The Effect of Cognitive and Meta-Cognitive Scaffolding on EFL Learners' Oral Skills, Self-regulation, and Learners' Attitudes

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Article Info	ABSTRACT
	This study investigated the effect of cognitive and meta-cognitive scaffolding strategies on EFL learners' oral skills, self-regulation, and attitudes. To this end, a mixed-methods approach involving 180 pre-intermediate learners was applied. They were selected through convenience sampling and divided into three groups: cognitive scaffolding, metacognitive scaffolding, and a control group. Data was collected using the Oxford Placement Test, Cambridge PET, Self-Regulation Questionnaire, and a semi-structured interview. After 16 treatment sessions, quantitative data were investigated through t-tests, ANOVA and ANCOVA, whereas qualitative data from a five-step semi-structured interview were analyzed thematically via NVIVO 8. The findings revealed that both scaffolding strategies significantly improved learners' listening($p<.001$, $\eta^2=.32$)and speaking proficiency ($p<.001$, $\eta^2=.30$), and self-regulation levels. Qualitative findings showed increasing self-regulation. Moreover, they fostered positive attitudes toward learning. In particular, the metacognitive scaffolding group outperformed the cognitive group in oral skills. This study has practical implications.

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1. Introduction

An essential pursuit in foreign language pedagogy is to guide learners to become autonomous. This requires learners to self-regulate their learning process and take increasing responsibility for their progress. (Hui, 2024). On the other hand, teaching oral skills, to a certain extent, has been ignored and mastering in oral communication has been challenging for most of EFL learners and they are unable to have effective oral communication in English. In addition, speaking may seem undemanding for competent speakers, however, it is in reality a cognitively and socially demanding skill (Goh, 2017). The principal goal of learners attending a language class is to become fluent and proficient speakers of the language. In the same way, an essential skill associated with speaking is listening. Listening is also vital in language acquisition and instruction. In everyday life, listening is the most common communication activity. Despite its importance, second language learners sometimes view listening as the most challenging language skill to acquire (Graham, 2003). In many EFL contexts like Iran, educational systems often neglect listening skills. Limited access to aural input leads to viewing listening as a passive skill (Khani et al., 2023).

More importantly, improving instructional strategies has become the sine qua non of education; the most efficient instructional strategies are those raising the learners' attitude towards learning (Alrawili et al., 2022). Meanwhile, numerous scholars paid much attention to scaffolding as one of the usual applied strategies to improve learners' L2 learning (Gonulal & Loewen, 2018; Laranjo, 2016).

Interestingly, concerning cognitive and metacognitive processes, it is noteworthy that despite their apparent similarities in some aspects, theorists essentially differentiate between them. The unique characteristics of cognitive and metacognitive processes lead to notable distinctions between cognitive and metacognitive scaffolding techniques, both in their forms and in their specific impacts on the development of foreign language (FL) learners' abilities and skills (Zhang, & Qin, 2018). Nonetheless, both cognitive and metacognitive scaffolding strategies can enhance FL learners' listening comprehension and speaking skills, and promote higher interactions. Furthermore, these strategies appear to affect EFL learners' levels of self-regulation and foster learner autonomy (Schunk & Greene, 2018).

Furthermore, several studies have revealed that metacognition or metacognitive awareness can have a significant function in learning English (e.g., Mehri Ghahfarokhi & Tavakoli, 2020; Wallace, 2022). Putting it differently, this kind of awareness appears to influence EFL students' self-regulation when reading texts by developing a learner's analytical approaches (Al-Jarrah et al., 2018). Also, the perspective of self-regulated learning is established on the view that learners are responsible of their own education and should take part in it actively (Zimmerman, 2010). In addition, sociocultural theory (SCT) introduced various concepts, such as scaffolding to the wide field of second language instruction (Molenaar van Boxtel & Sleegers, 2011).

Besides, past studies have investigated scaffolding from various theoretical perspectives;

nevertheless, few have compared cognitive and metacognitive scaffolds simultaneously. While studies some studies (e.g., Rahimi, 2020) focused on teacher modeling, others (e.g., Goh, 2017) connected metacognitive instruction to self-monitoring. Similarly, despite previous studies on scaffolding and language skills (e.g., Van de Pol et al., 2010; Zhang & Qin, 2018), few have considered their combined impacts on oral proficiency and self-regulation among Iranian EFL learners. The present study incorporates both standpoints to determine how each scaffolding kind involves in uniquely to oral performance and learner autonomy, fills the gap between oral proficiency and self-regulation.

The other remarkable point is EFL learners' attitudes towards the use of cognitive and metacognitive scaffolding strategies on language achievement. Addressing a closely related preoccupation, studies (e.g. Hunutlu, 2023; Wang, 2024) have attested to a need for a deeper understanding in this regard and have called for investigations to find specific means by which cognitive and metacognitive scaffolding procedures help oral skill improvement and enable learners to have a long-term progress in two skills of speaking and listening. To this end, this study aims to niche the gaps in order to compensate for the lack of studies in cognitive and meta-cognitive scaffolding strategies in an EFL field like Iran by proposing the following research questions:

RQ1: Do cognitive and metacognitive scaffolding strategies have any
        significant effect on EFL listening comprehension development?

RQ2: Do cognitive and metacognitive scaffolding strategies have any
        significant effect on EFL learners' speaking proficiency?

RQ3: Do cognitive and metacognitive scaffolding strategies have any
        significant effect on EFL learners' self-regulation levels?

RQ4: What are the EFL learners' attitudes towards the use of cognitive and
        Metacognitive scaffolding strategies on language achievement?

Based on the given research questions, the following null hypotheses were formulated:

H01: Implementing cognitive and metacognitive scaffolding strategies has no
        significant effect on EFL learners' listening comprehension development.

H02: Implementing cognitive and metacognitive scaffolding strategies has no
        significant effect on EFL learners' speaking proficiency.

H03: Implementing cognitive and metacognitive scaffolding strategies has no
        significant effect on EFL learners' self-regulation levels.

H04: Implementing cognitive and metacognitive scaffolding strategies has no
        significant effect on EFL learners' attitudes on language achievement.

2. A brief note of previous works

2.1. Cognitive scaffolding in Language Learning

Cognitive scaffolding is considered as the sort of scaffolding that supports learners to deal with and comprehend the language input and output. In other word, it refers to temporary support that assists

learners accomplish particular language activities using techniques such as modeling and prompting. This kind of scaffolding can consist of strategies like questioning, explaining, hinting, modeling, paraphrasing, prompting, summarizing, and clarifying (Sweller, 2020). Also, Johnston and Cooper (2003b) dealt with scaffolds as types of assistance momentarily given by teachers when teaching new materials and making assignments. Once these materials are mastered, such help may be removed.

