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Scaffolding Metacognition to Improve Oral Complexity, Accuracy, and Fluency

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Original Article

چکیده

حمایت عبارت است از ارائهٔ کمک به فراگیران و سپس کاهش تدریجی آن. این کاهش زمانی آغاز می‌شود که نشانه‌های پیشرفت در مهارت و دانش حمایت گیرنده بروز می‌کند و فرد نشان می‌دهد که توانایی پذیرش مسئولیت بیشتر در روند فراگیری را دارد. مطالعهٔ حاضر به بررسی تاثیر حمایت‌های فراشناختی بر سه جنبهٔ اصلی مهارت شفاهی زبانی یعنی پیچیدگی، صحت و روانی می‌پردازد. هدف حمایت‌های فراشناختی بالا بردن سطح سه فعالیت فراشناختی اصلی یعنی برنامه‌ریزی، نظارت و ارزشیابی است. در این پژوهش، مبنای اندازه‌گیری پیچیدگی محاسبه نسبت تعداد بندها به واحدهای تجزیه و تحلیل گفتاری شرکت‌کنندگان بود. از سوی دیگر، روانی کلام با تقسیم تعداد هجاهای تولید شده بر تعداد ثانیه ضرب در60 اندازه‌گیری شد. به‌علاوه صحت براساس نسبت تعداد بندهای عاری از خطاهای نحوی، صرفی و واژگانی به تعداد کل بندها محاسبه گردید. تجزیه و تحلیل نتایج نشان داد که حمایت‌های فراشناختی به شکل معناداری مهارت شفاهی فراگیران را بر حسب پیچیدگی، صحت، و روانی افزایش می‌دهد. مفاهیم ضمنی یافته‌ها برای فعالیت‌های آموزشی در مقاله ارائه شده است.

واژگان کلیدی

صحت، پیچیدگی، روانی، فراشناخت، حمایت.

Abstract

Scaffolding is conceptualized as the provision of assistance to learners and the gradual withdrawal of the aid as the scaffoldee signals progression in their knowledge/skill and the capability to take over more responsibility. The present study sought to scrutinize the impact of metacognitive scaffolds intended to endorse metacognitive activities (i.e. planning, monitoring, and evaluation) on various aspects of oral proficiency namely, complexity, accuracy, and fluency. Sixty participants selected through a proficiency test and ranging in age from 16 to 27 took part in the study. Complexity was assessed by calculating the ratio of clauses to AS units in the participants' production. Fluency was measured by dividing the number of syllables by the total number of seconds and multiplied by 60, and accuracy was gauged as the percentage of clauses devoid of syntactic, morphological, and lexical errors to the whole number of clauses. The results of a number of t-tests and ANOVAs on pre and post-intervention oral performance revealed that metacognitive scaffolds could significantly enhance oral proficiency in terms of complexity, accuracy, and fluency. Implications for classrooms are discussed.

Keywords

Accuracy, Complexity, Fluency, Metacognition, Scaffolding.

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Introduction

Since the introduction of the socio-constructivist view to learning studies (Vygotsky, 1978), scaffolding has played a fundamental role in research delineating how learning is mediated by social dynamics. It refers to the provision of assistance to learners and the gradual dismantlement of the aid as the scaffoldee demonstrates signs of growth in their knowledge/skill and signals readiness to carry on independently (Wood, et al., 1976). The literature of scaffolding research supports its role in promoting and acquiring domain knowledge (e.g., concepts and procedures) as well as metacognitive skills (Azevedo & Hadwin, 2005) which refer to individuals' ability to plan, monitor, and evaluate their own learning process (Brown, 1987).

Alias (2012) identified three main categories of scaffolds in the literature, namely cognitive, metacognitive, and affective or motivational ones. Applying metacognitive strategies could be arduous for learners (Bannert & Mengelkamp, 2013; Molenaar, et al., 2014). Therefore, metacognitive scaffolds can be exploited to remind learners of the employment of such strategies as they are engaged in the learning process and problem-solving tasks. These scaffolds are applied to provide a basis for exploiting metacognitive strategies, aiming at prompting learners to monitor, evaluate, and plan while involved in a task (Hannafin, et al., 1999).

