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Systemic Theoretical Instruction: The Impact of Three Types of Verbalization in L2 Learners' Knowledge of Passive Voice

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Abstract

This article was intended to investigate and compare the impact of three types of verbalization within Systemic Theoretical Instruction (STI) on the L2 learners' knowledge of the passive voice. To this end, four EFL intact classrooms from a high school in Iran were chosen and randomly assigned to one control and three experimental groups. The experimental groups received their respective treatment, that is, communicated thinking, dialogic thinking and, communicated plus dialogic thinking while the control group received instruction about the same target structure, through a deductive lesson. Results illustrated that STI in all its conceptualizations was an effective pedagogical option. The result also showed that communicated and communicated plus dialogic procedures had an advantage over the dialogic one both in the immediate and delayed posttests. This finding could be attributed to the unique nature of communicated thinking combining the mediation through concepts of STI with the mediation through the interaction of dynamic assessment.

*Keywords***:** Communicated thinking, dialogic thinking, SCOBA, sociocultural theory, systemic theoretical instruction

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INTRODUCTION

The theory of developmental education put forward by Vygotsky (1978) hypothesizes that the ultimate goal of education must be the development of learners through the internalization of theoretical concepts. Within this theory, the onus has been put on education to provide learners with explicit and coherent theoretical concepts and ensure that learners internalize these concepts (Negueruela & Lantolf, 2005). Though initiated by Vygotsky who emphasized the internalization of theoretical concepts as a prerequisite to development, the theory of developmental education has further been developed and expanded by Gal'perin's (1989, 1992) theory of Systemic Theoretical Instruction (STI) also called Concept-Based Instruction (CBI). In fact, it is Gal'perin who has delineated the process of internalization (Lantolf & Poehner, 2014).

According to the theory of Systemic Theoretical Instruction (STI), 'mental actions' or internalization emerges first as a materialized action, then through the verbal phase/action and finally is converted into a mental action (Gal'perin, 1992; Haenen, 2001). In other words, within STI mental actions or internalization of concepts is expected to be achieved through the following three phases: The first phase is called SCOBA or Schema of a Complete Orientation Basis of an Action (Gal'perin, 1989, 1992). At this phase, concepts are presented in non-linguistic, holistic forms such as models, diagrams, pictures and so on which do not lend themselves to memorization (Lantolf & Poehner, 2014). Although stretches of language might accompany them, SCOBAs are more effective if they contain fewer words (Lantolf & Poehner, 2006).

The second phase is called Verbal action. At this phase, as soon as the learners gain control over the use of a given concept with the help of SCOBA, their mediational tool is shifted from the SCOBA to speech (Gal'perin, 1969). When learners speak about action either to others or themselves, they are believed to be liberated from the control of the SCOBA and begin to internalize the action (Lantolf & Poehner, 2014). At this

juncture, it must be noted that Gal'perin's verbal phase consists of two sub-phases: "communicated thinking" and "dialogic thinking". According to Haenen (2001), in the former, the learners are required to talk about the action to make it comprehensible to others while in the latter they are asked to talk to themselves about the activity covertly. Other scholars (Lapkin, Swain, & Knouzi, 2008; Lantolf & Poehner, 2014; Negueruela, 2003, among others), however, are of the opinion that what differentiates communicated thinking from dialogic thinking is the direction of speech, that is, the speech which is directed at oneself is called dialogic thinking while the one which is directed to others is called communicated thinking. In the present study, the latter conceptualization of dialogic and communicated thinking is followed. Finally, at the last phase of internalization called inner speech, learners completely internalize the concepts and start to use it in different contexts.

In terms of operationalization in the SLA literature and especially in sociocultural theory (SCT) studies, the two aforementioned sub-phases of the verbal action (i.e. "communicated thinking" and dialogic thinking") have been approached differently. Some scholars (e.g. Negueruela, 2003; Swain & Lapkin, 2007; Swain, Lapkin, Knouzi, Suzuki, & Brooks, 2009, among others) have focused on dialogic thinking and few studies (e.g. Brooks & Swain, 2009) have incorporated "communicated thinking", while no researcher has attempted to compare the effectiveness of communicated thinking and dialogic thinking or integrated them in one study as conceptualized by Gal'perin (Lantolf & Poehner, 2014). Therefore, the present study intends to address this gap by examining the effectiveness of STI in terms of learners' grammar development when its verbal phase is conceptualized as "communicated plus dialogic thinking" compared to other two conceptualizations, that is, a) dialogic thinking, and b) communicated thinking.

