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Linking Instructional Scaffolding to Listening Outcomes: A Mediating Factor in Iranian EFL Learners' Comprehension, Metacognitive Awareness, and Anxiety Reduction

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Abstract

English foreign language learning is greatly influenced by pedagogical approaches employed, and of the latter, scaffolding has emerged as a very exceptional teaching technique. The present quasi-experimental study investigated the impact of various scaffolding techniques on Iranian intermediate learners' listening performance, metacognitive awareness, and listening anxiety. The population consisted of 180 female learners, six intact classes of 30 members per class, at a Sari, Iran-based private language school. The procedures were collected employing three instruments: IELTS Listening Test 18, Metacognitive Awareness Listening Questionnaire (MALQ), and Foreign Language Listening Anxiety Scale (FLLAS). Statistical analysis employed descriptive statistics and Multivariate Analysis of Covariance (MANCOVA). The findings revealed that the scaffolding strategies—procedural, metacognitive, cognitive, contextual, and motivational—exerted varying and significant effects on learners' listening comprehension, alleviation of listening anxiety, and improvement of metacognitive knowledge. The results also show the educational significance of scaffolding as a theoretical framework comprising multiple elements that can aid cognitive processing, promote learner independence, and address emotional obstacles to foreign language listening. The present findings have significant implications for instructional designers, language learners, and EFL educators looking to improve listening instruction in communicative language teaching and learning contexts.

Keywords: Anxiety reduction; Instructional scaffolding; Listening comprehension skill; Mediating factor; Metacognitive awareness

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1. Introduction

People embark on the pursuit of learning English as a foreign language for a variety of diverse ends and purposes. A core purpose of EFL learning is effective English communication as a necessity for people throughout the world (Tsai, 2022). EFL learning has proved to be influenced by a variety of techniques and strategies, among which scaffolding strategies can be mentioned (Yawisa, 2017). Scaffolding, described by Bruner (1983) as a "setting up" process, is a teaching approach where the teacher provides support to help learners tackle tasks just beyond what they can do on their own (Zuhra et al., 2022). This method creates an environment that encourages learners to identify and use the resources they need to take charge of their own language learning journey. Scaffolding is only possible within the Zone of Proximal Development (ZPD)

(Smagorinsky, 2018). Working based on it entails the learner receiving assistance from others in order to accomplish more than they could have done on their own. Scaffolding describes the specifics of this type of work in the ZPD. Scaffolding represents a social interaction between a student and a teacher and may include elements of tutoring and mentoring; however, it tends to be more successful when both the teacher and the learner engage together in a complex and genuine disciplinary practice (Tabak & Reiser, 2022). When an action depends on (i.e., impacts and is impacted by) other actions, that action is said to be dependent. Collaboration occurs when an objective is reached, whether it be the conclusion of a discussion or the resolution of a challenge. It also qualifies as interactive when it involves the mutually engaging activity of two or more people (Puntambekar, 2022).

Scaffolding has been found to be effective on different English skills (Maspufah, 2019). Listening plays a vital role in learning English, yet many EFL learners struggle to develop this skill effectively. Without listening, learners cannot effectively show themselves and receive attention from speakers, which is effective communication (Bagheri Masoudzade, 2022). What adds to the importance of listening skills is the increased significance of information exchange as an inevitable element of human life in today's global village. More importantly, listening skills are necessary for almost all students in any field, not just English. Obviously, this shows that listening is worth investigating as an inseparable part of the English language and communication. It is highly related to listening comprehension and a construct referred to as listening anxiety. When students learn to understand spoken English, they create a type of fear regarding listening, which refers to listening anxiety. The stress comes in because they try to build meaning from what they hear through a foreign language, and it affects how well they process and understand spoken information (Wang, 2010). As Wang (2010) has mentioned, understanding spoken words is inherently an intricate ability. Because of the intricacy of this, learners will be in a special state of nervousness when they try to understand what is being uttered in a foreign language. This means that learners' low listening skills may cause listening anxiety in them. Learners' anxiety, frequently referred to as foreign language anxiety, second-language classroom anxiety, or L2 anxiety, encompasses the emotions of tension, apprehension, nervousness, worry, and physical arousal that students feel when learning or utilizing a new language (Chen, 2023). Alsowat (2016) notes that a range of elements can shape how anxious learners feel when listening in a foreign language, such as a learner's cultural background, motivation, learning style, as well as their beliefs and attitudes. This anxiety debilitates learners in learning and listening, and negatively affects their success in listening comprehension. In fact, there is a two-way connection between how well someone understands what they hear and the anxiety they feel while listening. Therefore, if listening anxiety is reduced via different strategies, learners' listening comprehension performance will be enhanced as a consequence. Another factor that is influential on listening comprehension is metacognitive awareness. This implies that if learners' meta-cognitive awareness is positively manipulated by different strategies, their listening comprehension will improve. A substantial amount of research now demonstrates that metacognitive awareness, the capacity to govern and regulate one's self-controlled mechanisms and cognition, can play a substantial role in English listening (Wallace, 2022). Metacognitive awareness appears to play a significant role in helping EFL learners manage and guide their own learning while listening by improving an individual's analytical approaches (Al-Jarrah et al., 2018).

Most EFL teachers are not aware of using students' learning styles in their classrooms, so they might not employ the effective techniques and may get disappointed or lose their nerves (Bagheri Masoudzade & Fatehi Rad, 2022). Previous studies have established that scaffolding techniques are able to help learners realize noteworthy progress in their listening ability in English (e.g., Ahmadi Safa & Motaghi, 2021; Ahmadi Safa & Rozati, 2016; Al-Yami, 2008; Ashraf et al., 2016; Shabani, 2014). It has been proven via research that the traditional classroom teaching without scaffolding cannot adequately develop learners' potential, as well as assess their developing listening ability. As a result, incorporating scaffolding in listening courses in EFL contexts is crucial. However, scaffolding itself can be applied in many different ways, and understanding which methods work best is an area that deserves more focus from experts in TEFL.

Covering several introductory issues, in this research, our attention is directed toward the specific challenge being examined. By narrowing our focus to this particular issue, we aim to explore it in depth and gain meaningful insights. Listening is accompanied by many challenges for EFL learners (Rost, 2014). One of the biggest challenges is related to the transience of speech. In contrast to written work, where there is the option of returning to written work and reading it any number of times that is needed, moving through material at a pace that allows for the individual learning style, speech occurs in the moment, and there is limited room for reflection or repetition (Goh, 2010; Tran & Duong, 2020). This can be particularly daunting for EFL learners, who may find it difficult to keep pace with native speakers or decipher unfamiliar accents and varieties. In addition, spoken English commonly includes features such as reduced forms, elisions, liaisons, and connected speech, which make it difficult to understand for non-native listeners (Alameen & Levis, 2015).

