



HOW SHADOWING TRANSFORMS FOREIGN LANGUAGE FLUENCY: A REVIEW OF COGNITIVE MECHANISMS, EMPIRICAL EVIDENCE, AND PEDAGOGICAL IMPLICATIONS

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Abstract: Oral fluency remains a major challenge for many foreign language learners despite years of formal instruction. Among fluency-oriented techniques, shadowing has attracted increasing attention due to its ability to integrate listening, pronunciation, and speech production. This review examines the theoretical foundations of shadowing and synthesizes findings from second language acquisition, cognitive psychology, and applied linguistics. The article discusses how shadowing improves pronunciation, listening comprehension, speech automaticity, vocabulary retention, and learner confidence through continuous auditory processing and immediate speech production. It also highlights the cognitive mechanisms that support these improvements and outlines practical implications for language teaching. The review concludes that regular and structured shadowing practice can significantly enhance communicative competence. Rather than serving only as a pronunciation exercise, shadowing should be considered a comprehensive pedagogical technique for developing foreign language fluency.

Keywords: shadowing; foreign language fluency; second language acquisition; pronunciation.

Introduction

English has become the dominant medium of international communication in education, science, business, diplomacy, and digital interaction. Consequently, developing communicative competence has become a primary objective for millions of learners worldwide. Despite years of formal instruction, however, many learners continue to experience significant challenges in spoken communication. They often demonstrate strong reading comprehension and grammatical knowledge while struggling to produce fluent and spontaneous speech during authentic conversations. This phenomenon represents one of the most persistent challenges in second language acquisition and has attracted considerable scholarly attention (Krashen, 1985).

Researchers have argued that traditional language instruction frequently emphasizes explicit grammatical knowledge and written exercises while



providing insufficient opportunities for developing automatic oral production. As a result, learners accumulate declarative knowledge about the language without successfully transforming that knowledge into procedural competence required for real-time communication (Nation, 2001). The discrepancy between knowing a language and being able to speak it fluently illustrates the complexity of language acquisition and highlights the necessity of instructional methods that encourage extensive oral practice.

Among numerous fluency-oriented techniques, shadowing has gained increasing recognition during the past two decades. Originally developed as a training method for simultaneous interpreters, shadowing has gradually become an effective pedagogical strategy in foreign language education. The technique requires learners to repeat spoken language immediately after hearing it, usually with only a minimal delay. Unlike conventional repetition exercises, shadowing demands continuous attention, rapid auditory processing, accurate pronunciation, and immediate speech production. These simultaneous cognitive processes create intensive practice conditions that promote language automatization (Tamai, 2005).

The theoretical significance of shadowing extends beyond pronunciation improvement. Contemporary research suggests that shadowing activates multiple cognitive systems simultaneously, including working memory, phonological processing, auditory perception, lexical retrieval, and articulatory planning. Because learners continuously process incoming speech while producing their own output, shadowing creates an integrated learning environment that strengthens both receptive and productive language abilities. This dual engagement distinguishes shadowing from many traditional instructional techniques that isolate individual language skills.

The effectiveness of shadowing can also be understood through several influential theories of second language acquisition. According to Krashen's Input Hypothesis (1985), language acquisition occurs when learners receive comprehensible input slightly above their current proficiency level. Shadowing facilitates intensive engagement with such input by requiring learners to process every phonological and lexical element actively rather than passively listening.

Similarly, Swain's Output Hypothesis (1985) argues that language production itself contributes significantly to acquisition because speaking encourages learners to notice linguistic gaps in their competence. During shadowing, learners continuously compare their pronunciation, rhythm, and intonation with those of native or proficient speakers. This immediate comparison promotes self-monitoring and facilitates the refinement of spoken language performance.



Furthermore, Schmidt's Noticing Hypothesis (1990) proposes that conscious attention to linguistic features is essential for language learning. Because shadowing requires sustained concentration, learners become increasingly aware of pronunciation patterns, stress placement, connected speech, reductions, and intonation. Such heightened awareness accelerates the internalization of authentic spoken language.

