https://journal1.uinssc.ac.id/index.php/lens

Language Education, Network, and Studies
Vol. 2, No. 2, October 2026, pp. 109-128
e-ISSN: 3123-660X
English Language Teaching Department
UIN Siber Syekh Nurjati Cirebon, Indonesia

Investigating autonomous learners' process in learning English speaking

Alifia Zahara[1*], Wakhid Nashruddin[2], Siti Luruh Ayu Noerjannah[2]
[1,2,3]Universitas Islam Negeri Siber Syekh Nurjati Cirebon

Article Information

Article History:
Received: 25 May 2026
Accepted: 08 October 2026
Available online: 31 October 2026

Keywords:
Process of Learning
Speaking Skills
Autonomous Learners

ABSTRACT

T Autonomous learners are self-directed learners who are active in the process of learning English speaking, from setting learning goals, selecting instructional materials, determining strategies, choosing media, to evaluating their learning. Therefore, it is undeniable that they can speak English because they frequently engage in self-directed learning. This research aims to investigate the internal mechanisms through which autonomous learners acquire English speaking skills using empirical and theoretical data grounded in cognitive theory, psychology, and neuroscience. This research employed a qualitative case study design involving four sixth-semester students. The data were collected through interviews and analyzed using thematic analysis. The findings revealed that autonomous learners demonstrated strong self-regulation in both learning and speaking activities. They actively controlled their own learning process and continuously practiced speaking independently. From a cognitive perspective, the learners tended to reinforce information through repeated exposure and practice to strengthen memory activation.

How to cite (in APA style):
Zahara, A., Nashruddin, W., & Noerjannah, S. L. A. (2026). Investigating autonomous learners' process in learning English speaking. *Language Education, Network, and Studies*, 2(2), 108-128. https://doi.org/10.24235/lens.v2i2.24154

1. INTRODUCTION

In today's globalized world, mastering English speaking skills is more essential than ever, especially for autonomous learners who take charge of their own language education journey. In Indonesia, many students still struggle with speaking English. This is highlighted in a 2020 report by Education First (EF), which shows that the English proficiency of students in Indonesia is still low. In the English Proficiency Index, Indonesia ranks 74th in the world and 15th in Asia with a score of 453, which is considered low (Tika & Abadi, 2021). Some students demonstrate good speaking skills because they learn autonomously. Autonomous learners can create a good learning environment both inside and outside the classroom (Bao et al., 2024). Learning English speaking autonomously allows students to practice more often, monitor their progress, and correct their own mistakes (Warna et al., 2025).

*Corresponding author.
e-mail address: zaharaalifia05@gmail.com

However, the problem occurs that many still do not fully understand how the process of learning to speak English happen. This condition shows the need for a more in-depth study of the cognitive processes that occur when independent learners study English autonomously. The researcher intends to explore and identify how autonomous learners receive, store, process, and produce language during the process of learning English speaking, with cognitive psychology and neuroscience perspective. To identify the process of learning English speaking among autonomous learners, it is necessary to realize that speaking skills involve a complex process. Sternberg & Sternberg (2012) also stated that speaking ability is not only about producing words or sentences but also involves complex mental processes in the brain. This process consists of perception, comprehension, and language production, all of which are interrelated. Because speaking involves these cognitive mechanisms.

Research by Khulaifiyah et al. (2023) entitled Initial Activities Encouraging Students' Autonomous Learning: Faculty Teacher Training and Education Program examines how initial learning activities can foster student independence in higher education. This study emphasises the importance of learning autonomy in English language learning. Research by Agustina et al. (2025) entitled Indonesian Students' Autonomous Learning Activities to Support English Mastery in the Era of Merdeka Belajar highlights how students develop independent learning in the context of the merdeka belajar policy. Research by Boonma & Swatevacharkul (2020) discusses how the process of autonomous learning can increase the learning independence of students who take public speaking courses in English only focuses on the four main dimensions of learning independence, namely technical, psychological, critical political, and sociocultural.

After analyzing various relevant previous studies and identifying research gaps that have not been studied, many studies discuss autonomous learning in general terms, such as strategies, preferences, and media used, without discussing in depth the process of how students use strategies, preferences, and media autonomously. In addition, studies that discuss student activities during autonomous learning only examine learning activities outside the classroom and focus on English language learning in general and discuss the four language skills.

The researcher intends to explore and analyze how independent learners store, process, and produce language during the process of learning to speak, with reference to cognitive psychology and neuroscience theories. Although previous studies have discussed strategies, activities, and processes of learning English speaking for autonomous learners, there is still little research that specifically identify the underlying cognitive mechanisms. Therefore, this research seeks to fill this gap by examining whether the cognitive processes described by theory are consistent with the actual conditions experienced by independent learners. A deeper understanding of this process is expected to provide new insights into how independent learners internalize language and support the development of more effective English-speaking learning strategies.

Therefore, the position of this research lies in the process of learning English speaking among autonomous learners, which focuses on the cognitive processes of psychology and neuroscience education. This research spesifically delimited to the process of learning, speaking skills, autonomous learners, especially students majoring in English education sixth semester. This delimitation was determined to maintain alignment with cognitive and neuroscience perspectives, as speaking is a complex productive skill that strongly involves cognitive activity. The findings aim to provide an in-depth, contextual understanding rather than broad generalization and are not intended to represent all English learners in general.

This research is important because it explores, identifies, and understands how this process takes place. This view is in line with Firmanto et al. (2018) that the ability to absorb information depends on cognitive readiness. Thus, this study uses a cognitive psychology and neuroscience approach to identify whether the process is in line with the actual conditions experienced by autonomous learners. A deeper understanding of this process is expected to provide new insights into how autonomous learners internalize language and support the development of more effective English-speaking learning strategies based on psychology and neuroscience perspective.

This is an interesting field of research because the mind, brain, and education identify how education and brain function are interrelated, as well as how learning can be improved through interventions that target brain function (Pradeep et al., 2024). Students who understand this theory will realize that the way the brain processes information and the learning environment created greatly influence learning success. Thus, students can choose the right learning strategies so that they are more engaged, understand the material more easily, and find it easier to remember and recall the information they have learned (Fourie & Schlebush, 2022).

2. METHOD

This research uses a qualitative case study to understand and explore in depth the process of learning English speaking among autonomous learners. Qualitative research is an approach that focuses on how something happens. Research that aims to understand and assess how relationships, activities, situations, or materials occur and what their quality is like is referred to as qualitative research (Fraenkel et al., 2023). This design was chosen because this study focused on gaining an in-depth understanding of the process of learning English speaking among autonomous learners, both theoretically and empirically. This study was conducted at a university in Cirebon, specifically in the English Education study program. This choice was based on the consideration that the English Education study program focuses on developing English language skills, making it relevant and appropriate for examining the process of learning English speakig among autonomous learners. This study involved sixth-semester participants. This study only took fourth participants who were selected using purposeful sampling techniques. The selection of fourth participants was made because this study focused on the depth of the participants' experiences and learning processes. The participants here were those who had the characteristics of learners who learned to speak autonomously. In selecting participants, the researcher had to select participants who met the criteria of autonomous learners in speaking by distributing a questionnaire containing indicators or criteria of autonomous learning. From the results of the questionnaire, the researcher selected four subjects or participants with the highest questionnaire scores, who were considered most capable of providing rich and relevant data.

