



The Effect Of Pronunciation Variations On Students' Speech Perception: A Psycholinguistic Study

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Abstract

Learners of English as a Foreign Language (EFL) are often exposed to pronunciation variations that may influence their perception and comprehension of spoken English. Such variations, particularly in words that sound similar, can create perceptual ambiguity and lead to misunderstandings during listening activities. This study aims to investigate how learners perceive and adapt to different pronunciation forms and how pronunciation differences affect students' speech perception. This study employed a descriptive-interpretive approach within a psycholinguistic framework. The participants were undergraduate students of the English Education Study Program who had previously studied English. Data were collected through listening exercises involving words with different pronunciation forms and a perception questionnaire designed to explore students' experiences, opinions, and cognitive strategies in processing spoken input. The results indicate that pronunciation variations initially caused confusion and hesitation in word recognition, especially when contextual support was limited. However, with repeated exposure, students demonstrated the ability to adjust their perception by referring to previous listening experiences. These findings suggest that speech perception is a dynamic and experience-based cognitive process and that incorporating pronunciation variations into listening instruction can enhance students' comprehension of spoken English in real-life communication.

Keywords: *psycholinguistics; pronunciation variations; speech perception.*

Introduction

According to psycholinguistics, speech perception is a basic cognitive function that allows listeners to identify and decipher speech sounds as significant linguistic units. Phonological processing, auditory input, and lexical representations kept in memory are all integrated in this process (Pattamadilok et al., 2025). Because the phonological systems of the first and target languages differ, speech perception can be difficult for English as a Foreign Language (EFL) learners.

Pronunciation variance of the same lexical words is a major problem in learning English. These discrepancies could result from faulty speech sound articulation, first language interference, or accent differences. Speech perception in a second language is greatly influenced by exposure to phonetic diversity and language experience, according to earlier research (Chen & Chang, 2022; Verbeke et al., 2025). Other research, however, indicates that excessive pronunciation variance may impede accurate word recognition and increase perceptual difficulties, especially for learners with less expertise.

EFL students are regularly exposed to non-standard pronunciation forms in formal educational settings through peers, teachers, and audio materials. Although this exposure may improve perceptual flexibility, it may also cause phonological confusion that hinders lexical access and meaning understanding (Kutlu et al., 2024). While earlier studies have looked at the connection between phonetic variability and speech perception, there are still few that particularly look at how pronunciation differences affect EFL learners' perception of speech from a psycholinguistic standpoint.

Thus, the purpose of this study is to investigate how pronunciation differences affect EFL students' perception of speech. The goal of the study is to find out how learners modify their perceptual techniques in response to different pronunciation forms and how pronunciation variations affect word recognition processes. It is anticipated that the results will both theoretically advance our knowledge of speech perception as a dynamic, experience-based cognitive process and practically advance the creation of more efficient pronunciation and listening training for English language learners.

THEORETICAL REVIEW

Speech Perception in Psycholinguistics

According to psycholinguistics, listeners convert continuous audio data into distinct and meaningful linguistic units through a sophisticated cognitive process known as speech perception. This approach incorporates several levels of processing, such as auditory analysis, phonological categorization, and lexical access, rather than depending only on the physical characteristics of sound (Darcy et al., 2025). Real-time word recognition, meaning recognition, and comprehension of spoken language are all made possible by speech perception.

Most people agree that speech perception is an interactive process that combines top-down and bottom-up mechanisms. While top-down processing uses expectations, prior knowledge, and contextual information to interpret spoken input, bottom-up processing analyzes acoustic data, including phonetic clues and sound qualities. Due to limited exposure to phonological patterns in the target language, this interaction is frequently less effective for second language learners, which increases perceptual difficulty.

Language experience also influences how speech is perceived. Learners who get a lot of spoken input typically have more stable phonological representations, which makes it easier for them to process speech. When faced with unfamiliar pronunciation forms, learners with limited experience, on the other hand, are more susceptible to perceptual confusion since they frequently rely largely on surface-level sound signals.

Pronunciation Variations in second language context

Spoken language naturally varies in pronunciation among speakers, situations, and contexts. Due to variations in accent, speech rate, articulation, and first language influence, pronunciation diversity is more noticeable in second language contexts. Changes in vowel and consonant realization are examples of segmental variations; stress patterns, intonation, and rhythm are examples of supra-segmental variations.