The literature endorses the effectiveness of metacognitive scaffolds in various aspects of language learning such as writing and writing self-regulation (Hemmati & Mortazavi, 2017; Mortazavi, et al., 2016), reading comprehension (Dabarera, et al., 2014), and listening comprehension (Coşkun, 2010). The literature, however, fails to offer solid empirical backing for the effect of metacognitive scaffolds on improvement in speaking skills in EFL contexts. Yet, speaking, with fluency, complexity, and accuracy (CAF) being among its qualitative dimensions (Housen, et al, 2012), plays a crucial role in learning another language (Richards, 2008), A proficient language user produces accurate and complex language (Lintunen & Mäkil, 2014); therefore, conducting research into how and what pedagogical techniques result in the promotion of these aspects should be of paramount prominence and a pivotal issue for oral skills researchers.

Given the recounted beneficial effect of metacognitive scaffolding on other skills, further studies aiming to delineate the role of scaffolding metacognition in advancing the CAF triad of EFL speakers seem warranted. However, in EFL contexts so far no study, to the best of the researcher's knowledge, has inspected the influence of metacognitive scaffolds on the above-mentioned aspects when language learners are engaged in oral tasks. The study at hand hence sought to addresses the gap in the literature with regard to the paucity of research into the impact of applying metacognitive scaffolding tactics when teaching the speaking skill. In so doing, four research questions were posed:

1. Do metacognitive scaffolds significantly increase complexity in oral tasks?
2. Do metacognitive scaffolds significantly increase accuracy in oral tasks?
3. Do metacognitive scaffolds significantly increase fluency in oral tasks?
4. Which of CAF triad components is most promoted by metacognitive scaffolds?

Literature Review

Metacognition and Metacognitive Scaffolding

Metacognition, conceptualized as "thinking about thinking" (Flavell, 1979, p. 906), entails two components: knowledge of cognition and regulation of cognition (Brown, 1978; Schraw, et al, 2006). Individuals' awareness of their own features (e.g. constraints and strengths), task characteristics, a variety of strategies, and the right time each strategy must be employed constitute their cognitive knowledge (Flavell, 1979; Schraw et al., 2006). Cognitive regulation, on the other hand, comprises individuals' ability to plan and set short and long term goals for their learning tasks, monitor their

learning process, and evaluate the efficiency of the steps taken and the strategies applied to accomplish the specific learning task (Schraw et al., 2006). Planning, monitoring, and evaluation are deemed as three chief focuses or sub-components of cognition regulation (Schraw & Moshman, 1995).

Pointing to the necessity of scaffolding metacognitive activities, Schraw (1998) suggests that learners require help with the employment of metacognitive strategies and iterates that statements and prompts in the form of regulatory checklists with entries for metacognitive strategies such as planning, monitoring, and evaluation should be given to them to aid them to improve their regulating skills. There are a burgeoning number of studies addressing the ways metacognitive activities can be scaffolded in educational contexts (e.g. Molenaar, et al., 2011; Molenaar, et al., 2012; Molenaar, et al., 2010, Molenaar et al., 2014). However, most studies on scaffolding metacognition have been conducted in computer-assisted learning environments designed for teaching natural sciences. For instance, Molenaar et al. (2011) attempted to investigate whether metacognitive scaffolds offered in a computer-supported learning environment affect metacognitive activities, metacognitive knowledge, and learning. Having coded and analyzed metacognitive activities of the triads and inspected their mental models, the researchers reported the effectiveness of metacognitive scaffolds in enhancing metacognitive knowledge and activities.

There are few studies, though, on the effectiveness of metacognitive scaffolds in language learning. Jafarigohar and Mortazavi (2017), for instance, reported a positive impact for orally presented metacognitive, motivational, conceptual, and strategic scaffolds on cognitive knowledge and cognitive regulation among a cohort of female Iranian learners of English. This study also addressed the effect of metacognitive scaffolds on language skills. Hemmati and Mortazavi (2017) and Mortazavi et al. (2016) also examined the impact of metacognitive scaffolds on various aspects of writing and found that metacognitive scaffolds could promote writing ability and writing self-regulation. Dabarera et al. (2014) studied the impact of metacognitive strategy instruction on reading comprehension among 67 ESL learners in Singapore and reported a relationship between metacognitive awareness-raising and reading comprehension improvement. Coşkun (2010) also reported that prompting metacognitive activities could promote listening comprehension. However, in the speaking arena, an extensive literature search indicated that metacognitive scaffolding has not been delineated and studied. Most studies on scaffolding speaking have been exploratory in nature, analyzing pedagogical practices to examine techniques constituting as scaffolds (e.g. Tyas, 2008). Although the literature offers studies examining the role of the metacognitive component such as planning (e.g. Yuan & Ellis 2003), the employment of metacognitive scaffolds enjoying distinctive features of scaffolding techniques, such as fading, in speaking classes has not been the goal of any research in the English language learning context.