In addition to the aforementioned theoretical concern, this study is also pedagogically motivated. In fact, both Iranian teachers and learners consider passive structure difficult (Marefat & Nushi, 2012; Dehghani,

Bagheri, Sadighi, & Tayyebi, 2016). On the other hand, grammar is still predominantly taught through the traditional deductive method in Iranian schools (Razmjoo & Riazi, 2006). Juxtaposing these two facts, the difficulty of the passive structure might be attributable to the way it is taught, namely, deductively. Given this, we are of the opinion that STI with its systematic procedure and focus on conceptual understanding is likely to help Iranian L2 learners to internalize the passive structure and consequently improve their performance. Furthermore, it is worth mentioning that no prior STI study has previously addressed the passive structure in English.

LITERATURE REVIEW

Since the introduction of STI to the field of SLA by Negueruela (2003), researchers have embarked on examining its role in L2 development. This line of research has demonstrated that STI could successfully improve the learners' understanding and performance (Ganém-Gutiérrez & Harun; 2011; Lapkin, Swain, & Knouzi, 2008; Lai, 2012, among others). In what follows, some of these studies are reviewed.

As cited in Lantolf and Thorne (2006), in a study extending for fifteen weeks, Negueruela implemented concept-based instruction in a university classroom learning French as a foreign language. The following three target structures were included: 1) aspect, 2) use of articles, and 3) verbal tense. The learners were given a SCOBA in the form of a chart along with several oral and written activities and were asked to complete them with the help of the SCOBA. Furthermore, the learners were given some verbalization activities as homework and were instructed to verbalize their reflections overtly while doing the activities at home. They were also required to tape-record their performance for later classroom review. To assess the impact of the instruction, the researcher collected and analyzed three types of data on the learners: a) their performance on oral and written tasks at the beginning and end of the instruction; b) their verbalizations; and c) their definitions of the target structures. The results revealed that the

instruction improved not only the learners' performance on the oral and written tasks but also their conceptual understanding manifested through their verbalization and definitions of the target structures.

To find out the effect of verbalization on learners' understanding of the concept of voice in French, Lapkin, Swain, and Knouzi (2008) conducted a pilot study. The participants were six university students attending a communicative course designed for intermediate learners of French in southern Ontario. The data collection was extended over two sessions. The first one consisting of several components (i.e., pretest, self-explanation activity, and immediate posttest) that lasted 80 minutes. In fact, in the first session, the participants were given a pretest, then with the help of some cards and two charts, they were instructed to perform verbalization activities such as reading aloud and thinking aloud. The participants' dominant language was English, hence they were asked to verbalize in English. Two weeks later, in the second session, the learners took the delayed posttest. The researchers found that the students' understanding and learning had improved though in some cases learners had resisted the new procedure.

As reported in Lantolf and Poehner (2014), in a study conducted in a university classroom, Yánéz-Prieto used Gal'perin's systemic theoretical model to change the L2 Spanish learners' conceptualization and understanding of verbal aspect by an innovative combination of SCOBA and literature. To this end, the learners were presented first with SCOBA of aspect in Spanish and then by excerpts of literary texts which were intended to show the learners how preterit and impreterit aspect can be used creatively by writers to produce a particular impression on readers. This type of language use was different from learners' expectations rising from their prior rule-based learning. After being exposed to the SCOBA and the literary text, each learner was engaged in a communicated thinking about the verbal aspect with the researcher. Once again, several weeks later, after being exposed to various SCOBAs and literary texts, the learners did a verbalization activity in the form of communicated thinking. The researcher

noticed a change in learners' conceptual understanding of the Spanish verbal aspect. This change manifested itself in two ways: a) some students started to question their prior rules of thumbs; b) some students started to use aspect creatively in their performance activities.