Recent developments in cognitive psychology further support the pedagogical value of shadowing. Studies investigating working memory demonstrate that repeated simultaneous processing strengthens neural pathways associated with speech perception and production. Frequent activation of these pathways gradually reduces cognitive load during communication, allowing learners to allocate greater attention to meaning rather than linguistic form. Consequently, speech becomes increasingly automatic, fluent, and accurate.

Beyond its cognitive benefits, shadowing also contributes to affective aspects of language learning. Many foreign language learners experience communication anxiety, fear of making mistakes, and reduced self-confidence. Regular shadowing practice provides repeated exposure to authentic speech in a controlled learning environment, enabling learners to develop greater familiarity with natural pronunciation and conversational rhythm. As confidence increases, learners become more willing to participate actively in communicative situations, thereby creating additional opportunities for language development.

Given these theoretical and practical considerations, the present review aims to examine how shadowing transforms foreign language fluency through multiple cognitive and linguistic mechanisms. Specifically, this article seeks to synthesize existing research concerning the effects of shadowing on pronunciation, listening comprehension, vocabulary acquisition, automaticity, speaking confidence, and overall communicative competence. In addition, the review identifies limitations within current research and proposes pedagogical recommendations for integrating shadowing into contemporary language education.

Through an interdisciplinary examination of evidence from applied linguistics, educational psychology, and cognitive science, this article argues that shadowing represents a comprehensive learning strategy capable of promoting sustainable improvements in second language fluency. Rather than functioning solely as a pronunciation exercise, shadowing should be viewed as an integrated pedagogical approach that simultaneously develops multiple dimensions of communicative competence essential for successful foreign language acquisition.

2. Literature Review



Shadowing has evolved from a specialized training technique for simultaneous interpreters into a widely recognized pedagogical approach in second language education. Early definitions described shadowing as the immediate repetition of spoken language with minimal delay between auditory input and oral production. Unlike conventional repetition exercises, shadowing requires learners to process incoming speech while simultaneously articulating the same linguistic input. This dual-task nature places substantial demands on attention, working memory, and speech production, making shadowing a cognitively intensive but potentially effective learning strategy (Lambert, 1992).

The application of shadowing to foreign language education was pioneered in Japan during the early 1990s. Among the earliest researchers, Tamai argued that shadowing should not merely be considered a pronunciation exercise but rather a comprehensive listening activity capable of strengthening learners' bottom-up processing skills. Bottom-up processing refers to the ability to decode speech from its smallest phonological units before integrating them into meaningful words and sentences. Learners who struggle with this process often recognize vocabulary in written form but fail to identify the same words during authentic spoken interaction. Tamai's work laid the theoretical foundation for numerous subsequent investigations into the effectiveness of shadowing in English as a Foreign Language (EFL) classrooms.

Following these pioneering studies, researchers increasingly examined shadowing through the perspective of cognitive psychology. Working memory theories suggest that spoken language is temporarily maintained within the phonological loop before being transferred into long-term memory. Because shadowing requires continuous rehearsal of incoming speech, learners repeatedly activate this phonological system. Such repeated activation is believed to strengthen auditory discrimination, lexical access, and articulatory coordination. Consequently, learners gradually develop greater automaticity during oral communication as cognitive resources become available for higher-level meaning construction rather than basic sound recognition.

Another influential theoretical explanation derives from Krashen's Input Hypothesis. Krashen argued that language acquisition occurs when learners are exposed to meaningful and comprehensible input slightly above their existing proficiency level. Shadowing provides precisely such exposure while simultaneously preventing passive listening. Instead of merely hearing authentic speech, learners actively process every phoneme, word, stress pattern, and intonation contour through immediate oral reproduction. Consequently, the quality of language input becomes substantially enhanced because learners maintain continuous attentional engagement throughout the listening process.