Early research on listening mainly focused on whether simply being exposed to understandable language input would naturally improve listening skills, and no focus was on the strategies that help input processing (Krashen, 1982). In other words, listening strategies have been the missing link in the early research in the listening comprehension area. However, recently, English listening research has shifted to focus on how learners can learn listening with the help of different

strategies (Abdalhamid, 2012). A key challenge in learning listening is that, in many EFL education systems—including in Iran—listening skills often receive very little attention or focus, and EFL learners have not been provided with the required opportunities to learn this skill effectively (Ahmadi Safa & Rozati, 2016). What adds to listening difficulty for EFL learners is that they experience a high degree of listening anxiety. As mentioned above, the listening skills of EFL learners can be deeply influenced by such factors as listening anxiety and metacognitive awareness. However, this needs further investigation to be empirically proven. Fortunately, in the recent years, listening skill has been investigated under the effect of different teaching strategies including scaffolding. The consensus among these studies (e.g., Ashraf et al., 2016; Shabani, 2014) is that various strategies, including scaffolding, have the potential to make listening skills more straightforward for EFL learners. But a main problem in this regard is that the volume of studies showing scaffolding has little effect on EFL learners' listening abilities. Not much research has delved into the specific impact of scaffolding on listening anxiety and metacognitive awareness, making this an area that needs more attention. In other words, the studies done are not rich enough to lead us to the exclusive conclusion that EFL listening comprehension, listening anxiety and metacognitive awareness are significantly affected by scaffolding. More importantly, the studies done have operationalized scaffolding in its general sense without distinguishing different types of scaffolding. This is while scaffolding is there in various kinds. Each kind of scaffolding is characterized by its own set of procedures. What further complicates the matter is that scaffolding cannot be run by a set of pre-determined and clear-cut steps. This is why some EFL teachers may have problems with implementing it in EFL classes. This calls for the need to conduct more empirical studies with the intention to unearth how the scaffolding strategies can be implemented at the service of EFL learners' listening skills. Evidently, these efforts help the passive structure of listening classes to be deconstructed and replaced with a more interactive atmosphere wherein all students are interactive and engaged. It is anything but a passive space in which teachers are lecturers and students are recipients of lectures from the teachers. Faced with these challenges, the researchers were therefore challenged to examine the potential contribution of various types of scaffolding—i.e., contextual, cognitive, metacognitive, procedural, and motivational—to the ability of Iranian EFL learners to understand oral English, manage anxiety related to listening, and develop metacognitive skills. This study attempts to fill a perceived gap in current research. Guiding the research, the following questions were formulated:

1. To what extent are contextual, cognitive, metacognitive, procedural, and motivational scaffolding techniques different in their effectiveness at enhancing Iranian EFL learners' listening comprehension?
2. How does contextual, cognitive, metacognitive, procedural, and motivational scaffolding influence Iranian EFL learners' listening comprehension performance?
3. Are contextual, cognitive, metacognitive, procedural, and motivational scaffolding different in their effectiveness in enhancing Iranian EFL learners' metacognitive awareness?
4. To what degree do contextual, cognitive, metacognitive, procedural, and motivational scaffolding influence metacognitive awareness among Iranian EFL learners?
5. To what degree do contextual, cognitive, metacognitive, procedural, and motivational scaffolding have differential effects on listening anxiety among Iranian EFL learners?
6. Are contextual, cognitive, metacognitive, procedural, and motivational scaffolding strategies more/less effective in reducing listening anxiety among Iranian EFL learners?

2. Review of the Related Literature

Vygotsky's (1987) concept, known as the Zone of Proximal Development, or ZPD, constitutes the theoretical framework of this study. It is an important concept in educational psychology, particularly in language learning fields, including EFL teaching/learning. ZPD is also referred to as the space between tasks that one can accomplish alone and tasks that one can accomplish in the presence of a more knowledgeable individual, i.e., an instructor or another learner (Sage, 2022; Vygotsky, 1978). It demonstrates the dynamic, interactive, and social nature of learning in which social interaction plays a role in developing intellectual abilities (Zaretsky, 2021). In this study, Vygotsky's idea serves as a theoretical foundation for investigating how different scaffolding methods impact Iranian EFL learners' metacognitive awareness, listening comprehension, and listening anxiety.

According to Scaffolding, defined as the kind of short-term assistance offered to learners, helping learners reach a higher level of understanding and skill, is intrinsically linked to the principles of ZPD (Margolis, 2020). Utilizing scaffolding helps learners accomplish tasks they would otherwise find difficult to advance within their ZPD and improve their language proficiency.

The practical application of ZPD in language learning becomes evident through the strategic use of scaffolding. In scaffolding, initially, teachers provide extensive guidance and modeling, which is necessary. As learners become more skilled, the support they receive is slowly reduced. This gradual transition helps them become more self-sufficient and encourages them to take ownership of their learning process (Gonulal & Loewen, 2018). This fade, or fading, plays a critical role in training independent learners who are capable of governing themselves and possess sharp metacognitive awareness (Shabani, 2014). In EFL listening comprehension, this might involve guiding students through complex listening exercises that offer strategies to decode and interpret spoken language, and

progressively reduce assistance as they gain confidence and expertise. Additionally, Vygotsky's ZPD is deeply linked to the idea of metacognition, which involves a learner's awareness and control over their cognitive processes (Zhang & Zhang, 2019). Metacognitive strategies, such as keeping track of progress and reflecting on what works, are vital for language learning, especially in listening comprehension, where active engagement with spoken input is required (Chou, 2016). Scaffolding within the ZPD can enhance learners' metacognitive awareness through prompting them to evaluate their listening strategies and recognize where they can make improvements. This way, students can develop more effective approaches to processing spoken language (Taheri & Hedayat Zade, 2018).

2.1. Empirical Studies

In a most recent study, Sadeghpour and Najafi Sarem (2025) analyzed the effect of metacognitive scaffolding techniques on 60 EFL learners' listening-related anxiety and their active participation. Data were collected through a Listening Anxiety Scale and a Student Engagement questionnaire. Data analysis indicated that participants in the experimental group experienced a statistically significant reduction in listening anxiety and a notable improvement in behavioral engagement when compared to their counterparts in the control group. In the same year, Akram et al. (2025) analyzed the effect of AI-based scaffolding on problem solving and metacognitive awareness in 300 language learners. A quasi-experimental study was employed in secondary schools and undergraduate institutions. Data were gathered through pre-tests, post-tests, and structured questionnaires. The results indicated a strong relationship between metacognitive awareness and AI-based scaffolding. Munawir and colleagues (2022) explored how scaffolding affects students' ability to understand what they read. Using a pretest and posttest within a pre-experimental setup, they discovered that students showed noticeable improvement in their reading comprehension after receiving scaffolding support. In the same year, Tajadini and colleagues (2022) focused on investigating whether combining reciprocal teaching with sheltered instruction methods would have an impact on students' writing abilities and their self-confidence. Their research found that students in the experimental group, who experienced this integrated approach, improved their writing performance. Additionally, these teaching methods helped increase the learners' self-efficacy. Ultimately, the study provided valuable insights into which teaching strategies work best for pre-intermediate students. Similarly, Ahmadi Safa and Motaghi (2021) investigated which type of scaffolding—cognitive or metacognitive—was more effective in strengthening listening understanding skills of EFL learners. Their findings revealed that metacognitive scaffolding strategies were much more successful than both cognitive scaffolding and teaching without any scaffolding, leading to better listening outcomes for the learners. Moreover, the analysis revealed that the learners generally preferred the metacognitive scaffolding approach, considering it to be more instructive, innovative, and effective in identifying problems, enhancing comprehension, and increasing their preparedness for listening tasks.

Kula and Budack (2020) explored how scaffolding could impact students' reading comprehension, their ability to retain what they learned, and their confidence in understanding texts. Their study compared two groups: one that experienced scaffolding techniques and a group of individuals who learned through conventional teaching techniques (control group). The analysis confirmed a clear difference— learners who received extra support through scaffolding outperformed their peers when it came to understanding what they read and remembering the material later on. However, when it came to their confidence in their reading skills, the results showed that both groups performed at similar levels, with no noticeable gap between them in terms of outcomes. Students in the scaffolding group shared that they enjoyed having the opportunity to take the lead in class and contribute to how the lessons were shaped. They also felt that this approach helped them understand the reading materials more deeply and appreciated the chance to collaborate with their classmates. In research conducted by Taka (2020), the focus was on finding out whether using scaffolding techniques could make a difference in how Indonesian students, who are learning English as a foreign language, develop their reading abilities. The central question was whether this kind of supportive teaching could help children become better readers. The findings showed that this approach was indeed beneficial for teaching reading to these students. Similarly, Karimi and colleagues (2020) looked into how instructional scaffolding, particularly through graphic organizers, affected listening comprehension and vocabulary learning among second language learners.