Van de Pol et al. (2010) argued that this kind of scaffolding has been determined by 'contingency', 'fading' and 'transfer of ability' whereby it should be given via these three phases with a steady reducing rate of them, until learners can completely obtain their possible improvement level with the full extraction of scaffolds. In the context of second language speaking instruction, the structure of cognitive scaffolding design can also be shown towards these three phases. Also, Abdelshaheed (2019) proposed the same model of cognitive scaffolding along with six scaffolding tools, vocabulary, structure, and pronunciation. Nevertheless, it suffers from some critical conflicts for providing sufficient support to fulfill an activity and for long-term learning (Zheng et al., 2019).

2.2. Metacognitive Scaffolding in Language Learning

Metacognitive scaffolding concentrates on improving learners' awareness and control of their own learning procedures via planning, monitoring, and assessment strategies. It advocates planning, monitoring, self-assessment, and control of cognitive procedures, in a responsible way, during the improvement of learning activities in computational settings (López-Vargas et al., 2018; Zhang & Qin, 2018). Moreover, Quintana et al. (2005) and Molenaar et al. (2011) argued that metacognitive scaffoldings are determined by charging and regulating cognitive procedures. This kind of scaffoldings, rooted in Vygotsky's Sociocultural Theory (SCT), supports the learners: (1) organize what they need to learn; (2) implement and monitor the development in the suggested purposes and tasks, and (3) assess the achieved outcomes.

Nevertheless, some of the scholars argue that fixed scaffoldings greatly maintain the improvement of various cognitive potentials in learners whereas others contend that optional scaffoldings might be neglected by learners in some issues and, therefore, they do not obtain the favorite learning (Chang et al., 2002; Lakkala et al., 2005). Faced with the conflicting findings on the efficiency of fixed and optional scaffoldings, it is essential to examine deeply the application of these two kinds of scaffoldings when they help learners in obtaining diverse cognitive and metacognitive abilities (Renkl & Atkinson, 2003).

Moreover, Ge and Land (2003) contended that learners who involved in metacognitive question prompts outperformed importantly than those who did not obtain these prompts in all four problem-solving procedures, composed of problem representation, generating solutions, making justification, and monitoring and assessment. An (2010) also concluded that metacognitive scaffolds not merely help learner groups' planning, controlling, and assessment in the ill-structured problem solving process, but also they support the teacher better comprehend learners' conceptual needs. Nevertheless, only a few studies were carried out to consider meta-cognitive scaffolding used in the

EFL speaking setting, and its effectiveness in learners' oral production. On the other hand, its implementation is usually more complex and time-consuming than cognitive support. Besides, a synthesis of studies imply that this kind of scaffolding has a more profound and transferable influence on learning outcomes (Zheng et al., 2019).

2.3. Self-Regulated Learning (SRL)

According to Vrind et al. (2024), it is vital that learners in foreign language learning become independent and learn how to self-regulate their learning to keep on language improvement; SRL is conceived as the capacity of individuals to regulate their own patterns. Liman and Tepeli (2019) asserted that individuals, as social beings, are associated with a variety of interactions with other people and thus are directly related to their settings, constructing support which emerges from themselves that can be in the shape of self-motivation, and the ability to form their concentration. On the other hand, Laranjo (2016) viewed self-regulation as the process by which individuals integrate behavior shifts into their usual routines. Since it is associated with self-monitoring, goal setting, reflective thinking, decision-making, planning, plan enactment, self-evaluation, and management of the emotions coming from the behavior shifts.

Dornyei and Ryan (2015) also regarded self-regulation as a multidimensional and process-oriented construct, engaging in self-generated thoughts, feelings, and activities which are planned and cyclically adjusted to the achievement of personal objectives. It has been an important scope of studies in learners' academic functioning, including accurate learning strategies and mental processes that they use to increase their academic performance (Alrawili et al., 2022). Nonetheless, the improvement of self-regulation is not a linear progression and demands a complex interplay of cognitive, metacognitive, and motivational components (Ariyanti et al., 2018).

2.4. Scaffolding Strategies and Oral Skills

Suitable scaffolding processes in oral skills e.g., in speaking can develop learners' proficiency in speaking, whether it is in connection with their use of language knowledge or the applications of skills and strategies related to task demands (Foster & Ohta, 2005). Obviously, speaking is a demanding skill having an interactive nature that entails the participation of speakers in real time in which there is no time for particular planning (Thornbury, 2005). Therefore, improving this skill needs being proficient in different components of the target language, like linguistic knowledge, socio-linguistic competence, pragmatic competence, discourse competence, the application of sign language and paralinguistic aspects (Hughes, 2013). Besides, the development of this skill is impacted by the individual's affective conditions as it depends on many psychological components like as anxiety, motivation, self-efficacy and tendency to interact (Rivers & Ross, 2018). In addition, instructors can incorporate scaffolding activities and tasks in speaking and listening courses to support learners to become familiar with the processes contained in speaking and listening so as to make these processes 'visible' to them (Goh, 2017). However, many learners haven't sufficient linguistic knowledge and skills, demanding further scaffolding by teachers. This necessitates the key

skill of academic listening. As such, scaffolds support learners to actively listen and respond suitably whereby they stimulate learners to become 'reciprocal listeners' (Vandergrift & Goh, 2012).

On the other hand, cognitive scaffolds or scaffolding strategies are viewed as efficient tools in developing oral skills. Learners' awareness about vocabulary, grammar, pronunciation, discourse, and interactional skills will develop enormously due to attaining cognitive scaffolds (Garza, 2009). The interchange of listening and metacognition has been examined in recent years. For instance, Vandergrift and Goh (2012) recommended a combined model of applying metacognitive strategies for listening instruction to determine self-reported levels of metacognitive awareness.

2.5. Attitude and Language Development

Attitude is conceived as a psychological willingness which is stated by assessing a specific existence with some rates of approval or disapproval; it is considered as a powerful indicator of academic achievement (Eagly & Chaiken, 1993). In the same vein, Oxford (2011) and Nunan (2000) argued that learners' attitudes in addition to the skills and strategies they apply can identify whether or not they will achieve and comprehend the complexities of a language. Sociolinguistic studies in second language acquisition has maintained that social, cultural and psychological variables impact learning (Hou, 2015). Studies in L2 learning maintain that positive attitudes can develop learners' success in language learning. In this sense, Hadinejad, Moyle, Kralj, and Scott (2019) investigated the connection between cognition, metacognition and attitude in two different directions in which emotional characteristics and comprehended believability of the encouragement were modified independently.