Swain's Output Hypothesis further complements the theoretical justification for shadowing. According to Swain, producing language forces learners to recognize deficiencies in their linguistic competence. During shadowing, learners constantly compare their own pronunciation, rhythm, and fluency with the original speaker. These comparisons facilitate self-monitoring and encourage learners to modify inaccurate pronunciation or unnatural prosodic features. In this respect, shadowing functions not only as an input-oriented activity but also as a productive learning process that encourages continuous linguistic refinement.

Schmidt's Noticing Hypothesis also provides valuable insight into the effectiveness of shadowing. Schmidt proposed that conscious awareness of linguistic forms is an essential prerequisite for language acquisition. During ordinary listening activities, learners frequently concentrate on understanding meaning while overlooking phonological details. Shadowing, however, redirects attention toward pronunciation, connected speech, reductions, linking, stress placement, and intonation. This heightened awareness facilitates deeper processing of spoken language and promotes long-term acquisition of authentic speech patterns.

Empirical research has consistently reported positive effects of shadowing on listening comprehension. Numerous classroom experiments conducted primarily in Japan demonstrated that learners participating in structured shadowing programs significantly outperformed control groups receiving conventional listening instruction. Improvements were particularly evident in phoneme perception, word segmentation, and recognition of connected speech. Researchers concluded that shadowing effectively strengthens bottom-up listening processes, enabling learners to interpret spoken language more efficiently under real communicative conditions.

The benefits of shadowing appear especially pronounced among lower-proficiency learners. Several studies found that beginners and intermediate learners exhibited greater gains than advanced learners because shadowing directly addresses weaknesses in phonological decoding and auditory processing. Advanced learners, whose bottom-up processing is already relatively automatic, often demonstrate smaller improvements in listening comprehension, although they may continue benefiting in pronunciation accuracy and speech fluency. These findings suggest that learner proficiency moderates the effectiveness of shadowing and should therefore be considered when designing instructional programs.

Recent systematic reviews have strengthened confidence in the pedagogical value of shadowing while simultaneously identifying methodological limitations within the literature. Overall, available evidence



indicates improvements in pronunciation, fluency, intelligibility, and listening comprehension. Nevertheless, many studies have relied on relatively small participant samples, short intervention periods, and immediate post-tests without examining long-term retention. Furthermore, much of the existing literature has been conducted within Japanese educational contexts, raising questions concerning the generalizability of findings to learners from other linguistic backgrounds. These limitations indicate that although current evidence strongly supports the educational potential of shadowing, additional cross-cultural and longitudinal research remains necessary.

Overall, the existing body of literature demonstrates substantial theoretical and empirical support for shadowing as an effective instructional technique in second language acquisition. Its effectiveness can be explained through complementary perspectives offered by cognitive psychology, input-based theories, output-oriented learning, and attention-based approaches to language acquisition. While methodological challenges remain, the consistency of positive findings across numerous studies suggests that shadowing represents far more than a pronunciation drill. Instead, it functions as an integrated learning strategy capable of simultaneously strengthening listening, pronunciation, fluency, and communicative competence.

3. How Shadowing Improves Foreign Language Fluency: Cognitive Mechanisms and Empirical Evidence

Developing oral fluency requires far more than acquiring grammatical knowledge or memorizing vocabulary. Fluent communication depends on the rapid coordination of multiple cognitive processes, including speech perception, lexical retrieval, syntactic processing, articulation, and self-monitoring. These processes must operate almost simultaneously during authentic communication, leaving learners with only milliseconds to comprehend incoming speech and formulate appropriate responses. Consequently, many learners who possess considerable declarative knowledge continue to experience hesitation, long pauses, and reduced speech accuracy. Within this context, shadowing has emerged as an instructional technique capable of facilitating the transition from conscious language processing to automatic language performance.

