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Iraqi EFL Preparatory School Students' Cognitive Flexibility and Listening Proficiency: A Correlational Study

Asst. Lect. Mohammed Saad Mizel
mohammed.saad1207a@ircoedu.uobaghdad.edu.iq

Abstract

Facilitating effective communication is a primary goal of learning English as a Foreign Language (EFL). Interactive communication requires not only linguistic competence but also cognitive flexibility (CF), which enables learners to adapt to new situations and respond appropriately in dynamic communicative contexts. Listening, as a foundational receptive skill, plays a crucial role in overall language proficiency. Despite the theoretical importance of CF, limited research has examined its relationship with listening proficiency (LP), particularly among Iraqi EFL learners. This study investigates the correlation between cognitive flexibility and listening proficiency among Iraqi EFL preparatory school students. It aims to identify students' levels of CF and LP, examine the correlation between them, and determine the extent to which CF explains variance in listening proficiency. During the academic year 2023–2024, a randomly selected sample of 120 students from preparatory schools in the Karbala Governorate participated. The Listening Section of the TOEFL test and a 28-item Cognitive Flexibility questionnaire (Phillips, 2004) were used. After establishing validity and reliability, data were analyzed using appropriate statistical techniques. Findings revealed a high level of cognitive flexibility and a moderate level of listening proficiency, with a significant positive correlation between them. Cognitive flexibility explained a meaningful proportion of variance in listening performance. The results highlight the importance of integrating cognitive flexibility development into EFL instruction to enhance listening proficiency and communicative competence.

Paper Info

Keywords

Cognitive flexibility, Executive function, L2 listening proficiency, English as a Foreign Language (EFL), Correlational study

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1. Introduction

1.1 The problem and its significance

Listening is a fundamental skill in language learning, yet many Iraqi EFL preparatory school students continue to face significant challenges in developing effective listening proficiency. Difficulties such as limited vocabulary, rapid speech, inability to follow spoken instructions, and insufficient exposure to English hinder students' ability to comprehend spoken language. Although cognitive flexibility has been suggested to enhance overall language achievement by enabling learners to adapt to diverse learning situations (Bagheri & Andi, 2015), its specific role in supporting listening skills remains underexplored, particularly among Iraqi preparatory school students. Moreover, while emotional learning techniques and strategy-based instruction can reduce anxiety and improve listening performance (Yunus, 2014), many learners postpone developing their oral and listening abilities until required, indicating a persistent gap between theoretical understanding and practical application.

Despite the recognized importance of listening, previous research has largely focused on contexts outside Iraq, leaving limited empirical evidence regarding how students' attitudes, cognitive flexibility, and listening skills interact within the Iraqi educational setting. This scarcity of context-specific research also points to a theoretical gap in understanding the mechanisms through which cognitive flexibility may influence listening proficiency, as well as a practical gap in designing culturally relevant instructional strategies. By examining the correlation between cognitive flexibility and listening skills among Iraqi preparatory school students, the present study addresses these intertwined theoretical, empirical, and contextual gaps, contributing to knowledge in the field while offering practical insights for enhancing English language teaching in Iraq.

1.2 Aims

The primary purpose of this study is to investigate the relationship between cognitive flexibility and listening proficiency among Iraqi EFL Preparatory School students. The study specifically aims to determine the extent to which higher levels of cognitive flexibility correlate with enhanced performance on standardized listening comprehension tasks, thereby clarifying the role of this executive function in second language acquisition.

1.3 Limits

This study is confined to Iraqi EFL preparatory school students (fourth grade) for the academic year 2023-2024.

1.4 Definitions of the Basic Terms

1.4.1 Cognitive flexibility

The phrase "learners' feelings, attitudes, motivation, and values" is used to characterize CF (Oxford, 1990). The methods and strategies used by presenters to lessen their nervousness, keep an eye on their feelings, and support themselves when speaking may be summed up as cognitive flexibility.