To examine the effectiveness of SCOBA in the development of the Chinese tense and aspect system, Lai (2012) compared two first-semester beginning Chinese L2 classrooms. One of the classes received STI while the other received traditional instruction on tense based on their textbook exercises and examples. To examine the performance of the STI class on aspect, a third-semester intermediate classroom was also included in the study since in the instructional program the students did not receive instruction on aspect until the third semester. To compare the groups' performance, three different tasks were used as posttests which were immediately administered after the instruction. The results of the posttests showed that with regard to tense, the STI class outperformed the traditional one while concerning the aspect both the STI and the intermediate classes benefited from their respective treatments and there was no significant difference between them. Through a survey, the researcher also found that learners had developed a positive attitude towards CBI.

Ganém-Gutiérrez and Harun (2011) investigated the effectiveness of a concept-based approach in teaching English tense-aspect to six postgraduate English L2 students at a British university. The data collection was conducted in two consecutive daily sessions. The participants were randomly assigned to individual and dyad conditions. After receiving a pretest on the target structure, both groups were given the CBI materials, which were in the forms of PowerPoint slides including diagrams and animations. Individuals were asked to verbalize and explain while processing the slides (i.e. dialogic thinking) whereas the dyads were required to discuss what they understood from the slides (i.e. communicated thinking). All the verbalizations were recorded for later analysis. The day after the treatment, both groups were given a posttest. The results revealed that all the learners benefited from the treatment and developed a deeper

understanding of the concept of tense-aspect in English. However, none of the participants were given a chance to experience a combination of both types of verbalization (i.e. dialogic thinking and communicated thinking). Furthermore, the performance of the two groups was not compared. However, it must be noted that the two participants who gained the most from the CBI had participated in the dyad condition.

By drawing on Feuerstein's mediated learning experience, Poehner and Infante (2016) introduced a framework called *Mediated Development* (MD) integrating two major strands in socio-cultural theory, that is, *Dynamic Assessment* (DA) and *Systemic-Theoretical Instruction* (STI). In fact, the MD framework seeks to complement the mediation through concepts of STI by the mediation through the interaction of DA with the intention of helping L2 learners internalize linguistic concepts and develop new ways of thinking. Accordingly, MD proposes that L2 learners should both be exposed to theoretical concepts in the forms of charts, images, models, etc., and also be helped dialogically to appropriate those concepts. In the same article, Poehner and Infante (2016) reported how they supported university ESL learners' understanding and control over the English tense and aspect system with the help of their framework.

In an exploratory study conducted by Harun, Abdullah, Ab Wahab, and Zainuddin (2017) in Malaysia, 12 university students were recruited to examine the potential of CBI in improving learners' understanding of the English language tense-aspect system. Following a pretest-treatment-posttest design, the researchers exposed the learners to the concepts of tense and aspect in the forms of diagrams and animations presented in PowerPoint slides. Then, they engaged the learners in verbalization activities in the form of self-explanation. The results of the analysis showed that not only learners' use of the target structure, but also their conceptual knowledge of the structure improved. Furthermore, the learners' gained knowledge was sustained even after two months. However, it is worth mentioning that in this study, no comparison group was included and the researchers themselves emphasized a need for further research with a stronger design to

ascertain the effectiveness of CBI as a pedagogical option in grammar teaching compared to other alternatives (e.g., PPP or CLT method). To sum up, the implementation of Systemic Theoretical Instruction (STI) in L2 is still a nascent endeavor (Harun et al., 2017). Besides, the examination of the extant studies, some of which reviewed above, has illustrated that out of the three possible operationalizations of STI in terms of its verbal phase (i.e. dialogic thinking, communicated thinking, dialogic plus communicated thinking) researchers have primarily focused on the dialogic thinking (Harun et al., 2017; Lapkin, Swain, & Knouzi, 2008; Swain & Lapkin, 2007, among others) while few studies (Brooks & Swain, 2009; Ng & Zhao, 2017, for instance) have operationalized the verbal phase as communicated thinking and to our best of knowledge no published paper has integrated both sub-phases of the verbal phase of STI (i.e. dialogic plus communicated thinking) in one study as intended by Gal'perin (Lantolf & Poehner, 2014) although Ganém-Gutiérrez and Hurun (2011) did use both dialogic or communicated thinking, they did not combine or compare the two conditions.

