J. New Trends Engl. Lang. Learn. 2025; 4(3) Article 17

Journal of New Trends
in
English Language Learning (JNTELL)

https://doi.org/10.57647/JNTELL.2025.0403.17

Exploring the Effects of Synchronous Cognitive and Motivational Scaffolding on Speaking Accuracy and Fluency among Pre-Intermediate Iranian EFL Learners

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Original Research

Received:
16 August 2025

Revised:
30 August 2025

Accepted:
06 September 2025

Published in Issue:
19 October 2025

Abstract

With an emphasis on accuracy and fluency, this study examined how cognitive and motivational scaffolding affected the speaking abilities of Iranian pre-intermediate EFL learners. The Oxford Placement Test (OPT), speaking pre- and post-tests, and a semi-structured interview were used to choose 90 participants in total. SPSS 26 was used to examine the data, and the Shapiro-Wilk and Kolmogorov-Smirnov tests were used to determine whether the data were normal. Pretest and posttest differences within and between groups were examined using paired-sample t-tests and independent-sample t-tests. The results revealed that cognitive scaffolding enhanced speaking accuracy, whereas motivational scaffolding primarily improved fluency. The study also explored learners' perceptions through qualitative feedback, highlighting difficulties like technical issues and a lack of individualized attention in online settings. While students appreciated the positive reinforcement provided by motivational scaffolding, they found cognitive scaffolding more effective for understanding complex language structures. The study concludes that integrating both scaffolding approaches can provide a balanced method for improving EFL learners' speaking proficiency, with cognitive scaffolding addressing accuracy, and motivational scaffolding fostering fluency. These findings offer practical implications for EFL instruction, emphasizing the need for tailored strategies that incorporate both cognitive and motivational elements to enhance speaking performance.

Keywords: Cognitive scaffolding; Motivational scaffolding; OPT; Speaking accuracy and fluency

Cite this article: Hosnan, L., Marzban, A., & Pourkalhor, O. (2025). Exploring the Effects of Synchronous Cognitive and Motivational Scaffolding on Speaking Accuracy and Fluency among Pre-Intermediate Iranian EFL Learners, *Journal of New Trends in English Language Learn*ing, *4*(3), Article 17. https//doi.org/10.57647/JNTELL.2025.0403.17

1. Introduction

As speaking is perceived as a social and situational activity and as an interaction, language learners should work on their speaking skills. Furthermore, speaking is an important part of everyday life (Han & Li, 2025). Although speaking is seen as a crucial ability, the experiences from second language learning classrooms demonstrate that many students refrain from speaking in the target language. As it is axiomatic, numerous factors, including affective and cognitive ones, can have an impact on speaking. Since students must perform in front of a large audience, affective elements like fear and a lack of motivation are most closely associated with speaking presentations (Goh & Burns, 2012). Robinson (2011) stated that one of the ongoing challenges of

working on L2 acquisition is to capture the ongoing emergence of accuracy and fluency in learners' performance. Speaking requires practicing and initializing a structure to promote the balanced development of learners' accuracy, complexity, and fluency of language. Speaking in L2 fosters and empowers learners to communicate their own meanings by engaging them in language.

Speaking accuracy, as defined by Skehan and Foster (1997), is the extent to which the learner's language satisfies the requirements of the target language.

And, speaking fluency was described as counting the number of words produced in a specific time frame, "with frequency of lexicon, provided that the writer's meaning is simply comprehensible" (Fellner & Apple, 2006, p. 19).

In recent years, ZPD and scaffolding have become two important ideas in research on learning a second language. Wood, Bruner, and Ross (1976) were the first to use scaffolding to study how students and teachers interact. After that, it was linked to Vygotsky's concept of ZPD. The idea of scaffolding has its roots in L1 research and cognitive psychology. The supportive conditions created by an informed participant in a social interaction are referred to as scaffolding (Donato, 1994). It has also been used in tutorial interactions, when a tutor assists a less experienced individual in resolving an issue (Sidky, 2019).

Accordingly, scaffolding, which has been used as a metaphor for scaffolding in building construction, has been seen as tailored aid for students to help them reach their learning goals (Sawyer, 2006).

The pedagogical use of narratives, metaphors, and analogies by teachers to affect students' emotional reactions to particular elements of the subject matter in a way that encourages learning is known as motivational scaffolding (Storch, 2011). A key component of tutoring is motivational scaffolding, which includes techniques that affect students' drive, effort, and participation in class assignments.

Cognitive scaffolding, on the other hand, is designed to help students in this area, which is the space between what they can do on their own and what they can do with the help of someone who has more advanced knowledge and skills or tools to help them work independently without assistance (Storch, 2011). Cognitive scaffolding, a pivotal aspect of effective tutoring, involves diverse strategies aimed at prompting and enhancing students' thinking processes. Primarily delivered through questioning techniques, cognitive scaffolding encourages active student participation, fostering the construction and connection of ideas.

Moreover, with the spread of the COVID-19 virus a few years ago, the role of online teaching has increased. Accordingly, foreign teachers and learners should be equipped with some instruments, such as strategies, realia, tasks, and Language Learning Technology (LLT), which describes the use of online and computer programs for language acquisition.

According to Liou (2016) and Levy's (1998) edited book, World CALL: Global Perspectives on Computer Assisted Language Learning (CALL), it has been widely recognized as such. In contemporary education, there is a considerable focus on the integration of technology, with considerable researchers contending that the infusion of information and communication technology (ICT) into educational practices serves as a catalyst for students to develop their cognitive abilities and engage in effective problem-solving activities (Blake et al., 2009). The utilization of technology, particularly online tools, holds substantial significance in the realm of language education, providing educators and learners with a valuable instrument for the teaching and learning of L2 on a global scale (Hubbard, 2009; Levy & Stockwell, 2006). The transformative role of technology is underscored by its capacity to facilitate language instruction, transcending traditional paradigms. In this context, online teaching emerges as a dynamic and indispensable tool that augments language learning initiatives.