Oral Accuracy, Complexity, and Fluency

Complexity, accuracy, and fluency (CAF) comprise central components of language proficiency and fundamental issues in language acquisition research (Ellis, 2008). CAF triad has been profusely employed to indicate, describe, and assess oral and written proficiency (Housen & Kuiken, 2009). Complexity mostly refers to the extent to which learners can create versatile language and can be used to describe resourcefulness and intricacy in terms of interaction, proposition, function, grammar, and lexis (Ellis & Barkhuizen, 2005). The complexity, as well as the grammatical accuracy, have been quite extensively examined in the literature (Boggs, 2019; Fazilatfar, et al., 2020; Foster & Skehan, 1996; Mehnert, 1998; Nguyen, 2018; Ortega, 1999; Saeedi, 2015; Yuan & Ellis, 2003, to name but a few).

Such structural focus in complexity is characterized by learners' ability to produce

syntactically, and thus cognitively, more demanding linguistic material (e.g. longer units with more complex embedding elements) (Pallotti 2009). It necessitates the application of varying structures with complex elements, such as embedded dependent clauses. In the case of oral skills, a practical way to define and operationalize syntactic complexity is to gauge the ratio of clauses to AS units detected in the participants' production (Saeedi, 2015), with AS units being "a single speaker's utterance consisting of an independent clause, or sub-clausal unit, together with any subordinate clause (s) associated with either" (Foster, et al, 2000, p. 365). Fluency, in contrast, is "the extent to which the language produced in performing a task manifests pausing, hesitation or reformulation" (Ellis, 2003, p. 342) and can be measured based on the rate of pruned speech which does not account for repetitions, reformulations, false starts, and asides in L1 and embodies both the amount of speech and the length of pauses (Gilabert, 2007). Pruned speech rate is estimated by dividing the number of syllables by the total number of seconds and multiplied by 60 (Saeedi, 2015).

Accuracy is defined as the extent to which learners succeed in generating error-free language and producing linguistically appropriate language in communication, regarding the current level of the language speaker (Ellis, 2008). Previous research has indicated that metacognitive activities foster the CAF triad. Saeedi (2015), for instance, probed into the effects of online planning on Iranian EFL learners' oral performance and reported that providing adequate time to perform a tightly structured narrative task resulted in improvement in all performance areas. In their study, however, planning was not scaffolded and merely was operationalized as the opportunity to take some time to plan before the task. To date, the impact of scaffolding techniques designed to foster the exploitation of metacognitive strategies on CAF has not been investigated.

Several more recent studies investigated grammatical accuracy as a dependent variable. Jafari, et al., (2016) focused on the effect of transcribing task on EFL learners' grammatical accuracy. They found that the transcription of oral output followed by self-and peer-correction significantly improved the accuracy of the participants' production. Moreover, Roohani, et al., (2017) probed the effect of input vs. collaborative output tasks on Iranian EFL learners' grammatical accuracy as well as their willingness to communicate and found the input-and output-based tasks had a statistically significant effect on the participants' grammatical accuracy.

The most recent study in this area belongs to Fazilatfar, et al., (2020) which attempted to investigate the differential effect/s of three different planning time scenarios, as well as three task conditions on CAF. The results of this study indicated the main effect of planning time on the complexity of written tasks, but they found that task conditions had no significant effect. Nor did they find an interaction effect of planning time and task conditions on the quality of L2 writing of argumentative texts. On the other hand, though, they found that the task condition had a significant effect on the general accuracy of the writing output in all the tasks.

In another recent study, Safdari and Fathi (2020) investigated the effect of dynamic assessment (DA) on the speaking accuracy and fluency of a group of pre-intermediate EFL learners. The sample consisted of 62 participants who were given a speaking pretest in order to have their fluency and accuracy scores estimated. The experimental group received treatment for grammar and vocabulary which moved from the most implicit to the most explicit feedback in line with the basic tenets of DA. The control group, on the other hand, received the same content without the factor of step-wise mediation. Moreover, the researchers interviewed a number of participants in the experimental group in order to collect their perceptions towards the effectiveness of DA in speaking accuracy and fluency. The results of ANCOVA showed

that DA had a significant effect on speaking accuracy but not on fluency of the participants. The interview results, on the other hand, indicated that the participants had positive perceptions towards the effectiveness of DA.

