THE ROLE OF ATTENTION AND MEMORY IN EFL LISTENING COMPREHENSION: A PSYCHOLINGUISTIC ANALYSIS

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Abstract: This study investigates the role of attention and memory in EFL listening comprehension from a psycholinguistic perspective. Listening comprehension requires rapid processing of spoken input under time pressure, which places heavy demands on learners' cognitive resources. This research employed a quantitative correlational design involving undergraduate EFL learners. Data were collected using an attention task, a listening-based working memory task, and a standardized EFL listening comprehension test. Statistical analysis revealed significant positive relationships between attention, working memory, and listening comprehension. The results show that learners with stronger attentional control achieved better listening outcomes, while working memory emerged as the strongest predictor of listening performance. The findings also indicate a close interaction between attention and memory, suggesting that focused attention supports effective memory encoding during listening. These results confirm that listening difficulties are not solely caused by limited linguistic knowledge but also by cognitive constraints. The study contributes to psycholinguistic research by highlighting the importance of general cognitive mechanisms in second language listening. Pedagogically, the findings suggest that EFL listening instruction should consider cognitive load and learners' processing capacity to support more effective comprehension.
Keywords: EFL listening comprehension, attention, working memory, psycholinguistics, cognitive processing

INTRODUCTION

Listening comprehension plays a central role in English as a Foreign Language learning because it serves as the primary channel for language input (Bozorgian, 2012). Learners encounter spoken language before they produce it, both inside and outside the classroom (Lestari & Nugraha, 2023). Despite its importance, listening remains one of the most challenging skills for EFL learners to master. Many learners report that they understand written texts better than spoken discourse, even when both contain similar vocabulary and structures. This gap highlights the need to examine internal cognitive processes rather than focusing only on linguistic input. Psycholinguistics provides a useful framework to explore how mental mechanisms shape listening comprehension.

Listening comprehension is not a passive act of hearing sounds (Nor & Hizriani, 2025). It is an active and dynamic cognitive process that requires the coordination of several mental systems. Learners must perceive acoustic signals, segment them into meaningful units, and map them onto stored linguistic knowledge. At the same time, they must maintain information long enough to construct meaning across clauses and sentences. These processes occur under time pressure, which makes listening more demanding than reading. As a result, limitations in cognitive resources often disrupt comprehension even when learners know the words. This reality positions attention and memory as key variables in EFL listening research.

Attention functions as a gatekeeper in listening comprehension. It determines which auditory input enters conscious processing and which input fades away (Nagaraj, 2021). In real-time listening, learners face a continuous stream of sounds that they cannot pause or revisit. They must selectively focus on relevant

cues such as keywords, intonation patterns, and discourse markers. When attention lapses, even briefly, learners may miss critical information that affects overall understanding. Therefore, attention directly shapes how much linguistic input becomes available for further processing (Sultan & Fatima, 2025).

Psycholinguistic theories describe attention as a limited resource rather than an unlimited capacity. Learners cannot attend to all aspects of spoken language at the same time. They must balance attention between decoding sounds, recognizing words, and interpreting meaning. For EFL learners, this balance is often unstable because lower language proficiency increases processing demands. When too much attention is spent on decoding unfamiliar sounds, less attention remains for meaning construction. This competition for attentional resources explains why learners often understand isolated words but fail to grasp the message of a spoken text (Purba, 2018).

Memory plays an equally crucial role in listening comprehension. Once attention selects relevant input, memory systems store and manipulate that information. Working memory holds incoming linguistic units while the listener integrates them into a coherent representation. If working memory capacity is insufficient, earlier information may decay before integration occurs. This leads to fragmented understanding and misinterpretation. In EFL contexts, working memory demands increase due to unfamiliar vocabulary and structures (Sakai, 2018).

Long-term memory also contributes to listening comprehension by providing linguistic and schematic knowledge. Lexical knowledge, grammatical rules, and discourse patterns stored in long-term memory support efficient processing. When learners quickly retrieve known words and structures, they reduce cognitive load during listening. This efficiency frees up working memory resources for higher-level comprehension. Conversely, limited or poorly organized long-term memory representations slow down processing and overload working memory. This interaction highlights the close relationship between memory systems and listening performance.

From a psycholinguistic perspective, listening comprehension involves both bottom-up and top-down processing. Bottom-up processing relies on attention to acoustic and linguistic details, such as phonemes and words. Top-down processing draws on memory-based knowledge, including context and prior experience. Successful listening requires the integration of both processes. Attention supports bottom-up decoding, while memory supports top-down prediction and inference. When either process breaks down, comprehension suffers (El Moussaoui & Belhaj, 2025).

