed to distinguish the contrasts, perceiving them identically. Specifically, participants in the low group predominantly perceived both members of each contrast as ending in /i/ (i.e., Type 3). The high group also showed instances of inaccurate perception of the contrasts, though these occurred at considerably lower rates compared to the low group. Thus, the results suggest that it is challenging for Korean learners, particularly those in the low group, to acquire an accurate perception of the word-final contrasts.

Korean learners are expected to have difficulty perceiving word-final contrasts of /ʃ/ vs. /ʃi/, /tʃ/ vs. /tʃi/, and /dʒ/ vs. /dʒi/ due to the influence of their L1 phonology. In Korean, fricatives or affricates do not appear in syllable-final or word-final positions because they are realized as an unreleased alveolar stop [t̚] (e.g., /nas/ → [nat̚] 'sickle', /natɕ/ → [nat̚] 'day', and /natɕ^{h}/ → [nat̚] 'face'). In addition, [ʃ] occurs as an allophone of /s/ before /i/ or /j/, as can be seen from /misin/ → [miʃin] 'superstition' (Dawson et al., 2022; Sohn, 1999). Considering the phonological patterns of Korean, it is expected that Korean learners may misperceive word-final contrasts such as /ʃ/ vs. /ʃi/, /tʃ/ vs. /tʃi/, and /dʒ/ vs. /dʒi/, often interpreting consonant-final stimuli as ending in the illusory vowel /i/. The results of the present study demonstrate the influence of L1 phonology. Furthermore, such responses are consistent with claims made by Flege (1995) and Best and Tyler (2007), which propose that unfamiliar L2 sequences are often assimilated into existing L1 categories rather than forming independent new categories. The persistence of illusory vowel /i/ (i.e., Type 3), even among higher proficiency learners, suggests that proficiency gains alone may not fully eliminate L1-transfer.

The present study also revealed that Korean learners' perception of the contrasts was affected by the specific types of consonants involved. Both proficiency groups demonstrated lower accuracy for the /ʃ/–/ʃi/ contrast compared to the /tʃ/–/tʃi/ and /dʒ/–/dʒi/ contrasts. As mentioned earlier, [ʃ] occurs as an allophone of /s/ before /i/ or /j/ in Korean, which may contribute to greater perceptual ambiguity for this contrast. On the other hand, /tʃ/ and /dʒ/ do not occur in Korean and this possibly makes them more salient as non-native sounds, despite their unfamiliarity. These results suggest that phonological experience with [ʃ] as an allophone in L1 may interfere with the accurate perception of the L2 contrast of /ʃ/-/ʃi/.

In the case of the high group, Type 1 responses were most frequently attested across all consonant types. However, accuracy was lower for /ʃ/ vs. /ʃi/ (56.7%) compared to /tʃ/ vs. /tʃi/ (65%) or /dʒ/ vs. /dʒi/ (65%). Similar to the low group, the high group exhibited more

frequent Type 2 responses (i.e., perceiving both stimuli as lacking a final /i/) for /ʃ/ vs. /ʃi/ (25%) than for /tʃ/ vs. /tʃi/ (10%) or /dʒ/ vs. /dʒi/ (1.7%). These results suggest that, like the low group, the high group also experienced greater difficulty in perceptually discriminating /ʃ/ vs. /ʃi/ compared to /tʃ/ vs. /tʃi/ or /dʒ/ vs. /dʒi/. In addition, Type 3 responses were relatively high for /dʒ/ vs. /dʒi/ (30%) compared to /ʃ/ vs. /ʃi/ (18.3%) or /tʃ/ vs. /tʃi/ (21.7%). The Korean affricates /tɕ, tɕ^{h}, tɕ'/ are all voiceless and the plain /tɕ/ becomes voiced between sonorants (Kang, 2003). Thus, the high group's high rates of Type 3 responses for /dʒ/ vs. /dʒi/ (i.e., perceiving both /dʒ/ and /dʒi/ as [dʒi]) may be due to the influence of their L1 phonology.

In addition to proficiency and consonant-type effects, individual differences were found within each proficiency group. In the low group, no subject achieved 100% perception accuracy across all contrasts. While some subjects consistently responded with only one type of error (i.e., Type 3), others exhibited a range of different response types. In the high group, a greater number of subjects demonstrated 100% perception accuracy. However, some still responded with only one type of error (i.e., Type 2 or 3), and this pattern was especially noticeable for /ʃ/-/ʃi/. Specifically, two subjects (i.e., 301 and 305) consistently perceived both sounds in the contrast as [ʃ] while one subject (i.e., 304) consistently perceived them as [ʃi]. Again, these results show that the allophonic presence of [ʃ] in L1 causes more perceptual difficulty even to the high group. Only two subjects in the high group (i.e., 303 and 310) exhibited 100% perception accuracy for all contrasts examined and the others showed a variety of response types, illustrating that individual variation also existed within the high group.