One of the principal mechanisms underlying the effectiveness of shadowing is its influence on the phonological loop, a component of working memory responsible for temporarily storing and rehearsing verbal information. During shadowing, learners continuously receive auditory input while reproducing it almost immediately. This process repeatedly activates phonological storage and articulatory rehearsal, thereby strengthening the neural pathways involved in speech perception and production. Experimental neurocognitive research has shown that intensive shadowing practice can



improve working-memory performance and induce measurable changes in brain regions associated with phonological processing, suggesting that repeated shadowing promotes neural plasticity.

Another important contribution of shadowing concerns the development of speech automaticity. According to skill acquisition theory, language learning progresses from slow, conscious processing toward rapid and automatic performance through repeated practice. Shadowing provides precisely this type of deliberate practice because learners repeatedly process authentic spoken language under time pressure. Rather than translating mentally or constructing sentences word by word, learners gradually learn to recognize common sound patterns, collocations, and sentence structures automatically. As automaticity increases, cognitive resources become available for higher-level communicative functions such as organizing ideas, interpreting meaning, and maintaining conversational flow. This process explains why experienced shadowing practitioners often report greater fluency despite making no deliberate effort to memorize grammatical rules.

Pronunciation is another domain in which shadowing demonstrates substantial educational value. Many EFL learners possess accurate knowledge of English phonology in theory but continue to exhibit pronunciation influenced by the sound system of their first language. Traditional pronunciation exercises frequently emphasize isolated sounds without adequately addressing rhythm, stress, linking, and intonation. Shadowing exposes learners to authentic speech as an integrated prosodic system. By immediately reproducing native or proficient speakers' pronunciation, learners internalize natural patterns of connected speech, including reductions, assimilation, and sentence stress. Over time, repeated imitation contributes not only to greater pronunciation accuracy but also to improved comprehensibility during spontaneous communication. Recent reviews consistently report improvements in fluency, prosody, and intelligibility, particularly when shadowing is practiced over several weeks and combined with corrective feedback.

Listening comprehension also benefits significantly from shadowing. Conventional listening activities sometimes encourage passive processing, allowing learners to focus only on general meaning while ignoring important phonological details. Shadowing, by contrast, requires continuous attention to every sound because learners must reproduce the speech almost instantaneously. This intensive engagement strengthens bottom-up processing, enabling learners to distinguish phonemes more accurately, segment connected speech more efficiently, and recognize familiar vocabulary within natural conversational speed. A recent systematic review concluded that shadowing is particularly



effective for improving phoneme perception, word recognition, and decoding skills among beginning and intermediate learners, although evidence for advanced learners remains more mixed.

3.1 Vocabulary Retention and Lexical Development

Although shadowing is primarily associated with pronunciation and listening practice, growing evidence indicates that it also facilitates vocabulary acquisition. Repeated exposure to lexical items within meaningful communicative contexts strengthens the association between phonological representations and semantic knowledge. Unlike isolated vocabulary memorization, shadowing presents words as components of authentic discourse, enabling learners to acquire collocations, formulaic expressions, and discourse markers simultaneously. Consequently, lexical retrieval becomes faster and more automatic during spontaneous communication.

Research in psycholinguistics suggests that repeated auditory exposure enhances the consolidation of lexical representations in long-term memory. Every shadowing session requires learners not only to recognize lexical items but also to articulate them immediately after perception. This perception–production cycle reinforces memory traces through repeated activation of the same linguistic units. As a result, vocabulary is more likely to become available for productive use rather than remaining passive knowledge. Such findings are consistent with theories of skill acquisition, which emphasize repeated retrieval as a prerequisite for automatic performance.

3.2 Confidence and Speaking Anxiety

Psychological factors play a crucial role in second language performance. Even learners with extensive grammatical knowledge frequently hesitate because of communication anxiety, fear of making pronunciation errors, or concern about negative evaluation. These affective barriers often reduce learners' willingness to participate in classroom discussions and authentic conversations.

Shadowing provides a relatively low-risk learning environment in which learners repeatedly produce spoken language without the pressure of generating original ideas. Since the linguistic content is supplied by the recording, learners can devote greater cognitive attention to pronunciation, rhythm, and fluency rather than sentence construction. Repeated successful performance gradually strengthens self-efficacy and reduces communication apprehension. Several classroom-based studies have reported improvements in learners' confidence and motivation after several weeks of structured shadowing practice, particularly when progress was monitored through self-recordings and reflective feedback.