In the metacognitive model, attitudes are considered as object-assessment connection between a specific object and a particular summary assessment of that object. The model recommends the separation of positive (approach) and negative (avoidance) tendencies (e.g., Cacioppo et al., 1997), along with studies about cognitive negation, attitude confidence (e.g., Gross et al., 1995), and thought validation (e.g., Petty et al., 2002).

3. Theoretical framework

3.1. Participants

A sample of 180 male and female pre-intermediate EFL learners participated in this study based on the convenience sampling. They were part of a larger population and were chosen from a language institute in Urmia, Iran. An Oxford Placement Test (OPT) was administered to ensure homogeneity. Their ages ranged from 16 to 22 years. All the participants spoke Turkish as their first language. They had almost equal language learning experiences and were on average at the pre-intermediate level of proficiency because of passing some courses in English and in terms of their scores on an English proficiency test. In other words, learners whose scores fell within one standard deviation above and below the mean were selected as the final sample.

3.2. Materials and Instruments

The study employed four instruments. At first and prior to the treatment, the Oxford Placement Test (OPT) was applied to determine their listening and speaking to ensure the homogeneity of the participants and to select pre-intermediate level learners. The second instrument involved in a pretest and posttest in listening, and pretest and posttest in speaking. For listening test, the test of Preliminary English Test (PET) was used. And, for speaking test, Cambridge Preliminary Speaking test as a valid and reliable tool was used. In this part, participants were assessed in pairs by two examiners in order to decrease their subjectivity. One of the raters functioned as an interlocutor who guided the test and gave a grade for total achievement and the other acted as an examiner who applied the analytical assessment scales to assign grades the participants' performance against the four criteria in terms of IELTS scoring rubric, i.e., fluency and coherence, vocabulary and grammar, pronunciation and interactive communication. The analyses of reliability of these two raters both for the pre-test and post-test scores were run via intraclass correlation coefficient (ICC). The average measure ICC for this initial test was .993 with a 95% confidence interval from .991 to .995, $F (117,117) = 224.892$, $p < .001$. The validity of this instrument was confirmed by a panel of English experts who were six university teachers with more than 12 years of experience. Notably, while this Test is a validated tool, its content validity was re-investigated in order to ensure its appropriateness for the Iranian EFL learners culturally and linguistically.

The third instrument was the self-regulation questionnaire, designed by O'Neil et al. (1998). It included thirty-two questions in terms of Likert-scale. This questionnaire includes 2 components: metacognition and cognition. Each dimension was further subdivided into two sub-scales. In this questionnaire, the Cronbach reliability values for cognitive strategies were 0.82 and for metacognitive strategies was 0.78. Therefore, the overall estimated reliability of SRQ via Cronbach's Alpha consistency estimation was .80 which is regarded significant and high.

The fourth and last instrument was a semi-structured interview, as a qualitative research method to examine the learners' attitudes towards the use of cognitive and metacognitive scaffolding strategies on language achievement. This kind of interview protocol was developed based on the study's objectives and in terms of the guidelines from An & Cao (2014) and Goh (2017). It was reviewed by three Applied Linguistics teachers, and included seven open-ended questions regarding learners' attitudes, motivation, and self-regulation, along with prompts for elaboration. Therefore, these two various research methods in terms of a convergent mix-method approach could give variation of interpretation based on the results of the study. Using this approach quantitative data from proficiency and self-regulation tests were triangulated with qualitative interview data. Furthermore, prior to the main analyses, the KMO and Bartlett tests were applied to verify the suitability of data for factor analysis; they confirmed the adequacy of sampling and suitability of data and, therefore, showed satisfactory results. Furthermore, the validity of the interview items was checked by the three teachers in Applied Linguistics, who considered them for clarity, relevance, and alignment with the research objectives. For incorporating into the final protocol, their feedback ensured the validity of the questions. Meanwhile, in this study, the independent

variable is type of scaffolding (cognitive, metacognitive, control), and the dependent variables are listening, speaking, and self-regulation scores. Also, the study received ethical approval from all participants provided written informed consent. Besides, Cronbach's α for the SRQ was .87; PET speaking .91; interview coding reliability (κ = .84)

3.3. Data Collection Procedure

At the first phase of the study, the Oxford Placement Test (OPT) was administered to place candidates into a homogenized group. Learners whose scores fell within one standard deviation above and below the mean were selected as the final sample. These selected participants then were divided into three groups: a cognitive scaffolding group, a metacognitive scaffolding group, and a control group. The first two groups received treatment involving their respective scaffolding strategies (e.g., sentence frames for speaking practice, graphic organizers for listening tasks, planning guides for speaking tasks , and reflection journals after each session), whereas the control group received no treatment. After this phase, the learners were exposed to pretest in speaking, listening, and Self-Regulation questionnaire. In order to avoid the learning effect and recalling the information from pretest, there was an interval of about two months between pre-test and post-test. To ensure that learners in the scaffolding groups were applying context-specific and relevant strategies, the teacher actively monitored their group interactions.

On the other hand, as Self-Regulation Questionnaire (SRQ), self-Regulating Trait (SRT) questionnaire developed by O'Neil et al. (1998) used as the pretest in SR. Scores above 239 indicated high SR capacity, scores of 214-238 indicated intermediate (moderate) SR capacity, and scores less than 213 indicated low (impaired) SR capacity. The rational for selecting this old instrument was its strong reliability and validity and its particular emphasis on cognitive and metacognitive components.

In the next phase, the treatment was run. This phase lasted 16 sessions of 90 minutes each. The teacher supported cognitive group through questioning, modeling, and summarizing tasks. Also, he supported the metacognitive group through planning, monitoring, and evaluating activities. Moreover, in the scaffolding groups, the teacher provided flexible opportunities for learners to use their knowledge, abilities, and methods in different situations and for diverse objectives. When the learners were completing their assignments, the instructor checked whether they were performing them accurately in order to give support and further directions. At the end of the treatment sessions, the posttests in listening, speaking, and SR were used and analyzed.

Finally, a semi-structured interview was utilized to examine the participants' attitudes in the treatment group that outperformed the other groups to answer the last research question, and to explore their attitudes towards the given scaffolding strategies. The interviews were carried out with 20 learners from the metacognitive group, who outperformed the other groups. Also, each interview lasted about 20 minutes and audio-recorded with consent. Then, they transcribed literally for the purpose of analysis.

3.4. Data Analysis

For the parts of the quantitative data both the test results from listening and speaking skills and the answers to the self-regulation questionnaire were addressed for examination. These quantitative data were

analyzed using the SPSS version 26, with descriptive statistics such as frequency, percentage, mean, standard deviation, and inferential statistics. Finally, the means of three groups in listening, speaking, and SR was analyzed via ANOVA in order to test the first three null hypotheses.