According to research, learners' speech perception skills are significantly shaped by their exposure to phonetic diversity. Learners are more likely to develop perceptual flexibility the ability to detect words despite surface-level phonetic differences when they are exposed to a variety of pronunciation forms (Desmeules-Trudel & Zamuner, 2023; Saito et al., 2022) However, pronunciation variance that is excessive or unfamiliar can also be cognitively taxing, especially for learners who do not have enough phonological awareness in the target language.

Pronunciation variance in EFL environments frequently results from digital media, peer interaction, and instructional input. Because of this, students must comprehend spoken English that does not necessarily follow established pronunciation standards. For the development of speech perception, this heterogeneity offers both opportunities and obstacles.

Intelligibility, Comprehensibility, and Lexical Access

The ideas of intelligibility and comprehensibility in language learning are directly associated with pronunciation variance. While comprehensibility relates to the amount of effort needed to comprehend spoken material, intelligibility is the degree to which speech is accurately understood. Pronunciation variations may increase processing effort and slow down word recognition, but they may not always lead to communication breakdown, according to (Basseti et al., 2015).

According to psycholinguistics, effective lexical access—which entails matching incoming speech with lexical representations that have been stored in memory—is essential for successful speech perception. Listeners may find it difficult to identify words when pronunciation differences greatly depart from these representations, especially when there is no contextual assistance (Lim et al., 2025; Sailuddin et al., 2025). For second language learners whose phonological representations are less stable, this challenge is particularly noticeable.

However, comprehension is not necessarily hampered by variations in pronunciation. Listeners frequently use contextual signals, semantic expectations, and past language experience to make up for phonetic discrepancies. This compensating process emphasizes how speech perception is adaptive.

Phonological Processing and Perceptual Adaptation

Because it allows listeners to classify acoustic information into meaningful sound units, phonological processing is essential to speech perception. First language sound systems frequently have an impact on second language learners' phonological processing, which might impede their ability to perceive phonemes in the target language. Learners' capacity to efficiently process pronunciation variance is further hampered by limited exposure to phonological contrasts in the target language.

Nonetheless, studies show that perceptual adaptation can be aided by repeated exposure to pronunciation variations. Learners are able to identify words more reliably despite phonetic diversity when they progressively improve their phonological categories and modify their perceptual expectations through experience (Cheng et al., 2021; Kim et al., 2025; Leung et al., 2025). Experience-based learning, in which perceptual systems grow more effective through prolonged interaction with spoken data, is reflected in this adaptation process.

Pronunciation variance may serve as a learning tool rather than a permanent barrier, according to perceptual adaptation. Over time, learners' speech perception abilities improve and their tolerance for phonetic variability increases when they are exposed to a variety of pronunciation forms in meaningful circumstances.

Position of the Present Study

The current study investigates how pronunciation differences affect EFL students' perception of speech using theories of speech perception, phonological processing, lexical access, and perceptual adaptation. This study highlights learners' perceptual experiences and cognitive reactions to pronunciation variety, in contrast to earlier studies that mostly concentrated on pronunciation correctness or listening comprehension outcomes.

This study aims to determine whether pronunciation variation mostly impairs speech perception or enhances perceptual flexibility in EFL learners by using a descriptive psycholinguistic approach. This section's theoretical framework serves as the basis for evaluating students' reactions to pronunciation variance and interpreting the results in light of accepted psycholinguistic theories.

METHOD

This study employed a descriptive research approach within a psycholinguistic framework to investigate how pronunciation variations influence students' speech perception. A descriptive approach was selected because the study aimed to describe and interpret learners' perceptual responses to different pronunciation forms as they naturally occur in English as a Foreign Language (EFL) contexts rather than to test statistical hypotheses or manipulate experimental variables (Bosker, 2022). The research was conducted in January 2026 at the English Education Study Program of Universitas Nias. The population of this study consisted of undergraduate students enrolled in the English Education Study Program. The sample consisted of 13 undergraduate students who were selected using purposive sampling based on specific criteria, including students who had completed courses in phonology and psycholinguistics and whose first language was Indonesian. These criteria were applied to ensure that the participants possessed sufficient background knowledge to reflect on their experiences of speech perception. The participants were considered suitable subjects for this research because they were EFL learners who were frequently exposed to pronunciation variation through academic instruction and spoken English input (Hearnshaw et al., 2023).