Their results revealed that students who used graphic organizers performed significantly better in both listening and vocabulary acquisition compared to those who did not. Additionally, interviews showed that learners responded positively to the use of graphic organizers in their lessons, appreciating this supportive tool.

The gap in research is particularly observed in studies that differentiate between types of scaffolding. While general scaffolding approaches have been discussed in the literature, the distinct impacts of specific scaffolding strategies on listening comprehension, metacognitive awareness, and anxiety in Iranian EFL learners have not been sufficiently explained. For instance, research could explore the effects of interactive scaffolding, where teachers provide ongoing feedback and support during listening tasks, versus more structured pre-listening scaffolding, which might involve teaching specific listening strategies or providing contextual background before listening.

To sum up these research gaps, it can be noted that while the potential benefits of scaffolding in language learning are well-acknowledged, there is a critical need for more focused research on how different types of scaffolding

influence listening comprehension performance, metacognitive awareness, and listening anxiety among Iranian EFL learners.
Addressing these gaps could provide useful findings to optimize language teaching/learning in Iran, ultimately supporting learners in overcoming the linguistic, cognitive, cultural and emotional barriers to effective listening comprehension.

3. Methodology

3.1. Design and Participants

This study aimed to examine how different scaffolding strategies (the independent variables) impact EFL learners' listening skills (the dependent variable) using quantitative methods. Specifically, it followed a quasi-experimental design with pretests and post-tests, including a control group, where the researchers adjusted the scaffolding approaches to observe their effects on listening performance.
The research was carried out with a group of intermediate English learners at a private language school in Sari, Iran. The participants were conveniently chosen from six female classes, each consisting of 30 students. As a general definition, "Convenience sampling involves using available cases for a study. Using a large undergraduate class, using the students in your own classroom as a sample, or taking volunteers to be interviewed in survey research are examples of convenience sampling" (Ary et al., 2010, p. 156). Five classes were assigned to five experimental groups (i.e., process-based + context scaffolding group, process-based cognitive scaffolding group, process-based + metacognitive scaffolding group, process-based procedural scaffolding group, and process-based motivational scaffolding group) as well as to the control group (text-based group).
This institute had already confirmed that the participants were fairly similar in their English proficiency levels before the study began. The native language of the sample was Farsi.
The learners taking part in the study were between 16 and 18 years old. At the beginning of the research, ethical approval and written consent were obtained, and they were clearly informed about what the study aimed to achieve. They were also reassured that any personal details they shared would remain private and confidential.

3.2. Materials and Instruments

3.2.1. *Listening IELTS Test 18*

To measure how well students understood spoken English both before and after the program, the researchers used the Listening section from the IELTS Test 18 as their assessment tool. This test includes 40 questions divided into four parts: Part 1 has 10 fill-in-the-blank questions, while Parts 2, 3, and 4 each contain 10 questions combining fill-in-the-blank and multiple-choice formats. The test is scored out of 40 points.

3.2.2. *Metacognitive Awareness of Listening Questionnaire (MALQ)*

To find out how students' awareness of their own listening strategies changed over the course of the study, the researchers asked them to complete the Metacognitive Awareness of Listening Questionnaire (MALQ) both before and after the program. This survey, created by Vandergrift in 2006, features 21 statements that students respond to on a six-point scale, ranging from "strongly disagree" to "strongly agree." Vandergrift confirmed the questionnaire's validity through factor analysis and reported a high reliability score of 0.90.

3.2.3. *Foreign Language Listening Anxiety Scale (FLLAS)*

To measure how anxious the participants felt about listening in a foreign language before and after the study, the researchers used the Foreign Language Listening Anxiety Scale (FLLAS) developed by Kim (2000). This scale consists of 33 statements that participants rate on a five-point scale, from strongly disagree to strongly agree, helping to capture the level of their listening-related anxiety. Kim confirmed the scale's validity and reported a reliability score of 0.85, ensuring it is a trustworthy tool for measuring listening anxiety.

3.3. Procedure

Once the participants were chosen and the classes were split into two groups—one receiving the new teaching method and the other sticking with traditional instruction—all students first completed three assessments: the Listening IELTS Test 18, the Metacognitive Awareness of Listening Questionnaire (MALQ), and the Foreign Language Listening Anxiety Scale (FLLAS).
These initial tests helped the researchers understand where everyone started. After that, both groups attended fifteen sessions at the institute, each lasting 90 minutes and held twice a week, giving everyone plenty of time to engage with the material in different ways.
During the educational sessions, the textbook that was currently taught in the institute was taught in the first 70 minutes of the class session because the educational sessions were part of the regular class sessions of the language institute, which constituted the setting of the study.
However, in the last 20 minutes of each class session, the scaffolding strategies were applied while teaching the listening part of the MINDSET FOR IELTS 1 Book. This book has been published by Cambridge Press in eight units in 2017 in four parts, including reading, writing, listening and speaking. Before diving into the specific scaffolding strategies used with the experimental groups, it's important to note that all these groups followed a process-based listening approach.
As Vandergrift (2004) explains, with this approach, the teacher takes an active role in showing students how to become better listeners by introducing and practicing

different listening techniques. The goal is to help learners discover strategies that make it easier for them to understand spoken language and apply these methods as they listen. Simply put, learners receive support to explore and build their skills, leading to overall improvement in their listening abilities (Vandergrift, 2004).

In the cognitive scaffolding group, the teacher used some examples to help the learning process, guided students to relate the new knowledge to what they know, and gave hints to them in order to correct their errors. In this group, modeling, explaining, questioning, prompting, hinting, summarizing, paraphrasing, and clarifying strategies were used. In the context of the scaffolding group, the teacher explained the concepts using pictures, charts, conceptual maps, PowerPoint, and films.

She also used authentic podcasts and short videos. The main aim in this group was to contextualize learning through authentic materials. In the metacognitive scaffolding group, the teacher helped students to set their goals for studying, guided them to use appropriate learning procedures, and provided opportunities for them to ask some questions.

The main strategies used in this group included planning, monitoring, evaluating, setting goals, giving feedback, self-assessing, reflecting, and transferring strategies. In the motivational scaffolding group, the teacher told some stories and interesting events to increase students' interest, persuaded them to increase their motivation, and guided them to insure them that they can learn. She also used to give praise, generating optimism, increasing self-confidence, showing empathy/sympathy, and giving positive feedback strategies.

In the procedural scaffolding group, the teacher proposed an order for the materials in order to help students understand them, gave some solutions, proposed some ways to help students comprehend the materials, and supported the students by breaking down words into smaller, easier-to-understand parts to help them grasp the meaning.

Moreover, she used tools and resources to support the students as they gained access to the learning, provided explicit modeling through visuals, gestures, and realia, and used visual tools (organizers) as students manipulated information.

However, the control group didn't receive any scaffolding support and only worked with traditional text-based or product-focused listening activities. That is, learners' strategy knowledge and strategy use were not emphasized and practiced in this group.

In this group, during the last 20 minutes of each class, students focused on memorizing listening details, repeating them, and answering comprehension questions using the listening section from the MINDSET FOR IELTS 1 Book. Then, one week after the teaching sessions ended, all six groups took the Listening IELTS Test 18, the MALQ, and the FLLAS again as post-tests to measure their progress.

To analyze the data, the researchers used a mix of methods. They started by calculating averages and standard deviations to get a general sense of the results. Then, to dig deeper and compare how the six groups performed on the post-tests—while taking into account where everyone started—they used a statistical technique called MANCOVA, followed by a Bonferroni Post-Hoc test.