Researchers use interviews to collect data. Interviews are an important technique in qualitative research. The type of interview used is a semi-structured interview. The purpose is to find out what a person thinks or feels about something. Interviews were conducted in Indonesian to enhance the rigor of qualitative research by providing insight into the researcher's positionality and how it influences their interpretation of participants' experiences (Younas et al., 2021). Furthermore, providing original and translated quotations has the added potential to enhance the symbolic and conceptual usefulness of qualitative research. After the data was collected through interviews, it was analyzed using thematic analysis. This analysis process involved reading the data thoroughly, understanding its meaning, and then grouping the information into major themes that emerged from the data. The researcher used thematic analysis to analyze the data in this study. Thematic analysis is

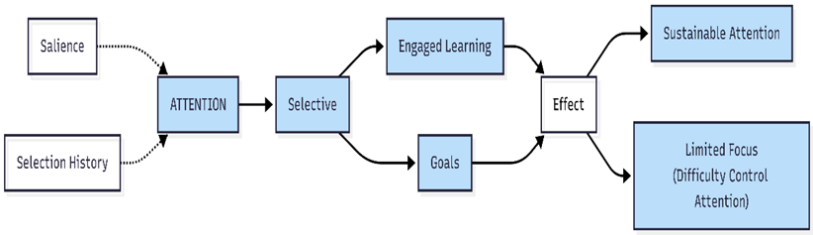
Thematic analysis is a way to analyze qualitative data by looking for patterns, meanings, or main themes from the information collected. In this process, researchers examine how the data was collected, the extent of the researcher's understanding of the context, and how the researcher interprets the meaning of the data (Naeem et al., 2023).

3. RESULTS AND DISCUSSION

3.1. The Way Autonomous Learners Pay Attention in Learning English Speaking

When learning, we naturally pay attention to the information we receive. Attention encompasses a mental process that makes us aware of what we are doing and what is happening in our surroundings. In this process, the human brain plays a role in responding, selecting, and focusing on important things (Oberauer, 2019). Human mental capacity is limited, so not all information can be paid attention to simultaneously. Therefore, attention is usually selective. Only information that is considered important will be processed more deeply. Attention can be influenced by several things, namely salience, and selection history. This will result in selective attention (Munneke et al., 2020). Salience is a condition in which something that stands out is more easily captured by perception, attracts attention, and enters further cognitive processes and learning (Valentin & Ellis, 2016). Autonomous making learning interesting and in line with the objectives, it makes stay focused so they can achieve sustainable attention. The explanation above can be illustrated as shown in the figure 1 below.

Figure 1. The Way Autonomous Learners Pay Attention



3.1.1. Selective Attention Influenced by Engaging Learning

Selective attention is the ability to focus attention on specific information (Duchesne et al., 2022). Selective attention involves orientation networks, in which the brain system selects and focuses attention on ongoing stimuli or events (Fourie & Schlebusch, 2022). These findings indicate that participants' attention is selective, whereby they focus and choose to pay attention to interesting learning activities that motivate them. Engaging learning keeps them motivated, which can be linked to more efficient information retrieval (Bardella et al., 2025). This was conveyed by Participants 1 and 3 when asked about the aspects that attracted their attention, they replied:

> *"[...] I find the tenses section interesting. Because I've never been able to do it, so I tried to study it more deeply, and I'm still learning. The good thing is that now I'm pretty good at it. So, I think it's interesting to learn (PI.Q4). "When learning to speak English for everyday use, like watching movies or listening to music, I only listen to things that interest me. It depends on my mood. [...] I want to be like a native speaker, because that's really difficult. I really want what I say to be understood by the people who hear me. (P3.Q4).*

It can be concluded that selective attention can stem from participants' interests and emotional states, which they find appealing and mood-enhancing when learning to speak,

thereby motivating them. Individuals with more efficient selective attention can selectively focus on information relevant to the lesson (King et al., 2023).

3.1.2. Selective Attention Influenced by Goals

Participants also focus their attention on aspects that are considered most relevant to their goals in learning to speak. This was conveyed by Participants 2, 3, and 4 when asked what kept them focused on their goals. They replied:

> *"I usually come across new words, and I immediately look up how to pronounce them, how to spell them, and so on. Mostly new material or vocabulary. (P2.Q4)" Because learning must have a purpose, right? When learning to speak, I want to speak English well. Especially since I'm majoring in English. Well, the goal is just to be able to speak English fluently. "(P4.Q4)." If I'm really focused, for example, if I'm studying, then I definitely focus on the goal." (P3.Q4).*

Their goal is to be able to speak English fluently like a native speaker and be understood by others. Therefore, they learn to speak by focusing on information related to their goals, such as learning vocabulary and pronunciation. As for information that leads to something interesting, such as grammar, they consider grammar to be interesting material to learn. After information is selected based on engaging learning and goals, it is retained and focused on continuously. It makes attention sustained that is very important when completing activities that require long-term concentration, such as learning to speak. Sustainable attention refers to the ability to maintain focus on stimuli or information received over a long period of time (Sharpe & Tyndall, 2025). Sustainable attention does not occur passively but is consciously managed through the regulation of learning duration, rest breaks, and distraction control.

3.1.3. Sustainable Attention by Avoiding Distractions from Cell Phones when Practicing Speaking

After information is selected, it is retained and focused on continuously. This is called sustained attention, a skill that is very important when completing activities that require long-term concentration, such as learning to speak. Sustained attention refers to the ability to maintain focus on stimuli or information received over a long period of time (Sharpe & Tyndall, 2025). Sustained attention does not occur passively but is consciously managed through the regulation of learning duration, rest breaks, and distraction control.

In some situations, there are those who avoid distractions from cell phones, especially minimizing interaction on social media, because they believe social media interferes with their learning activities. Experiments show that even when people manage to maintain sustained attention, such as when resisting the temptation to check their phones, the mere presence of these devices reduces available cognitive capacity (Ward et al., 2017). This was conveyed by Participant 3 who, when asked how to maintain focus when learning to speak, replied by avoiding distractions from mobile phones when learning to speak.

There are those who avoid distractions from mobile phones, especially minimizing interaction on social media, because they believe social media interferes with their learning activities. Experiments show that even when people manage to maintain sustained attention, such as when resisting the temptation to check their phones, the mere presence of these

devices reduces available cognitive capacity (Ward et al., 2017). This was conveyed by Participant 3 when asked how to maintain focus when learning English speaking, replied:

> *"I give myself time to study. Don't open other applications. Just focus on one thing (PI.Q8). "When I'm studying, my phone is a distraction, so sometimes I turn it off because I'm focused on listening to my laptop, and I block all notifications so that I can really focus on studying, like practicing speaking, but when I'm watching a film, I have no choice, so I just relax and study. So, the phone can be distracting, especially the notifications, so when I'm studying, I block all notifications" (P3.Q8).*

This shows that sustained attention requires environmental control to prevent external distractions.