The study of EFL speaking requirements (i.e., accuracy, fluency, and complexity) via peer scaffolding has been underappreciated despite the existence of a body of knowledge on the subject. Many of the aforementioned studies have focused on the scaffolding actions of classmates throughout language learning (Khosravi, 2017; Taheri & Nazmi, 2021). Furthermore, very few studies have been conducted on the role of motivational and cognitive scaffolding on speaking ability. In addition, in recent years, due to the prevalence of COVID-19 worldwide, the teaching and learning process has changed from face-to-face to virtual, which can create more challenges for curriculum planners, teachers and students.

2. Review of the Related Literature

Scaffolding is defined by Bruner (1978) as verbal assistance in the mother tongue in second language learning, continuing conversation with a child that helps promote language learning. Scaffolding is associated with the zone of proximal development that has recently been considered by researchers of language learning. Donato (1994) indicated that scaffolding is a concept derived from cognitive psychology that "refers to the supportive conditions made by a knowledgeable participant in a social interaction" (cited in Sabet et al., 2013).

The term scaffolding originated with Vygotsky's concept of the Zone of Proximal Development (ZPD). The difference between a learner's actual developmental level, as determined by autonomous problem-solving, and their potential developmental level, as determined by problem-solving under a teacher's supervision and by interacting and working with more seasoned peers, is known as ZPD, according to Vygotsky (Levitt, 2017). Based on this idea, a learning model makes two recommendations for language acquisition. Students will never advance if a teacher only focuses on what they can already do with language; however, real learning and progress are possible if the teacher helps the students move through the zone of proximal development to their potential level of performance (Lin & Chen, 2007). Scaffolding metaphorically refers to a learning

opportunity in which a more expert tutor teaches a less expert student to answer a question, correct an error, or perform a task without telling the student the answer or doing the work for him or her. Scaffolding, as proposed by Day Babcock, Kellye Manning, and Travis Rogers (2012), is a crucial concept in understanding the actions and statements of seasoned tutors during writing center conferences, aimed at supporting the enhancement of student writers. This idea is rooted in the contributions of educational psychologists David Wood, Jerome S. Bruner, and Gail Ross (1976). Babcock et al. (2012) assert that a comprehensive exploration of scaffolding in writing center contexts is vital for unraveling the intricacies of tutor-student interactions and their role in fostering improvement in writing skills.

The existing body of research on scaffolding predominantly focuses on problem-solving disciplines like mathematics (Putnam, 1987) and physics (Chi, 1996). These investigations frequently examined the use of specialist computer software (Lehman et al., 2008) and clearly specified tasks, such as decoding in adult literacy education (Cromley et al., 2005).

While these investigations offer detailed insights into the strategies employed by tutors, both experienced and inexperienced, within highly structured domains, there is a discernible gap in the literature concerning scaffolding specifically within the context of speaking.

In order to bridge this gap, it is imperative to understand the theoretical foundations laid by Wood, Bruner, and Ross (1976), which serve as the underpinning for the scaffolding concept. Wood et al. (1976) proposed that learning is an interactive process where a more knowledgeable individual (MKO) provides support to a less knowledgeable individual (LKO) to help them achieve tasks beyond their current capability. This conceptual framework has been widely applied in educational settings, emphasizing the importance of tutor-student interactions in facilitating learning and skill development. The work of Babcock et al. (2012) underscored the applicability of scaffolding in language learning, where tutors engage with students to enhance language proficiency. The learning process involves various complexities, and effective scaffolding strategies become paramount for tutors to guide students through the challenges they encounter. Drawing on the principles of Wood et al. (1976), tutors in language education serve as MKOs, providing timely and tailored support to address the specific needs of individual students. This study falls in the field of cognitive scaffolding. It is rooted in Lev Vygotsky's sociocultural theories, particularly his concept of the zone of proximal development (ZPD) (Ohta, 2000). Vygotsky's investigations into individual development led to the formulation of the ZPD, representing the space between the actual developmental level determined through independent problem-solving and the potential development level achieved through collaborative problem-solving under the guidance of a knowledgeable adult or in collaboration with more capable peers (Basturkman, 2006). The primary objective of cognitive scaffolding is to provide support to learners within this ZPD, bridging the gap between their independent capabilities and what they can achieve with assistance from someone possessing more advanced knowledge, skills, or tools. This assistance is designed to empower learners to work independently, reducing dependence on external support over time. The essence of incorporating cognitive scaffolding strategies lies in achieving a delicate balance, ensuring that learners receive the appropriate amount of support within their ZPD.

Vygotsky's ZPD framework posits that learning and development occur most effectively when individuals engage in tasks just beyond their current abilities, with the guidance of a more knowledgeable other (Basturkman, 2006). Cognitive scaffolding, therefore, becomes a strategic approach to facilitate this learning process. The scaffolding process involves tailoring support to learners' needs within their ZPD, allowing them to tackle challenges that would be daunting in isolation but are achievable with guidance. This active participation is integral to the success of cognitive scaffolding, as it fosters a dynamic interaction between learners and the more knowledgeable other, whether it be an adult or a peer. The collaborative nature of cognitive scaffolding encourages learners to go beyond their current abilities, gradually internalizing the support provided and enhancing their independent problem-solving skills.

Cognitive scaffolding, as a pedagogical concept, plays a crucial role in education by facilitating the learning process and supporting students in achieving tasks or goals beyond their unassisted efforts. Drawing from the works of Flick (1998), Ahmadi Safa and Motaghi (2024), and George Fernandez (2003), it is claimed that there is a dynamic interplay between teachers, students, and instructional materials in the scaffolding process.