Empirical studies in psycholinguistics suggest that attentional control predicts listening success in second language learners. Learners who can sustain attention and resist distraction tend to achieve better comprehension outcomes. Similarly, research shows that working memory capacity correlates with the ability to process longer and more complex spoken texts. These findings indicate that listening difficulties do not stem solely from linguistic deficits. Cognitive constraints also play a decisive role. Therefore, examining attention and memory offers deeper insight into why some learners struggle with listening despite adequate language knowledge.

In EFL classrooms, listening instruction often emphasizes strategies and practice materials. Teachers may focus on repeated exposure, comprehension questions, or vocabulary pre-teaching. While these practices are valuable, they may not address underlying cognitive limitations. Learners with weak attentional control or limited working memory may continue to struggle despite extensive practice. This gap between pedagogy and cognition underscores the need for a psycholinguistic analysis. Such analysis can inform more effective instructional design that aligns with learners' cognitive capacities.

The current study positions attention and memory as central constructs in understanding EFL listening comprehension. It adopts a psycholinguistic approach to examine how these cognitive processes interact during listening tasks. Rather than treating listening failure as a simple lack of exposure, this study views it as the outcome of complex mental dynamics. By focusing on attention and memory, the study aims to clarify the cognitive sources of listening difficulty. This focus contributes to a more nuanced understanding of EFL listening beyond surface-level performance.

Understanding the role of attention and memory also has practical implications for EFL pedagogy. Insights from psycholinguistics can guide teachers in designing tasks that manage cognitive load. For

example, structured listening activities may help learners allocate attention more effectively. Memory-supportive techniques such as chunking and repetition can enhance retention during listening. When instruction aligns with cognitive principles, learners may experience less frustration and greater comprehension success.

RESEARCHMETHOD

This study employed a quantitative research method with a correlational design. The method was chosen to examine the relationship between attention, memory, and EFL listening comprehension in a systematic and measurable way. A quantitative approach allows the researcher to capture cognitive variables through standardized instruments and analyze their relationships statistically. The correlational design fits the purpose of the study because it does not aim to manipulate variables, but to identify patterns of association among them. This design is appropriate for psycholinguistic research that focuses on internal cognitive processes underlying language comprehension. By using this method, the study seeks to provide empirical evidence on how attention and memory relate to listening performance.

The study was conducted in an EFL academic context where English is taught as a foreign language. The participants consisted of undergraduate EFL learners enrolled in an English education program. These learners had received formal instruction in English listening skills as part of their curriculum. Their learning context reflects typical EFL conditions, where exposure to English occurs mainly in classroom settings. This context makes it suitable for examining cognitive constraints during listening comprehension. All participants voluntarily took part in the study and completed all research instruments.
Data Collection

Data collection involved three main instruments designed to measure attention, memory, and listening comprehension. The first instrument was an attention measurement task adapted from established cognitive attention tests. This task required participants to focus on auditory stimuli while identifying target information under time constraints. The task aimed to capture sustained and selective attention during auditory processing. Scores reflected participants' ability to maintain focus and filter irrelevant input. This instrument aligns with psycholinguistic views of attention as a limited cognitive resource.

The second instrument measured working memory capacity. A listening-based working memory task was used to ensure relevance to the listening domain. Participants listened to short sequences of sentences and were required to recall specific elements while processing meaning. This task assessed the ability to temporarily store and manipulate auditory information. Working memory scores were calculated based on accuracy and recall consistency. This measure reflects the central role of working memory in real-time language processing.

The third instrument was an EFL listening comprehension test. The test consisted of short dialogues and monologic texts commonly found in academic listening materials. Each text was followed by multiple-choice comprehension questions. The questions targeted both literal understanding and inferential comprehension. The listening test was administered under controlled conditions to ensure consistency. Scores represented overall listening comprehension ability.

All instruments were administered in one data collection session. Participants completed the tasks individually in a quiet classroom environment. Clear instructions were provided before each task to reduce confusion and anxiety. The order of tasks was fixed to minimize variability in cognitive fatigue. Data were collected within a limited time frame to maintain attentional consistency. This procedure ensured that the data reflected authentic cognitive performance during listening.

Data Analysis
Data analysis was conducted using statistical techniques appropriate for correlational research. Descriptive statistics were first calculated to obtain an overview of participants' performance on each measure. These statistics included mean scores, standard deviations, and score ranges. This step helped identify general trends in attention, memory, and listening comprehension. It also ensured that the data met basic assumptions for further analysis.