3.1.4. Difficulty Regulating Control Attention in Learning English Speaking

When they have the capacity to pay attention to information while learning to speak English, they automatically control and regulate their attention, which determines where their focus is directed. However, in real-life situations, when they are not yet ready to receive new information because they are still processing the information they have received previously (Cowan et al., 2024), this ability to control attention is not always stable because feelings of anxiety, boredom, or fear of making mistakes can weaken attention control, thereby causing distractions in the speaking learning process. This is as stated by Participants 1, 2, 3, and 4 when asked how much information they can pay attention to at once, they answered:

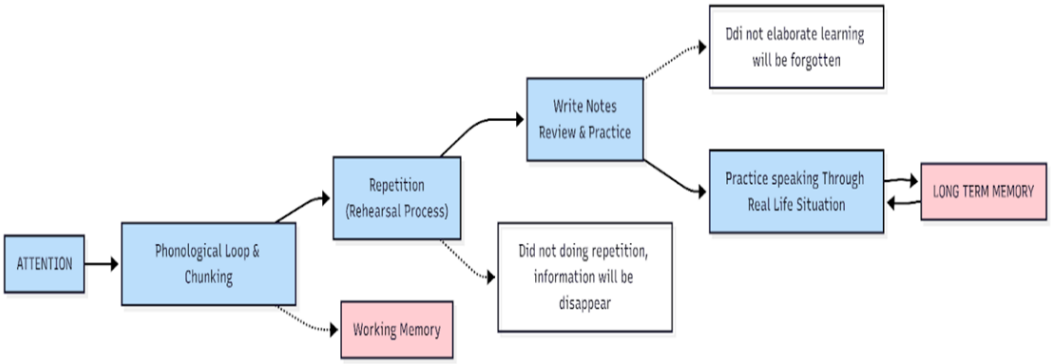
> *"[...] In past tenses, there are more branches, sometimes I get confused about the verbs. Because there is past tense, it means you have to use did, would, and so on. So, sometimes I'm still confused there (PI.Q5). "[...] I want to say something, but I forget the English word" (P2.Q5). Especially when putting words together, constructing sentences when I want to speak. Because I think too much about grammar, basically. Usually, I freeze up or go blank like that (P4.Q5). "[...] native speakers who speak really blank out a lot. Because their speaking speed is faster, and especially since their language is really different, like completely different from what I've learned" (P3.Q5).*

Attentional control in which selection is ultimately determined by the competitive interaction between current goals, selection history, and salience (Theeuwes, 2025). This means that at certain moments, whether it be in the mechanism of goals, selection history, or salience when learning vocabulary, there is structural grammatical complexity in a sentence that can interfere with attentional control when learning to speak, causing a loss of focus. Lexical selection also hinders smooth focus. When listening to others speak English, the speed of incoming information can also cause overload, making it difficult to pay attention to the information effectively. Attention control is related to cognition and the learning context that shapes how they manage their focus. Examples include confusion in determining verbs, forgetting English vocabulary, capturing information from native speakers, and arranging words related to their cognition. This can be caused by several factors, such as lack of exposure to English and overthinking grammar.

3.2. The Way Autonomous Learners Memorize their Learning English Speaking

Memory is a cognitive system that enables humans to store, process and reuse stored information. Memory storage consists of short-term memory and long-term memory. However, this section only explains the mechanism of information when learning to speak is received, stored and then reprocessed from memory. At this stage, the mechanism of memory will be explained. Working memory is a mechanism for retaining information that has been processed at the attention stage, which will later be stored in short-term memory and long-term memory. Working memory is very useful for planning and carrying out tasks, such as learning, understanding, and reasoning (Faria et al., 2025). Working memory exists because of the interaction between long-term memory representations and attention. Thus, when learners are presented with new material, the information must first be processed in working memory before being encoded and stored in long-term memory (Gorbunova et al., 2025). Based on previous research, individuals with high working memory scores tend to perform better in focusing their attention on learning tasks. This process involves repetition, strategy selection, and decision-making regarding how and when to respond (Baddeley, 2021). The explanation above can be illustrated as shown in the figure 2 below.

Figure 2. The Way Autonomous Learners Memorize Learning English Speaking



3.2.1. Maintaining Linguistic Information through the Phonological Loop

The findings indicate that students retain language information through internal verbal repetition, which is a key feature of the phonological loop in working memory. They store vocabulary or short phrases by repeating them mentally before saying them aloud or storing them in long-term memory. This was conveyed by Participant 1 when asked hen asked how to repeat vocabulary in mind, then replied:

> *"[...] If it's just one word, it's still normal. Because it goes straight into the brain. Unless it's more than 5 words. That's difficult to memorise" (P1.Q9).*

The assumption that there is difficulty in repeating more than 5 vocabulary words is due to the phonological similarity effect, which refers to the process of remembering phonologically dissimilar information, where performance levels are higher than for phonologically similar information (Morbach & Bettoni, 2022). This shows the limits of the phonological loop's capacity, where too much verbal information becomes difficult to retain. Participant 2, when asked how to repeat vocabulary in their mind, replied:

> "*When I'm reading fanfiction, I sometimes use English, and that can be more than ten words. The effect I feel is that I discover a lot of new vocabulary. So, I can know, oh, this word means this" (P2.Q9).*

Repeating and reciting vocabulary in your mind not only keeps the information active but also facilitates its transfer to long-term memory. The phonological loop also functions as an internal simulation space prior to speech production. Based on field data, when learning or speaking English, they like to repeat vocabulary in their minds. The effect they feel is that they learn English vocabulary and become more confident. With repetition, the brain becomes more accustomed to the language and reduces cognitive load. This means that when learning and speaking English, especially repeating vocabulary in their minds, their phonological loop is active. The phonological loop is a speech-based or verbal storage system with limited capacity, where information fades quickly but can be refreshed through repetition (Baddeley & Hitch, 2019; Hitch et al., 2024). The phonological loop is very useful in learning to speak, especially when learning new vocabulary, because when learning new vocabulary, learners repeat the new words they have learned repeatedly.

3.2.2. Repetition in Learning English Speaking

The rehearsal process also plays a role in strengthening networks in long-term memory by repeating information or stimuli, thereby increasing memory activation and neural connections (Plater et al., 2023). Rehearsal involves the conscious repetition of information to retain it in memory and strengthen recall. In this process, it is not just a matter of repeating or memorizing information, but involves meaningful repetition such as practicing, connecting, and using the information that has been learned in real situations. Meaningful repetition is far more effective than simply memorizing, as it makes the information obtained when learning to speak stored longer in the memory. Findings show that participants repeated material to reinforce vocabulary. This was conveyed by Participants 1 and 2 when asked how often they repeated information or material when learning English speaking, said:

> *"Three times a day with the same material. Sometimes I feel burnt out from studying all the time' (P1.Q11). "[...] If it's per day, yes, there is. Usually once or twice, something like that. Count it, yes, seven days, like every day, something like that. The effect I feel is that we can remember better, you know. Remembering the new information we have received. For example, new material or new vocabulary, something like that" (P2.Q11).*

Understanding a topic material requires several repetitions of the material, because this process involves synaptic plasticity, which is the central mechanism for learning and memory in all nervous systems (Kandel et al., 2016; Schaefer et al., 2017; Dubinsky & Hamid, 2024). It should be noted that for retention, the repetition of material should not be done at too short intervals, because in such conditions, little effort is required to recall previously learned material. However, it should not be too long, because if it is too long, it can fail to recall the material that has been learned. When the exercise is challenging enough that the learner has to exert maximum effort, this condition can strengthen the learning process and long-term memory. This view is related to Bjork's (1994) concept of desirable difficulties (Suzuki et al., 2019; Suzuki & Hanazawa, 2022).