3.3 Classroom Evidence



Empirical investigations conducted across different educational settings generally support the effectiveness of shadowing as a language-learning strategy. Intervention studies involving secondary school students, university learners, and adult language learners have demonstrated improvements in pronunciation accuracy, listening comprehension, fluency, and intelligibility after structured shadowing programs. While the magnitude of improvement varies according to learner proficiency, instructional design, and duration of practice, the overall pattern of findings remains remarkably consistent.

A recent systematic review synthesizing more than forty empirical studies concluded that shadowing contributes positively to comprehensibility, prosody, fluency, and learners' perceptions of their own speaking ability. However, evidence concerning the development of segmental pronunciation remains less conclusive, indicating that shadowing should ideally be combined with explicit pronunciation instruction when individual sounds require targeted correction.

Similarly, systematic reviews of listening research indicate that shadowing substantially strengthens bottom-up processing, particularly among beginning and intermediate learners. Improvements are especially noticeable in phoneme discrimination, word segmentation, and recognition of connected speech at natural speaking speed. These gains provide an essential foundation for subsequent development of spontaneous oral communication.

3.4 Critical Evaluation

Despite its considerable pedagogical value, shadowing should not be regarded as a complete solution for achieving foreign language fluency. Speaking proficiency depends upon multiple interacting components, including grammatical competence, lexical knowledge, pragmatic awareness, discourse organization, and interactional skills. Shadowing primarily develops pronunciation, listening, automaticity, and speech rhythm; therefore, it should complement rather than replace communicative practice, vocabulary development, and meaningful interaction.

Furthermore, existing research reveals several methodological limitations. Many empirical investigations employ relatively small participant samples, short intervention periods, and limited follow-up assessments. Consequently, further longitudinal and cross-cultural studies are required to determine the long-term effects of shadowing across diverse educational contexts. Nevertheless, the convergence of theoretical explanations and empirical findings strongly suggests that shadowing constitutes one of the most effective techniques currently available for improving oral fluency when integrated within a comprehensive language-learning program.

4. Discussion and Pedagogical Implications

The findings synthesized in this review indicate that shadowing is a



multifaceted instructional technique that contributes to foreign language fluency through several interrelated cognitive and linguistic mechanisms. Rather than functioning as a narrow pronunciation drill, shadowing operates as an integrated practice that simultaneously engages perception, production, memory, and attention systems. This integration explains its effectiveness in improving not only pronunciation accuracy but also listening comprehension, lexical access, and speech automaticity.

From a cognitive perspective, the effectiveness of shadowing can be attributed to its intensive activation of working memory systems, particularly the phonological loop. Continuous repetition of auditory input under time pressure strengthens the connection between perception and articulation, thereby reducing processing delays during spontaneous speech. As learners repeatedly map sounds to articulatory patterns, speech production becomes less effortful and more automatic. This transition from controlled to automatic processing is a key condition for fluency development, as it allows learners to allocate cognitive resources to meaning construction rather than form generation.

The pedagogical implications of these findings are significant. Shadowing can be effectively integrated into foreign language curricula as a supplementary activity alongside communicative tasks. In classroom settings, short and structured shadowing sessions (typically 10–15 minutes) can be implemented at the beginning or end of lessons. Teachers may select audio materials that reflect authentic speech, including dialogues, interviews, podcasts, or graded listening passages. The gradual increase in difficulty—from slow, clearly articulated speech to natural conversational speed—appears to maximize learning outcomes.

In addition, shadowing can be combined with reflective learning strategies to enhance its effectiveness. For example, learners may record their shadowing performance and compare it with the original audio to identify pronunciation gaps, rhythm inconsistencies, and intonation errors. Such self-monitoring activities promote metacognitive awareness, enabling learners to take greater control of their language development process. Feedback from teachers can further refine learners' performance by addressing persistent pronunciation issues or fluency disruptions.