1.4.2 Listening Proficiency

LP is defined as the "ability to effectively understand a real spoken passage or text by actively and automatically using one's internalized language and cultural expectation system" (Cox & Clifford, 2014).

2. Theoretical background

2.1.2 Construct of Cognitive Flexibility

2.1.2.1 Definition & Theoretical Foundation of Cognitive Flexibility

The ability to use creativity and flexibility to adjust to changing circumstances rather than adhering to a particular state is a crucial aspect of human cognition, and cognitive flexibility is regarded as a crucial component of executive functioning required for successful adaptation to a constantly changing environment (Grange & Houghton, 2014, p. 332). Accordingly, it is described as changing, enabling people to efficiently shift their focus from one stimulus to another, and as a crucial component of the broader working memory and attention system (Papanicolaou, 2017, p. 284).

Furthermore, adaptive cognition, innovative problem solving, and unconventional thinking all depend on cognitive flexibility (Grange & Houghton, 2014, p. 332). The ability to switch between two different concepts, think about multiple concepts at once, or choose between multiple representations of an object, multiple strategies, or multiple tasks given particular or changing situations is thus referred to as cognitive flexibility (Cohen et al., 2007)

There are several ways to define cognitive flexibility. For instance, in the context of problem solving, it may be described as the capacity to modify one's approach to problem solving in response to changes in task requirements (Kerms, 1995, p. 202). Conversely, communication researchers define cognitive flexibility as a communication component that is associated with an individual's self-efficacy, willingness to be flexible, and knowledge of the choices in a particular scenario (Martin & Anderson, 1998, p. 4)

Furthermore, flexibility refers to the ability to adjust one's knowledge and meaning-making in response to new stimuli; in other words, the capacity to adjust one's plans in the event of an error, unforeseen challenge, or new information (Beverly, 2021, p. 26). When Spiro and his colleagues assert that many instructional methods fail due to their failure to recognize the ill-structured nature of many complicated domains that are complex and in which there are few regularities from one example to another the cognitive flexibility hypothesis was born. As a result, the theory concludes that in order for a learner to acquire complicated material; they must see it from many conceptual perspectives, at various times, in various contexts, and for various reasons (Dills & Romiszowski, 1997, p. 735).

According to cognitive flexibility theory, people must be able to apply their knowledge to new issues, create new knowledge, and comprehend information more thoroughly since the nature and structure of knowledge are dynamic and vary depending on the context (Mayer, 2005, p. 320). Since understandings are built on top of previously acquired knowledge to go beyond the material provided, the idea has a connection to constructivism and has emerged as a novel constructivist approach to the challenges of acquiring advanced knowledge in unstructured environments. According to Steffe and Gale (2012), this theory is therefore seen as an integrated theory of learning, mental representation, and teaching.

The seven main tenets of cognitive flexibility theory were as follows: learners must actively construct solutions; concepts should be examined in the context of current problems rather than previous ones; emphasis should be avoided on highly focused schemata; problems should be approached from a variety of perspectives; simple, regular problems should be avoided; and flexible thinking should be encouraged (Misseyanni et al., 2018).

In conclusion, cognitive flexibility theory is essentially a feature of the definitions of both ill-structured domains (domains where the material is complicated and there are several solutions for a single problem) and advanced knowledge (knowledge gain

compared to introductory level learning). According to Cheng and Koszalka (2016), "the learner must attain a deeper understanding of a content material, reason with it, and apply it flexibly in diverse contexts" in order to succeed in advanced learning.

2.1.2.2 Cognitive Flexibility, Self-Concepts and Interpersonal Communication

Numerous communication and personality attributes have been shown to be related to cognitive flexibility. Cognitively flexible people are more argumentative and more tolerant of disagreement, according to studies that link cognitive flexibility to traits like self-efficacy, self-monitoring, assertiveness, responsiveness, interpersonal communication competence, and the repertoire of communication strategies (Stavros, 2003, p.2). The three components of cognitive flexibility awareness of options, willingness to adapt, and self-efficacy in adapting are highlighted in items created by Martin and Rubin (1995), one of several measures created to evaluate cognitive flexibility based on communication and social interaction skills (Greene & Burleson, 2003).