The analysis of the qualitative data from the interviews was conducted based on the guidance presented by Schmidt (2004). His five-step semi-structured interview was adopted to analyze the interview transcripts. In the first stage, analytical categories were formed by reading intensely and repeatedly through all transcripts to discover the themes and the related aspects that focused on the positive and negative aspects of the method under study. In the second stage, data entailed were formulated and assembled. In the third stage, the analytical strategy determined according to the coding guide. In the fourth stage, the coding results quantified in order to provide a general overview of the distributions within the transcripts in terms of frequencies in the analytical categories. In the last stage, detailed interpretations of each interviewee's transcript was conducted to suggest new considerations**t**.

4. Research methodology

4.1. Results

4.1.1. Descriptive Statistics for Oxford Placement Test (OPT)

In order to place and homogenize the learners in groups in terms of their proficiency and based on the rubric of the OPT for the score bands, an Oxford Placement Test developed by Allen (2004) was administrated. Table 1 shows the number of learners, mean and standard deviation.

Table 1. Descriptive Statistics of the Oxford Placement Test (OPT) Scores for Homogenizing Participants

	Group	N	Mean	Std. Deviation	Std. Error Mean
OPT	Experimental	90	104.63	20.044	2.11
	Control	90	102.35	23.376	2.46

The learners with scores 1 SD above and 1 SD below the mean were chosen from the population. The range of scores was estimated using the minimum and maximum values within approximately +/-3 standard deviations from the mean in this normal distribution. As shown in the Table 1, experimental group and the control group were partially at similar levels of language proficiency since their means are fairly similar (i.e., control group=102.35, experimental group=104.63). For identifying the significance of the difference between the mean values of these two groups, an independent-samples t-test was run. Table 2 supplies the results of this test.

Table 2 shows that the p-value (.142) for the *Levene's Test for Equality of Variances* exceeded .05. Therefore, the first line of results (i.e. Equal variances assumed) was utilized. The p-value .427 (shown as Sig. 2-tailed) in this line of results was more than .05, too. Consequently, there can't be seen a significant difference between the performances of these two groups on the OPT and they were homogeneous in terms of their language proficiency before the start of the treatment. Then,

these selected participants were divided into three groups: a cognitive scaffolding group, a metacognitive scaffolding group which received the treatment with scaffolding strategies, and a control group that received no scaffolding. Then, the Shapiro-Wilk test was applied as the numerical tool for evaluating the assumption of normality. Furthermore, Furthermore, Levene's Test for Equality of Variances was applied to ensure that the assumption of homogeneity of variances was met before further analysis and the parametric tests.

Table 2. *Independent-Samples t-test of the Performances of the Experimental Group and the Control Group on the OPT*

	Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference		Lower	Upper
Equal variances assumed	2.468	.142	.879	89	.427	1.943	2.078		-2.312	6.934
Equal variances not assumed			.879	47.15	.374	1.943	2.078		-2.358	6.934

4.2. Results of Pre-tests

4.2.1. Listening Test of Preliminary English Test (PET)

Based on the rubric of PET, as shown in Table 3, the cognitive group (X = 49.66, SD = 8.56), metacognitive group (X = 49.83, SD = 8.31) and control group (X = 49.54, SD = 8.47) had nearly the same mean scores and standard deviations, suggesting that the three groups were homogenized before the treatment. Then, the performances of the cognitive and metacognitive groups and the control group on the pretest in listening skill were dealt with in order to ensure that they were homogeneous regarding their language learning prior to the onset of treatment.

Table 3. *Descriptive statistics of PET listening scores for cognitive, metacognitive, and control groups prior to treatment*

Group	N	Mean	Std. Deviation	Variance
Cognitive	60	49.66	8.56	4.23
Metacognitive	60	49.83	8.31	4.12
Control	60	49.54	8.47	4.09

In order to determine the significance of the difference between the mean value of the cognitive group (i.e. 49.66) and the mean value of the control group (i.e. 49.54), the researchers applied an independent-samples t-test. The p-value in the results was greater than .05, i.e., .373. Consequently, the researchers applied the first line of results (i.e. Equal variances assumed). Therefore, there was not a significant difference between the performances of these groups on the listening pretest and they were homogeneous in terms their listening skill before the start of the treatment.

The researchers also compared the performances of the metacognitive group and the control group on pretest in the listening skill in order to ensure that they were homogeneous regarding their language learning prior to the onset of treatment.

In order to identify the significance of the difference between the mean value of the metacognitive group (i.e. 49.83) and the mean value of the control group (i.e. 49.54), the researchers utilized an independent-samples t-test. They found that the p-value in the results was greater than .05, i.e., .381 (marked as Sig. 2-tailed). Subsequently, the researchers utilized the first line of results (i.e. Equal variances assumed). Therefore, there was not a significant difference between the performances of these groups on the listening pretest and they were homogeneous in terms of their listening skill before the onset of the treatment.

4.2.2. Cambridge English: Preliminary Speaking Test (PET)

For pre-test of speaking, Preliminary Speaking test (PET) with an acceptable inter-rater reliability index was used by two raters (i.e., an interlocutor and an examiner) to assess the participants' performance against the four criteria in terms of IELTS scoring rubric. This test with four sections improved to obtain a wide range of speaking skills from the participants. Then, the researchers compared the performances of the cognitive group and the control group on the speaking pretest to

make sure that they were homogeneous in terms of their speaking skill prior to the start of treatment.

In order to identify the significance of the difference between the mean value of the cognitive group (i.e. 45.04) and the mean values of the control group (i.e. 44.11), an independent-samples t-test was used. Based on this test, the p-value (.139) in the results of the *Levene's Test for Equality of Variances* was more than .05. Therefore, the first line of results (i.e. Equal variances assumed) was used. Hence, there was not a significant difference between the performances of these groups on the speaking pretest and they were homogeneous in terms their speaking skill before the start of the treatment.

Then, the researchers compared the performances of the metacognitive group and the control group on the speaking pretest in order that they could make sure that they were homogeneous based on their speaking skills prior to the onset of treatment.

In order to deal with the significance of the difference between the mean value of the metacognitive group (i.e. 45.51) and the mean value of the control group (i.e. 44.11), an independent-samples t-test was used. This test displayed that there was not a significant difference between the performances of these groups on the speaking pretest and they were homogeneous with regard to their speaking skills before the onset of the treatment.

4.2.3. Self-regulation Questionnaire (SRQ)

O'Neil's et al. (1998) self-regulating trait (SRT) questionnaire composing of thirty-two Likert-scale questions was used to determine these participants' self-regulatory strategies. Descriptive statistics of this questionnaire is summarized in Table 4. As this table illustrates, the highest mean is (M=254.03), while the lowest mean is (M=151.00).