3.2.3. Writes in Notes and Reflection Material

The findings show that participants used notes and reviews to deepen their understanding of the material. This was conveyed by Participants 1 and 2 when asked how they understood the related concepts that had been learned previously, said:

> "*The way I usually do it is by taking notes. Then I repeat and review what I've learned. I make time to open my notes. For example, earlier it was grammar. For example, in the past tense section. I write it down in my notes. For example, the main point is this example sentence. Then I review it again (P1.Q12). "I open my notes. Then, while remembering, I think, oh, this is how it works, and if I forget, I can search for it" (P2.Q12).*

Based on interview data, participants 1 and 2 only repeated information from the learning material; there was no indication that they repeated it by integrating new experiences with old ones. The process carried out by participants 1 and 2 only maintained memory. It is possible that the repetition strategy used by participants 1 and 2 caused them to forget quickly because they did not connect and link old knowledge with new knowledge. In addition, speaking is not only about passively repeating information but also requires practical application. Deep processing, such as conceptual, semantic, or associative engagement, can produce more elaborate memory traces or neural networks compared to shallow processing, such as perceptual, structural, or phonological analysis. Greater elaboration is assumed to support success in the retrieval process later on (Peng et al., 2024). In addition, deeply encoded information can be integrated with existing knowledge structures (Peng et al., 2024).

3.2.4. Practice Speaking through Real Life Situations

In the context of learning, retrieval enables students to utilise facts that have been acquired or learned, extract their knowledge, and transfer it to new situations (Kranz et al., 2024). Retrieval exercises conducted immediately after information encoding have been shown to improve memory for retrieved information but may cause forgetting of other information that has not been retrieved. In short, the retrieval process is the process of retrieving information that has been stored in memory and used for thinking and acting. This process involves encoding and elaboration; if both are done well, the retrieval process becomes fast and accurate. The practice of recalling information is more beneficial for learning than simply studying the material repeatedly (Adesope et al., 2017; Roediger & Karpicke, 2006; Jaeger et al., 2024). The findings show that students recall information they have learned and apply it directly in real-life situations, both in informal social interactions and formal academic contexts. This process is central to retrieval, as it allows them to access long-term memory and use it actively. This was conveyed by Participants 1 and 2 when asked how to implement speaking learning materials into real or new situations. They replied:

> *"[..] more like trying out typing like on social media. For example, like on Twitter. Then talking like bilingual tweeting (PI.Q12). "Mostly when I'm studying. Studying at university, in lectures. In real life, I mostly chat with international students, sometimes in English, sometimes in Indonesian. So I apply it in everyday conversation when chatting with international students (P2.Q13).*

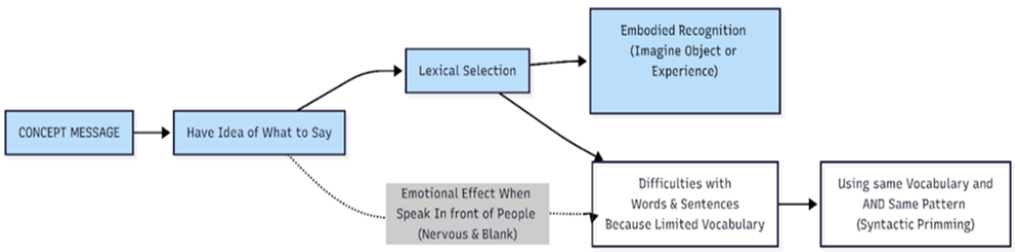
This statement emphasises that retrieval occurs when they encounter real interactions and in the virtual world, where the vocabulary, structures and language patterns that have been learned must be used immediately. As for combining preparation with improvisation,

this involves recalling learned knowledge and adapting it to the context. This process confirms the role of retrieval in ensuring that information is not only stored but ready to be used. This explanation states that when a person tries to remember something, they also activate other information that is semantically related to the target material. This related information then functions as a semantic mediator that helps improve memory performance in subsequent attempts to remember (Jaeger et al., 2024). Thus, retrieval is effective when active practice is carried out, strengthening the connection between memory and actual performance, and improving language adaptation skills in different situations. The retrieval process occurs when taking knowledge or speaking material that has been learned to be used in real situations. For example, when chatting with international students using English, before presentations and speeches, they prepare concepts and texts in advance. It should be noted that the retrieval process can cause forgetting of certain information. Most studies showing this forgetting effect were conducted with information retrieval exercises only a few minutes after learning, usually with a one or two-minute interval. However, if the time interval between learning and information retrieval exercises is longer, for example, one or two days, the findings are different, namely that information retrieval exercises actually improve memory of material that has not been retrieved (Kriechbaum & Bäuml, 2023).

3.3. The Way Autonomous Learners Produce Spoken Language

This statement emphasizes that retrieval occurs when they encounter real interactions and in the virtual world, where the vocabulary, structures and language patterns that have been learned must be used immediately. As for combining preparation with improvisation, this involves recalling learned knowledge and adapting it to the context. This process confirms the role of retrieval in ensuring that information is not only stored but ready to be used. This explanation states that when a person tries to remember something, they also activate other information that is semantically related to the target material. This related information then functions as a semantic mediator that helps improve memory performance in subsequent attempts to remember (Jaeger et al., 2024). Thus, retrieval is effective when active practice is carried out, strengthening the connection between memory and actual performance, and improving language adaptation skills in different situations. The retrieval process occurs when taking knowledge or speaking material that has been learned to be used in real situations. For example, when chatting with international students using English, before presentations and speeches, they prepare concepts and texts in advance. It should be noted that the retrieval process can cause forgetting of certain information. Most studies showing this forgetting effect were conducted with information retrieval exercises only a few minutes after learning, usually with a one or two-minute interval. However, if the time interval between learning and information retrieval exercises is longer, for example, one or two days, the findings are different, namely that information retrieval exercises improve memory of material that has not been retrieved (Kriechbaum & Bäuml, 2023).