Self-efficacy is another idea that is connected to cognitive flexibility. This connection is explained by the fact that self-efficacy encourages self-regulatory behaviors, which heavily depend on cognitive flexibility. It can be argued that self-efficacy and incremental beliefs influence adaptive response to novel situations, adopting approach-based orientations and sustaining motivation, all of which promote flexibility. As a result, self-efficacy beliefs are somehow linked to cognitive flexibility (Liu et al., 2019).

Additionally, there is mounting evidence that good affect makes people more adaptable thinkers and decision makers who can shift their focus between various components of a scenario. As a result, they will be able to adapt to complex or changing situations and encourage elaboration processes, context-responsive problem solving, and flexible attentional focus, which will alter cognitive organization and the capacity to view things from different perspectives (Lewis et al., 2008).

Furthermore, creativity is a crucial aspect of learning that is connected to cognitive flexibility. Cognitive flexibility, or the ability to flexibly transition between different categories throughout the thought process when participants must generate ideas to solve issues, is the key to creativity (Liu et al., 2019).

2.1.2.3 Cognitive Flexibility in EFL Contexts

Cognitive flexibility has been connected to learning processes, particularly language acquisition, and is considered a crucial aspect of human intelligence. In other words, language facilitates the expression of flexible cognition, allows for a variety of encoding and creative representation processes, and develops the ability to pay attention to and interpret linguistic and nonlinguistic signals that are essential to language acquisition (Kail, 2003).

According to research, people who speak two languages exhibit more cognitive flexibility than people who only speak one. This means that bilinguals can switch between tasks and information with ease and select the information that is most pertinent to the situation at hand by using cognitive strategies that go beyond language (Littlemore, 2009). Research on the relationship between cognitive flexibility and second or foreign language learners primarily comes to the conclusion that bilingual people may develop a more flexible brain and that cognitive flexibility influenced by genetics may impact switching ability, increasing the likelihood that someone will become bilingual (Schwieter, 2019).

Furthermore, research on the relationship between learning a foreign language and cognitive flexibility and divergent thinking shows that learners of foreign languages perform better than monolinguals because learning a foreign language requires a variety of cognitive processes, including operating two language systems and familiarizing oneself with other cultures, values, and beliefs that one must view from a variety of perspectives, (Pawla & Mystkowsk-Wiertelak, 2018).

These processes are thought to be important components of executive function, which is the capacity to choose which information to pay attention to and which to disregard. As a result, they help people think and make decisions more effectively and solve a variety of cognitively demanding problems with more flexibility (Zarobe et al., 2011). This allows proficient speakers to select from a variety of descriptions of an object or event that emphasize various characteristics depending on viewpoints that change throughout conversation and necessitate dynamic semantic representation updating (Kail, 2003).

2.1.2.4 Cognitive Inflexibility: Problems with Cognitive Flexibility

The condition itself and how people perceive the necessary adjustment are two of the many variables that affect the process of adjusting or adapting to a new circumstance. For instance, if the change is significant, modest, or sensitive to certain people. Age is one of the additional variables that affect how people react to change. In other words, as the brain grows, people's ability to process new information also gets better and they become more adaptable when it comes to understanding new situations (Huizinga et al., 2014).

These elements may result in cognitive rigidity or inflexibility, which is the inability of people to modify or reevaluate their assessment of a scenario or issue that has been offered, (Jonassen & Grahowski, 2012). In this regard, Arnoff and Wilson (2009) argue that "a continuation of former behavior pattern when there is a change in the situation requires a change in behavior of more efficient functioning which is similar to a process called intolerance of uncertainty" .

Cognitive rigidity occurs when learners are unable to recognize the need for change or reject a change in the new situational demands. This can be due to cognitive indecision, which is demonstrated by their refusal to change their viewpoints and make the necessary decision for a particular situation, or it can be due to their strong belief in a particular piece of knowledge, which causes them to cling to it. Additionally, learners' insensitivity to instructional strategies designed to promote cognitive flexibility may be the cause of cognitive inflexibility (Elen et al., 2011).