In fact, given the extent of emphasis put by STI on the role of verbal mediation in cognitive development (Haenen, 2001), addressing this unattended issue through the integration of the two sub-phases of verbal mediation seems an intriguing research endeavor with potential benefits. If this integration leads to better performance on the part of learners, this study would yield further evidence in support of STI theory. It is also expected that through an emphasis on systematic verbal mediation, STI would turn into a stronger pedagogical intervention that could help L2 learners internalize difficult L2 structures. In the present case, for instance, we believe that STI could help Iranian L2 learners of English to internalize a difficult L2 target structure such as passive (Dehghani et al., 2016).

PURPOSE OF THE STUDY

Given the above facts, this investigation aims to examine how STI in general and its three types of operationalization in terms of its verbal

phase, in particular, affect L2 learners' grammatical knowledge of passive voice in English. Passive voice in its simple present, past, and future form was chosen as the target structure for several reasons. First of all, the choice of this structure was partly motivated by the fact that it has been found difficult by both Iranian teachers and learners (Dehghani et al., 2016). This difficulty, in turn, could be attributed to the complex nature of English passive (Spada & Tomita, 2010) in terms of its structural intricacies (e.g. such as choice of a correct *to be* verb based on the tense and number, the past participle of irregular verbs, etc.). Secondly, our focus on passive was also logistically motivated. In fact, due to time restriction and the teacher's being behind the schedule, the researchers had to choose a target structure from the remaining lessons of the students' textbook, and among the reviewed structures passive voice seemed more amenable to SCOBA construction.

Furthermore, since in the Iranian public schools, the deductive method is still the dominant one in teaching grammar (Razmjoo & Riazi, 2006), the researchers also decided to compare the effectiveness of STI with that of the traditional, deductive method. To sum up, in addition to comparing STI with the deductive method, this study is primarily interested in exploring the impact of integrating two sub-phases of the verbalization phase of STI in one study (i.e. dialogic plus communicated thinking) while comparing it with other two common conceptualizations, that is, dialogic thinking and communicated thinking. This, in turn, is expected to lead to further development of the theory of STI and its practice in L2 classrooms. To this end, the following two research questions were addressed:

1) Does STI affect L2 learners' grammatical knowledge of English passive voice significantly compared with the traditional, deductive method both in the short and long-run?

2) Do the three verbal phases of STI affect L2 learners'

grammatical knowledge of English passive voice differently both in the short and long-run?

METHOD

Participants

To find answers to the proposed research questions, the researchers followed a quasi-experimental design and recruited four intact EFL classes (n=105) in an Iranian high school through convenience sampling. The participants were male high school seniors speaking Persian as their native language. They had four hours of English per week with a non-native teacher and their textbook was called Vision 3, a communicative-based textbook intended to cover the four skills of English language, although grammar, reading, and writing skills received the most attention. The four classes were randomly assigned to one control group (n=27) and three experimental ones, that is, dialogic (n=27), communicated (n=25), and the communicated plus dialogic group (n=26).

Instrumentation

In the present study, the following materials were utilized: a) a SCOBA along with its task (i.e., SCOBA task; b) a dialogic task; c) a communicated task; and d) a communicated plus dialogic task. The SCOBA was modeled on a similar task used by Swain, Lapkin, Knouzi, Suzuki, and Brooks (2009) in an experiment to teach French to English speakers. The SCOBA task was intended to orient the learners and help them better grasp the grammatical concept presented through the SCOBA. Hence, in this task, the participants were provided with six grammatical test items about English passive and were asked to answer them with the help of the SCOBA. In the other three tasks, however, the participants were asked to proceed without the help of the SCOBA. The same task was used for both dialogic and communicated groups consisting of ten grammar test items, however, the dialogic group was instructed to do the

task while verbalizing their thoughts, whereas the communicated group was instructed to cooperate and talk in pairs while doing the task.

A communicated plus dialogic task was also used in this study. It consisted of two sub-tasks (i.e., a communicated and dialogic component) each of which included five grammar test items. The participants of this group were first asked to complete the first component while talking to each other in pairs. Later, they were required to conduct the second component individually while thinking aloud.