Cognitive scaffolding is rooted in the Social Cognitive Theory (SCT), emphasizing the collaborative nature of learning where the interaction between teachers and students, or even instructional materials, fosters knowledge construction (Lantolf & Thorne, 2006). Lawrence Flick (1998) conceptualizes cognitive scaffolding as actions undertaken by a teacher to guide a student through problem-solving, task completion, or goal achievement. He underscores the dynamic nature of scaffolding, highlighting its dependence on continuous adjustments based on student responses.

Motivational scaffolding, as the other variable in the current study, is a pedagogical approach that involves providing structured support to learners to enhance their motivation and self-regulation during the learning process. Rooted in the scaffolding theory of Vygotsky, motivational scaffolding focuses on guiding students towards developing a sense of autonomy, self-efficacy, and intrinsic motivation. The scaffolding is not only cognitive but also motivational, aiming to foster students' engagement, persistence, and positive attitudes toward learning. In this context, motivational scaffolding encompasses various teacher strategies and interventions designed to promote a supportive and motivating learning environment.

Motivational scaffolding stands as a critical component in the educational landscape, profoundly influencing learners' engagement, persistence, and overall academic

success. Its integration into scaffolding strategies has been identified as a key factor in enhancing the effectiveness of educational interventions. This discourse explores the multifaceted reasons underlying the significance of motivational scaffolding in learning, drawing on empirical studies to reinforce and expand upon these pivotal points.

In terms of motivational scaffolding, Shooshtari et al. (2018) investigated the effects of synchronous scaffolded corrective feedback (SYN), asynchronous scaffolded corrective feedback (ASYN), and motivational scaffolding (MS) on the speaking fluency and accuracy of forty-five female adolescent EFL learners in Behbahan, Iran. The groups' speaking fluency and accuracy did not significantly increase, according to quantitative research. Qualitative results, however, showed that the SYN and ASYN groups had made significant strides in using the grammatical feature of the third person singular -s. Additionally, Sohrabi et al. (2022) used a mixed-methods approach to investigate how motivational scaffolding affected learning accomplishment and self-efficacy in field-dependent and field-independent English language learners. The findings showed no discernible differences between field-dependent and field-independent learners and that motivational scaffolding improved learners' academic performance and sense of self-efficacy. These results imply useful implications for teachers and students to enhance psychological health and language proficiency in learning environments.

2.1. Speaking Skill

Speaking is a crucial and unavoidable part of teaching and learning a language. Various definitions of speaking have been put forth by language learning professionals. Speaking is an interactive communicative activity that involves both speakers and listeners, according to Derakhshan et al. (2016). Through this process, speakers must learn to modify their speech to the audience, employ a variety of self-expression techniques, utilize speech to elucidate their points, and continue their speech to foster critical thinking and reasoning. It indicates that they need to complete four steps.

Speaking proficiency, according to Brown (2003, p. 267), is the ability to converse in a language with a reasonable level of competence. Furthermore, he points out that the ability to achieve pragmatic goals through interactive discourse with other language speakers is usually the standard for successful language acquisition. Speaking, as elucidated by Kayi (2006), delineated the divergence between linguistic expertise and teaching methodology. The linguistic expertise encompasses language structure and content, whereas teaching speaking necessitates distinctive methods compared to listening, reading, and writing. Developing a habit is crucial since speaking involves real communication and is a productive skill, demanding regular practice (Kayi, 2006).

In the realm of language learning, achieving a balance between fluency and accuracy is paramount. As suggested by Mazouzi (2013), the design of learners' activities should be grounded in an equivalence between fluency and accuracy achievement. Both aspects are integral components of the communicative approach, and classroom practices play a pivotal role in fostering learners' communicative competence by ensuring an appropriate understanding of the language system. However, complexity is important, while it can be associated with higher levels of language proficiency.

Fluency stands as the primary characteristic of speaking performance, and it represents a key objective for teachers when imparting speaking skills. Hughes and Bryan (2002) define fluency as the learners' ability to articulate thoughts in an understandable manner, preventing communication breakdowns that might lead to a loss of interest among listeners. Hedge (2000) further elucidated that fluency entails the coherent connection of words and phrases, clear pronunciation of sounds, and the adept use of stress and intonation. The multifaceted nature of fluency requires learners to articulate their ideas in a manner that maintains listener engagement and facilitates effective communication. Achieving fluency involved not only linguistic elements but also the ability to convey ideas coherently and smoothly.

Accuracy, the second characteristic of speaking performance, is equally crucial in language learning. While fluency is emphasized as a primary aim, accuracy plays a complementary role in the teaching process. Mazouzi (2013) asserts that when speaking, students should pay attention to the wholeness and accuracy of language forms, emphasizing vocabulary, syntax, and pronunciation.

Thornbury (2005) underscores the importance of correct grammatical structures, emphasizing the role of well-structured clauses and the length and complexity of utterances. Accuracy in vocabulary usage requires learners to select appropriate words in suitable contexts, avoiding the application of similar words or expressions that may carry different meanings. This nuanced understanding ensures that learners use words and expressions correctly, contributing to accurate communication.

2.2. Review of Empirical Studies

In terms of scaffolding, a set of studies has been conducted. For example, Bigdeli and Rahimi (2015) explored the impact of scaffolding, rooted in sociocultural theory, on the complexity and accuracy of narrative writing by Iranian EFL learners. Two groups, experimental (n=18) and control (n=20), participated over one semester, engaging in narrative writing tasks. Scaffolding, including expert, reciprocal, and self-scaffolding, significantly improved complexity and accuracy in the experimental group compared to the control. The study supported the sociocultural perspective, emphasizing interactions for knowledge construction. Expert scaffolding provided a conceptual foundation, leading to increased complexity and accuracy. The findings underscored the need for a shift in Iranian EFL education towards collaborative learning and scaffolding techniques tailored to individual needs.