Distracted, global, resistant to change, avoiding emotions as information, overgeneralized cognitive set cues, field-dependent, having trouble reorganizing problems and using prior knowledge to solve problems, focusers rather than scanners when attention is distributed in object comparison, and having a lower tolerance for ambiguity are all characteristics of rigid or constricted people (Jonassen & Grahowski, 2012).

On the other hand, the following are most of the skills that cognitive flexibility involves, as explained by Beverly (2021): Accepting the unclear and unexpected; learning the cultural context to select a practical approach; adjusting to novel and evolving circumstances; modifying one's feedback style to suit the demands of others; Attending to several ongoing events, avoiding limiting assumptions, refraining from passing judgment on the morality or immorality of others' actions and values, adapting one's leadership style to the circumstances, embracing the unknown and unexpected;

understanding the cultural background to choose a useful strategy;dealing with new and changing situations; changing one's feedback style to accommodate others' needs; creatively getting around challenges Attending to multiple ongoing events, modifying one's skills according to the situation, approaching the same issue from multiple perspectives, considering new ideas and arguments, embracing the unknown and unexpected;understanding the cultural background to choose a useful strategy; Reimagining practice in action; taking risks and using them as opportunities for personal development; accepting ambiguity; placing trust in the process over structure; converting information into knowledge that can be put to use; overcoming obstacles

2.2 Listening Skill

Howatt and Dakin (1974) assert that "Listening is the ability to identify and comprehend what others are saying." Understanding a speaker's accent or pronunciation, vocabulary and syntax, and meaning proficiency are all included in this. This supports the assertion made by Renukadevi (2014) that listening is crucial for language learners because it enables them to acquire vocabulary, syntax, word stress, and pronunciation. It also enables them to understand texts based only on tone of voice, pitch, and accent—all of which can only be achieved through listening. Without a thorough understanding of the input, learning cannot be improved.

According to Brown (2001), listening is a crucial skill for language learners since it enables them to pick up the linguistic knowledge needed for communication. According to Hendrawaty (2019), the first and most crucial skill that students need to master when learning a new language is listening. Since it is a receptive skill, language learners pick up new words by listening to or hearing what they have already heard. The capacity to generate is influenced by the capacity to receive. Pupils with strong listening skills will comprehend and even excel in productive skills like writing and speaking.

Additionally, Rost (2013) defines listening as "the process of receiving what the speaker actually says, constructing and representing meaning, negotiating and responding to meaning with the speaker, and creating meaning through involvement, imagination, and empathy." According to Chamot (1995), listening is also thought of as a mental process in which information is filtered by the listener's short-term, working, and long-term memory after being absorbed by the auditory and/or visual sensors. Moreover, the listener selects and evaluates information to understand it, according to Vandergrift (2006).

Hidayat (2013) asserts that as listening is a prerequisite for effective communication, it is a crucial ability that must be developed. An individual's capacity for good listening has a substantial impact on the caliber of their interpersonal relationships. "Active listening," considers as knowing the substance of the message and enters competency as an act of sympathetic understanding of the speaker.

2.2.1 Listening Proficiency

LP has a significant role in language learning. Language competency, as defined by Richards and Schmidt (2013), is the "process of understanding speech in a first or second language." The role of specific linguistic elements (such as phonemes, words, and grammatical structures), as well as the listener's expectations, the setting and context, prior knowledge, and the topic, are the main topics of research on listening competence processes in second language acquisition. Hamouda (2013) asserts that LP is a collaborative process where listeners help to create meaning. Proficiency with oral

content is aided by grammatical forms, emphasis, intonation, sound discrimination, prior knowledge, and other linguistic or non-linguistic cues.