This approach allowed them to look at differences in listening comprehension, metacognitive awareness, and listening anxiety across the groups, making sure their comparisons were fair and thorough.

Additionally, the necessary assumptions for MANCOVA were checked, including the normality of the data, linear relationships between pre-tests and post-tests, correlations among covariates and post-tests, equal variances across groups, and consistent covariance matrices.

3.5. Data Analysis and Results

To make sure the comparison between the six groups was accurate, the researchers used MANCOVA to look at their post-test scores in listening comprehension, metacognitive awareness, and listening anxiety, while also considering how each group performed on these measures before the study began.

This approach helped ensure that any differences found were due to the intervention, not just where the students started out. Before discussing the results, the assumptions related to MANCOVA will be reported. Before running the MANCOVA, the researchers needed to check that the data followed a normal distribution. They looked at the skewness and kurtosis values shown in Table 1, and since all the numbers were within the acceptable range of plus or minus 2, they concluded that the data were suitably normal for the analysis.

Second, MANCOVA requires a clear, linear relationship between the pretests and posttests for listening anxiety, metacognitive awareness, and listening comprehension. The data of Table 2 demonstrate that this assumption's met, with strong and significant linear connections for listening comprehension ($F(1, 179) = 58.93$, $p < 0.05$, large effect size), metacognitive awareness ($F(1, 179) = 99.87$, $p < 0.05$, large effect size), and listening anxiety ($F(1, 179) = 21.43$, $p < 0.05$, large effect size).

This means the pretest scores reliably predicted the posttest outcomes in all three areas. Third, MANCOVA assumes that the relationship between the covariates and posttest scores is consistent across all six groups, meaning the regression slopes should be similar. Table 3 shows that this assumption holds true.

The analysis showed that there wasn't any meaningful connection between the main factors being studied and the variables that were controlled for listening comprehension ($F(1, 168) = 1.97$, $p > 0.05$), metacognitive awareness ($F(1, 168) = 2.00$, $p > 0.05$), and listening anxiety ($F(1, 168) = 2.25$, $p > 0.05$), indicating that the regression slopes were consistent across groups.

The effect sizes were small, supporting the idea that this assumption was met. This means the way pretest scores relate to posttest scores was similar for all groups.

Table 1. Skewness and Kurtosis Indices of Normality

Group		N	Skewness		Kurtosis	
		Statistic	Statistic	Std. Error	Statistic	Std. Error
Metacognitive	PreLC	30	0.617	0.427	-0.469	0.833
	PostLC	30	-0.040	0.427	1.093	0.833
	PreMeta	30	0.751	0.427	0.326	0.833
	PostMeta	30	-0.561	0.427	-1.076	0.833
	PreLCAnx	30	-0.150	0.427	-0.802	0.833
	PostLCAnx	30	-0.338	0.427	-0.695	0.833
Motivational	PreLC	30	0.573	0.427	0.623	0.833
	PostLC	30	-0.087	0.427	-0.691	0.833
	PreMeta	30	0.247	0.427	-0.343	0.833
	PostMeta	30	0.175	0.427	0.617	0.833
	PreLCAnx	30	-0.132	0.427	0.527	0.833
	PostLCAnx	30	-0.195	0.427	-0.490	0.833
Context	PreLC	30	-0.516	0.427	0.908	0.833
	PostLC	30	0.257	0.427	0.391	0.833
	PreMeta	30	-0.149	0.427	-0.508	0.833
	PostMeta	30	-0.032	0.427	-0.469	0.833
	PreLCAnx	30	-0.033	0.427	0.372	0.833
	PostLCAnx	30	-0.198	0.427	-0.558	0.833
Procedural	PreLC	30	-0.240	0.427	0.249	0.833
	PostLC	30	0.592	0.427	-0.080	0.833
	PreMeta	30	-0.215	0.427	-0.775	0.833
	PostMeta	30	0.310	0.427	-0.930	0.833
	PreLCAnx	30	0.574	0.427	0.077	0.833
	PostLCAnx	30	-0.471	0.427	0.286	0.833
Cognitive	PreLC	30	-0.763	0.427	-0.155	0.833
	PostLC	30	-0.434	0.427	0.840	0.833
	PreMeta	30	0.190	0.427	-0.125	0.833
	PostMeta	30	-0.314	0.427	0.591	0.833
	PreLCAnx	30	-0.111	0.427	-0.311	0.833
	PostLCAnx	30	0.223	0.427	-0.126	0.833
Control	PreLC	30	-0.400	0.427	-0.582	0.833
	PostLC	30	0.218	0.427	-0.634	0.833
	PreMeta	30	-0.266	0.427	-0.785	0.833
	PostMeta	30	-0.609	0.427	-0.582	0.833
	PreLCAnx	30	0.554	0.427	-0.297	0.833
	PostLCAnx	30	0.185	0.427	-0.650	0.833

Note. Pre = Pretest, Post = Posttest, LC = Listening Comprehension, Meta = Metacognitive Awareness, and LCAnx = Listening Anxiety.

Table 2. Assumption of Linearity of Relationship between Pretests and Posttests of Listening Comprehension, Metacognitive Awareness, and Listening Anxiety

			Sum of Squares	df	Mean Square	F	Sig.
PostLC * PreLC	Between Groups	(Combined)	2051.267	15	136.751	5.559	0.000
		Linearity	1449.761	1	1449.761	58.937	0.000
		Deviation from Linearity	601.506	14	42.965	1.747	0.051
	Within Groups		4034.127	164	24.598		
	Total		5220.728	179	Eta-Squared		0.337
PostMeta * PreMeta	Between Groups	(Combined)	37206.775	19	1958.251	6.702	0.000
		Linearity	29180.161	1	29180.161	99.872	0.000
		Deviation from Linearity	8026.614	18	445.923	1.526	0.087
	Within Groups		46748.025	160	292.175		
	Total		83954.800	179	Eta-Squared		0.443
PostLCAnx * PreLCAnx	Between Groups	(Combined)	23937.442	19	1259.865	2.514	0.001
		Linearity	10741.529	1	10741.529	21.433	0.000
		Deviation from Linearity	13195.913	18	733.106	1.463	0.110
	Within Groups		80188.535	160	501.178		
	Total		104125.978	179	Eta-Squared		0.230

Note. Pre = Pretest, Post = Posttest, LC = Listening Comprehension, Meta = Metacognitive Awareness, and LCAnx = Listening Anxiety

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Table 3. Testing Homogeneity of Regression Slopes

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Group	59.600	5	11.920	1.486	0.197	0.042
PreLC	1112.729	1	1112.729	138.704	0.000	0.452
Group * PreLC	79.241	5	15.848	1.976	0.085	0.056
Error	1347.747	168	8.022			
Total	94841.000	180				
Group	803.588	5	160.718	4.277	0.001	0.113
PreMeta	4951.249	1	4951.249	131.772	0.000	0.440
Group * PreMeta	376.261	5	75.252	2.003	0.081	0.056
Error	6312.475	168	37.574			
Total	554586.000	180				
Group	2114.361	5	422.872	8.463	0.000	0.201
PreLCAnx	6119.021	1	6119.021	122.460	0.000	0.422
Group * PreLCAnx	562.302	5	112.460	2.251	0.052	0.063
Error	8394.513	168	49.967			
Total	941622.000	180				

Note. Pre = Pretest, Post = Posttest, LC = Listening Comprehension, Meta = Metacognitive Awareness, and LCAnx = Listening Anxiety

Fourth, MANCOVA assumes that the variances across groups are equal. The results of Levene's test, which checks whether the groups have similar levels of variation, are shown in Table 4. The test showed that the variances were equal for the listening comprehension posttest (F (5, 174) = 0.613, $p > 0.05$), but this assumption was violated for the posttests of metacognitive awareness (F (5, 174) = 7.76, $p < 0.05$) and listening anxiety (F (5, 174) = 3.66, $p < 0.05$). However, since the groups in this study all had equal sample sizes, this violation is not a major concern and can be safely overlooked. This means the analysis remains reliable despite these differences in variance.