Figure 3. The Way Autonomous Learners Produce Spoken Language



3.3.1. Concept Message before Speak

This process is the initial stage when a person forms what they want to convey or say, and it usually still takes the form of meaning and intention. At the conceptualization stage, a pre-verbal plan is formed, consisting of concepts and linguistic cues (Liu, 2020). This process then leads to semantic information retrieval, which begins with the message or idea to be conveyed and mapped into words (Strijkers & Costa, 2011), to the stage of selecting appropriate lexical words and constructions and structuring them well in the form of phrases (Hu et al., 2023). This was conveyed by Participants 1, 2 and 4 when asked what made them think for a long time when they were about to speak. They replied:

> *"So when I want to speak, my brain immediately constructs the sentence, like, how do I say this in English? I mean, constructing the sentence' (P2.Q1) "because I'm afraid of mixing up the grammar. For example, the event happened a while ago, but I'm still stuck on the verb. For example, in the present, it should be in the past tense' (PI.Q1). 'So I know, oh, that means there is an image and it matches what is in our minds [...]" (P3.Q1).*

Based on the participants' explanations, they explicitly described that before speech production, internal mental planning occurs. These two areas play an important role in understanding the meaning of words. The temporal lobe is closely related to semantic processing, which is the understanding of the meaning of words and their relationship to experience and knowledge. Meanwhile, the parietal lobe, especially areas such as the angular gyrus, functions to connect semantic information with other aspects of language. That is why when speaking, participants think of an event that is connected to the meaning of the word. In addition, the conceptual process in the brain is also influenced by emotional conditions and cognitive load, because according to participant 4, when asked what makes them think for a long time when they want to speak, replied:

> *"Talking isn't easy. Especially if you're asked to speak or be a last-minute presenter. That's not easy. It's difficult, so it takes longer because you might go blank or get nervous. You get nervous first, then you go blank. Because if we want to speak, we have to understand first. We have to know what we want to say in front of everyone" (P4.Q1).*

The issues raised by participant 4 have a significant impact during the message conceptualization phase. According to Eysenck and colleagues' (2007) Attention Control Theory (ACT), anxiety and nervousness can disrupt the balance between goal-directed attention and attention that is easily distracted by surrounding stimuli. Consequently, working memory capacity decreases, making the process of recalling information more difficult, and the ability to select and organize words spontaneously is also impaired (Osman et al., 2025) Other participants emphasised that before speaking in a public speaking context, they needed to prepare the message they wanted to convey, but in this situation, they could also be hindered by emotional pressure that interfered with their ability to compose the message they wanted to convey.

Based on field data, they thought more carefully when speaking in real time. This included determining the context of the discussion and the vocabulary and sentence structure. They say that speaking is not easy, especially when under pressure, which makes them nervous and causes them to go blank. Functional brain imaging studies show that activity in the left ventrolateral prefrontal cortex is strongly associated with top-down control of semantic memory, which guides the process of retrieving and selecting conceptual information stored in the posterior temporal cortex and surrounding cortical areas (Martin, 2007; Zhao & Yang, 2016). If blanking out when speaking is caused by nervousness, it can be assumed that the part of the brain that manages emotions is more

dominant, so that the part of the brain that manages semantic memory is less effective. Disfluencies in speech such as fillers ("um," "uh"), word repetitions, sentence revisions, and incorrect sentence beginnings are actually normal in spontaneous speech production. However, if the level of disfluency increases, it can be an indication of high cognitive load or difficulty in information processing. The relationship between anxiety and speech fluency has been studied in specific contexts, such as anxiety when speaking in public (Khalid et al., 2025).

3.3.2. Lexical Selection Shaped by Experiences

After the message is conceptualized through semantic meaning, the brain then selects the most appropriate word for that message. That word competes with thousands of other words in the mental lexicon to represent the meaning to be conveyed. In short, when speaking, the brain does not immediately pick one word but rather has a pool of candidate words with similar meanings, which are then selected and filtered according to context, purpose, and sentence structure. In addition, word selection is influenced by bodily experiences, such as the five senses, which activate memories from sight or hearing. This is called embodied recognition. These experiences help the brain to recognize meanings that are appropriate to the context, thereby speeding up and sharpening the word selection process.

Concrete representations that leave traces of experience in the brain and are linked to knowledge related to specific objects, situations, and actions (Barsalou, 2008; Vogt et al., 2022). When interpreting the meaning of a word, the brain automatically reactivates part of the process that occurred when experiencing that condition. For example, when processing nouns that refer to objects with specific locations, attention is immediately directed to that location because the brain reactivates real experiences related to that object (Vogt et al., 2022). This was conveyed by Participants 2 and when asked what was on their minds and whether they were imagining an object or an experience. They replied:

> *"When discussing something, we naturally imagine the object or activity. For example, when we talk about animals in English, we sometimes refer to how many animals there are, especially when describing them (P2.Q2). When we are storytelling, we are definitely telling about something, right? So, for example, if we are telling about an experience, I always imagine experiences that have happened in my life. If I am telling about an object, of course I will discuss the object. I think it depends on the context" (P3.Q2).*

Data shows that the process of speaking does not occur automatically, but involves word retrieval guided by meaning and motor experiences that have been undergone. Researchers investigating embodied cognition have suggested that language comprehension involves mental activation and integration of motor and perceptual experiences related to the events described by linguistic symbols (Zwaan, 2004; Borghi, 2012; Shapiro, 2019). Convergent empirical evidence from neuroscience and behavioural research supports the theory that language meaning is rooted in our motor-perceptual experiences of the world, thus supporting embodied language comprehension (e.g., Kaschak et al., 2005; Tettamanti et al., 2005; Casteel, 2011; Moreno et al., 2013; De Koning et al., 2017; Kronrod and Ackerman, 2021).

3.3.3. Difficulties of Selecting Second Language Words amid Competition with Lexical Items from the First Language

There are difficulties encountered in the lexical selection stage, especially for second language learners who must deal with the difficulty of selecting second language words amid competition with lexical items from the first language as well as related second language lexical items. Lexical access in a second language is a cognitive process that demands attention. On the one hand, L2 learners face the challenge of selecting the appropriate L2 word amid competition with L1 items and related L2 items. On the other hand, time constraints in real communication require learners to process language efficiently, thereby increasing pressure on the cognitive process (Liu, 2020). It turns out that the problems raised by Liu (2020) are almost like those experienced by the participants below. This was conveyed by Participants 3 and 4 when asked what difficulties they faced when searching for the right vocabulary when speaking English. They replied:

> *"When I speak, I sometimes pay too much attention to grammar. Because sometimes the grammar is wrong. Yes, actually, it's in the construction of sentences.' (P4.Q3). 'It's like there are sets in the brain, if I'm not used to repeating those words, then those words rarely appear in my mind, so I only know a few, and because I'm often casual, what comes out is casual English, formal English rarely appears, so that's where the difficulty lies" (P3.Q3)*

They find it difficult to speak English because the pronunciation is difficult, they are not used to repeating words, and they pay too much attention to grammar. It is important to remember that the brain works by repeating and familiarizing itself with the information it receives. If you only repeat the same words, the brain will automatically pick up those words. As a result, the efficiency of lexical access greatly affects the quality of speech in the second language (Liu, 2020). Lee et al. (2007) suggest from a psycholinguistic perspective that repeating unfamiliar words (nonwords) is closely related to the ability to expand one's vocabulary. The brain can also change its structure according to learning experiences, or neuroplasticity. The more vocabulary that is learned, the stronger the networks in that area.