In the words of O'Malley et al. (1989), "Listening proficiency is an active and conscious process in which the listener constructs meaning using clues from contextual information and prior knowledge, while relying on a variety of strategy resources to fulfil the task requirement." Rather than learning every word in the spoken language, the main goal of listening is to absorb the meaning that is conveyed by the text (Lund, 1990). Therefore, the listener has to be able to hear sounds, connect them to meaning, and retain the information for later use in addition to comprehending the text. Therefore, the listener must remember what is stated in order to listen effectively (Cohen et al., 2007).

2.2.2 Listening Proficiency Process

The ability to differentiate sounds, recognize vocabulary and grammatical structure, comprehend stress and intonation, and relate them to the present situation are all considered to be important components of LP, which is viewed as a complex dynamic process. Since listening is often the first skill that students acquire, it is an inclusive capacity that helps with vocabulary and grammar development, (Vandergrift 1999).

Clark and Clark (1977) discuss this active process and propose four mechanisms involved in proficiency: Listeners remember raw speech in their short-term memory.Organize what was heard into constituents based on substance and function.

Once constituents are found, they are utilized to generate propositions and link them together to create a cohesive message. After identifying and reconstructing propositional meanings, the listener stores them in long-term memory and deletes the original message form.

2.2.3 Types of Listening Proficiency Processes

2.2.3.1. Bottom-Up Processing (BUP)

It is generally accepted that the language process proceeds in a certain order, starting with the least amount of information and working its way up to the most (Buck, 2001). Listening, especially in BUP, benefits from the same mindset. Instead of concentrating on individual words, the listener concentrates on the tiniest parts of spoken text in this process. Phrases are then combined to create comprehension (Harmer, 2007). Schwartz (1998) asserts that BUP are text-based, meaning that the listener depends on the message's content—which includes words, syntax, and sounds. According to Buck (2001), language proficiency is seen as a journey through several stages or levels, with the results of one phase serving as the input for the next higher phase.

Top-Down Processing (TDP)

Numerous viewpoints suggest that different kinds of information are not processed in a predetermined order or sequence. They start attacking the first point of view, which maintains that it is possible to decipher the statement's meaning without first decoding its sounds. The impact of other knowledge kinds (non-linguistic knowledge), such environmental knowledge, which is the subject of TDP, is to blame for this. The BUP, which begins with the students' past knowledge, is reversed in the TDP (Buck, 2001). According to Richards (1990), TDP is the process of interpreting a communication's content by drawing on prior knowledge. He makes a distinction between various types of background knowledge:

Demonstrated subject matter expertise.

Contextual or situational knowledge.

Schemata and scripts are used to store information in long-term memory.

2.2.3.3 Interactive Processing (IP)

IP combines top-down and bottom-up strategies to enhance spoken text competence. It was widely held in the early 1980s that TDP was the sole treatment that enhanced L2 LP. It is now widely accepted that in order to improve LP, TDP and BUP should be combined. Additionally, according to Vandergrift (2003), LP is an IP in which listeners require both language expertise and background information in order to read messages, rather than a TDP or BUP. He adds that listeners' incentive to listen, language proficiency, and subject-matter knowledge all influence how much they use BUP and TDP.

2.2.4 Listening Proficiency Problems (LP)

Listening proficiency (LP) can be particularly challenging for learners of a second or foreign language, as numerous studies have shown that second language (L2) listening involves complex cognitive processes that span perception, processing, and usage stages, which are interrelated rather than linear (Vandergrift, 2006). However, much of the existing literature has been largely descriptive with limited critical synthesis, often relying on older sources without integrating recent empirical developments in the field. Earlier research documented listening difficulties across these stages, emphasizing linguistic and cognitive barriers such as limited vocabulary, rapid speech, and processing overload (Goh, 2000).

Nonetheless, this body of work rarely engages with how non linguistic cognitive mechanisms, such as cognitive flexibility and executive control, support L2 listening comprehension. Recent empirical evidence suggests that cognitive control mechanisms like cognitive flexibility and inhibition are positively associated with L2 listening proficiency, indicating that listeners must flexibly shift attention and suppress irrelevant information to construct meaning from spoken input (Yang et al., 2022).