Table 4. *Descriptive statistics of SRQ scores for cognitive, metacognitive, and control groups prior to treatment*

	N	Minimum	Maximum	Mean	Std. Deviation
self-regulation	180	151.00	254.03	202.05	17.76
Valid N (listwise)	180				

The Table indicates that with regard to SR, the mean of cognitive group (M=215.72, SD= 4.398), metacognitive group (M=239.11, SD= 4.284) and control group (M= 235.09, SD= 4.132) are to some extent the same with each other. It can be argued that these groups have relatively close means on the pretest of SR. Moreover, One-way ANOVA showed that there are no significant differences between the three groups at the outset for listening, speaking and self-regulation.

4.3. Results of Post-tests

4.3.1. Listening Test of Preliminary English Test (PET)

After the treatment, the researchers compared the performances of the cognitive group on the listening pretest and posttest to determine the impact of the treatment of the study in the participants' listening skill. Table 5 provides the results of this comparison. Meanwhile, all comparisons between

the Cognitive, Metacognitive, and Control groups were conducted through an independent-samples t-test, and a one-way ANOVA followed by post-hoc tests.

Table 5. *Comparison of* **Descriptive Statistics for Listening Pretest and Posttest Scores across Cognitive, Metacognitive, and Control Groups**

Group		N	Mean	Std. Deviation
Cognitive	Pretest	60	49.66	8.56
	Posttest	60	68.90	5.64
Metacognitive	Pretest	60	49.83	8.31
	Posttest	60	70.26	4.23
Control	Pretest	60	49.54	8.47
	Posttest	60	60.24	5.72

As seen in Table 6, the mean value of cognitive group on the listening posttest (M=68.90) was more than its mean value on the listening in the pretest (M=49.66). Nevertheless, the researchers utilized an independent-samples t-test to find out the significance of this difference. And, an independent-samples t-test verified a meaningful improvement in the cognitive group's listening pretest and posttest scores, t(59), $p < .001$. The magnitude of this development was very large, as mentioned by Cohen's d = 2.24."

Furthermore, the researchers compared the achievements of the metacognitive group on the listening pretest and posttest to discover the impact of the treatment on these learners' listening skill. As shown in Table 6, the mean value of metacognitive group on the listening posttest (M=70.26) was more than its mean value on the listening on pretest (M=49.83). Nonetheless, the researchers applied an independent-samples t-test to identify the significance of this difference. They realized that the p-value . $p < .001$ (marked as Sig.) in the results of the independent-samples t-test was less than .05, indicating a notable gain. For this reason, there was a significant difference between the performances of the metacognitive group on the listening pretest and posttest. In the same way, since the mean of metacognitive group (M= 70.26) in post-test is more than that of the cognitive group (M= 68.90), the results indicate that metacognitive group performed better than the cognitive group in the post-test. Moreover, Applying the pretest standard deviation (SD=8.56) as the basis, Cohen's d = (68.90 - 49.66) / 8.56 = 2.24. This suggests that there is a very large positive effect of the cognitive scaffolding intervention on listening comprehension.

And, applying the pretest standard deviation (SD=8.31), Cohen's d = (70.26 - 49.83) / 8.31 = 2.45. This clarifies that there is a very large positive impact of the metacognitive scaffolding intervention on listening comprehension.

4.3.2. Cambridge English: Preliminary (PET) Speaking Test

In order to deal with the impacts of cognitive and metacognitive scaffolding strategies on the participants' performances against four cited criteria in terms of IELTS scoring rubric, the post-test of Preliminary Speaking test (PET) was administered and investigated by two raters. After

summarizing the results, the comparison of the descriptive statistics of the pretest and posttest PET scores of the Three Groups in speaking test is provided in Table 6. Furthermore, Using the pretest standard deviation (SD=17.08), Cohen's d = (56.08 - 45.04) / 17.08 = 0.66. This declares a medium to large positive influence of the cognitive scaffolding intervention on speaking proficiency. And, applying the pretest standard deviation (SD=17.40), Cohen's d = (66.98 - 45.51) / 17.40 = 1.21. This indicates a very large positive impact of the metacognitive scaffolding intervention on speaking proficiency.

Table 6. *Comparison of the Descriptive Statistics of the Pretest and Posttest PET Spesking Scores of the Three Groups*

Group		N	Mean	Std. Deviation
Cognitive	Pretest	60	45.04	17.08
	Posttest	60	56.08	13.66
Metacognitive	Pretest	60	45.51	17.40
	Posttest	60	66.98	14.43
Control	Pretest	60	44.11	17.59
	Posttest	60	51.12	12.26

As shown in Table 12, the mean value of Cognitive group on the speaking posttest (M=.56.08) was more than its mean value on the speaking pretest (M=45.04). However, the researchers used an independent-samples t-test to find out the significance of this difference. They determined that the p-value p < .001 (marked as Sig.) in the results of the independent-samples t-test was less than .05. As a result, there was a significant difference between the achievements of the cognitive group on the listening pretest and posttest.

Likewise, the mean value of Metacognitive group on the speaking posttest (M=66.98) was more than its mean value on the listening on pretest (M=45.51). However, the researchers utilized an independent-samples t-test to identify the significance of this difference. By investigating this test, they concluded that there was a significant difference between the performances of the metacognitive group on the speaking pretest and posttest.

4.3.3. Comparison of Learners' Listening and Speaking Skills in Cognitive and Metacognitive Groups

Again, in terms of the Table 6, we can see that there is a significant difference between the performances of the Cognitive group and the Metacognitive group in the listening and speaking posttests. In this way, the mean value of metacognitive group on the listening posttest (M=70.26) was more than that of cognitive group on the listening in posttest (M=68.90). Also, the mean of speaking post-test in Metacognitive group (M= 66.98) was greater than that of cognitive group (M= 56.08). Nonetheless, the researchers applied an independent-samples t-test to determine the significance of this difference between the two independent groups. By considering this test, the results showed that there was a significant difference between the performances of the Cognitive

group in post-test and the Metacognitive group in post-test in listening. Moreover, the researchers utilized an independent-samples t-test to determine the significance of this difference in speaking posttest. Again, by dealing with this test, the results revealed that there was a significant difference between the performances of the Cognitive group in post-test and the Metacognitive group in post-test in speaking. Besides, applying the pooled standard deviation of the two posttest groups (SD~5.0), Cohen's d = (70.26 - 68.90) / 5.0 = 0.26. This shows a small effect, indicating that whereas the metacognitive group performed better, the practical difference in listening scores was modest. Also, using the pooled standard deviation of the two posttest groups (SD~14.0), Cohen's d = (66.98 - 56.08) / 14.0 = 0.77. This mentions a medium to large impact, displaying a meaningful and substantial superiority of metacognitive scaffolding over cognitive scaffolding for speaking proficiency.