Table 4. Levene's Test of Homogeneity of Variances

	F	df1	df2	Sig.
PostLC	0.613	5	174	0.690
PostMeta	7.768	5	174	0.000
PostLCAnx	3.667	5	174	0.004

Finally, Table 5 presents the results of Box's test, which checks whether the covariance matrices are similar across groups. The results (Box's M = 125.57, $p > 0.001$) showed that this assumption was not met, meaning the covariance matrices were not equal across the groups. According to Field (2024, p. 800), "If sample sizes are equal, then people tend to disregard Box's test, because (1) it is unstable, and (2) in this situation we can assume that Hotelling's and Pillai's statistics are robust". The robust results of the Pillai's Trace were reported in Table 7. It's important to mention that the results of Box's test are reported using a stricter significance level of 0.001. Now that we've covered the assumptions behind MANCOVA, let's move on to the main findings. Table 6 presents the average scores for all six groups on the post-tests, reflecting their performance in listening comprehension, metacognitive awareness, and listening anxiety, with adjustments made to account for their pre-test results.

Table 5. Box's Test of Homogeneity of Covariance Matrices

Box's M	125.570
F	4.001
df1	30
df2	68421.681
Sig.	0.000

A more detailed discussion of these findings will follow when we review the post-hoc comparison tests shown in Tables 9, 10, and 11. It's worth mentioning that when running ANCOVA in IBM SPSS 26, the program reports Standard Error (SE) instead of Standard Deviation (SD), as you can see in Table 6. Because these results are adjusted for pre-test effects, as noted in the table's footnote, it's not possible to manually calculate the standard deviations from this data.

Table 7 presents the key findings from the MANCOVA analysis. The results (F (15, 513) = 30.79, $p < 0.05$, partial $\eta^2 = 0.474$, indicating a large effect) show clear contrasts among these six groups when looking at their combined scores on the post-tests for listening comprehension, metacognitive awareness, and listening anxiety.

In other words, if you add up the scores from these three post-tests, the average results differ meaningfully across the groups. The findings from the analysis that compared differences among the groups are summarized in Table

8, which essentially compares how each group performed on the different tests. When we look at these findings alongside the average scores from Table 6 and the post-hoc comparison results in Table 9, we can draw a few key conclusions, labeled A, B, and C below.

Table 6. Descriptive Statistics for Posttests of Listening Comprehension, Metacognitive Awareness, and Listening Anxiety by Group with Pretests

Dependent Variable	Group	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
PostLC	Metacognitive	27.172[a]	0.476	26.232	28.112
	Motivational	24.662[a]	0.473	23.728	25.596
	Context	23.300[a]	0.477	22.358	24.243
	Procedural	21.556[a]	0.467	20.634	22.478
	Cognitive	19.824[a]	0.468	18.899	20.749
	Control	16.719[a]	0.595	15.545	17.893
PostMeta	Metacognitive	79.995[a]	1.101	77.822	82.168
	Motivational	65.165[a]	1.094	63.006	67.324
	Context	55.660[a]	1.103	53.482	57.838
	Procedural	45.080[a]	1.080	42.948	47.211
	Cognitive	33.412[a]	1.083	31.274	35.549
	Control	27.489[a]	1.375	24.775	30.203
PostLCAnx	Metacognitive	40.961[a]	1.338	38.321	43.601
	Motivational	48.973[a]	1.329	46.350	51.597
	Context	70.373[a]	1.341	67.727	73.020
	Procedural	57.814[a]	1.312	55.224	60.404
	Cognitive	86.015[a]	1.316	83.418	88.612
	Control	105.130[a]	1.671	101.832	108.428

a. Covariates appearing in the model are evaluated at the following values: PreLC = 15.02, PreMeta = 26.01, PreLCAnx = 35.67.

Table 7. Multivariate ANCOVA for Posttests of Listening Comprehension, Metacognitive Awareness and Listening Anxiety by Group with Pretests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	0.326	27.239[b]	3.000	169.000	0.000	0.326
	Wilks' Lambda	0.674	27.239[b]	3.000	169.000	0.000	0.326
	Hotelling's Trace	0.484	27.239[b]	3.000	169.000	0.000	0.326
	Roy's Largest Root	0.484	27.239[b]	3.000	169.000	0.000	0.326
Group	Pillai's Trace	1.421	30.798	15.000	513.000	0.000	0.474
	Wilks' Lambda	0.032	76.757	15.000	466.936	0.000	0.681
	Hotelling's Trace	16.306	182.265	15.000	503.000	0.000	0.845
	Roy's Largest Root	15.455	528.549[c]	5.000	171.000	0.000	0.939

3.5.1. *Results of the Research Questions One and Two*

A: Once the initial differences in pretest scores were taken into consideration, the results revealed that the six groups ended up with noticeably different average scores in listening comprehension on the posttest. The statistical analysis ($F(5, 171) = 46.03$, $p < 0.05$) indicates that these differences are not due to chance, and the effect size (partial $\eta^2 = 0.574$) suggests a strong impact. This means that the findings supported the first research question, "To what extent are contextual, cognitive, metacognitive, procedural, and motivational scaffolding techniques different in their effectiveness at enhancing Iranian EFL learners' listening comprehension?" showing a favorable outcome. The results of the Bonferroni post-hoc comparisons for the groups' listening comprehension scores after the intervention, while considering their starting points from the pretest, are detailed in Table 9. It's important to mention that when performing a MANCOVA analysis in IBM SPSS, standard post-hoc tests like Scheffe and Tukey aren't available, so the Bonferroni method was used instead. The researchers can select either of the three tests of No Correction, LSD, or Bonferroni. The first method does not penalize for the multiple comparisons made. The second one, i.e., Least Significant Difference (LSD), flags as significant the least differences between means, while the last one, the Bonferroni Correction, is the best (Field, 2024), which corrects for multiple comparisons made. The post-hoc comparison tests revealed the following:

A-1: The group that received context scaffolding scored much higher on the listening comprehension posttest (average score of 23.30) compared to the control group (average score of 16.71), even after taking their pretest results into account. The gap between the groups, with an average difference of 6.58 points, was large enough

to be considered statistically meaningful, as the probability value was less than 0.05. Accordingly, it is evident that context scaffolding significantly affects Iranian EFL learners' listening comprehension performance.

Table 8. Tests of Between-Subjects Effects for Posttests of Listening Comprehension, Metacognitive Awareness and Listening Anxiety by Group with Pretests

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
	PostLC	1483.341	5	296.668	46.037	0.000	0.574
Group	PostMeta	47425.386	5	9485.077	275.461	0.000	0.890
	PostLCAnx	63251.342	5	12650.268	248.792	0.000	0.879
	PostLC	1101.949	171	6.444			
Error	PostMeta	5888.125	171	34.433			
	PostLCAnx	8694.811	171	50.847			
	PostLC	94841.000	180				
Total	PostMeta	554586.000	180				
	PostLCAnx	941622.000	180				

A-2: After taking into account students' initial listening abilities, those who received cognitive scaffolding scored noticeably higher on the listening comprehension test (average score: 19.82) compared to those in the control group (average score: 16.71). The difference between the groups was statistically significant (difference = 3.10, $p < 0.05$), showing that using cognitive scaffolding can make a real difference in how well Iranian EFL learners understand spoken English.