Overall, scaffolding proved effective in enhancing narrative writing skills. Talebinejad and Akhgar (2015), in an effort, tried to ascertain how instructor scaffolding affected Iranian EFL learners' listening comprehension. To achieve this, 60 intermediate students—30 men and 30 women—were selected from a language school and split into two groups. Throughout their courses, scaffolding strategies were incorporated using Hogan and Pressley's (1997) criteria. The findings demonstrated that both male and female EFL learners' listening achievement was significantly impacted by instructor scaffolding. By taking gender into account, it was also demonstrated that there was no connection between teacher scaffolding and listening performance.

Two approaches to scaffolding, namely the symmetrical and/or asymmetrical, were examined by Izanlu and Feyli (2015). Iranian EFL second-year university students may benefit from scaffolding in their grammar learning. Convenience sampling was used to choose 65 female college students between the ages of 19 and 24 in order to achieve this goal. For this study, two different kinds of tools were used: a grammar test and a series of two-way exercises. They were split into two groups after completing a pretest: symmetrical scaffolding (SS) and asymmetrical scaffolding (AS). At the same time, the symmetric method was used to advise the experimental group SS, and the asymmetric strategy was used to instruct the experimental group AS. A post-test was administered in order to address the study questions, and the results were examined using both independent and paired t-tests. The findings demonstrated that AS scaffolding is a more successful tactic for raising participants' grammar proficiency. There may be some ramifications for teachers and instructors from the findings.

Khosravi (2017) looked into how advanced students' reading comprehension was affected by symmetrical (S) scaffolding. In this study, twenty advanced Iranian students took part. The average age of the participants was 21, and they included both male and female students. The symmetrical framework was used to instruct them. A pre-test was given to them prior to administration. A post-test was given at the conclusion of the study, and the t-test was used to assess the results. The findings showed that S scaffolding significantly affects students' reading comprehension performance.

Jafari (2019) investigated the extent to which scaffolding can affect Iranian EFL language learners' vocabulary knowledge. This study sought to determine the effectiveness of scaffolding for students. Twenty-two Bandar Abbas EFL students took part. There were eleven pupils in the experimental group and eleven in the control group. The study used a pre-posttest control group design and was experimental in nature. Students were divided into two groups at random: the treatment group and the control group. The ANCOVA results show that scaffolding has a favorable impact on vocabulary learning and that students' success during the vocabulary scaffolding intervention was predicted by their prior spoken vocabulary knowledge in English. Moayeri and Khodareza (2019) investigated the effect of Mobile-Assisted Language Learning (MALL) on the speaking accuracy of Iranian EFL learners. The learners, aged 15 to 21, were divided into experimental and control groups. Pre-testing revealed no significant differences between the groups. The experimental group utilized a mobile application to enhance speaking accuracy, while the control group received no mobile-based intervention. Accuracy measures included error-free clauses and correct verb forms. Results indicated the positive role of the mobile application, providing additional learning opportunities outside formal instruction. The study emphasized the importance of recognizing non-formal and informal learning, suggesting that teachers explore supplementary methods like online group activities for comprehensive language learning.

Razaghi, Bagheri, and Yamini (2019) explored the influence of cognitive scaffolding on the speaking skills of Iranian female EFL learners, considering scaffolding features such as contingency, fading, and the transfer of responsibility. The study involved four groups (two upper-intermediate and two pre-intermediate) totaling 120 participants in a language school. The investigation encompassed various speaking components, including grammar, vocabulary, pronunciation, discourse management, and interactive communication. The study revealed that cognitive scaffolding positively impacted speaking skills and their components. Interestingly, learners' proficiency levels did not moderate the influence of scaffolding on the studied variables, indicating equal benefits for both upper-intermediate and pre-intermediate learners. The findings have pedagogical implications, emphasizing the potential of cognitive scaffolding to enhance speaking proficiency in EFL contexts.

The relative efficacy of cognitive and metacognitive scaffolding techniques on the improvement of listening comprehension in 90 intermediate EFL learners in Iran, ages 15 to 20, was examined by Ahmadi Safa and Motaghi (2024). The findings demonstrated that when it came to improving listening comprehension, metacognitive scaffolding performed noticeably better than both cognitive scaffolding and non-scaffolding teaching. According to a semi-structured interview, learners considered metacognitive scaffolding to be more creative, effective, and informative, which helped them identify and understand problems.

From the studies mentioned above, past research has individually explored cognitive and motivational scaffolding, acknowledging their positive effects on various language skills. However, the lack of studies integrating both aspects simultaneously leaves an unexplored territory. The proposed study aims to bridge this gap by investigating how synchronous cognitive and motivational scaffolding can collectively enhance speaking accuracy, fluency, and complexity. This holistic approach is crucial as language skills are inherently interconnected, and a comprehensive scaffolding strategy can address multiple facets of speaking proficiency. Therefore, this study aims at addressing the following research questions: Q1) Is there any significant difference between motivational

and cognitive peer-scaffolding on Iranian pre-intermediate EFL learners' speaking accuracy?
Q2) Is there any significant difference between motivational and cognitive peer-scaffolding on Iranian pre-intermediate EFL learners' speaking fluency?

3. Method

3.1. Participants

A total number of 90 male and female EFL learners studying at two language institutes in Mazandaran province, with their ages ranging from 15 to 19, were selected based on a general English proficiency test (i.e., Oxford Placement Test: OPT). This test was used to make sure that the 75 participants of this study are homogeneous in terms of their language knowledge prior to the treatment. In addition, thirty learners were selected for participating in the qualitative section (answering the interview test).
The learners were divided into three main groups: two experimental groups and a control one. 1) The first experimental group received instruction through cognitive scaffolding. 2) The second experimental group received the instruction through motivational scaffolding. 3) The control group received a traditional method without any scaffolding. The number of participants was 25 in each group.