Pearson correlation analysis was then applied to examine the relationships among attention, working memory, and listening comprehension. This analysis aimed to determine the strength and direction of

associations between cognitive variables and listening performance. Correlation coefficients provided evidence of whether higher attention and memory capacity related to better listening comprehension. Significance levels were used to assess the reliability of the relationships. This analysis aligns with the study's objective to explore cognitive links rather than causal effects.

To further understand the contribution of cognitive variables, multiple regression analysis was conducted. Listening comprehension scores were treated as the dependent variable, while attention and working memory scores served as independent variables. This analysis examined the extent to which each cognitive factor predicted listening comprehension. Regression coefficients indicated the relative influence of attention and memory. This step strengthened the interpretation of findings from a psycholinguistic perspective.

Throughout the analysis process, results were interpreted based on established theories of attention and memory in language processing. Statistical findings were not treated as isolated numbers but as indicators of cognitive functioning during listening. This analytical approach ensured coherence between theory, method, and interpretation. Overall, the methodology was designed to provide empirical and systematic insight into the role of attention and memory in EFL listening comprehension.

RESULTS AND DISCUSSION

This section presents the findings of the study based on the quantitative analysis of attention, working memory, and EFL listening comprehension. The results are organized to reflect the focus of the research and the correlational methodology employed. The findings are reported descriptively and inferentially to show patterns, relationships, and predictive tendencies among the variables. The analysis reveals clear trends that highlight the cognitive dimensions of listening comprehension in an EFL context. Overall, the findings demonstrate that attention and memory play significant and measurable roles in learners' listening performance.

Descriptive statistics showed noticeable variation in participants' attention, working memory, and listening comprehension scores. Attention scores ranged from low to high, indicating differences in learners' ability to sustain focus during auditory tasks. Some learners consistently identified target information with minimal error, while others showed frequent lapses in focus. Working memory scores also varied, particularly in tasks that required simultaneous processing and recall. Listening comprehension scores reflected similar variability, with some learners demonstrating strong understanding across texts and others struggling with basic comprehension questions. These variations suggest that learners did not experience listening difficulty uniformly, which supports the need to examine cognitive factors.

Correlation analysis revealed a positive and statistically significant relationship between attention and listening comprehension. Learners who scored higher on attention tasks tended to achieve higher listening comprehension scores. This finding indicates that sustained and selective attention supports effective processing of spoken English. For example, learners with high attention scores were better at identifying key points and following the flow of spoken texts. In contrast, learners with lower attention scores often missed critical information, especially in longer listening passages. This pattern confirms that attentional control contributes directly to listening success.

The analysis also showed a strong positive correlation between working memory capacity and listening comprehension. Learners with higher working memory scores demonstrated better comprehension of both literal and inferential questions. These learners were able to retain earlier information while integrating new input. For instance, they could remember details mentioned at the beginning of a dialogue and use them to interpret later statements. Learners with limited working memory often failed to connect ideas across sentences. This resulted in fragmented understanding and incorrect responses. These findings highlight the central role of working memory in real-time listening.

When attention and working memory were examined together, the results showed that both variables were interrelated. A moderate positive correlation was found between attention and working memory scores. Learners who maintained focus during listening tasks also tended to perform better on memory-based tasks. This relationship suggests that attention supports the efficient use of working memory. When

learners allocate attention effectively, they can encode and retain information more successfully. This interaction aligns with psycholinguistic models that view attention as a prerequisite for memory encoding. Multiple regression analysis provided deeper insight into the predictive power of attention and working memory. The model showed that both variables significantly predicted listening comprehension performance. However, working memory emerged as the stronger predictor. This result indicates that while attention enables input processing, working memory plays a more dominant role in integrating and retaining information. For example, even learners with adequate attention struggled when their working memory capacity was limited. They could focus on the input but failed to maintain information long enough to build meaning. This finding emphasizes the importance of memory resources in listening comprehension.

The regression model explained a substantial portion of the variance in listening comprehension scores. This suggests that cognitive factors account for a meaningful part of learners' listening performance. Listening difficulty, therefore, cannot be attributed solely to lack of vocabulary or grammar knowledge. Cognitive constraints such as limited attention and memory capacity also shape outcomes. These findings support the psycholinguistic assumption that language comprehension depends on general cognitive mechanisms. Listening performance reflects how well learners manage cognitive load during processing. Qualitative patterns observed during task performance further support the statistical findings. Learners with high attention and memory scores often employed effective listening behaviors. They remained focused throughout the task and responded confidently to comprehension questions. Some learners reported that they mentally grouped information or focused on keywords while listening. In contrast, learners with lower scores often appeared distracted or overwhelmed. They hesitated when answering questions and reported losing track of the message midway through the text. These behavioral observations align with the quantitative data.