Table 9. Bonferroni Post-Hoc Comparison Tests for Posttest of Listening Comprehension by Group with Pretest

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
Metacognitive	Motivational	2.510*	0.660	0.003	0.544	4.476
	Context	3.872*	0.668	0.000	1.883	5.860
	Procedural	5.616*	0.658	0.000	3.657	7.575
	Cognitive	7.348*	0.664	0.000	5.371	9.325
	Control	10.453*	0.803	0.000	8.063	12.843
Motivational	Metacognitive	-2.510*	0.660	0.003	-4.476	-0.544
	Context	1.361	0.657	0.598	-0.596	3.318
	Procedural	3.106*	0.660	0.000	1.142	5.070
	Cognitive	4.838*	0.657	0.000	2.882	6.794
	Control	7.943*	0.805	0.000	5.547	10.339
Context	Metacognitive	-3.872*	0.668	0.000	-5.860	-1.883
	Motivational	-1.361	0.657	0.598	-3.318	0.596
	Procedural	1.745	0.666	0.144	-0.238	3.727
	Cognitive	3.477*	0.658	0.000	1.517	5.436
	Control	6.581*	0.808	0.000	4.177	8.986
Procedural	Metacognitive	-5.616*	0.658	0.000	-7.575	-3.657
	Motivational	-3.106*	0.660	0.000	-5.070	-1.142
	Context	-1.745	0.666	0.144	-3.727	0.238
	Cognitive	1.732	0.660	0.141	-0.231	3.695
	Control	4.837*	0.776	0.000	2.526	7.148
Cognitive	Metacognitive	-7.348*	0.664	0.000	-9.325	-5.371
	Motivational	-4.838*	0.657	0.000	-6.794	-2.882
	Context	-3.477*	0.658	0.000	-5.436	-1.517
	Procedural	-1.732	0.660	0.141	-3.695	0.231
	Control	3.105*	0.785	0.002	0.768	5.441
Control	Metacognitive	-10.453*	0.803	0.000	-12.843	-8.063
	Motivational	-7.943*	0.805	0.000	-10.339	-5.547
	Context	-6.581*	0.808	0.000	-8.986	-4.177
	Procedural	-4.837*	0.776	0.000	-7.148	-2.526
	Cognitive	-3.105*	0.785	0.002	-5.441	-0.768

*The mean difference is significant at the 0.05 level.

A-3: After accounting for students' initial listening comprehension levels, those in the metacognitive scaffolding group achieved much higher posttest scores (average: 27.17) than the control group (average: 16.71). This difference was found to be meaningful based on the analysis (difference = 10.45, $p < 0.05$), highlighting that metacognitive scaffolding can make a substantial difference in helping Iranian EFL learners improve their listening proficiency. Other studies have supported this finding and found that when learners use strategies such as planning how they'll listen, keeping track of their understanding as they go, and reflecting on how well they did afterward, they tend to become more skilled and independent listeners. Thus, it can be concluded that metacognitive scaffolding significantly affects Iranian EFL learners' listening comprehension performance.

A-4: After taking students' initial listening comprehension levels into account, those in the procedural scaffolding group scored higher on the posttest (average: 21.55) than the control group (average: 16.71). This difference was statistically significant (difference = 4.83, $p < 0.05$), suggesting that procedural scaffolding can play a helpful role in boosting listening comprehension for Iranian EFL learners by guiding them step-by-step through listening tasks. Thus, it can be concluded that procedural scaffolding significantly affects Iranian EFL learners' listening comprehension performance.

A-5: After controlling for students' initial listening comprehension levels, those in the motivational scaffolding group scored significantly higher on the posttest (average: 24.66) compared to the control group (average: 16.71). This meaningful difference (difference = 7.94, $p < 0.05$) suggests that motivational scaffolding can effectively boost listening comprehension skills for Iranian EFL learners by encouraging and supporting their engagement during listening tasks. Thus, it can be concluded that motivational scaffolding significantly affects Iranian EFL learners' listening comprehension performance. In sum, the answer to the second research question "How does contextual, cognitive, metacognitive, procedural, and motivational scaffolding influence Iranian EFL learners' listening comprehension performance?" was that context, cognitive, metacognitive, procedural and motivational scaffolding significantly affect Iranian EFL learners' listening proficiency.

3.5.2. *Results of the Research Questions Three and Four*

B: After adjusting for students' starting levels of metacognitive awareness, the six groups displayed clear and reliable differences in how they performed on the posttest ($F(5, 171) = 275.46$, $p < 0.05$). The impact observed was exceptionally strong (partial $\eta^2 = 0.890$), meaning that the kind of support provided through scaffolding played a major role in shaping how much students developed their metacognitive awareness. Different scaffolding approaches influenced how students planned, monitored, and reflected on their learning, which in turn led to varying levels of growth in their ability to think about and manage their own learning processes. Thus, the answer to the third research question, "Are contextual, cognitive, metacognitive, procedural, and motivational scaffolding different in their effectiveness in enhancing Iranian EFL learners' metacognitive awareness?" was positive. Table 10 presents the outcomes of the Bonferroni post-hoc tests, which were carried out to compare the metacognitive awareness scores of different groups after adjusting for their starting points. These follow-up tests helped identify exactly which groups differed from each other in meaningful ways:

B-1: After taking students' starting points into account, those in the context scaffolding group scored much higher on metacognitive awareness in the posttest (average: 55.66) compared to the control group (average: 27.48). This difference was statistically significant (difference = 28.17, $p < 0.05$), showing that context scaffolding can make a meaningful difference in helping Iranian EFL learners become more aware of and better oversee their own learning processes. Thus, it is reasonable to conclude that context scaffolding significantly affects Iranian EFL learners' metacognitive awareness.

B-2: After accounting for students' initial metacognitive awareness levels, those in the cognitive scaffolding group scored significantly higher on the posttest (average: 33.41) compared to the control group (average: 27.48). This difference, though smaller than some other scaffolding types, was statistically meaningful (difference = 5.92, $p < 0.05$), suggesting that cognitive scaffolding can help Iranian EFL learners improve their ability to reflect more deeply on how they learn and to take greater control over their study habits and strategies. This aligns with research showing that cognitive scaffolds support learners' engagement in metacognitive activities, which in turn enhances their metacognitive knowledge and learning outcomes. Thus, it can be concluded that cognitive scaffolding significantly affects Iranian EFL learners' metacognitive awareness.

B-3: After taking students' starting levels into account, those in the metacognitive scaffolding group had much higher posttest scores for metacognitive awareness (average: 79.99) compared to the control group (average: 27.48). This difference was statistically significant (difference = 52.50, $p < 0.05$), showing that metacognitive scaffolding can greatly enhance Iranian EFL learners' ability to reflect on and steer their own learning. Thus, it can be inferred that metacognitive scaffolding significantly affects Iranian EFL learners' metacognitive awareness.

B-4: After taking students' starting points into account, those in the procedural scaffolding group had much higher metacognitive awareness scores on the posttest (average: 45.08) than the control group (average: 27.48). The difference observed between the groups was large enough that it is unlikely to have happened by chance (difference = 17.59, $p < 0.05$), indicating that procedural scaffolding can meaningfully enhance Iranian EFL

learners' ability to reflect on and organize and plan their own learning. Thus, we can deduce that procedural scaffolding significantly affects Iranian EFL learners' metacognitive awareness.

B-5: After taking students' starting points into account, those in the motivational scaffolding group scored much higher on metacognitive awareness in the posttest (average: 65.16) compared to the control group (average: 27.48). This difference was statistically significant (difference = 37.67, $p < 0.05$), indicating that motivational scaffolding can meaningfully enhance Iranian EFL learners' ability to reflect on and regulate their learning activities. Thus, the evidence suggests that motivational scaffolding significantly affects Iranian EFL learners' metacognitive awareness. In sum, the answer to the fourth research question "To what degree do contextual, cognitive, metacognitive, procedural, and motivational scaffolding influence metacognitive awareness among Iranian EFL learners?"
Was that context, cognitive, metacognitive, procedural and motivational scaffolding significantly affect Iranian EFL learners' awareness of their own thinking processes.