Data were collected through a listening task and a perception questionnaire administered through Google Forms. The listening task served as the primary instrument and involved audio recordings of English words pronounced in different forms. Participants were asked to listen to each audio stimulus, identify the word they heard, and evaluate the clarity of the pronunciation. This procedure was designed to capture how students perceive, process, and interpret variations in spoken English pronunciation (Hossein Keshavarz & Keshavarz, 2022). To ensure the validity of the instrument, expert judgment was used to evaluate the alignment of the instrument with the research objectives and the theoretical construct of speech perception. The validation results indicated that the instrument was appropriate for eliciting students' perceptual responses to pronunciation variation and produced responses related to speech perception with acceptable consistency (Maret'atush S et al., 2021). The listening task was conducted in a controlled learning setting in which each participant listened to the audio stimuli and recorded their responses individually.

The collected data were analyzed descriptively to identify patterns and tendencies in students' responses related to word recognition accuracy and perceived clarity across different pronunciation variations. The analysis focused on describing how pronunciation variation influenced students' speech perception without employing inferential statistical procedures (Ishtiaq, 2022). Within the research framework, pronunciation variation was treated as the independent conceptual variable, referring to different pronunciations of the same English words, while speech perception was treated as the dependent variable, referring to students' ability to recognize and interpret spoken input. The relationship between these variables was interpreted from a psycholinguistic perspective in order to explain how learners process and adapt to pronunciation differences in spoken English (Cutler, 2023).

RESULT AND DISSCUSION

Research Context and Data Overview

This study involved 13 undergraduate students from the English Education Study Program who had prior experience learning English and had completed courses related to phonology and psycholinguistics. The selection of participants ensured that the data reflected informed perceptual judgments rather than novice reactions to spoken English. Data were collected in January 2026 through an online listening task and a perception questionnaire administered via Google Forms, allowing participants to complete the tasks individually and without time pressure.

The listening task consisted of English words containing pronunciation variations, such as *lighthouse*, *light house*, and *like house*. These items were intentionally selected due to their phonological similarity, which has been shown to trigger perceptual ambiguity in second language speech processing. The questionnaire complemented the listening task by eliciting students' reflections on their experiences, difficulties, and cognitive strategies when encountering pronunciation variation in spoken English. Together, these instruments generated qualitative data that illustrate how learners perceive, process, and adapt to pronunciation variability within a psycholinguistic framework.

Students' Perception of Pronunciation Variations

The majority of participants showed understanding that a single English word may be realized through numerous pronunciation forms, according to the analysis of students' responses. Learners' exposure to spoken English in a variety of settings, such as classroom instruction, peer interaction, and digital media, is reflected in this awareness. But awareness by itself did not ensure correct perception. When trying to identify terms with comparable phonological forms, many students expressed reluctance and confusion, especially when pronunciation distinctions were modest and backed by contextual information.

From a psycholinguistic standpoint, this result supports the idea that acoustic input and mental representations kept in memory interact during speech perception (Al-Shami, 2024). Perceptual uncertainty rose when incoming speech differed from learners' anticipated phonological patterns. This discrepancy between information and anticipation frequently led to temporary misinterpretation or delayed word identification, underscoring the susceptibility of speech perception in second language environments.

Cognitive Experiences During Speech Processing

Experiences of Confusion and Uncertainty

When listening to words with similar phonological forms, pupils often felt confused during the early phases of speech processing. When pupils first experienced pronunciation discrepancies, this uncertainty was particularly noticeable. As they tried to reconcile the acoustic signal with their prior phonological knowledge, a number of participants reported that differentiating between similar-sounding forms required more attention effort.

This result supports (Chen & Chang, 2022) claim that early lexical access stages can be disrupted by variations from predicted phonological patterns. Limited exposure to phonological variety exacerbates this challenge for EFL learners. Pronunciation variety might therefore momentarily overburden cognitive processing resources, resulting in hesitancy and ambiguity when perceiving speech.