4.3.4. Post-test in Self-Regulation Trait (SRT)

The result of this test after the treatment and its comparison with pre-test are provided in Table 7. As illustrated in this table, both groups in cognitive and metacognitive ones had means greater than that of the control group in post-SRT. By comparing the performances of the cognitive groups and the control group on the SRT (i.e., pretest and posttest), we can find that the mean in Cognitive group on the SRT posttest (M=229.41) was more than its mean value on the SRT in the pretest (M=215.72). However, the researchers applied an independent-samples t-test to determine the significance of this difference between the two independent groups. They concluded that that the there was a significant difference between the performances of the cognitive group on the SRT pretest and posttest mean value of cognitive group on the SRT posttest. In the same way, we can infer that there was a significant difference between the performances of the metacognitive group on the SRT pretest and posttest due to the fact that the mean value of metacognitive group on the SRT posttest (M=235.94) was more than that of metacognitive group on the SRT pretest (M= 213.09). To investigate the impact of the scaffolding strategies on self-regulation when controlling for pre-existing differences, an Analysis of Covariance (ANCOVA) was carried out. The self-regulation pre-test scores were applied as the covariate, the self-regulation post-test scores as the dependent variable, and the three groups as the fixed factor. The ANCOVA displayed a significant impact of the pre-test covariate at p < .001, after adjusting for these initial differences, as a significant main effect of group.

Table 7. Comparison of Descriptive Statistics of the Pretest and Posttest in SRT on the three study groups

Group		N	Mean	Std. Deviation	Std. Error of Mean
Cognitive	Pretest	60	215.72	4.398	.728
	Posttest	60	229.41	4.229	.569
Metacognitive	Pretest	60	218.11	4.284	.549
	Posttest	60	235.94	4.12	.317
Control	Pretest	60	213.09	4.132	.713
	Posttest	60	217.84	4.009	.582

For further investigation, the means of three groups in listening, speaking, and SR were analyzed via one-way analysis of variance (ANOVA) through the latest version (v26.0) of the Statistical Package for the Social Sciences (SPSS). With the aim of indicating the effectiveness of cognitive and metacognitive scaffolding strategies in improving listening comprehension, *pre-test and post-test results* of these groups were subjected to an analysis of ANOVA in order to discover the potential differences between the mean scores of the study groups (Table 8). In addition, in terms of the pretest standard deviation (SD=4.398), Cohen's d = (229.41 - 215.72) / 4.398 = 3.11. This demonstrates a very large positive influence of the cognitive scaffolding intervention on self-regulation. Also, in terms of the pretest standard deviation (SD=4.284), Cohen's d = (235.94 - 218.11) / 4.284 = 4.15. This manifests a very large positive impact of the metacognitive scaffolding intervention on self-regulation.

Table 8 reveals the outcomes of an ANOVA analysis used to ensure where the observed mean difference was meaningful improvement. Then, a Scheffé's test was utilized to display this point. As can be seen in this table, the three groups carried out competently on the tests; nevertheless, the mean scores were different, proposing that the three treatment conditions have diversely influenced on the achievement scores of the learners. The mean difference is in favor of the two cognitive and metacognitive groups who used scaffolding strategies. Moreover, a further glimpse at the means shows that the learners in the metacognitive group were at a greater privilege, performance-wise, compared to their counterparts in using scaffolding strategies. To further investigate the meaningfulness of the mean difference across these three groups and its statistical significance a one-

way ANOVA was used. For this reason, a post-hoc analysis was carried out to determine exactly which group varies from each other. The one-way ANOVA displayed a statistically significant impact of treatment on learners' oral performance, $F(2,177) = 42.764$, $p < .001$, showing considerable group differences. In addition, the metacognitive group outperformed the others in self-regulation. That is, post-hoc comparisons implied that both experimental groups significantly outperformed the control group ($p < .001$), although the metacognitive group also displayed a modest but significant advantage over the cognitive group ($p = .041$, and large effects ($\eta^2 = .32$)).

Table 8. ANOVA Analysis Results Reported for Mean Scores of the Three Study Groups

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2898.059	2	1449.030	42.764	.000
Within Groups	5792.137	177	33.88		
Total	8690.196	179			

Note. The Sig. value for ANOVA is more than the alpha level ($P < 0.001$); the assumption of homogeneity of variances is not violated.

Table 9

Results of the Post Hoc Comparison of the Mean Scores on the Three Study Groups

(I) Exp. Groups	(J) Exp. Groups	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
A	B	19.24*	3.214	.024	.96	16.24
	C	20.43*	3.214	.000	8.21	26.54
B	A	10.07*	3.214	.024	5.32	5.15
	C	5.533*	3.214	.006	2.83	9.31
C	A	9.967*	3.214	.000	4.94	5.42
	B	5.533*	3.214	.006	3.31	3.36

Note. The Sig. value for each comparison set is smaller than the alpha value ($p < .001$), and no confidence interval contains zero; all the three means are significantly different. A: Cognitive, B: Metacognitive, C: Control

Therefore, all the three means are significantly different, as the mean difference is statistically significant for each comparison set ($p < .001$), indicating that the learners' test performance grades were differentially influenced by all the two scaffolding strategies. Also, for all significant results, effect sizes were determined. Cohen's d values above 0.8 signify large effects, whereas η^2 values above 0.14 show large effect sizes in ANOVA. Based on this table, the means of both cognitive group and metacognitive group are greater than that of control group and the mean of the metacognitive group is more than those of the others. Therefore, this group performed better than the other groups.

4.4. Semi-Structured Interview

As a qualitative research method, this kind of interview involved in asking seven broad, open-ended

questions (the ones that prompt discussion) and background questions with different components (age, education, occupation, experience, qualifications etc) with additional particular prompts. By means of coding, this kind of interview was used to investigate the participants' attitudes in the group that outperformed the other groups, i.e., metacognitive, towards the given scaffolding strategies. Their answers and suggestions were divided into codes. Finally, the codes were combined and thus, four categories were created, although some of the learners initially worry about adapting to this procedure of instruction. Also, coding reliability was determined via inter-coder agreement with a Cohen's kappa of .84 (κ = .84). Data from the interviews were analyzed via thematic analysis in term of Schmidt's (2004) five phases described before. These categories were: overall progress (f=37), idea development (f=12), task completion (f=7), linguistic level (f=4). In addition, the transcripts were coded via NVIVO 8 for the analysis. The majority of participants in the metacognitive group reported that their language learning improved after using scaffolding strategies and they were motivated by this procedure.