A grammar test has been used as the pre, post, and the delayed posttests in the present study. The test, developed collaboratively by the researcher and the teacher, consisted of four parts. The first two parts were receptive. The first part consisting of some passive and active sentences in random order instructed the learners to identify the passive and the active sentences. The second part included a set of multiple-choice questions in which the learners were supposed to read each sentence and fill the blank by choosing the correct answer among the given choices. The third and fourth parts of the test were, however, productive. In the former, the learners were given some sentences in each of which the verb was replaced by a blank while its bare form was given in parenthesis at the end of the sentence. The learners were required to read each sentence and write the correct form of the verb in terms of tense, and voice. Finally, in the last part of the test, learners were given some active sentences and were asked to change them into passive. An English teacher who was an expert in testing was also asked to comment on the test content and items. This led to the final revision of the test by rewording some items and the rubrics. Finally, the internal consistency of the test was calculated resulting in Cronbach's alpha index of 0.78.

Data Collection Procedure

The data collection phase of the study was conducted in two sessions by an experienced, non-native English teacher. First, before the

commencement of the treatment, the teacher and one of the researchers met for two sessions during which the researcher briefed the teacher on STI and they reviewed the materials and procedure to be followed in the study.

In the first session which was common among all the three experimental groups, after sitting for a pretest, the students in all experimental groups were presented with SCOBA in the forms of a chart and a diagram along with a task (i.e., SCOBA task). Designed based on the 'systemic functional linguistics' (SFL) model, the chart was intended to provide the learners with the "meaning potential" of the passive concept (Negueruela, 2008). The diagram along with some sample sentences provided the learners with whatever they required to construct a passive sentence. Subsequently, the teacher familiarized the learners with the SCOBA and gave them the task, and instructed them to complete it with the help of the SCOBA. By way of illustration, a sample of question types used in the SCOBA task is presented below. As shown, the questions are arranged in order of difficulty. That is, in the first question, the learners are required to indicate whether the sentence is passive or active. In the second question, they are asked to identify the correct form of the verb required for them to complete the item. Finally, in the third question, the learners are asked to change an active sentence to a passive one.

SCOBA task: Answer with the help of the SCOBA
A. *After reading each sentence, decide whether it is passive or active.*
   1) They eat lunch every day.
     a) Active   b) Passive
B. *Choose the correct form of the verb.*
   1) The boy ………………… many books last Monday.
     a) bought   b) were bought   c) was bought d) buy
C. *Change the following active sentence into passive.*
   1) My father invited some guests.

In the second phase, after collecting the SCOBA and its accompanying task, the teacher gave the experimental groups three tasks to complete without the help of SCOBA; however, this time each group was required to carry out its relevant task differently. In other words, although the dialogic and the communicated groups were given the same task, the former was asked to do the task individually and verbalize during the task while the latter was asked to cooperate and talk in pairs during the task. The third experimental group, the communicated plus dialogic group, was given two shorter tasks. In the first task, the learners were required to do the task in pairs while communicating with each other. After completing the first task, immediately they received the second one. This time, they were asked to verbalize individually while doing the task. Finally, each experimental group was given an immediate posttest in the same session and a delayed posttest in the following week. At this juncture, it is worth mentioning that in SCT in general and STI in particular verbalization is considered as a mediational tool intended to help L2 learners to internalize the targeted grammatical concepts (Ganém-Gutiérrez, & Harun, 2011). Within this perspective, it is also believed that since L2 learners already have a developed L1 system, it is natural (Lantolf, 2000) and beneficial to use it as a mediational tool in L2 development (Ganém-Gutiérrez & Roeher, 2011) especially in cases such as this study in which the participants are not proficient enough to be able to verbalize in English. Given the above facts, in the present study, the learners were asked to verbalize in their native language, Farsi. In a similar vein, as it is obvious in the SCOBA provided in appendices 1 and 2, the SCOBA instruction was also provided in Farsi since as mentioned above, within SCT language is seen not just as a means of communication but also a tool for cognitive development (Swain et al., 2009). Some studies have illustrated that the learning of complex L2 concepts could be facilitated by using L1 as a cognitive tool (e.g. Swain & Lapkin, 2000; Van Lier, 2006). Accordingly, the use of Farsi in the present study is

expected to mediate the understanding of passive voice in English.