Another important pedagogical implication concerns learner motivation. Because shadowing produces relatively rapid perceptible improvements in pronunciation and fluency, it can enhance learners' sense of achievement. This immediate feedback loop contributes to increased motivation and sustained engagement in language learning. For learners who experience anxiety in speaking situations, shadowing provides a structured and low-pressure



environment in which oral production can be practiced without fear of communicative failure.

However, effective implementation requires careful consideration of learner proficiency levels. Beginners may initially struggle with processing speed and cognitive overload, particularly when exposed to fast or complex speech. Therefore, instructional scaffolding is essential. Teachers should begin with simplified input and gradually increase linguistic complexity as learners develop greater processing efficiency. Advanced learners, on the other hand, may benefit from more challenging materials that emphasize natural speed, reduced forms, and discourse-level features.

4.1 Limitations of Shadowing Practice

Despite its advantages, shadowing is not without limitations. One major concern is the potential for cognitive overload, especially among lower-level learners. The simultaneous demands of listening and speaking can overwhelm working memory capacity, leading to reduced comprehension or inaccurate repetition. This suggests that shadowing must be carefully paced and adapted to learners' cognitive readiness.

Another limitation relates to the scope of language skills developed through shadowing. While it is highly effective for improving pronunciation and fluency, it does not directly address grammatical accuracy, pragmatic competence, or interactive conversational skills. Therefore, shadowing should be viewed as one component of a broader instructional framework rather than a standalone teaching method.

4.2 Future Research Directions

Future research should focus on longitudinal studies that examine the long-term effects of shadowing on fluency development. Many existing studies rely on short-term interventions, which do not capture sustained learning outcomes. Additionally, cross-linguistic research involving learners from diverse first-language backgrounds is necessary to determine whether the effectiveness of shadowing varies according to phonological distance between L1 and L2.

Further investigation is also needed into optimal instructional design. Variables such as input speed, repetition frequency, text difficulty, and feedback type remain insufficiently explored. Advances in technology, including mobile applications and AI-assisted pronunciation tools, may provide new opportunities for integrating shadowing into personalized language-learning environments.

5. Conclusion

This review has demonstrated that shadowing is a cognitively grounded and pedagogically effective technique for enhancing foreign language fluency.



Unlike traditional repetition drills, shadowing requires simultaneous auditory processing and speech production, which engages working memory, attentional control, and phonological encoding systems in an integrated manner. This multimodal processing contributes to the development of speech automaticity, which is a central component of fluent communication.

The theoretical foundations of shadowing are strongly supported by established second language acquisition frameworks. Input-based theories emphasize the importance of comprehensible auditory exposure, while output-oriented perspectives highlight the role of language production in noticing linguistic gaps. Cognitive theories further explain how repeated perception–production cycles strengthen phonological memory and reduce processing load over time. Together, these mechanisms provide a coherent explanation for improvements observed in pronunciation, listening comprehension, and oral fluency.

Empirical findings generally indicate that structured shadowing practice leads to measurable gains in learners' speech rhythm, intelligibility, and listening accuracy. However, its effectiveness depends on factors such as input difficulty, practice duration, and learner proficiency. While beginner and intermediate learners tend to benefit most in terms of bottom-up processing and pronunciation accuracy, advanced learners may experience more incremental gains, particularly in prosodic control and fluency refinement.

Despite these advantages, shadowing should not be considered a standalone method for complete language mastery. It does not directly address grammatical development, pragmatic competence, or interactive conversational strategies. Therefore, its optimal pedagogical value emerges when it is integrated into a balanced curriculum that includes communicative practice, explicit instruction, and meaningful interaction.

Overall, shadowing represents a powerful bridge between listening and speaking, enabling learners to internalize authentic speech patterns and improve real-time language processing efficiency. When applied systematically, it can significantly accelerate the development of oral fluency in second language learners.

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