Furthermore, contemporary research has begun to adopt more integrative models that consider cognitive, metacognitive, and affective factors collectively, moving beyond the descriptive approach of earlier work (e.g., a systems model highlighting the roles of vocabulary, metacognitive awareness, and affective dimensions such as anxiety and motivation in listening comprehension; Imhof & Janusik, 2025).

These studies demonstrate that not only bottom up processes such as word recognition but also by top down strategic processing and emotional factors that interact dynamically within the listening framework (He & Jiang, 2020) influence listening comprehension. Moreover, research on strategy use further confirms that effective listening involves both cognitive and metacognitive strategies, with proficient listeners showing greater flexibility and awareness in employing these strategies than less skilled ones (Laeha & Laohawiriyanon, 2022). Taken together, these developments point to the need for research that integrates cognitive flexibility theory with current empirical models of L2 listening comprehension in specific educational contexts.

3. Methodology and Results

The section presents the methodology employed in the study, including the research design, sampling procedures, and instruments used for data collection. The statistical methods applied to analyze the gathered data are described, along with the procedures used to ensure the validity, reliability, and other psychometric properties of the instruments. These measures provide a rigorous framework for evaluating the relationship between cognitive flexibility and listening proficiency among the study participants.

3.1 Participants

The study sample consisted of 120 male fourth-grade preparatory school students from various schools in the Karbala Governorate, Iraq, selected using a simple random sampling procedure during the academic year 2023–2024. The participants were representing a typical demographic distribution of preparatory students in the region. Students were drawn from different academic tracks and socioeconomic backgrounds to ensure a diverse and representative sample. This sampling approach aimed to minimize selection bias and enhance the generalizability of the study findings.

3.2 Data Collection (Instruments)

To investigate the correlation between the two variables, the following instruments were piloted and then applied:

3.2.1 Listening Proficiency Test:

Students' listening proficiency (LP) was assessed using an adapted version of the TOEFL listening section (Phillips, 2004) to suit the Iraqi preparatory school context. The test comprises fifty multiple-choice questions divided into three sections. Each question has a 12-second time restriction for responses, and all instructions, examples, and the actual test items are presented in a 35-minute audio tape. In Part (A), students listen to thirty brief conversations between two people and answer one question per conversation on the response sheets. Part (B) includes eight longer conversations with corresponding questions, while Part (C) consists of speeches followed by twelve questions. Each correct answer is scored as one point, and incorrect answers are scored as zero.

To ensure the test's suitability and clarity, it was adapted and piloted on a small group of preparatory students prior to the main study. EFL instructors, confirming that it appropriately measures listening comprehension skills, established the validity of the adapted test through expert review. The reliability was assessed using Cronbach's alpha, yielding an acceptable coefficient of 0.82, indicating consistent and stable measurement across the items.

3.2.2 Cognitive Flexibility Questionnaire:

Two surveys are utilized to generate the cognitive flexibility questionnaire (CF from now on) used in this study (Dennis & Wal, 2010; Martin & Rubin, 1995). Martin and Rubin's questionnaire consists of 12 items that evaluate several components of cognitive flexibility required for effective communication, such as self-efficacy in being flexible, readiness to adjust to the circumstance, and knowledge of communication possibilities. Regarding the 16 items that were added from Dennis & Wal's (2010) questionnaire, they represent elements of flexibility like the propensity to view challenging circumstances as manageable, the capacity to recognize several possible explanations for events in life and human behavior, and the capacity to come up with several different answers to challenging situations.

The provided CF questionnaire has 28 items and uses a 5-point Likert scale, with 1 denoting strongly disagree and 5 denoting strongly agree. Additionally, there are items on the questionnaire with the opposite direction, which are reverse-scored to maintain consistency. The theoretical mean of the questionnaire is 84, with the minimum possible score being 28 and the maximum being 140, representing the range of cognitive flexibility levels that participants may exhibit.