Method

Participants

From among 213 female intermediate English learners studying in a language institute in Tehran, Iran, 60 were chosen based on the results of the Preliminary English Test (PET). Their age ranged between 16 and 27, (M = 18.64, SD = 9.41), and they were chosen from among those who had obtained scores one standard deviation from the mean in the PET exam (M = 72.57, SD = 7.51) and had indicated willingness to take part in the study. They were assigned to either the experimental condition (EX, N = 30) who were presented with metacognitive scaffolds or the control group (CG, N = 30). The same teacher taught both groups.

Instrumentation

PET

The Cambridge PET was the first instrument applied in this study as a means to ensure the homogeneity of the participants in terms of their proficiency level before the treatment. Consisting of four parts namely, Reading and Writing, Listening and Speaking, the test results helped the researcher to select 60 intermediate learners of almost the same proficiency level as the participants of the study from an initial sample of 213 learners.

The oral test to measure CAF

Both before and after the treatment, the participants performed an oral task. Since the class time did not allow for all participants to accomplish the oral task in class and the noises in the natural setting of the classroom did not allow for preparing good quality records of participants' speech, they were asked to carry out the task at home. The task required the participants to choose from three controversial topics, to specify their stance, and to give reasons. They were required to speak for about three minutes and record their voices.

Following Saeedi (2015), the researcher deployed some techniques to measure the CAF triad. Complexity was assessed by calculating the ratio of clauses to AS units in the participants' production. Fluency was measured by dividing the number of syllables by the total number of seconds and multiplied by 60; moreover, accuracy was gauged as the percentage of clauses devoid of syntactic, morphological, and lexical errors to the whole number of clauses were used to assess the accuracy of oral performance.

Procedure

Prior to the treatment, as briefly mentioned above, the learners in both groups were given a take-away oral task. As the participants studied English in a private institute in which the main motivation of learners' is usually higher proficiency and not higher grades, the researcher assumed that they would do the task themselves and would not seek assistance from other more proficient people in doing the tasks. Moreover, as another precaution in this regard, the researcher randomly compared the completed task against the actual proficiency level of the participants with whom the researcher was quite familiar in terms of their language knowledge and skills. They were required to choose one of three controversial topics. The task was to orally specify and justify their stance in two to three minutes and record their voices. This was regarded as the pretest in which participants' performance concerning complexity, accuracy, and fluency was assessed. This was followed by the treatment which included ten 105-minute sessions held three days a week in which the EX received metacognitive scaffolds. In each session, the groups were given a topic and ten learners were selected to talk for three minutes. The classroom schedule was designed in a way as to provide the opportunity to talk for three minutes in class under the guidance of the teacher once a week. Before, while, and

after these oral presentations, which included justifying a choice/stance through giving reasons, the participants in the EX were offered metacognitive scaffolds.

As conceptualized by Hannafin et al., (1999), metacognitive scaffolds instruct learners how to think, and when and how to apply metacognitive strategies such as goal setting and planning, monitoring, and evaluating. Therefore, in the current study, the scaffolds were employed in the form of prompts and explanations all aimed at encouraging metacognitive activities. During the treatment and in every session, the teacher explained what decisions comprised planning before imitating the talk. He also elaborated on the role of goal setting and the way a talk could be planned and goals could be set. He modeled thinking aloud to demonstrate the process of planning before the oral task. Participants were provided with prompts including questions eliciting planning decisions. Examples of such prompts are "have you planned your talk?", "How are you going to start your presentation?", and "Have you taught about the number of reasons you are going to give to support your choice?". Besides, he explained how learners could monitor and evaluate their performance during and after their oral presentations.

The instructor provided the learners with a checklist to consider a series of linguistic factors (e.g., tense). Besides, they were offered hints about the necessity of monitoring. Examples of these prompts included: "Are the sentences you are using grammatically correct?", "Are you using the right word?", "Are you using the right tense?". Having finished their talk, the experimental group participants received scaffolding prompts eliciting self-evaluation. They were asked whether, how, and on what basis they were going to evaluate their performance. They also listened to their teacher's thinking aloud while evaluating his performance in a model activity at the beginning of the session. The learners in the control group similarly had oral presentations but did not receive any metacognitive scaffolds before, while, and after doing their oral tasks. Table 1 depicts scaffolding means and focuses before, while, and after EX participants' oral tasks.