3.2. Instruments

The subjects were homogenized using the Oxford Placement Test (OPT). The three primary components of the test are grammar, vocabulary, listening, and reading. There are two sections and sixty questions on the test. To assess reading comprehension, the first section consists of multiple-choice questions ranging from 1 to 20. After reading a cloze paragraph, the students were instructed to choose one choice from a list of three. The learners' grammatical understanding is assessed by questions 21 through 40. There are two subsections in this examination's second section. The students had to read two cloze passages and choose the right answer for problems 41 through 50. taped learners' vocabulary format for questions 51 through 60. Moreover, in order to test learners' speaking ability, a picture description test was utilized as a pre- and post-test. Six sequential pictures from a story were selected from the Internet for all the participants to construct a speaking story. The pictures were printed and given to the learners individually. The topic of the story was "an old man". Two raters scored both speaking pre- and post-tests. The assessment of learners' speaking skills is a complex task, requiring a comprehensive framework that considers accuracy and fluency. By utilizing the methods proposed by Bygate (2009) for accuracy, Foster and Skehan's (1996) model for fluency, the researcher endeavors to provide a nuanced analysis of learners' speaking proficiency. Bygate's (2009) method for measuring accuracy serves as a robust tool for assessing the linguistic precision exhibited by learners during speaking tasks. This method focuses on the correctness of grammatical structures, vocabulary usage, and pronunciation. By incorporating this approach into the analysis, the researcher aims to examine the intricacies of language accuracy, identifying areas of strength and areas that may require further attention among the learners.
Furthermore, Foster and Skehan's (1996) model for fluency adds another layer of depth to the assessment. Fluency in speaking is not merely about the speed at which learners can articulate their thoughts, but also about the coherence, cohesion, and overall smoothness of communication. This model considers the ability of learners to maintain a clear and understandable discourse without causing communication breakdowns that may hinder listener engagement. By adopting Foster and Skehan's model, the research seeks to evaluate the fluency of learners in a way that reflects their communicative effectiveness.
In the application of these models, the research aims to uncover patterns, identify areas of improvement, and celebrate strengths in learners' speaking skills. The integration of accuracy and fluency provides a holistic view that goes beyond a narrow assessment of linguistic correctness. It acknowledges the dynamic nature of language use in real communicative settings.

3.3. Data Collection Procedure

In the first step, the researcher selected the participants of the study. Seventy-five out of ninety EFL learners were selected through OPT for this study. The learners who got one standard deviation above and below the mean score were regarded as the participants of this study. After homogenizing learners' proficiency level, the participants were divided into three groups: two experimental groups and a control group: GROUP 1: cognitive Peer-scaffolding group (N = 25); GROUP 2: motivational Peer-scaffolding group (N = 25); Control Group: They received the traditional method (N = 25). Firstly, the speaking pre-test was given by the teacher.
The cognitive peer-scaffolding procedures were based on the following stages: All the treatments in the three groups were done in an online platform (WhatsApp). The teacher divided learners into some groups and determined a leader for each group. The teacher determined a number of texts or even pictures for the participants in each session. Afterwards, the teacher introduced the content. In each session, the leader of each group has to make two questions about the content. Other learners had to answer the questions. The learners had to read the text or think about the pictures individually and find the new words and sentences. In addition, they had to ask questions about the content, and others had to answer these questions regarding the ideas. If the learners made an error, the teacher attempted to help them in revising their errors through cognitive scaffolding. In addition, each learner had to reconstruct the text or pictures. Motivational scaffolding techniques were used to encourage the learners. Positive evaluations were given to the learners' performances (e.g., This is a good concept). The teacher encouraged the students by reminding them that they would overcome their

language production challenges (e.g., It will require a lot of practice, yet I believe you can do it); humor was also used to demonstrate that the instructor and the students shared similar values and background knowledge.
The instructor occasionally asked the students how pleased they were with the way he showed concern for them (e.g., Do you feel comfortable with the topic?). If necessary, he also showed his understanding of them by expressing sympathy (e.g., I know that it is difficult). The use of the "we" form reminded the students that the task was cooperative (e.g., if we use simple present in this sentence, it will be OK). The teacher reinforced the learner's responsibility and demonstrated attention by repeating, in whole or in part, what was said (e.g., Following what you said about the topic, etc.); other strategies for highlighting the learner's ownership included defending recommendations with arguments, avoiding open or honest dissatisfaction and mitigating a suggestion with the use of hedges, the passive voice, or other forms of language. The control group used a traditional method as a product-based approach. It meant that the teacher gave a few samples on how to make a story. After explaining the elements of the essay, the teacher gave a number of pictures or a text to language learners, and they made a story without any scaffolding. After giving instructions, a speaking post-test was administered to all groups. Furthermore, a semi-structured interview was conducted with the selected participants.

3.4. Data Analysis

3.4.1. *Pretest of Speaking for Cognitive Scaffolding Complexity (PRSPCOSCC)*

The PRSPCOSCC variable has the highest mean (68.48) and a standard deviation of 5.51, indicating a consistent distribution. The skewness value of -0.519 demonstrates a slight negative skew, and the kurtosis value of -0.245 suggests a fairly normal distribution without sharp peaks or extreme tails.
The median (68) table 1 matches the mean closely, and the range (21.00) and interquartile range (9.50) reflect balanced data. Given these measures, PRSPCOSCC data is normally distributed, with minimal deviations from symmetry or uniformity.