This study employs a correlational design, which is appropriate for examining the relationship between cognitive flexibility and listening proficiency among preparatory school students. The design was chosen to identify whether variations in cognitive flexibility scores are associated with differences in listening performance, without

manipulating any variables. This approach is justified because it allows for assessment of naturally occurring relationships between the constructs in a real educational setting, ensuring ecological validity while providing insights into potential predictive factors for listening achievement.

2.3 Results

The study examined the relationship between students' cognitive flexibility (CF) and listening proficiency (LP) by analyzing their responses to the adapted CF questionnaire and the TOEFL-based LP test.

4.1 Descriptive Statistics

The CF scores ranged from 45 to 138, with a mean of 102.5 (SD = 15.3), indicating a moderate to high level of cognitive flexibility among the participants. The LP test scores ranged from 18 to 48, with a mean of 33.7 (SD = 7.2), suggesting that listening proficiency varied considerably across students. Both distributions were approximately normal, as assessed by skewness and kurtosis values within ±1.

4.2 Inferential Statistics

Pearson's correlation coefficient was calculated to examine the relationship between CF and LP. The results indicated a strong, positive correlation between the two variables, $r(118) = 0.740$, $p < .001$, suggesting that higher cognitive flexibility is associated with better listening proficiency.

A one-sample t-test was conducted to assess whether the correlation significantly differs from zero. At a significance level of $\alpha = 0.05$ and with 118 degrees of freedom, the calculated t-value was 20.555, exceeding the critical t-value of 1.980, indicating a statistically significant relationship between CF and LP.

4.3 Effect Size

The effect size for the correlation was calculated using Cohen's r^2, which yielded $r^2 = 0.5476$. This large effect size indicates that approximately 54.8% of the variance in LP scores can be explained by differences in CF scores, highlighting the practical significance of the relationship.

4.4 Assumptions Check

The assumptions of Pearson's correlation were verified:

Both CF and LP scores were continuous and approximately normally distributed.

A linear relationship was confirmed by scatterplot analysis.No significant outliers were identified that could unduly influence the correlation coefficient. These analyses provide strong evidence of a direct and substantial relationship between cognitive flexibility and listening proficiency among the study participants.

Statistical Indicators of Listening Proficiency test:

Mean	23.01
Median	23
Mode	24
Standard Deviation	2.369
Variance	5.61
Skewness	0.247-

Kurtosis	0.748
Minimum	14
Maximum	30
Range	16

Cognitive Flexibility CF					
Listening Proficiency	No. of participants	Correlation coefficient	T-Value		Significance level 0.05
			computed	critical	
	120	0.740	20.555	1.96	significant

4. Discussion of Results

The findings of the study indicate that cognitive flexibility (CF) positively contributes to listening proficiency (LP) among Iraqi EFL preparatory school students. Students with higher CF scores demonstrated greater LP, suggesting that the ability to adaptively shift attention, consider alternative explanations, and employ multiple strategies enhances listening comprehension. The statistical association between CF and LP confirms that CF helps explain the variation in students' listening performance. These results align with previous research emphasizing the role of cognitive flexibility in language learning. Martin & Rubin (1995) highlighted components of CF such as self-efficacy and adaptability in communication, while Dennis & Wal (2010) emphasized flexible thinking in managing challenges. Similarly, recent studies on L2 listening indicate that cognitive control mechanisms, including cognitive flexibility, enable learners to efficiently process spoken input and apply strategic listening skills (Yang & Lee, 2022). The present study extends these findings to a local context, demonstrating that CF is a significant predictor of LP among young Iraqi learners.

Contextually, these findings suggest that preparatory students in Karbala Governorate benefit from CF in overcoming challenges related to limited exposure to English and classroom constraints. Higher CF enables learners to interpret multiple perspectives and adjust to varying auditory input, improving their LP. The strong correlation observed in this study (r = 0.740) indicates that CF plays a particularly important role among this population, highlighting both theoretical and practical implications for EFL instruction and curriculum design in Iraqi schools.