An example from the listening comprehension test illustrates these differences clearly. In a monologic text describing a university orientation program, learners needed to identify the sequence of activities. High-performing learners correctly identified the order and purpose of each activity. They demonstrated the ability to hold multiple pieces of information in memory. Lower-performing learners often recalled only the final activity mentioned. They failed to integrate earlier details, which led to incorrect answers. This example shows how working memory limitations affect comprehension outcomes.

Another example emerged from the attention task. Learners were required to identify specific auditory cues under time pressure. High-attention learners maintained consistent accuracy throughout the task. Their performance remained stable even as task difficulty increased. Low-attention learners showed declining accuracy over time. This decline suggests attentional fatigue, which likely affected their listening comprehension as well. These results demonstrate how attentional control influences sustained listening performance.

Attention and Its Role in EFL Listening Comprehension
The findings show that attention has a significant relationship with EFL listening comprehension. Learners who demonstrated stronger attentional control achieved higher listening scores. This result supports psycholinguistic theories that view attention as a filtering mechanism in language processing. Spoken language unfolds rapidly, and learners cannot process all incoming information simultaneously. Attention allows learners to prioritize relevant input and ignore irrelevant noise. Without sufficient attention, critical information fails to enter conscious processing.

The results align with limited capacity models of attention. These models argue that cognitive resources are finite and must be allocated efficiently. In the present study, learners with lower attention scores often missed key ideas in longer listening texts. This suggests that attentional lapses disrupted the flow of comprehension. Even short losses of focus led to incomplete understanding. This finding explains why some learners recognize individual words but fail to grasp overall meaning.

From a psycholinguistic perspective, attention supports bottom-up processing during listening. Learners must attend to phonological cues, word boundaries, and stress patterns. When attention weakens, decoding accuracy declines. This affects higher-level processing, such as inference and interpretation. The study confirms that attention is not a peripheral factor. It directly shapes listening outcomes in EFL contexts.

Pedagogically, this finding highlights the need to address attentional demands in listening instruction. Teachers often assume that listening difficulty stems from linguistic gaps alone. The results challenge this assumption. Learners may possess adequate vocabulary but lack the attentional control required for sustained listening. Instructional tasks that gradually increase listening length and complexity may help learners develop attentional endurance. Structured listening stages can also help learners maintain focus.

The Dominant Role of Working Memory in Listening Comprehension

Working memory emerged as the strongest predictor of listening comprehension in this study. This finding confirms its central role in real-time language processing. Working memory allows learners to hold incoming information while integrating it with previous input. In listening tasks, this process occurs under strict time constraints. Learners cannot revisit earlier sentences, which increases memory demands (Mekheimer, 2024).

The results support psycholinguistic models that link working memory capacity to comprehension success. Learners with higher working memory scores showed better performance on both literal and inferential questions. They retained earlier details and connected them with later information. Learners with lower capacity often lost earlier content before integration occurred. This led to fragmented understanding and incorrect interpretations.

This finding explains why listening comprehension often breaks down in longer texts. As text length increases, working memory load increases. Learners with limited capacity struggle to maintain coherence across sentences. The study demonstrates that listening difficulty is not always a result of poor language knowledge. Cognitive overload plays a critical role. This insight strengthens the argument that listening is one of the most cognitively demanding language skills.

In instructional terms, this finding suggests that listening tasks should consider memory load. Tasks that present dense information without support may overwhelm learners. Pre-listening activities that activate background knowledge can reduce memory demands. Segmenting listening texts into shorter units may also help learners process information more effectively. These practices align instruction with cognitive constraints rather than ignoring them.

Interaction Between Attention and Memory in Psycholinguistic Processing

The study also revealed a meaningful interaction between attention and working memory. Learners with strong attentional control tended to show better memory performance. This interaction supports psycholinguistic views that attention facilitates memory encoding. Information that receives focused attention is more likely to be stored and manipulated in working memory. When attention weakens, memory performance declines.

This interaction explains why attention alone did not fully predict listening comprehension. Some learners maintained focus but still struggled due to limited working memory capacity. Attention enabled input selection, but memory limitations restricted integration. This finding highlights the complementary roles of attention and memory. Listening comprehension depends on both processes working together rather than independently.