The control or deductive group, however, in the first session, after receiving a pretest, was taught the same structure deductively by the same teacher. First, the teacher explained the passive voice to the learners and provided them with a rule to change an active sentence to a passive one. Then, they were given two activities similar to those in their textbook. 1) A recognition activity in which the learners were required to read some sentences and indicate whether they are active or passive. 2) A fill-in-the-blank activity in which some sentences with blanks were presented to the learners to fill in the blanks with the correct forms of the verbs given in parentheses. Finally, an immediate posttest was administered. In the next session, a week later, the learners were also given a delayed posttest. A summary of treatments for the experimental and control groups is shown in Table (1).

Table 1: A summary of the treatment for experimental and control groups

Dialogic	Warm-up	Pretest	SCOBA	Dialogic Tasks	Immediate Posttest	Delayed posttest
Communicated	Warm-up	Pretest	SCOBA	Communicated Tasks	Immediate Posttest	Delayed posttest
Communicated plus dialogic	Warm-up	Pretest	SCOBA	Communicated and Dialogic Tasks	Immediate Posttest	Delayed Posttest
B) Control Group		Pretest		Deductive Lesson	Immediate Posttest	Delayed Posttest

Data Analysis

To measure the outcome of different types of treatments and to compare their effectiveness in terms of the learners' grammatical knowledge, one-way ANOVA was utilized.

RESULTS

Pretest Results

Before the commencement of the treatment, all the groups were given a pretest and an ANOVA was run to ensure the learners' homogeneity concerning their prior knowledge of the passive voice. The descriptive statistics for the pretest and the subsequent ANOVA are presented in Tables 2 & 3 respectively. The results of the one-way ANOVA test showed that there was no statistically significant difference between the learners in the four groups (P>0.05) at the start of the treatment.

Table 2: Descriptive statistics for the pretest

	N	Mean	SD	Min.	Max.
Dialogic	27	9.66	12.21	.00	50.00
Communicated	25	8.40	11.06	.00	50.00
Comm. plus dialogic	26	10.00	11.66	.00	50.00
Control	27	8.88	10.86	.00	50.00

Table 3: ANOVA results for the pretests

	Sum of Squares	df	Mean Square	F	Sig
Between Groups	40.89	3	13.63	.10	.95
Within Groups	13280.66	101	131.49		
Total	13321.56	104			

Posttest Results

As shown in Table 4 below, the students' means for all the four groups increased dramatically. This can be considered as an initial indication that the four procedures of dialogic, communicated, communicated plus dialogic and deductive were more or less effective in improving the learners' performance in the posttest. Furthermore, both the communicated and communicated plus dialogic groups' means seemed higher than those of other groups. Therefore, to see if the differences among the groups were statistically significant, the researchers consulted the ANOVA Table. (Table

5).

Table 4: Descriptive statistics for the posttests

	N	Mean	SD	Min.	Max.
Dialogic	27	64.81	27.08	10.00	110.00
Communicated	25	88.00	20.20	50.00	120.00
Comm. plus dialogic	26	89.61	21.99	40.00	120.00
Control	27	63.33	30.63	10.00	120.00
Total	105	76.09	27.99	10.00	120.00

Table 5: ANOVA results for the posttests

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	16128.82	3	5376.27	8.30	.00
Within Groups	65370.22	101	647.23		
Total	81499.04	104			

As shown in Table 5, the results of the ANOVA illustrated that there were significant differences among the groups in the posttest (P<0.05). Hence, to spot the differences, the researchers ran a post hoc test whose results are presented in Table 6.

Table 6: Post hoc results for the posttests

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.
Dialogic	Communicated	-23.18*	7.06	.016
	Comm. plus dialogic	-24.80*	6.99	.008
	Control	1.48	6.92	.997
Communicated	Dialogic	23.18*	7.06	.016
	Comm. Plus dialogic	-1.61	7.12	.997
	Control	24.66*	7.06	.009
Communicated plus dialogic	Dialogic	24.80*	6.99	.008
	Communicated	1.61	7.12	.997
	Control	26.28*	6.99	.004
Control	Dialogic	-1.48	6.92	.997
	Communicated	-24.66*	7.06	.009
	Comm. Plus dialogic	-26.28*	6.99	.004

As illustrated in Table 6, the results of post hoc analysis can be summarized in three parts: a) the difference between the dialogic and control treatments were not significant; b) the difference between the communicated and communicated plus dialogic treatments were not significant either; c) the difference between the treatments in part a (i.e. dialogic and control) with treatments in part b (i.e. communicated and communicate plus) were, however, found significant. To sum up, on the one hand, the dialogic and the deductive procedures were as effective as each other. On the other hand, the communicated and communicated plus dialogic procedures were also as effective as each other. Furthermore, the latter procedures were more effective in improving the learners' performance in comparison with the former ones.