3.3.4. Syntactic Primming while Constructing Words before Speaking

Research shows that one factor influencing this selection is syntactic priming, which is the tendency of speakers to repeat the same syntactic framework. In addition, visual attention or perceptual cues also influence the determination of the subject in a sentence (Myachykov & Scheepers, 2024). Studies conducted by Russek Tomlin (1995, 1997) show that objects that are more visually prominent tend to occupy important syntactic roles and influence the choice between active and passive sentences (Myachykov & Scheepers, 2024). This was conveyed by Participants 2 when asked what patterns they use when speaking and whether they feel they often use the same sentence patterns repeatedly, then replied:

> *"[...] Nowadays, I often repeat phrases like 'I wish I were,' because lately I feel like I have no talent in anything" (P2.Q6).*

As mentioned earlier, syntactic priming is the tendency to repeat the same syntactic pattern because that pattern is often activated in the brain. If participants use patterns such as "I wish" or "I were" because they feel they have no talent, this can be interpreted as meaning that syntactic activation related to emotions is interrelated and active. On the other hand, when Participants 3, and 4 when asked what patterns they use when speaking and whether they feel they often use the same sentence patterns repeatedly, then replied:

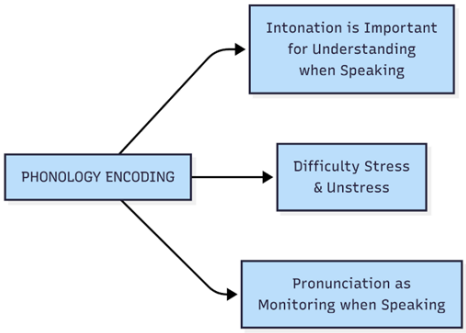
"I don't think I intend to do that, but in the end, I really do repeat those words. Maybe it's because of how the brain works, because I only know that, because that's what's at the top, for example, like, for example, when talking, then because I'm used to repeating or hearing that word, so that word comes back again and again. For example, it's like, what I think is like that" (P3.Q6) "When I'm talking, sometimes I repeat myself. Talking about it again. But I don't know. It just suddenly pops into my mind, at least for me. Because first, this is a very big factor. Usually, it's a lack of vocabulary" (P4.Q6)

It can be proven that syntactic priming relies on active syntactic patterns. Based on data obtained from participants, cognitive and psychological conditions play a major role. The reason they repeat the same words is due to a lack of vocabulary, so when speaking English, they only retrieve and repeat the vocabulary they remember. Another reason is their psychological condition, where emotions are also involved in syntactic priming. They tend to repeat emotional sentences because they are thinking about emotional things. Priming occurs when words are stored in short-term memory (i.e., 'working memory' in the model) and are more likely to be reactivated along with the associated syntactic details if they have just been used (Wheeldon & Konopka, 2023).

3.4. Phonology Encoding in Utterance Production

Phonological encoding is the process of extracting sounds associated with spoken words (Strijkers & Costa, 2011). Phonological encoding occurs after the linguistic encoding stage at the lexical level. This process involves the activation, selection, and arrangement of phonological segments (Alderete & Séaghdha, 2022). Empirical findings show difficulty in distinguishing stress and unstress when speaking English, in addition, autonomous learners consider intonation and pronounciation to be an important aspect when speaking. The explanation above can be illustrated as shown in the figure 4 below.

Figure 4. Phonology Encoding in Utterance Production



3.4.1. Difficulty Distinguishing Stressed and Unstressed Syllables

One of the five phonological factors that cause stress placement errors is incorrect pronunciation (Karjo, 2016). Stress placement errors are caused, among other things, by the influence of vowel length, vowel height, errors in identifying syllable structure, and the influence of orthographic form, or spelling (Karjo, 2016; Weda, 2018). English speakers often use stress when speaking, and in a single sentence they may stress one or more segments. In English, each meaningful word or content word usually has one or more stressed syllables (Fromkin et al., 2007). Many English learners have difficulty mastering the nuances of stress patterns that distinguish stressed and unstressed syllables (Yang, 2025).

Word stress placement in English is arbitrary or difficult to predict. Mosheer and Amer (2011) suggest that the best approach is to treat word stress as a unique characteristic of each word, which must be learned along with the word itself (Karjo, 2012). This was conveyed by Participants 2 and 4 when asked how to give and practise stress on a word in speaking exercises, then replied:

> *"sometimes forget about stress like that, Miss. Even if I've learned it before, been taught it, I still forget. (P2.Q8). I've tried my best, but it's difficult. We have to get used to not speaking Javanese; we have to maintain our Indonesian and English skills. We have to keep practising. If, for example, we rarely use a word, we'll revert back to our old habits" (P4.Q8).*

Based on field data, some people do not pay enough attention to stress because even though they have practised, they often forget which words to stress and which not to stress. Another cause is the lingering influence of regional accents, which makes it difficult to stress English vocabulary. Nurpahmi et al. (2023) emphasise that incorrect word stress can disrupt the flow of conversation, especially if the speaker has difficulty controlling English vowel sounds. The more often the speaker misplaces the stress, the more difficult it is for the listener to understand what the speaker is trying to say.

3.4.2. Difficulty Distinguishing Stressed and Unstressed Syllables

Intonation, as part of prosody, is specifically related to the pitch contour of a sentence. These elements are very important for effective communication because they help distinguish statements from questions, indicate sarcasm or sincerity, and highlight important information in a conversation. For example, a rise in tone at the end of a sentence in English usually indicates a question (Anum et al., 2024). This was conveyed by Participants 1, 3 and 4 when asked how to practise and understand intonation in speech, to which they replied:

> *"Trying to use intonation. Because sometimes it sounds weird to me. It's like hearing myself speak English, because I'm not used to it yet. So, it still sounds a bit strange. When we speak Indonesian, we use intonation naturally, so when we speak English, we have to understand the words first. This is how it is in English. So, in English, it should be the same as in Indonesian. So I have to keep doing that [...] (PI.Q9). When speaking English, if the intonation is lacking and we just speak flatly, sometimes people don't understand what we're saying, so I think intonation and stress are important [...] (P3.Q9). [...] for example, there's a dialogue. The dialogue is in English. Well, I use Indonesian first. How to say it in Indonesian, you know. Then, I try it in English [...]" (PI.Q9). "Intonation also tries to attract the audience's attention, right? I mean, if you just speak straight without any ups and downs, the audience will definitely get bored, especially when speaking in public. Usually, before speaking in public or giving an academic presentation, I practice while talking in front of a mirror, looking at myself and staring into my own eyes, checking if my intonation is correct, then my pronunciation, my emphasis. That's about it. That's just for the beginning. Once the intonation is correct, I usually correct it at home since there's no one around. I usually use a dictionary or AI to help correct my pronunciation, intonation, and emphasis" (P4.Q9).*

They say that intonation is very important in speaking, especially when speaking English, because if you don't use intonation when speaking, the other person will not understand what you are saying. In addition, in the world of public speaking, intonation

makes the audience interested in what is being said. Participants correct their intonation using AI. Keep in mind that AI does not guarantee correct intonation; communicating with humans is something that AI cannot yet replace. For those who want to learn intonation to sound like a native speaker, the author suggests listening to or learning directly from native speakers who can be accessed through social media. For learners who are interested in acquiring pronunciation like a native speaker, intonation is very relevant, because prosody has been found to be an important cue in the perception of accents that do not match the target language, above and beyond other linguistic features (Jilka, 2000; Munro, 1995; Pettorino, De Meo, & Vitale, 2014; Casillas et al., 2022). Intonation helps listeners identify the focus of a message and understand its communicative intent. This perspective is in line with the functional approach to prosody, which views prosodic features as tools for achieving communicative goals (Anum et al., 2024). It should be noted that intonation cannot be learned in one go. Students must be guided to understand intonation and how it can be identified in the context of spoken English (Gandhioke & Singh, 2023).