Table 1. Descriptive analysis of pretests of cognitive scaffolding in the three groups

Descriptive		PRSPCOSC		PRSPCOSCA		PRSPCOSCF		PRSPCOSCC	
		Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error
Mean		67.6400	1.07	67.3600	1.21	67.0800	1.27	68.4800	1.10
95% Confidence Interval for Mean	Lower Bound	65.4239		64.8608		64.4506		66.2062	
	Upper Bound	69.8561		69.8592		69.7094		70.7538	
5% Trimmed Mean		67.9000		67.2444		67.2889		68.7667	
Median		68.0000		67.0000		68.0000		68.0000	
Variance		28.823		36.657		40.577		30.343	
Std. Deviation		5.36874		6.05447		6.36998		5.50848	
Minimum		55.00		57.00		53.00		55.00	
Maximum		75.00		80.00		77.00		76.00	
Range		20.00		23.00		24.00		21.00	
Interquartile Range		8.00		10.50		6.00		9.50	
Skewness		-0.597	0.464	0.157	0.464	-0.646	0.464	-0.519	0.464
Kurtosis		-0.165	0.902	-0.738	0.902	0.238	0.902	-0.245	0.902

The results indicate that the data are normally distributed, as the significance values for each are above the commonly used threshold of 0.05.

3.4.2. *Pretest of Speaking for Cognitive Scaffolding (PRSPCOSC)*

The mean score for PRSPCOSC is 67.64, with a standard deviation of 5.37, indicating moderate variability in the data. The skewness value of -0.597 suggests a slight negative skew, meaning scores are slightly clustered toward higher values. The kurtosis value of -0.165 indicates a near-normal distribution without extreme peaks or tails. Additionally, the median (68) is very close to the mean, and the range of scores is 20.00, further supporting symmetry in the data. Based on the skewness and kurtosis values, the data for PRSPCOSC can be considered normally distributed.

3.4.3. *Pretest of Speaking for Cognitive Scaffolding Accuracy (PRSPCOSCA)*

PRSPCOSCA has a mean of 67.36 and a standard deviation of 6.05, showing moderate spread. The skewness of 0.157 suggests a very slight positive skew, and the kurtosis of -0.738 indicates a somewhat flat distribution, though not significantly deviating from

normality. The median (67) aligns closely with the mean, supporting symmetry in the dataset. The interquartile range (10.50) and overall range (23.00) suggest some variability but no outliers. Overall, the skewness and kurtosis values indicate that PRSPCOSCA data is approximately normally distributed.

3.4.4. *Pretest of Speaking for Cognitive Scaffolding Fluency (PRSPCOSCF)*

The variable with the most variability, PRSPCOSCF, has a mean of 67.08 and a standard deviation of 6.37. The kurtosis score of 0.238 indicates a little peaked but acceptable distribution, while the skewness of -0.646 indicates a slight negative skew. A moderate range of scores is shown by the range (24.00) and the interquartile range (6.00). The skewness measure is complemented by the median (68), which is somewhat higher than the mean. With just slight variations, these numbers imply that the PRSPCOSCF data is nearly typical.

3.4.5. *Pretest of Speaking for Motivational Scaffolding Group (PRSPMOSC)*

The descriptive statistics for PRSPMOSC indicate that the mean score is 67.52, with a standard deviation of 5.48, suggesting a moderate spread of scores around the mean. The skewness value of -0.573 implies a slight negative skew, but this value is close to zero, indicating a fairly symmetrical distribution. The kurtosis value of -0.267 suggests a relatively flat distribution compared to a normal curve. Based on these values and the lack of extreme deviations, the data appear to be approximately normally distributed.

3.4.6. *Pretest of Speaking for Motivational Scaffolding Group – Accuracy (PRSPMOSCA)*

With a mean of 67.36 and a standard deviation of 6.45, PRSPMOSCA exhibits marginally greater variability than PRSPMOSC. While the kurtosis of 0.031 is extremely near to zero, suggesting a distribution shape of the normal curve, the skewness of -0.658 indicates a minor negative skew. A reasonably constant score distribution is supported by the interquartile range (7.50). According to these statistics, the facts are fairly regularly distributed for accuracy.

3.4.7. *Pretest of Speaking for Motivational Scaffolding Group – Fluency (PRSPMOSCF)*

The mean for PRSPMOSCF is 67.04, with a standard deviation of 6.11, showing a slightly smaller spread than PRSPMOSCA. The skewness value of 0.363 indicates a slight positive skew, but it is minimal and does not significantly affect the normality of the data. The kurtosis of -0.634 suggests a slightly flatter distribution. Together, these values indicate that the fluency data exhibit approximate normality, with no significant deviations from a normal distribution.

3.4.8. *Posttest of Speaking for Cognitive Scaffolding (POSPCOSC)*

For the POSPCOSC (Overall Speaking) variable, the data show a mean of 70.97, with a standard deviation of 6.03716 and a variance of 36.447. The 95% confidence interval for the mean ranges from 68.48 to 73.46. The distribution has a skewness of -0.947 and a kurtosis of 0.021. The skewness value suggests a slight negative skew, while the kurtosis value is close to zero, indicating a relatively normal distribution. The Kolmogorov-Smirnov test yielded a p-value of 0.200, and the Shapiro-Wilk test showed a p-value of 0.308. Since both p-values are greater than 0.05, we can conclude that the data for POSPCOSC are normally distributed.

3.4.9. *Posttest of Speaking for Cognitive Scaffolding Accuracy (PRSPCOSCA)*

For POSPCOSCA (Accuracy), the mean is 71.12, with a standard deviation of 7.75306 and a variance of 60.110. The 95% confidence interval for the mean is between 67.92 and 74.32. The skewness is -1.278, which suggests a moderate negative skew, and the kurtosis is 1.137, indicating a slight peak. The Kolmogorov-Smirnov test returned a p-value of 0.200, and the Shapiro-Wilk test showed a p-value of 0.170. Since both p-values are greater than 0.05, the data for POSPCOSCA are normally distributed despite the negative skew and kurtosis, suggesting some slight deviations from perfect normality.