At the end of the term, the learners in both groups were given an oral task similar to the one in the pretest. Their voices were recorded for further analysis so that the researcher could measure their oral accuracy, fluency, and complexity and compare the two groups in terms of increase in these three variables.

Design

This study deployed a quasi-experimental pretest-posttest design in which the participants' performance in terms of producing accurate, fluent, and complex sentences in an oral task posttest were compared with their performances on a similar task in the pretest. To this aim, the difference between the two administrations of the tests, the gain scores, of the EX and CG were compared through t-tests.

Table 1. Scaffolding Means and Focus in Oral Tasks.

Speaking Phase	Scaffolding focus	Scaffolding means
Before speaking	Planning and Goal-setting	Teacher's explanations and modeling prompts
While speaking	Monitoring	Prompts and checklists, explanations
After speaking	Evaluation	Prompts, models

To analyze the collected data, the participants' tape-recorded L2 oral productions were transcribed and coded, and scored in terms of complexity, fluency, and accuracy. Analyzing the pretest data, the researcher coded 25% of data for each class and the inter-coder reliability was calculated. Given the high inter coder-reliability values (fluency: α= 79.45, accuracy: α= 95.79, complexity: α= 87.13), the rest of the data were coded by a different coder. In a similar vein, to establish the reliability of coding for participants' performance after the treatment, both raters independently coded 25% of data for each class and gauged the inter-coder reliability (fluency: α= 83.15,

accuracy: α= 93.23, complexity: α= 89.62). The rest of the posttest performance data were then analyzed by one of the coders.

Results

Complexity

To answer the first research question and to gauge the complexity of the participants' oral presentations in pre and post-tests, the researcher calculated the ratio of clauses to AS units and ran a t-test to compare the gains in the EX and CG. Table 2 displays descriptive statistics for both groups in complexity.

Table 2. Descriptive Statistics for Complexity

	G	N	Mean	SD
Complexity-gain	CG	30	4.06	3.05
	EX	30	25.70	6.00
Complexity-pretest	CG	30	52.93	9.75
	EX	30	48.16	10.20
Complexity-posttest	CG	30	57.00	11.11
	EX	30	73.86	7.06

G= Group

As shown in Table 2, despite little difference between the EX (M = 48.16, SD = 10.20) and the CG (M = 52.93, SD = 9.75) in the pretest, a sizeable difference was detected between the EX (M = 73.86, SD = 7.06), and the CG (M = 57.00, SD = 11.11). Descriptive statistics for gain scores also indicated more gains for EX (M = 25.70, SD = 6.00) when compared to CG (M = 4.06, SD = 3.06). Table 3 shows the results of the t-test employed to ensure the existence of statistical significance between the two groups.

Table 3. t-test for Equality of Means in Complexity Gains

	T	df	Sig. (2-tailed)
Complexity-gain Equality of variance assumed	17.60	58	.00
Equality of variance not assumed	17.60	43.05	.00

As it can be seen in Table 3, the t-test run on complexity gains yielded significant differences between EX (M = 25.70, SD = 6.00) and CG (M = 4.06, SD = 3.06), t (58) = 17.60, p<.05, indicating positive effect of metacognitive scaffolds on oral complexity.

Accuracy

Next, the accuracy of participants' pretest and posttest oral presentations was compared to answer the second question. To do so, the percentage of clauses free from syntactic, morphological, and lexical errors to the whole number of clauses in pre and post-tests were calculated. Descriptive statistics for accuracy in the two administration of the oral test is presented in Table 4.

As Table 4 demonstrates, slight difference was observed between the EX (M = 51.46, SD = 8.00) and the CG (M = 57.93, SD = 6.59) in the pretest. However, a considerable difference was found between the EX (M = 79.50, SD = 15.28), and the CG (M = 61.53, SD = 6.39). Moreover, as can be seen in Table 4, descriptive statistics yielded more gains for EX (M = 28.03, SD = 12.11). Table 5 depicts the results of the t-test run to see if statistical significance existed between the two groups.