One frequently cited theme within *overall progress* was: *"This procedure helped me to determine the gaps in my knowledge or problems into my current cognitive structure."* The other learner in this theme said that *"I obtained a better control of my listening and speaking thanks to the scaffolding activities."*

Also, one of the other frequently cited theme within idea development was: *"This kind of teaching helped me to find ways to develop their oral skills and solve my problems."* And, another learner reported that *"I obtained ideas about how to develop my interaction because my attitudes improved on oral skills in language learning."*

One of the frequently cited theme within task completion was: "*I found new ways to plan activities and process successfully the given tasks in oral skills and monitor them.*" Furthermore, another learner indicated that *"I appreciated the opportunities of interaction with other students which helped me to improve team working skills, a very important professional competence."*

In General, these learners' comments were positive towards the application of cognitive and metacognitive scaffolding strategies in the classroom. They further added that these kinds of strategies assisted them to pay more attention to planning, monitoring, and assessing their own learning process in addition to developing a thought process or thinking pattern like task analysis.

4.5. Discussion

Based on the proposed research hypotheses, this study had four main objectives. In considering $H0_1$, *implementing cognitive and metacognitive scaffolding strategies have no significant effect on EFL learners' listening comprehension development*, the results of the study show that the learners in posttest both in cognitive group and in metacognitive group achieved greater means in listening PET than those of the pre-test in the cognitive group and metacognitive group. That is, the mean in cognitive group increased from 49.66 to 68.90. Then, an independent-samples t-test identified the significance of this difference between the two independent groups. Therefore, there was statistically

significant difference in the performance level of EFL learners in listening comprehension in terms of using cognitive scaffolding strategies. As such, part of the first hypothesis was rejected.

This finding aligns with Razaghi et al. (2019), who demonstrated that cognitive scaffolding strategies can improve learners' language competence and listening skills. Moreover, it can be inferred that listening skill as a receptive skill can be developed by cognitive scaffolding. Learners can construct and internalize new knowledge and listening skill on their cognitive basis, and experience cognitive activities steadily to a higher level. This finding can be supported by the finding of Sweller (2020) who argued that the cognitive scaffolding is regarded as the kind of scaffolding that maintains learners to address and comprehend the language input and output.

Again, the results reveal that metacognitive group in the listening posttest have a mean greater than that of in the pre-test. Also, independent-samples t-test revealed that there was statistically a significant difference in the performance level of EFL learners in listening comprehension based on the application of metacognitive scaffolding strategies. As such, the other part of the first hypothesis and, therefore, this hypothesis ($H0_1$) was rejected. Additionally, this finding is in line with the results of Read and Barcena's (2016) study who emphasized the function that metacognition can efficiently have in the improvement of second language listening comprehension.

Furthermore, in an attempt to examine $H0_2$, implementing cognitive and metacognitive scaffolding strategies have no significant effect on EFL learners' speaking proficiency, the results of this post-test clarify that the mean value of Cognitive group in the speaking posttest was greater than that of in pretest. An independent-samples t-test identified that there was a significant difference between the performances of the cognitive group on the speaking pretest and posttest using cognitive scaffolding strategies. As such, part of the second hypothesis was rejected. Hence, cognitive scaffolding strategies can improve EFL learners' speaking skills.

This finding is supported by the study of Van de Pol et al. (2010) who concluded that in the context of second language speaking learning and teaching, the structure of cognitive scaffolding design, promotes learners' cognitive actions regarding oral production. Similarly, Razaghi's et al. (2019) study with Iranian learners put an emphasis that cognitive scaffolding can develop learners' speaking skill and the level of their proficiency.

On the other hand, the results illustrate that the mean of post-test in the metacognitive group is greater than the mean in the pre-test speaking PET. Again, an independent-samples t-test determined this significant difference in the means. Therefore, applying the metacognitive scaffolding strategies can promote EFL learners' speaking skills. In this way, the second part of the second hypothesis was rejected and there was statistically significant difference in the performance level of EFL learners in speaking skill with regard to using metacognitive scaffolding strategies and these strategies have remarkable impacts on EFL learners' speaking skills. As such, the second hypothesis ($H0_2$) was rejected. This finding was in agreement with that of An and Cao's (2014) in which the metacognitive scaffolding positively influenced learners' speaking skill and the design of problem solving

processes. Furthermore, metacognitive scaffolding strategies can improve meta-cognitive activities in order to fulfill better a learning task in the classroom. This is in line with what Jafarigohar (2021) specifically found and showed the way metacognitive scaffolding was utilized in the classroom to encourage learners for meta-cognitive activities in terms of the three features of metacognition in the stages of speaking, i.e., before, during and after speaking tasks.

Similarly, the results display that by comparing the means of cognitive and metacognitive groups on the listening posttest we find that the mean value of metacognitive group on the listening posttest was greater than that of cognitive group. An independent-samples t-test determined the significance of this difference between the two independent groups. Moreover, an analysis of ANOVA proved the potential differences between the mean scores of the study groups. Then, Scheffé's test clarified that all the three means are significantly different, and the mean difference is a meaningful improvement for each comparison set (p < .001). Therefore, learners' performance scores were remarkably affected by the two kinds of scaffolding strategies. This finding is also true for the speaking PET in which the mean in metacognitive group was greater than that of cognitive group in posttest. In any way, both cognitive and metacognitive scaffolding strategies improved leaners' listening and speaking skills.

Nevertheless, in spite of the this finding, Erniwati et al. (2024) argued that there is no significant difference based on the usefulness of both of these strategies in developing listening skills. In practice, these strategies support each other leading to learners' better comprehension in listening. In another explanation, we can induce that scaffolding strategies can help and maintain learning improvement. This function of scaffolding in development of oral interaction is in line with that of Sletova's (2023) research. He found that scaffolding strategies can impact on L2 speaking accuracy. More interestingly, the findings of this study based on both the first hypothesis and second hypothesis are supported by Baralt's (2013) study on cognitive complexity. He concluded that cognitive and metacognitive variables can improve learners' listening and speaking.

The other objective of this study was related to the third hypothesis ($H0_3$); implementing cognitive and metacognitive scaffolding strategies have no significant effect on EFL learners' self-regulation levels. For this purpose, O'Neil's et al. (1998) self-regulating trait (SRT) questionnaire was used to identify the learners' self-regulatory strategies. Based on the results of the comparison of a pretest and a posttest in SRT, both cognitive group and metacognitive group had means greater than those of the pre-test. An independent-samples t-test determined the significance of this difference in the means. As a result, this significant difference between the performances of the cognitive group and metacognitive group rejected the third hypothesis ($H0_3$). In this way, perceptions and attitudes of learners and their cognitive-metacognitive awareness were related to EFL learners' self-regulation levels. This finding is maintained by the results of Mulendema's et al. (2016) study. They concluded that the perceptions and attitudes of students and teachers, and their cognitive-metacognitive awareness develop through metacognitive awareness and affective variables.