3.4.3. Difficulty Distinguishing Stressed and Unstressed Syllables

Pronunciation is an important aspect of speaking that involves the production and perception of speech sounds in a language. It includes the skills that enable speakers to reproduce individual sounds, rhythms, stresses, and intonations of a language clearly and comprehensibly (Zambrano et al., 2025). Clarity of voice is an important aspect of pronunciation because it relates to how words are pronounced in English so that they are easily understood by listeners (Irawan & Ahmad, 2025). It should be noted that the importance of correct pronunciation becomes clear when considering that successful communication depends on clarity (Zambrano et al., 2025). This was conveyed by Participants 1, 2, 3, and 4 when asked how to practice pronunciation so that it sounds clear and can be understood by others, to which they replied:

> *"If the pronunciation is not right... In my opinion, it sounds unpleasant. To sound clear and be understood by others, search YouTube, TikTok, or DeepL for how to pronounce it, then after learning there... Keep following the sentence. Like the vocabulary, I follow how he speaks, then I repeat it over and over" (P1.Q10). "Actually, for formal situations, it's definitely important. For informal situations, it's not that important. I learn mostly through English learning apps, sis. Like Elsa Speak, Duolingo, Fondi. If, for example, we are alone, I practice... When I'm alone, I usually practice like I'm talking to myself. Talking to myself. If there is feedback, there is. So, for example, if there is a sentence that is not pronounced correctly... I usually check Google for reference, sis (P2.Q10). [...] I listen to native speakers, talk like this, but I think it's because different accents have different pronunciations. (P3.Q10) Sometimes in English, there are words that are pronounced almost the same. For example, if we want to say this but we pronounce it wrong, our audience will automatically hear a different meaning. For example, "now" and 'know'. They are quite similar, the only difference is the presence or absence of "k" (P4.Q7). The way to learn is to first write down the two words, "now" and "know." We practice continuously, record ourselves, and use an app, AI, or dictionary to correct whether it's right or not. The challenge is that it's difficult to distinguish between them" (P4.Q10).*

According to partivipants, pronunciation when speaking is very important. However, when speaking, they sometimes mispronounce words, and when listening to native speakers, there are different pronunciations, such as British and American, which is a challenge for them when learning and speaking English. They also sometimes practice pronunciation

using AI. The wise use of AI can help with learning pronunciation. AI-based applications show promising potential as helpful tools in practicing pronunciation. It is suggested that developers should continue to improve application stability by improving technical issues such as unexpected crashes and inaccurate speech recognition (Fanania & Priyatmojo, 2025). because pronunciation itself is part of the speaking process, functioning as a perception- and production-based internal monitoring system that helps learners evaluate sound accuracy, distinguish meaning, adjust accent, and control speech clarity through auditory feedback and reflective strategies

4. CONCLUSION

In actual practice, autonomous learners can monitor their learning process. They have control over themselves in speaking and learning. Cognitively, in terms of how information is processed in the brain, they often repeat information to strengthen its activation in the memory pathway. This is in line with the theory in research question 2, where they receive information and reinforce it through repetition. Since this study aims to critique and examine the compatibility or incompatibility of theory with real-world practice, the researcher found incompatibility with the theory. The lack of elaboration and distance or retention of information repetition became the inconsistency between theory and actual practice. In fact, this elaboration is very important to help strengthen memory into long-term memory. Repetition without elaboration becomes repetition without meaning in learning. Therefore, this study strongly recommends autonomous learners who want to learn speaking in accordance with how the brain works. Further research is recommended to examine the retention distance of repetition in relation to acquired learning information in order to retain information in the long term in the context of independent learning, because based on the findings, participants often repeat the material but also easily forget it. In addition, research is needed to explore elaboration models or strategies for independent learners to determine how elaboration skills can be developed in an autonomous learning environment. Last, for the further research related to the learning process need to be researched quantitatively so that the data obtained is more optimal using fMRI.

REFERENCES

Anum, L., Limbeng, Z. N., Lubis, F. A., & Nazhira, A. D. (2024). The Role of Prosody and Intonation in English Phonology : Implications for Speech Perception and Production. 2(3). https://doi.org/https://doi.org/10.62383/bilangan.v2i3.82

Baddeley, A. D. (2021). Developing the Concept of Working Memory : The Role. Oxford, 00, 1–13. https://doi.org/https://doi.org/10.1093/arclin/acab060

Bao, I. R. K. D., Aleksius, M., & K. Danibao, B. (2024). Autonomous Learning Strategies to Improve the Speaking Skills of the EFL University Students. Ethical Lingua: Journal of Language Teaching and Literature, 11(1), 171–186. https://doi.org/10.30605/25409190.690

Bardella, G., Brunamonti, E., Hamed, S. Ben, & Bello, F. Di. (2025). Editorial : Integrating motivation and attention : behavioral and neural perspectives. Front. Hum. Neurosci. 19:1729668. https://doi.org/10.1037/h0054346

Barthel, M. (2025). Phonological input processing is reduced during speech planning in turn taking. Journal of Memory and Language, 146(April 2025). https://doi.org/https://doi.org/10.1016/j.jml.2025.104717

Boonma, N., & Swatevacharkul, R. (2020). The effect of autonomous learning process on learner autonomy of English public speaking students. INDONESIAN JOURNAL

OF APPLIED LINGUISTICS, 10, 194–200. https://doi.org/https://doi.org/10.17509/ijal.v10i1.25037

Casillas, J. V, Garrido-pozú, J. J., Parrish, K., Arroyo, L. F., Shao, J., Rascón, I. A., & Taveras, K. (2023). Using intonation to disambiguate meaning : The role of empathy and proficiency in L2 perceptual development. Applied Psycholinguistics (2023), 913–940. https://doi.org/10.1017/S0142716423000310

Cowan, N., Bao, C., Bishop-chrzanowski, B. M., Costa, A. N., Greene, N. R., Guitard, D., Li, C., Musich, M. L., & Ünal, Z. E. (2024). The Relation Between Attention and Memory. Annual Review of Psychology, 183–214. https://doi.org/https://doi.org/10.1146/annurev-psych-040723- 012736

Dubinsky, J. M., & Hamid, A. A. (2024). Neuroscience and Biobehavioral Reviews The neuroscience of active learning and direct instruction. 163(May), 0–1. https://doi.org/https://doi.org/10.1016/j.neubiorev.2024.105737

Fanania, & Priyatmojo. (2025). Students Perception on the Use of AI-based Applications to Practice Pronounciation. Journal of English Language and Education.