Table10. Bonferroni Post-Hoc Comparison Tests for Posttest of Metacognitive Awareness by Group with Pretest

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
Metacognitive	Motivational	14.830*	1.527	0.000	10.285	19.374
	Context	24.335*	1.544	0.000	19.739	28.931
	Procedural	34.915*	1.521	0.000	30.387	39.443
	Cognitive	46.583*	1.535	0.000	42.013	51.153
	Control	52.506*	1.856	0.000	46.982	58.030
Motivational	Metacognitive	-14.830*	1.527	0.000	-19.374	-10.285
	Context	9.505*	1.520	0.000	4.981	14.029
	Procedural	20.085*	1.525	0.000	15.544	24.626
	Cognitive	31.753*	1.519	0.000	27.231	36.276
	Control	37.676*	1.861	0.000	32.138	43.215
Context	Metacognitive	-24.335*	1.544	0.000	-28.931	-19.739
	Motivational	-9.505*	1.520	0.000	-14.029	-4.981
	Procedural	10.580*	1.539	0.000	5.998	15.163
	Cognitive	22.248*	1.521	0.000	17.719	26.777
	Control	28.171*	1.867	0.000	22.613	33.730
Procedural	Metacognitive	-34.915*	1.521	0.000	-39.443	-30.387
	Motivational	-20.085*	1.525	0.000	-24.626	-15.544
	Context	-10.580*	1.539	0.000	-15.163	-5.998
	Cognitive	11.668*	1.524	0.000	7.130	16.206
	Control	17.591*	1.794	0.000	12.249	22.933
Cognitive	Metacognitive	-46.583*	1.535	0.000	-51.153	-42.013
	Motivational	-31.753*	1.519	0.000	-36.276	-27.231
	Context	-22.248*	1.521	0.000	-26.777	-17.719
	Procedural	-11.668*	1.524	0.000	-16.206	-7.130
	Control	5.923*	1.814	0.020	0.522	11.324
Control	Metacognitive	-52.506*	1.856	0.000	-58.030	-46.982
	Motivational	-37.676*	1.861	0.000	-43.215	-32.138
	Context	-28.171*	1.867	0.000	-33.730	-22.613
	Procedural	-17.591*	1.794	0.000	-22.933	-12.249
	Cognitive	-5.923*	1.814	0.020	-11.324	-0.522

*The mean difference is significant at the .05 level.

3.5.3. *Results of the Research Questions Five and Six*

C: The analysis showed that, after accounting for students' initial anxiety levels, there were clear and statistically significant differences in listening anxiety among the six groups on the posttest ($F(5, 171) = 248.79$, $p < 0.05$). The effect size was very large (partial $\eta^2 = 0.879$), meaning that the kind of support students received during their listening activities played an important role in shaping how anxious they felt. Thus, the answer to the fifth research question, "To what degree do contextual, cognitive, metacognitive, procedural, and motivational scaffolding have differential effects on listening anxiety among Iranian EFL learners?" was that contextual, cognitive, metacognitive, procedural, and motivational scaffolding significantly affect Iranian EFL learners' listening anxiety. Table 11 presents the findings from the Bonferroni post-hoc tests, which were used to compare the groups' listening anxiety scores after adjusting for

their initial anxiety levels. These follow-up tests helped pinpoint exactly which groups differed from each other, with a marked difference supported by the data:

C-1: After adjusting for students' initial anxiety levels, those in the context scaffolding group had much lower listening anxiety scores on the posttest (average: 70.37) compared to the control group (average: 105.13). The difference observed between the groups was large enough that it is unlikely to have happened by chance (difference = 34.75, $p < 0.05$), suggesting that context scaffolding can meaningfully help reduce listening anxiety for Iranian EFL learners.

C-2: After adjusting for students' initial anxiety levels, those in the cognitive scaffolding group had noticeably lower listening anxiety scores on the posttest (average: 86.04) than the control group (average: 105.13). This difference was statistically significant (difference = 19.11, $p < 0.05$), suggesting that cognitive scaffolding can help reduce listening anxiety for Iranian EFL learners.

Thus, it can be inferred that cognitive scaffolding significantly affects Iranian EFL learners' listening anxiety.

Table 11. Bonferroni Post-Hoc Comparison Tests for Posttest of Listening Anxiety by Group with Pretest

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
Metacognitive	Motivational	-8.012*	1.855	0.000	-13.534	-2.490
	Context	-29.412*	1.876	0.000	-34.998	-23.827
	Procedural	-16.852*	1.848	0.000	-22.355	-11.350
	Cognitive	-45.054*	1.865	0.000	-50.607	-39.500
	Control	-64.169*	2.255	0.000	-70.881	-57.456
Motivational	Metacognitive	8.012*	1.855	0.000	2.490	13.534
	Context	-21.400*	1.846	0.000	-26.897	-15.903
	Procedural	-8.840*	1.854	0.000	-14.358	-3.322
	Cognitive	-37.042*	1.846	0.000	-42.537	-31.546
	Control	-56.156*	2.261	0.000	-62.887	-49.426
Context	Metacognitive	29.412*	1.876	0.000	23.827	34.998
	Motivational	21.400*	1.846	0.000	15.903	26.897
	Procedural	12.560*	1.871	0.000	6.991	18.129
	Cognitive	-15.642*	1.849	0.000	-21.145	-10.138
	Control	-34.756*	2.269	0.000	-41.511	-28.002
Procedural	Metacognitive	16.852*	1.848	0.000	11.350	22.355
	Motivational	8.840*	1.854	0.000	3.322	14.358
	Context	-12.560*	1.871	0.000	-18.129	-6.991
	Cognitive	-28.201*	1.853	0.000	-33.716	-22.686
	Control	-47.316*	2.181	0.000	-53.808	-40.825
Cognitive	Metacognitive	45.054*	1.865	0.000	39.500	50.607
	Motivational	37.042*	1.846	0.000	31.546	42.537
	Context	15.642*	1.849	0.000	10.138	21.145
	Procedural	28.201*	1.853	0.000	22.686	33.716
	Control	-19.115*	2.204	0.000	-25.678	-12.552
Control	Metacognitive	64.169*	2.255	0.000	57.456	70.881
	Motivational	56.156*	2.261	0.000	49.426	62.887
	Context	34.756*	2.269	0.000	28.002	41.511
	Procedural	47.316*	2.181	0.000	40.825	53.808
	Cognitive	19.115*	2.204	0.000	12.552	25.678

*The mean difference is significant at the 0.05 level.

C-3: After accounting for students' initial anxiety levels, those who received metacognitive scaffolding reported much lower listening anxiety scores on the posttest (average: 40.96) compared to the control group (average: 105.13). This difference was statistically significant (difference = 64.16, $p < 0.05$), showing that metacognitive scaffolding can play a substantial role in helping Iranian EFL learners feel less anxious during listening activities. Thus, it can be concluded that metacognitive scaffolding significantly affects Iranian EFL learners' listening anxiety.

C-4: The group that received procedural scaffolding scored significantly lower on listening anxiety in the posttest (average score: 57.81) compared to the control group (average score: 105.13), even after adjusting for

their initial anxiety levels. This difference was statistically significant (difference = 47.31, $p < 0.05$), indicating that procedural scaffolding can effectively help reduce listening anxiety among Iranian EFL learners. Thus, we can deduce that procedural scaffolding significantly affects Iranian EFL learners' listening anxiety.