Table 4. Descriptive Statistics for Accuracy

	G	N	Mean	SD
Accuracy-gain	CG	30	4.40	3.25
	EX	30	28.03	12.11
Accuracy-pretest	CG	30	57.13	6.59
	EX	30	51.46	8.00
Accuracy-posttest	CG	30	61.53	6.39
	EX	30	79.50	15.28

As shown in Table 5, the t-test run on complexity gains indicated statistically significant differences between EX (M = 28.03, SD = 12.11) and CG (M = 4.40, SD = 3.25), t (58) = 10.31, p<.05which rendered metacognitive scaffolds effective in promoting on oral accuracy.

Table 5. t-test for Equality of Means in Accuracy Gains

	T	df	Sig. (2-tailed)
Complexity-gain Equality of variance assumed	10.31	58	.00
Equality of variance not assumed	10.31	33.16	.00

Fluency

The pretest and posttest oral presentations were analyzed to gain insight into the participants' improvement in terms of fluency

and to answer the third question. To do so, the researcher divided the number of syllables by the total number of seconds and multiplied the gained value by 60. Shown in Table 6 is the descriptive statistics for participants' fluency in the two administrations of the oral test.

Table 6. Descriptive Statistics for Fluency

	G	N	Mean	SD
Fluency-gain	CG	30	4.70	6.60
	EX	30	27.80	7.67
Fluency-pretest	CG	30	47.60	7.82
	EX	30	45.73	7.80
Fluency-posttest	CG	30	52.30	9.94
	EX	30	73.53	7.39

Table 6 indicates that there was trivial difference between the fluency scores of EX (M = 45.83, SD = 7.80) and those of the CG (M = 47.60, SD = 7.82) in the pretest. Nevertheless, a huge difference was observed between the EX (M = 73.53.50, SD = 7.39), and the CG (M = 52.30, SD = 9.94). Furthermore, descriptive statistics indicated more gains for EX (M = 27.80, SD = 7.67). Table 7 illustrates the results of the t-test to investigate the possible statistical significance between the two groups.

Table 7. t-test for Equality of Means in Fluency Gains

	T	df	Sig. (2-tailed)
fluency-gain			
Equality of variance assumed	12.49	58	.00
Equality of variance not assumed	12.49	56.73	.00

As demonstrated in Table 7, the t-test run on fluency gains indicated statistically significant differences between EX (M = 27.80, SD = 7.67) and CG (M = 4.70, SD = 6.60, t (58) = 12.49, p<.05, which proved that metacognitive scaffolds could advance participants' oral fluency.

Table 9. ANOVA for the CAF Triad Components Gains for the EX

	Sum Squares	ofdf	Mean Square	F	Sig.
Between Groups	99.08	2	49.54	.61	.54
Within Groups	7010.06	87	80.57		
Total	7109.15	89			

Finally, a one-way ANOVA was applied to compare complexity, accuracy, and fluency gains in the EX to shed light on which of the CAF triad components was most promoted as a result of metacognitive scaffolds and to find the answer to the fourth research question. Demonstrated in Table 8 is the descriptive statistics for gains in the EX in terms of complexity, accuracy, and fluency.

Table 8. Gains in the CAF triad in the EX

CAF Triad Component	N	Mean	SD
Complexity	30	25.70	6.00
Accuracy	30	28.03	12.11
Fluency	30	27.80	7.67
Total	90	27.17	8.93

As shown in Table 8, EX learners' improvements with regard to the accuracy in oral accounts (M = 28.03, SD = 12.11) were found to be more than the other two components. Yet, to find out whether this superiority was statistically significant, the researcher ran a one-way ANOVA the results of which are depicted in Table 9.

According to Table 9, no significant difference was detected among the gains in complexity, accuracy, and fluency, F (2, 87) = .61, p > .05, indicating that metacognitive scaffolds could equally promote all the components of oral proficiency.

Discussion

The present study set out to explore the impact of activities designed to scaffold the employment of metacognitive strategies (i.e. planning, monitoring, and evaluation) on various aspects of oral proficiency namely, complexity, accuracy, fluency. In so doing, samples of participants' oral performance both before and after the treatment were gathered, coded, and scrutinized. The results of the analysis of pre and post-intervention oral performance revealed that metacognitive scaffolds could significantly enhance the CAF triad.