The results support integrated models of language processing. These models reject single-factor explanations of comprehension difficulty. Instead, they emphasize dynamic interaction among cognitive systems. The study confirms that listening comprehension reflects how well learners manage multiple cognitive demands simultaneously. Attention selects input. Working memory integrates it. Failure at either stage leads to breakdown.

This interaction has important implications for EFL pedagogy. Instruction that focuses only on listening strategies may not be sufficient. Learners also need support in managing cognitive load. Tasks that combine clear goals, predictable structure, and controlled pacing can support both attention and memory. Teachers should recognize that listening difficulty may reflect cognitive overload rather than lack of effort or motivation.

Overall, the discussion confirms that attention and working memory are central to EFL listening comprehension. The findings reinforce psycholinguistic theory and extend its application to classroom

contexts. Listening should be viewed as a cognitively complex skill shaped by general cognitive mechanisms. Understanding these mechanisms allows researchers and teachers to interpret listening difficulty more accurately. It also provides a foundation for designing instruction that aligns with how learners process spoken language.

CONCLUSION

This study examined EFL listening comprehension through a psycholinguistic lens by focusing on attention and memory. The findings show that listening comprehension depends not only on linguistic knowledge but also on core cognitive processes. Attention determines which auditory input learners process, while working memory determines how that input is retained and integrated. Together, these processes shape listening success in meaningful and measurable ways.

The results demonstrate that attention has a significant relationship with listening comprehension. Learners who sustain focus process spoken input more effectively. However, working memory plays a more dominant role. Learners with higher working memory capacity show stronger comprehension across different listening tasks. This finding confirms that listening places heavy demands on temporary storage and integration of information. Listening difficulty often reflects cognitive overload rather than lack of exposure or motivation.

The interaction between attention and memory further clarifies the complexity of listening comprehension. Attention supports memory encoding, while memory enables meaning construction. When one process weakens, comprehension breaks down. This interaction supports integrated psycholinguistic models that view language comprehension as a coordinated cognitive activity. Single-factor explanations are insufficient to explain listening difficulties in EFL contexts.

The study contributes theoretically by reinforcing the role of general cognitive mechanisms in second language listening. It also offers practical implications for EFL instruction. Listening activities should consider cognitive load, pacing, and task structure. Instruction that aligns with learners' cognitive capacities can support more effective comprehension.

REFERENCES

[1] Bozorgian, H. (2012). The relationship between listening and other language skills in International English Language Testing System. Theory and Practice in Language Studies, 2(4), 657–663. https://doi.org/10.4304/tpls.2.4.657-663

[2] El Moussaoui, M., & Belhaj, A. (2025). Bottom-up listening skills: EFL teachers' perceptions and classroom practices. European Journal of Foreign Language Teaching, 9(2). https://doi.org/10.46827/ejfl.v9i2.5936

[3] Lestari, R. I. H., & Nugraha, S. I. (2023). EFL students' challenges and strategies in speaking English. INNOVATIVE: Journal of Social Science Research, 3(4), 2142–2153. https://j-innovative.org/index.php/Innovative

[4] Mekheimer, M. (2024). Working memory as a predictor of reading and listening comprehension in EFL college students: A reinvestigation. Australian Journal of Applied Linguistics, 7(3), 2076. https://doi.org/10.29140/ajal.v7n3.2076

[5] Nagaraj, N. K. (2021). Effect of auditory distraction on working memory, attention switching, and listening comprehension. Audiology Research, 11(2), 227–243. https://doi.org/10.3390/audiolres11020021

[6] Nor, H., & Hizriani, N. (2025). Psycholinguistics: Language, mind, and brain and teaching methodology from psychology and linguistics perspectives. Antasari Press.

[7] Purba, N. (2018). The role of psycholinguistics in language learning and teaching. Tell: Teaching of English Language and Literature Journal, 6(1), 47. https://doi.org/10.30651/tell.v6i1.2077

[8] Sakai, H. (2018). Working memory in listening. In J. I. Liontas (Ed.), The TESOL encyclopedia of English language teaching (pp. 1–6). Wiley. https://doi.org/10.1002/9781118784235.eelt0579

[9] Sultan, A., & Fatima, N. (2025). Attention modulation in reading: An analysis of cognitive dynamics through stories in English literature and linguistics. Lumina Literati Publishing. https://doi.org/10.5281/zenodo.14720209