In addition, the analyses displayed that on the whole the EFL learners were more satisfied with the metacognitive scaffolding strategies and regarded them as instructive and effective for developing language learning and self-regulation. This finding is in agreement with that of Ahmadi Safa and Motaghi's (2021) who conceived metacognitive scaffolding procedures as instructive, innovative, and efficient for solving problems, better understanding and self-regulating. Similarly, it is in line with those of Rose et al. (2018) and Moe's et al. (2018) who concluded that that cognitive and metacognitive scaffolding strategies have influences on self-regulation and promote more positive attitudes of students towards homework.

On the other hand, self-regulation has a significant influence on speaking skill, develops learners' speaking performance, and has a mediating role in reducing speaking anxiety. These important findings are in line with those of Lee and Ko (2019) and Nugroho et al. (2020). What's more, scaffolding strategies have a key positive impact on the improvement of oral skills and the attitudes of learners towards the use of these strategies. Along the same line, Wang's (2024) findings of the importance of cognitive, metacognitive and motivational scaffolding strategies on EFL learners' self-regulation, speaking motivation and proficiency are in agreement with those of this study.

The last purpose of this study was to deal with EFL learners' attitudes on language achievement in terms of cognitive and metacognitive scaffolding strategies based on $H0_4$. In a way, the quantitative findings were augmented by qualitative data that gave insight into learners' perceptions of the scaffolding experience. In order to achieve this objective, a semi-structured interview was carried out through coding via NVIVO 8 for the analysis to address the outperformed group's attitudes towards the given scaffolding strategies. Those codes were integrated into four categories and analyzed through thematic analysis in term of Schmidt's (2004) five phases. The results of analyzing these codes and themes revealed that cognitive and metacognitive scaffolding strategies involve in important impacts on the achievements of these learners and their attitudes towards language learning and particularly towards oral skills and consequently the fourth hypothesis ($H0_4$) was rejected. These findings are consistent with some qualitative work of Quintana et al. (2005) and Molenaar et al. (2011) who declared that metacognitive scaffolding strategies support learners to organize what they need to learn, implement and control their improvement.

On the other hand, by thematic analysis of the codes we can infer that these strategies deal with the negative attitudes that the learners have for oral skills and therefore these strategies improve them. These findings confirm the results of Nunan's (2000) study which addressed the relative efficacy of cognitive and metacognitive scaffolding approaches and their comparative influences on the development of EFL learners' oral skills. Therefore, the idea that cognitive and metacognitive scaffolding strategies have vital impacts on EFL learners' attitudes on language achievement has been taken up by a number of scholars (e.g., Granena, 2023; Wang et al., 2025).

Moreover, the findings signify that metacognitive scaffolding strategies were more efficient than cognitive ones in developing oral skills. This superior performance can be ascribed to the nature of

metacognition, which enables learners to plan, monitor, and assess their own learning performances. This is in line with Zhang & Qin (2018) citing that whereas cognitive scaffolding supplies immediate support for task completion, metacognitive scaffolding provides them with self-regulatory instruments that can be conveyed across activities and contexts. This fosters greater learner autonomy, which is a main component in long-term language learning. This superior performance may emerge from learners' active involvement in planning and assessing their performance, which improved greater self-regulation. This finding also maintains Vygotsky's sociocultural theory, implying that internalizing regulatory processes through scaffolding results in more sustainable learning outcomes and that scaffolding should increasingly transfer responsibility from teacher to learner. In addition, accommodating planning, monitoring, and assessment potentials may be more important for sustainable language improvement than supplying immediate cognitive support alone. On the other hand, this understanding is confirmed by the qualitative data since learners in the metacognitive group frequently mentioned growing awareness of their learning strategies and an extensive sense of control. In the same vein, the quantitative results demonstrate metacognitive scaffolding's superiority (d = 0.84) in relation to Zimmerman's self-regulated learning theory, in which learners who steadily control their learning processes accomplish better outcomes than those who depend merely on external support. This highlights learners' potential to monitor and assess their own progress. Nevertheless, Cognitive scaffolding developed comprehension but did not improved the same level of autonomy.

5. Conclusion

This study evinces that cognitive and metacognitive scaffolding significantly impact EFL oral skill development and self-regulation. However, metacognitive scaffolding strategies remarkably develop these variables. Also, each of these components is concurred with the findings of some scholars (e.g., Razaghi et al., 2019; Read & Barcena's, 2016; Sweller, 2020; Van de Pol et al., 2010). Furthermore, metacognitive scaffolding strategies outperform cognitive ones in developing leaners' listening and speaking skills. In the same vein, the study displayed that applying cognitive and metacognitive scaffolding strategies have crucial impacts on EFL learners' self-regulation levels as the integration of quantitative and qualitative findings demonstrated. Therefore, the apprehension and attitudes of learners and their cognitive-metacognitive awareness were associated with their self-regulation levels. Finally, through a semi-structured interview and considering the thematic analysis of the codes, it was showed that using cognitive and metacognitive scaffolding strategies have important influences on EFL learners' attitudes towards language achievement.

In addition, the theoretical and practical implications drawn from the findings of this study can present worthwhile and important insights for policymakers, instructors, course designers, and learners. The theoretical implications of this study are more related to the improvement of cognitive and metacognitive models and strategies in language learning skills. Also, the practical implications

of this study are more contributed to SCT and shed light on the manner in which the experts or the instructors construct opportunities for the learners by supplying scaffolding strategies. Further, the considerable development in metacognitive groups ($d = 0.84$) advocates that investing in learners' strategic awareness provides greater returns than pinpointing merely on linguistic support. Similarly, this study supplies empirical support for SCT by showing the specific mechanisms of cognitive and metacognitive scaffolding strategies in the classroom. In this way, teachers can integrate scaffolding into communicative activities by explicitly instruction of goal-setting and self-assessment strategies and syllabus designers can combine scaffolded listening and speaking modules into EFL textbooks to improve learning. Yet, due to some limitations of this study (e.g., sample, specificity, short-term study, context), its applications and efficient findings, which are in line with the constructivist approach emphasizing the function of scaffolding strategies in the classroom settings (Anwer, 2019), may not be generalizable to all conditions and situations. Also, despite the use of ANCOVA to account for baseline differences, the class level randomization of interclass assignment at the class level may not completely preclude the possibility of selection bias. Therefore, future studies should mitigate these restrictions through multi-institutional sampling, longer intervention periods, blended learning environments and cross-cultural comparisons and explore long-term motivational impacts.

Acknowledgments

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