Faria, S., Salles, D., & Pereira, L. (2025). Exploring the frontiers of working memory: an integrative review. 13431–13451. https://doi.org/https://doi.org/10.56238/arev7n3-192

Fourie, M., & Schlebush, G. (2022). Information Processing Ability and its Implications for Teaching and Learning. International E-Journal of Educational Studies (IEJES), 6(12). https://doi.org/DOI: 10.31458/iejes.1130846

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2023). How to Design and Evaluate Research in Education (11th ed.).

Gorbunova, A., Kapuza, A., Chen, O., & Costley, J. (2025). Rethinking pre-training : cognitive load implications for learners with varying prior knowledge. Front. Psychol., August, 1–12. https://doi.org/10.3389/fpsyg.2025.1628047

Hu, J., Small, H., Kean, H., Takahashi, A., Zekelman, L., Kleinman, D., Ryan, E., Nieto-castañón, A., Ferreira, V., & Fedorenko, E. (2023). Precision fMRI reveals that the language-selective network supports both phrase-structure building and lexical access during language production. Oxford, September 2022, 4384–4404. https://doi.org/https://doi.org/10.1093/cercor/bhac350

Jaeger, A., Henrique, T., Gomes, P., João, M., & Parreira, P. (2024). The benefits of elaborative encoding over retrieval practice for associative learning. Memory & Cognition, 1592–1607. https://doi.org/10.3758/s13421-024-01671-z The

Irawan, L. A., Ahmad, R., & Mandalika, U. P. (2025). The interplay of segmental and suprasegmental features in ESL / EFL reading aloud performance. Journal of Applied Studies in Language, 9(2), 113–123. https://doi.org/http://ojs2.pnb.ac.id/index.php/JASL

Khalid, Alif, Tabish, & Jehangir. (2025). Speech Disfluency Patterns and Cognitive Failuires in Young Adults with Generalized Anxiety Disorder: A Cross-sectional Study. Allied Medical Research Journal, 3.

Khulaifiyah, Widiati, U., Anugerahwati, M., & Suryati, N. (2023). Initial Activities Encouraging Students' Autonomous Learning: Faculty Teacher Training and Education Program. Ournal of English for Academic, 10, 2–9. https://journal.uir.ac.id/index.php/jshmic

King, J., Marcus, T., & Markant, J. (2023). Individual differences in selective attention and engagement shape students ' learning from visual cues and instructor presence during online lessons. 1–13. https://doi.org/https://doi.org/10.1038/s41598-023-32069-7

Kranz, J., Möller, A., Kaufmann, K., Tempel, T., & Kranz, J. (2024). Retrieval Practice : A Tool for Teaching the Control- of-Variables Strategy in Science Classrooms ? The Journal of Experimental Education, 0973. https://doi.org/10.1080/00220973.2024.2392684

Kriechbaum, V. M., & Bäuml, K. H. T. (2023). The critical importance of timing of retrieval practice for the fate of nonretrieved memories. Scientific Reports, 1–9. https://doi.org/https://doi.org/10.1038/s41598-023-32916-7

Kröger, B. J., Bekolay, T., & Cao, M. (2022). On the Emergence of Phonological Knowledge and on Motor Planning and Motor Programming in a Developmental Model of Speech Production. Front. Hum. Neurosci. 16:844529., 16(May). https://doi.org/10.3389/fnhum.2022.844529

Liu, F., & Zhang, Q. (2020). The effect of high approach-motivated positive affect on selective attention under high perceptual load. Front. Hum. Neurosci. 19:1628818., August, 1–11. https://doi.org/10.3389/fnhum.2025.1628818

Munneke, J., Corbett, J., & Burg, E. (2020). Learned prioritization yields attentional biases through selection history. Attention, Perception, & Psychophysics, 2244–2256. https://doi.org/https://doi.org/10.3758/s13414-020-01970-y

Naeem, M., Ozuem, W., Howell, K., & Ranfagni. (2023). A Step-by-Step Process of Thematic Analysis to Develop a Conceptual Model in Qualitative Research. International Journal of Qualitative Methods, 2022, 1–2. https://doi.org/10.1177/16094069231205789

Nurpahmi, S., & Nur, N. A. (2023). An Acoustic Analysis of Word Stress Production by Indonesian Learners of English. Indonesian Tesol Journal, 5(2), 302–320.

Oberauer, K. (2019). Working Memory and Attention – A Conceptual Analysis and Review. Journal of Cognition, 2(1), 1–23. https://doi.org/https://doi.org/10.5334/joc.58

Plater, L., Nyman, S., Joubran, S., & Al-aidroos, N. (2023). Repetition enhances the effects of activated long-term memory. Quarterly Journal of Experimental Psychology. https://doi.org/10.1177/17470218221095755

Pradeep, K., Sulur Anbalagan, R., Thangavelu, A. P., Aswathy, S., Jisha, V. G., & Vaisakhi, V. S. (2024). Neuroeducation: understanding neural dynamics in learning and teaching. Frontiers in Education, 9, 04. https://doi.org/10.3389/feduc.2024.1437418

Sharpe, B. T., & Tyndall, I. (2025). The Sustained Attention Paradox : A Critical Commentary on the Theoretical Impossibility of Perfect Vigilance. Cognitive Science, 49. https://doi.org/10.1111/cogs.70061

Theeuwes, J. (2025). Attentional Capture and Control. Annual Review OfPsychology, 251–273. https://doi.org/https://doi.org/10.1146/annurev-psych-011624- 025340

Vogt, A., Kaup, B., & Rahman, R. A. (2022). Experience-driven meaning affects lexical choices during language production. Quarterly Journal of Experimental Psychology, 76. https://doi.org/10.1177/17470218221125425

Warna, D., Amrina, R. D., Yuliyanti, A. Y., & Uyun, M. (2025). Challenges to Learner Autonomy in Online Speaking Classes : Insights from University Students in Indonesia. 17, 2890–2902. https://doi.org/10.35445/alishlah.v17i2.6318

Wheeldon, L. R., & Konopka, A. (2023). Grammatical Encoding for Speech Production (Vol. 9768). https://doi.org/10.1017/9781009264518

Woolfolk, A. (2019). Educational Psychology (14th ed.).

Yang, Y. (2025). Research on the Impact of Word Stress on the Vowel System of English. Proceedings of the 3rd International Conference on Social Psychology and Humanity Studies, 0, 119–123. https://doi.org/10.54254/2753-7048/78/2025.20375

Zhao, L., & Yang, Y. (2016). Lexical Planning in Sentence Production Is Highly Incremental : Evidence from ERPs. 1–20. https://doi.org/10.1371/journal.pone.0146359.