The results can be justified in the light of the socio-constructive conceptualization of scaffolds as well as the metacognitive nature of the scaffolds employed in this study. Scaffolds are designed and exploited to diminish

the load and to simplify the tasks (Wood et al., 1976). Thus, scaffolded activities are expected to enjoy lower task complexity levels. Skehan (2009) reiterates that manipulating task complexity can result in variances in fluency, arguing that less intricate tasks lead to the production of more fluent language. This was confirmed in the current study as scaffolds increased the participants' oral fluency.

Metacognitive scaffolds exploited in this study were focused on and aimed at promoting, encouraging, and triggering the use of metacognitive strategies namely, planning, monitoring, and evaluation. Hence, the findings are commensurate with those reporting the positive impact of such strategies on proficiency and the CAF triad. More specifically, the findings endorse the studies introducing planning as effective in promoting CAF (Saeedi, 2015). The present research contributes to the literature as it introduces ways in which planning can be scaffolded and planning and goal setting decisions can be triggered in planning time. The literature introduces online planning as effective in the production of more accurate and complex L2 discourse, and strategic planning as useful for the generation of more fluent and complex language (Ellis, 2009). Hence, given the obtained results concerning the promotion of all components of the CAF triad as a result of metacognitive scaffolds, it can be plausibly argued that having received metacognitive scaffolds, participants could advance both their on-line and strategic planning skills.

Conclusion and Implications

The findings, in general, hint at the paramount effect of metacognition in language learning and oral proficiency and might encourage language instructors to value and aim for explicitly teaching and scaffolding metacognitive strategies. The findings are expected to motivate EFL teachers to apply scaffolding techniques to assist learners in using metacognitive strategies when needed.

The results showed that all CAF components were equally increased as the result of receiving metacognitive scaffolds, rendering metacognitive scaffolds as optimum pedagogical tools to be exploited in speaking classes. Given that writing, akin to speaking, necessitates production entailing CAF components, the results should be of interest to writing instructors as well. However, to delve into the ways metacognitive scaffolds can be employed to trigger more accurate, complex, and fluent written performance, further studies need to be designed and conducted to gain a clearer picture of how prompting metacognitive activities might affect various aspects of written proficiency. Moreover, additional studies are needed to qualitatively analyze learners' planning, monitoring, and evaluating decisions and behaviors as a result of metacognitive scaffolds when learners strive to generate ideas in oral/written form.

The findings of the present study can be of interest to and beneficial for teacher education or professional development programs which aim to raise awareness among student-teachers with regard to the nature and value of metacognitive scaffolds and the way they can be applied in language classes. It can also be of value to foreign language instructors and English language teachers in particular who might be interested in applying metacognitive scaffolds to assist language learners in carrying out metacognitive activities before, while, and after accomplishing learning tasks in general and oral tasks in particular. Given that learners need assistance in using metacognitive strategies (Schraw, 1998) language instructors are encouraged to scaffold the application of metacognitive activities to enable learners to promote their metacognitive skills and, consequently, their ability to generate error-free, intricate, effortless output.

Obviously, the findings of a single study provide us with a few pieces of the gigantic puzzle we deal with in any field of inquiry. Second or foreign language acquisition, by nature, is a highly complicated puzzle involving hundreds or even thousands of pieces to be fitted together so that we can have a decent understanding of the whole phenomenon. This study, admittedly, is no exception

and it might have its own deficiencies in terms of internal and external validity. As the study was conducted in a natural classroom environment of a language institute, the researcher was not able to deploy a strict laboratory condition for carrying out the procedure. As a result, factors such as exposure to other sources of input outside the classroom might have acted as intervening variables and thus weakening the internal validity of the study.

One of the obvious limitations of the study is the fact that the sample consisted only of female students. As the study by Namaziandost, et al., (2019) showed that female participants outperformed the males in terms of fluency while males were superior in terms of accuracy, future studies can include gender as a moderator variable to investigate whether metacognitive scaffolds have differential effects on complexity, accuracy, and fluency in this regard. Moreover, the sample consisted of participants within a certain age range. Future investigations in this area can include participants from a wider age range to find out whether age is a determining factor in moderating the effect of metacognitive scaffold on the CAF triad.

As for the external validity of this study, the limitations mentioned above as well as those that might have acted as intervening variables such as extracurricular exposure to the English language through, for example, the wide-spread use of various types of social media or audio-visual materials such songs or movies caution us against generalizing the findings of this study too far and wide.

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