Strategies for Speech Recognition

Students did not continue to be passive listeners despite having perceptual difficulties. The majority of participants reported using their familiarity with English sound patterns and past listening experiences to deduce the intended words in order to deal with uncertainty. According to (Al-Shami, 2024), this dependence is a reflection of the predictive aspect of speech perception, where listeners actively formulate assumptions about spoken input based on prior knowledge.

These techniques show how learners use contextual expectations and stored lexical representations to make up for ambiguous or lacking phonetic information. This active participation implies that speech perception is a top-down process influenced by cognitive resources and experience as well as a bottom-up process driven by sonic input.

Perceptual Adaptation to Pronunciation Variations

The results show that students' perceptual adaptation was aided by frequent exposure, notwithstanding the initial confusion produced by pronunciation diversity. Regular listening practice, according to the participants, steadily enhanced their confidence in identifying similar-sounding forms. With time, students become less reliant on exact phonetic realization and more acquainted with English sound patterns. Psycholinguistic theories that highlight experience-based learning in speech perception are supported by this adaptability. Learners can improve word recognition accuracy by refining their phonological categories and adjusting their perceptual expectations through repeated exposure (Cutler, 2023; Hossein Keshavarz & Keshavarz, 2022). Pronunciation diversity thus serves as both a challenge and a motivator for the development of perception.

Additionally, a number of students said that pronunciation diversity improved their overall understanding of spoken English when combined with ongoing listening practice. According to this view, pronunciation variety can have educational benefits, especially if students are encouraged to concentrate on meaning rather than superficial phonetic variations.

Summary of Students' Perceptual Patterns

To illustrate the overall patterns of students' speech perception, the findings are summarized in Table 1.

Table 1

Summary of Students' Perceptual Patterns toward Pronunciation Variation

Perceptual Aspect	General Description
Awareness of pronunciation variation	Students recognize that one word may have more than one pronunciation
Initial response	Confusion and hesitation in recognizing spoken input

Cognitive processing	Reliance on prior listening experience
Perceptual adaptation	Increased familiarity through repeated exposure
Learning implication	Pronunciation variation is beneficial when introduced gradually

Table 1 illustrates the progression of students' speech perception from initial confusion toward perceptual adaptation as a result of repeated exposure and accumulated listening experience. The table highlights that perceptual development is gradual and dependent on sustained interaction with spoken input.

Theoretical and Practical Implications

The results of this study support psycholinguistic theories that see speech perception as a dynamic, experience-based cognitive process. Higher-level interpretive mechanisms, lexical access, and phonological processing are all triggered by pronunciation diversity. Pronunciation diversity helps students improve their perceptual techniques and adjust to real-world spoken language information rather than just being a source of difficulties (Hearnshaw et al., 2023).

These results imply that pronunciation diversity should be purposefully included in listening training in EFL environments from a pedagogical standpoint. Learners can improve their perceptual flexibility and get ready to comprehend spoken English in everyday conversational contexts by being exposed to similar-sounding forms. Therefore, more robust speech perception skills may result from structured listening exercises that incorporate pronunciation diversity.

Overall, the extended findings show that EFL students' perception of speech is significantly influenced by pronunciation variances. These differences encourage perceptual adaptation through experience and repeated exposure, even though they may initially induce uncertainty and reluctance. The conclusions made in the study's last section have a solid foundation thanks to these findings.

CLOSING

According to the study's findings, pronunciation differences have a big impact on how EFL students perceive communication. When learners come across similar-sounding words without enough contextual assistance, pronunciation discrepancies sometimes lead to first perceptual doubt. These differences do not, however, always make comprehension more difficult. Rather, students use their linguistic knowledge and past listening experiences to gradually adjust to pronunciation variations, suggesting that speech perception is an active, experience-based cognitive process.

The results also imply that repeated and meaningful exposure to pronunciation variance can enhance learners' perceptual flexibility. Therefore, in EFL contexts, pronunciation diversity should be seen as a possible resource for developing more adaptive speech perception rather than just a source of difficulties. This study emphasizes how crucial it is to acknowledge pronunciation variability as a crucial part of spoken language input that influences learners' capacity to comprehend and analyze spoken English.

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