3.4.10. *Posttest of Speaking for Cognitive Scaffolding Fluency (PRSPCOSCF)*

For POSPCOSF (Fluency), the mean is 68.24, with a standard deviation of 5.78273 and a variance of 33.440. The 95% confidence interval for the mean ranges from 65.85 to 70.63. The skewness value of 0.007 suggests nearly perfect symmetry, and the kurtosis value of -0.642 indicates a flatter distribution. The Kolmogorov-Smirnov test had a p-value of 0.200, and the Shapiro-Wilk test showed a p-value of 0.617. As both tests yielded p-values greater than 0.05, we can confidently say that the data for POSPCOSF are normally distributed.

3.4.11. *Posttest of Speaking for Motivational Scaffolding Group (PRSPMOSC)*

For the POSPMOSC (Overall Speaking) variable, the descriptive statistics show a mean of 69.69 with a standard deviation of 5.31. The Shapiro-Wilk test returned a p-value of 0.18, which is greater than 0.05. This suggests that the data for POSPMOSC are normally distributed.

3.4.12. *Posttest of Speaking for Motivational Scaffolding Group – Accuracy (PRSPMOSCA)*

For POSPMOSCA (Accuracy), the descriptive statistics show a mean of 67.96 with a standard deviation of 6.89. The Shapiro-Wilk test returned a p-value of 0.03, which is less than 0.05. This indicates that the data for

POSPMOSCA are not normally distributed, as there is a significant deviation from normality.

3.4.13. *Posttest of Speaking for Motivational Scaffolding Group – Fluency (PRSPMOSCF)*

For POSPMOSCF (Fluency), the descriptive statistics show a mean of 72.12 with a standard deviation of 5.89. The Shapiro-Wilk test returned a p-value of 0.73, which is greater than 0.05. This indicates that the data for POSPMOSCF are normally distributed, as there is no significant deviation from normality.

3.5. Testing the First Research Hypothesis

Based on the results of the study, a significant difference exists between motivational and cognitive peer scaffolding on speaking accuracy. The results show that cognitive scaffolding significantly outperformed motivational scaffolding in terms of accuracy, as indicated by a mean difference of 3.16000 ($p = 0.000$). This suggests that the cognitive approach's structured and analytical nature helps learners focus on linguistic precision and error correction. By encouraging deeper processing of language rules, cognitive scaffolding enables learners to develop more accurate language use. In contrast, motivational scaffolding primarily emphasizes encouragement and confidence-building, which may not sufficiently address grammatical accuracy and linguistic correctness in speaking tasks. Therefore, the RH1 indicating "There is no significant difference between motivational and cognitive peer-scaffolding on Iranian pre-intermediate EFL learners' speaking accuracy" is rejected.

3.6. Testing the Second Research Question

The analysis's findings demonstrate that motivational and cognitive peer scaffolding significantly differ in their effects on the speaking fluency of Iranian pre-intermediate EFL learners, with motivational scaffolding outperforming cognitive scaffolding.

The analysis revealed a mean difference of -3.88000, favoring motivational scaffolding ($p = 0.000$). Motivational scaffolding's focus on fostering confidence, reducing anxiety, and encouraging spontaneous language use likely helps learners speak more fluidly without overanalyzing linguistic correctness. This environment reduces hesitation and promotes a natural speaking flow.

Cognitive scaffolding, while enhancing accuracy, often requires deliberate focus on rules, which might slow down speech production. Thus, motivational scaffolding proves more effective in developing fluency by creating an engaging and supportive conversational setting for learners.

Therefore, RH2, indicating "There is no significant difference between motivational and cognitive peer-scaffolding on Iranian pre-intermediate EFL learners' speaking fluency," is rejected.

4. Discussion

The study's conclusions demonstrated the importance of the distinctions between cognitive and motivational peer scaffolding in influencing the speaking fluency and accuracy of Iranian pre-intermediate EFL learners. Cognitive scaffolding was shown to outperform motivational scaffolding in terms of accuracy. The structured, analytical nature of the cognitive scaffolding aids learners in focusing on linguistic precision and understanding language rules, which improves grammatical accuracy and enables the use of more sophisticated sentence structures and vocabulary. By encouraging a deeper processing of language, cognitive scaffolding supports the development of speaking accuracy, providing a solid foundation for accurate and advanced language use.

On the other hand, motivational scaffolding was found to be more effective in improving speaking fluency. This approach emphasizes building confidence, reducing anxiety, and encouraging spontaneous speech. By creating a supportive and relaxed environment, motivational scaffolding enables learners to speak more naturally and fluidly, minimizing hesitation and promoting better flow in their speech. However, this focus on fluency often overlooks grammatical precision and linguistic sophistication, limiting its effectiveness in developing accuracy.

The findings of the study on the impact of cognitive and motivational scaffolding on Iranian pre-intermediate EFL learners' speaking skills align with some studies from the provided list while diverging from others. For example, research on culture-based educational content and speaking performance aligns closely with the scaffolding study. Richards & Bohlke (2011) recognized the value of structured approaches, similar to cognitive scaffolding, in enhancing linguistic precision and complexity. Structured textual analysis and discussions help learners improve syntactic and lexical skills by encouraging deeper language processing, which supports accuracy and complexity. Additionally, the use of culturally rich materials through films aligns with the motivational scaffolding approach by creating a relaxed environment conducive to fluency development (Richards & Bohlke, 2011).

Similarly, studies examining the effects of AI-based and teacher corrective feedback echo the scaffolding study's emphasis on structured, analytical approaches. The immediate and precise feedback provided by AI tools mirrors the benefits of cognitive scaffolding for grammatical accuracy and complexity. Furthermore, motivational scaffolding's emphasis on reducing anxiety resonates with the role of teacher feedback in promoting fluency by fostering a supportive environment (Brown et al., 2021). Likewise, research on the transition from declarative to procedural memory in vocabulary learning highlights the importance of structured approaches like cognitive scaffolding. Such approaches aid learners in consolidating rules and structures in their declarative memory, which facilitates the proceduralization necessary for fluent and complex language use (Skehan, 2009).