VI. CONCLUSION

This study examined how Korean EFL learners perceive English word-final contrasts of /ʃ/ vs. /ʃi/, /tʃ/ vs. /tʃi/, and /dʒ/ vs. /dʒi/, with a particular focus on perceptual error types. The results revealed that learners' responses were systematically related to their L1 phonology, proficiency, and consonant type. In addition, individual perceptual differences were observed across different contrasts, which cannot be fully accounted for by proficiency alone. These results are in line with earlier findings that showed systematic individual variations in the production of word-final contrasts of /ʃ/ vs. /ʃi/, /tʃ/ vs. /tʃi/, and /dʒ/ vs. /dʒi/.

The present study provides pedagogical insights. The findings suggest that difficulties in perceiving English word-final contrasts cannot be fully addressed through increased exposure or proficiency gains alone. Instead, instruction may benefit from drawing learners' attention to word-final positions and contrast-specific perceptual patterns, particularly for

consonant types that remain challenging even at higher proficiency levels.

The present study also has several limitations, including the relatively small number of participants and stimuli. Additionally, the relationship between perception and production was beyond the scope of this study. We leave the production-perception relationship for future study. Future research should explore the relationship by examining whether the perceptual error types observed in the study are related to learners' production patterns.

REFERENCES

Best, C. T., & Tyler, M. D. (2007). Nonnative and second-language speech perception: Commonalities and complementarities. In O.-S. Bohn & M. J. Munro (Eds.), *Language experience in second language speech learning: In honor of James Emil Flege* (pp. 13-34). John Benjamins. https://doi.org/10.1075/lllt.17.07bes

Darcy, I., Mora, J. C., & Daidone, D. (2016). The role of inhibitory control in second language phonological processing. *Language Learning, 66*(4), 741-773. https://doi.org/10.1111/lang.12161

Dawson, H. C., Hernandez, A., & Shain, C. (Eds.). (2022). *Language files: Materials for an introduction to language and linguistics* (13th ed.). Ohio State University Press.

Flege, J. E. (1995). Second language speech learning: Theory, findings, and problems. In W. Strange (Ed.), *Speech perception and linguistic experience: Issues in cross-language research* (pp. 233-277). York Press.

Kang, Y. (2003). Perceptual similarity in loanword adaptation: English postvocalic word-final stops in Korean. *Journal of Phonology, 31*(2), 219-255. https://doi.org/10.1017/S0952675703004524

Kartushina, N., Frauenfelder, U. H., & Golestani, N. (2016). How and when does the second language influence the production of native speech sounds: A literature review. *Language Learning, 64*(Suppl 2), 155-186. https://doi.org/10.1111/lang.12187

Kim, S., & Rhee, S.-C. (2019). Acoustic characteristics of English word-final consonants produced by Korean learners. *Korean Journal of English Language and Linguistics, 19*(3), 432-451.

Kong, E. J., & Kang, S. (2023). Individual differences in categorical judgment of L2 stops: A link to proficiency and acoustic cue-weighting. *Language and Speech*, *66*(2), 354-380. https://doi.org/10.1177/00238309221108647

Llompart, M., & Reinisch, E. (2019). Robustness of phonolexical representations relates to phonetic flexibility in nonnative speech perception. *Bilingualism: Language and Cognition, 22*(5),1085-1100. https://doi.org/10.1017/S1366728918000925

Major, R. C. (1998). Interlanguage phonetics and phonology: An introduction. *Studies in Second Language Acquisition, 20*(2), 131-137.

Schneider, W., Eschman, A., & Zuccolotto, A. (2002). *E-Prime* (Version 2.0) [Computer software]. Psychology Software Tools.

Selinker, L. (1972). Interlanguage. *International Review of Applied Linguistics, 10*(3), 209-231.

Seo, M., & Lim, J. (2010). L2 production of non-contrastive sounds in L1. *English Language & Literature Teaching, 16*(2), 129-146.

Seo, M., & Lim, J. (2011). An acoustic study of English voiced sibilants: correct vs. incorrect L2 production. *English Language & Literature Teaching, 17*(4), 251-271.

Seo, M., & Lim, J. (2024). Beyond segmental accuracy: Exploring acoustic differences in Korean EFL learners′ interlanguage phonology. *Journal of Pan-Pacific Association of Applied Linguistics, 28*(1), 1-17. https://doi.org/10.25256/PAAL.28.1.1

Seo, M., & Lim, J. (2025). Individual differences, proficiency and consonant type in Korean learners' production of English word-final contrasts. *Journal of Pan-Pacific Association of Applied Linguistics, 29*(1), 1-19. https://doi.org/10.25256/PAAL.29.1.1

Sohn, H.-M. (1999). *The Korean language*. Cambridge University Press.

Suzukida, Y. (2021). The contribution of individual differences to L2 pronunciation learning: Insights from research and pedagogical implications. *RELC Journal, 52*(1), 48-61. https://doi.org/10.1177/0033688220987655

Examples in: English

Applicable Languages: English

Applicable Levels: Tertiary

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