C-5: After considering students' initial anxiety levels, those who received motivational scaffolding had much lower listening anxiety scores on the posttest (average: 48.95) compared to the control group (average: 105.13). This difference was statistically significant (difference = 56.15, $p < 0.05$), showing that motivational scaffolding can make a real difference in helping Iranian EFL learners feel less anxious during listening activities. In sum, the answer to the sixth research question "Are contextual, cognitive, metacognitive, procedural, and motivational scaffolding strategies more/less effective in reducing listening anxiety among Iranian EFL learners?" was that context, cognitive, metacognitive, procedural and motivational scaffolding significantly affect Iranian EFL learners' listening anxiety.

4. Discussion

This study answered six research questions. Looking at the first two research questions, the findings showed that the various forms of scaffolding—such as context, cognitive, metacognitive, procedural, and motivational—did not all have the same impact. Instead, there were clear and significant differences in how effective each type was for improving listening comprehension among Iranian EFL learners. This suggests that the kind of support teachers choose can make a real difference in their students' listening skills. The study also found that all five types of scaffolding—context, cognitive, metacognitive, procedural, and motivational— contributed in a positive and meaningful way to improving how well Iranian EFL learners understood spoken English. In other words, using these different support strategies helped students better understand spoken English.

These results align with earlier research by Ahmadi Safa and Motaghi (2021) as well as Karimi and colleagues (2020), both of which found that using a range of scaffolding strategies can effectively boost the listening comprehension abilities of students learning English as a foreign language.

To interpret these results, potentially, learners prefer scaffolding strategies and regard them as instructive, innovative, and effective in identifying problems, enhancing comprehension, and increasing their preparedness for listening tasks. Moreover, scaffolding enhances learners' self-efficacy and self-confidence (Tajadini et al., 2022), and this may contribute to significant improvements in their listening comprehension.

Additionally, probably, learners' listening anxiety has been reduced under the effect of scaffolding. An outcome of this reduction can be the enhancement of listening comprehension. Furthermore, scaffolding has the potential to increase learners' attention and motivation, both of which can make a meaningful difference in how well students comprehend what they hear. However, the results of the present study are not in line with a study by An and Cao (2014), which indicated that metacognitive scaffolding did not have a significant effect on design outcomes.

A notable aspect is that in spite of research scarcity concerning scaffolding techniques on listening comprehension, literature is rife with studies that have proved the effect of ZPD-based interventions on different language skills, including listening skills. Among such studies, those by Ableeva (2010), Ahmed Abdel-Al Ibrahim et al. (2023), Ashraf et al. (2016), Barabadi et al. (2018), and Shabani (2011) can be mentioned.

Regarding the second two research questions, the study found clear differences in how effective each type of scaffolding—context, cognitive, metacognitive, procedural, and motivational—was at increasing Iranian EFL learners' metacognitive awareness. In addition, all five scaffolding approaches made a significant, positive impact on students' ability to reflect on, organize, and plan their own learning.

After looking through previous studies, the researchers noticed that there hasn't been any research specifically exploring how scaffolding might influence learners' awareness of their own thinking and learning strategies. Therefore, these results cannot be compared with previous studies. However, congruent with this study, Birjandi et al. (2013) and Zhang and Xi (2022) confirmed the effect of ZPD-laden treatments on metacognitive awareness of EFL learners.

To help explain these findings, it's useful to point out that learners generally responded positively to the support provided through scaffolding, which likely played a role in shaping the results, as noted by Ahmadi Safa and Rozati (2016), and may have played a role in boosting the positive impact of scaffolding on their metacognitive awareness. In other words, because students viewed scaffolding favorably, this mindset could have helped make the support strategies even more effective in helping them reflect on and manage their own learning. What is more, scaffolding strategies make learning to listen quicker. This, in turn, leads to the enhancement of learners' metacognitive awareness. In addition, with the use of different types of scaffolding, learners' control over listening is enhanced. Consequently, their metacognitive awareness improves. Last but not least, using scaffolding leads to a remarkable increase in learners' engagement. This, in turn, can lead to improvement of their metacognitive awareness. Finally, the findings concerning the final two research questions revealed that different types of scaffolding—context, cognitive, metacognitive, procedural, and motivational—varied in how much they helped reduce listening anxiety among Iranian EFL learners. In other words, each type of support had a unique impact, and all played a meaningful role in helping students feel less anxious while listening in English. Further, it was shown that context, cognitive, metacognitive, procedural and motivational scaffolding

significantly affect Iranian EFL learners' listening anxiety. Similar to what was argued above, the literature is devoid of any study on the impact of scaffolding on listening anxiety. This means that it is not possible to compare these results with the existing literature. This does not rule out the findings of previous studies showing the positive influence of ZPD-based teaching techniques on the anxiety of learners. Among the various works reviewed, the studies conducted by Bracket et al. (2010) and Mosleh et al. (2022) stand out as notable examples in this area. Their research is frequently referenced for its contributions to understanding the effects of scaffolding in educational contexts.

To account for these results, different kinds of scaffolding increase learners' willingness to learn listening. Willingness is the opposite of anxiety. Accordingly, learners' listening anxiety decreases. Besides, as shown above, scaffolding leads to improvement in listening comprehension. When listening comprehension increases, listening anxiety decreases. Moreover, learners' autonomy, interest and enjoyment are enhanced due to exposure to different kinds of scaffolding. This is contrary to anxiety in listening. Also, using scaffolding calls for better teacher-student relations. This contributes to a considerable reduction in listening anxiety. Finally, scaffolding enhances learners' reflective behavior. When learners reflect more, they become reasonably less anxious.

5. Conclusion

According to the results, it is concluded that using different types of scaffolding, including context, cognitive, metacognitive, procedural and motivational scaffolding, may significantly change Iranian EFL learners' listening anxiety, awareness of their own thinking and learning strategies and the performance of listening comprehension. Therefore, different types of scaffolding, including context, cognitive, metacognitive, procedural and motivational scaffolding, can be resorted to in an attempt to enhance EFL learners' metacognitive awareness and listening comprehension performance as well as to reduce listening anxiety. Moreover, it is concluded that these types of scaffolding differentially affect Iranian EFL learners' listening anxiety, metacognitive awareness and the performance of listening comprehension. That is, it appears that certain forms of scaffolding offer greater benefits than others, particularly when it comes to easing listening-related anxiety, fostering students' awareness of their own learning strategies, and boosting their performance in listening comprehension tasks. The results of this research provide EFL teachers with important perspectives and encourage them to experiment with different scaffolding techniques in their classrooms when teaching English listening and, in this way, move away from the mainstream methods, some of which have proved to be ineffective for the listening skills of learners in EFL contexts. EFL learners will benefit from this study in coping with the problems they have in learning English listening. The insights from this study can spark new ideas for EFL researchers, encouraging them to explore fresh directions and topics inspired by these findings. By building on this research, scholars can investigate different aspects of scaffolding and its impact on language learning, opening up a range of possibilities for future studies. EFL curriculum planners can take useful insights from this study and plan future EFL curricula in a way that scaffolding strategies are incorporated in them.

On the limitations, the participants could not be selected by random sampling. Since only a small number of people took part in the research, the findings might not capture the full range of experiences or perspectives found in the larger community. Additionally, the research period was relatively short, which could also affect how well the findings apply to other situations. About the delimitations, the context of the study was a private language institute in Iran. In addition, among different scaffolding strategies, this study was concerned with cognitive, context, metacognitive, procedural and motivational strategies since they have been less investigated than the other strategies. Finally, only female students participated in this study. With a view to these limitations and delimitations, future studies can replicate this study to add to the validity of the findings.

Authors Contributions

All the authors have participated sufficiently in the intellectual content, conception, and design of this work or the analysis and interpretation of the data (when applicable), as well as the writing of the manuscript.

Availability of data and materials

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

Conflict of interest

The author states that there is no conflict of interest.

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