However, the present scaffolding study differs from other studies. For instance, studies on the impact of

mobile apps on pronunciation development focus primarily on fluency rather than accuracy or complexity. While motivational scaffolding's fluency emphasis might relate to mobile app usage, cognitive scaffolding's structured approach to accuracy and complexity has limited relevance to pronunciation-focused studies. Similarly, research on listening skills using podcasts diverges from the scaffolding study's focus on speaking skills. Although listening practice might indirectly improve fluency, it does not emphasize the structured analytical approaches central to cognitive scaffolding (Peterson, 2001).

Theoretically, this research uniquely contributes to the existing body of knowledge on EFL speaking development by providing empirical evidence that cognitive scaffolding primarily enhances speaking accuracy while motivational scaffolding predominantly improves fluency. Prior studies have demonstrated general positive effects of various scaffolding types on oral production, but results on their specific impacts on accuracy versus fluency remain mixed or inconclusive, with ambiguous definitions and limited comparative analyses. By differentiating these effects in Iranian pre-intermediate learners and advocating for their integration to achieve balanced proficiency, the study advances theoretical frameworks on scaffolding complementarity. Methodologically, the study innovates by integrating a rigorous mixed-methods approach tailored to distinguish scaffolding effects and semi-structured interviews for perceptual insights from 90 Iranian pre-intermediate learners. Although similar quantitative tools and mixed designs appear in earlier work on cognitive scaffolding alone, this research uniquely applies them to a direct comparison of cognitive and motivational scaffolding on accuracy and fluency, while addressing online implementation—offering a replicable model for future investigations in virtual settings and emphasizing tailored, multifaceted data collection for holistic EFL assessments.

5. Conclusion

The study investigated the impact of cognitive and motivational scaffolding on Iranian pre-intermediate EFL learners' speaking skills, specifically focusing on accuracy and fluency. The findings revealed that cognitive scaffolding had a more significant effect on speaking accuracy. This approach, which emphasizes structured and analytical learning, helped learners focus on linguistic precision, enabling them to use more sophisticated sentence structures and vocabulary. In contrast, motivational scaffolding was found to be more effective in improving speaking fluency. This approach focuses on building learners' confidence, reducing anxiety, and promoting spontaneous speech. Motivational scaffolding was recognized for its role in enhancing learners' confidence and fluency. Immediate positive feedback and encouragement were critical for maintaining focus and overcoming challenges, especially when dealing with complex tasks. These findings align with self-determination theory, which underscores the importance of positive reinforcement in fostering intrinsic motivation. Despite its benefits, distractions in home environments and long, uninterrupted sessions were identified as factors that impeded learner engagement. These challenges highlight the need for strategies that balance motivational support with measures to minimize external disruptions.

5.1. Implications and Suggestions for Further Research

The findings of this study offer several practical implications for teachers, curriculum designers, professors, and students, particularly in the context of EFL instruction. Teachers can leverage the complementary strengths of cognitive and motivational scaffolding to enhance different aspects of speaking proficiency. Incorporating structured, analytical activities such as grammar-focused exercises, sentence restructuring, and vocabulary-building tasks can significantly improve accuracy. Meanwhile, integrating motivational scaffolding strategies, such as immediate positive feedback, gamified speaking tasks, and confidence-boosting activities, can foster fluency and reduce learner anxiety. Teachers should also aim to create a balanced learning environment that encourages both precision and spontaneity, thereby addressing the trade-offs observed in this study. The study emphasizes the need for curriculum frameworks that blend cognitive and motivational scaffolding techniques. Curricula should include diverse activities that promote linguistic precision alongside tasks encouraging natural and fluent speech. For online learning, designers should incorporate interactive tools such as discussion forums, real-time collaboration features, and structured practice modules. Addressing technical challenges, such as providing offline access to materials and robust support for technical issues, is essential to optimizing online scaffolding. Professors can draw on the findings to enhance the effectiveness of blended and online learning models. Synchronous scaffolding, particularly cognitive scaffolding, should be strategically embedded into lectures to help students navigate complex topics and develop a deeper understanding of language rules. Professors should also incorporate motivational scaffolding techniques, such as peer reviews, discussion-based learning, and constructive feedback, to build learners' confidence and engagement in academic discourse. The study provides insights into the benefits of embracing both cognitive and motivational scaffolding in their learning journey. Students should actively engage with structured materials to improve linguistic complexity and accuracy while taking advantage of supportive feedback to enhance fluency. Online learners, in particular, should develop strategies to overcome technical and environmental barriers, such as ensuring a distraction-free workspace and leveraging asynchronous resources for review. Based on the present study and considering the gaps that require further investigation, future research can explore several innovative avenues: Investigation of the use of AI-

driven tools, such as chatbots or virtual tutors, to provide real-time cognitive and motivational scaffolding. Research could focus on how adaptive AI systems enhance learner engagement and speaking proficiency in personalized learning environments.

In addition, it is possible to conduct comparative studies examining the effectiveness of scaffolding approaches across different cultural contexts. This could provide insights into how cultural attitudes toward feedback and confidence-building shape the outcomes of cognitive and motivational scaffolding. Examining the impact of scaffolding strategies on learners who are acquiring multiple languages simultaneously. This research could investigate whether scaffolding for one language positively transfers to the development of speaking skills in another language. Furthermore, the exploration of the integration of gamified elements in scaffolding can be considered, such as interactive challenges, role-playing scenarios, and reward systems, to examine their effect on motivation and language development. Conducting long-term studies to assess the sustainability of scaffolding effects on speaking accuracy, fluency, and complexity over time. This could involve tracking learners' progress post-intervention to evaluate the enduring impact of scaffolding approaches.

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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