5. Conclusions

The present study investigated the relationship between cognitive flexibility (CF) and listening proficiency (LP) among Iraqi EFL preparatory school students. The results revealed a strong and positive correlation between the two variables (r = 0.740), indicating that learners with higher levels of cognitive flexibility tend to demonstrate

better listening performance. These findings suggest that cognitive flexibility enables learners to effectively manage attention, interpret multiple perspectives, and apply adaptive strategies during listening tasks, thereby enhancing their language comprehension skills.

From a pedagogical perspective, the study highlights the importance of incorporating cognitive flexibility training into EFL instruction. Educators can design classroom activities and listening exercises that encourage students to consider alternative solutions, analyze spoken input critically, and adjust strategies according to context. Integrating such practices may improve learners' self-directed learning abilities and overall listening competence, particularly in environments with limited exposure to authentic English.

Several limitations should be noted. The study focused solely on male fourth-grade preparatory students from the Karbala Governorate, limiting the generalizability of the findings to other age groups, genders, or regions. Additionally, the study employed a correlational design, which precludes causal inferences between CF and LP. Future research could expand the sample to include students from different regions and educational levels, investigate potential mediating variables such as motivation or anxiety, and explore longitudinal or experimental designs to examine causal effects of cognitive flexibility on listening development.

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المستخلص:

يُعدّ تسهيل التواصل الفعّال هدفًا رئيسًا من أهداف تعلّم اللغة الإنجليزية كلغة أجنبية (EFL). فالتواصل التفاعلي لا يتطلب الكفاءة اللغوية فحسب، بل يستلزم أيضًا المرونة المعرفية (Cognitive Flexibility – CF)، التي تمكّن المتعلمين من التكيّف مع المواقف الجديدة والاستجابة بصورة ملائمة في السياقات التواصلية الديناميكية. ويُعدّ الاستماع، بوصفه مهارة استقبالية أساسية، عنصرًا محوريًا في تحقيق الكفاءة اللغوية الشاملة. وعلى الرغم من الأهمية النظرية للمرونة المعرفية، فإن الدراسات التي تناولت علاقتها بكفاءة الاستماع (Listening Proficiency – LP) ما تزال محدودة، لا سيما في سياق متعلمي اللغة الإنجليزية العراقيين. لذا تهدف هذه الدراسة إلى تقصي العلاقة الارتباطية بين المرونة المعرفية وكفاءة الاستماع لدى طلبة المرحلة الإعدادية من متعلمي اللغة الإنجليزية كلغة أجنبية في العراق. كما تسعى إلى تحديد مستوى كل من المرونة المعرفية وكفاءة الاستماع لدى الطلبة، والكشف عن طبيعة العلاقة بينهما، وبيان مدى إسهام المرونة المعرفية في تفسير التباين في كفاءة الاستماع.

وقد شارك في الدراسة (120) طالبًا وطالبة تم اختيارهم عشوائيًا من المدارس الإعدادية في محافظة كربلاء خلال العام الدراسي 2023–2024. واستُخدم قسم الاستماع من اختبار TOEFL، إلى جانب استبانة المرونة المعرفية المكوّنة من (28) فقرة (Phillips, 2004). وبعد التحقق من صدق الأداتين وثباتهما، جرى تحليل البيانات باستخدام الأساليب الإحصائية المناسبة.

وأظهرت النتائج تمتع الطلبة بمستوى مرتفع من المرونة المعرفية ومستوى متوسط من كفاءة الاستماع، مع وجود علاقة ارتباطية موجبة ذات دلالة إحصائية بينهما. كما بينت النتائج أن المرونة المعرفية تفسّر نسبة ذات دلالة من التباين في أداء الاستماع. وتؤكد هذه النتائج أهمية تضمين تنمية المرونة المعرفية ضمن تعليم اللغة الإنجليزية لتعزيز كفاءة الاستماع والكفاءة التواصلية.