Delayed Posttest Results

To compare all the impact of treatments in terms of learners' retention of the target structure, in the long run, all the groups were given a delayed posttest a week later. The descriptive results are shown in Table 7.

Table 7: Descriptive statistics for the delayed posttests

	N	Mean	SD	Min.	Max.
Dialogic	27	50.37	26.23	.00	110.00
Communicated	25	69.20	24.13	20.00	110.00
Comm. Plus dialogic	26	80.00	22.09	40.00	120.00
Control	27	47.40	23.95	.00	90.00

Based on the results in Table 7, the groups' means seemed different. However, to statistically examine the differences among the groups in the delayed posttest, the researcher ran an ANOVA. The results are shown below in Table 8.

Table 8: ANOVA results for the delayed posttests

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	19086.89	3	6362.30	10.89	.000
Within Groups	58998.81	101	584.14		
Total	78085.71	104			

The results of the ANOVA test showed that the differences among the groups were statistically significant (P<0.05). To spot the differences, the researchers ran a post hoc test. The results are illustrated in Table 9.

Table 9: Post hoc for delayed posttests

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.
Dialogic	Communicated	-18.82	6.70	.054
	Comm. plus dialogic	-29.62*	6.64	.000
	Control	2.96	6.57	.977
Communicated	Dialogic	18.82	6.70	.054
	Comm. plus dialogic	-10.80	6.77	.471
	Control	21.79*	6.70	.018
Comm. plus dialogic	Dialogic	29.62*	6.64	.000
	Communicated	10.80	6.77	.471
	Control	32.59*	6.64	.000
Control	Dialogic	-2.96	6.57	.977
	Communicated	-21.79*	6.70	.018
	Comm plus dialogic	-32.59*	6.64	.000

The results of the post hoc tests showed that the performance of the communicated plus dialogic group was significantly different from those of either the dialogic or the control group (P<0.05). On the other hand, the difference between the communicated plus and the communicated group was found not significant (P>0.05). In fact, this part of the result which sounds consistent with the findings of the posttest suggests that learners in communicated and communicated plus groups retained their gains more effectively than those learners in the dialogic and deductive groups. However, a closer look at Table 9 shows that the learners in the communicated plus group retained their gains more effectively compared to dialogic and deductive groups while the communicated group retained their gains only more effective than the deductive group but not the dialogic one.

This shows that in the delayed posttest, communicated plus dialogic procedure was more effective compared to dialogic and deductive ones, while the communicated group was only found more effective than the deductive one. This finding, in turn, might be construed as evidence that communicated plus dialogic procedure has an edge over the communicated procedure in the long run.

DISCUSSION

The results of the present study could be summarized into two parts. Regarding the first research question dealing with the effectiveness of STI in teaching grammatical concepts, the answer was positive. In fact, among the three conceptualizations of STI compared in this study, one was as effective as the traditional method while the other two conceptualizations were more effective both in the short and long run. This part of the results confirms previous literature illustrating the success of STI in improving learners' grammatical knowledge (Fazilatfar, Jabbari, & Harsij, 2017; Harun et al., 2017; Lapkin, et al., 2008; Lai, 2012; Negueruela, 2003 among others). This superiority of STI over the traditional method could be explained in terms of two features of STI. The first one is the emphasis which STI puts on a meaningful and comprehensive presentation of concepts and the second one is the systematic procedures STI applies to help learners internalize those concepts first through the materialization of concepts in the forms of diagrams, charts, etc., then through verbalization process. This, in turn, is expected to lead to learners' better understanding (Lapkin, et al., 2008; Negueruela, 2003). In other words, the ultimate goal of STI is the cognitive development of learners through theoretical concepts. To this end, STI helps learners to internalize those concepts through two types of mediation, that is, mediation through SCOBA and verbal mediation. This latter mediation or verbalization which follows the former one is believed to liberate learners from their dependence on material things (i.e. SCOBA) and thereby facilitates the internalization process and

consequently leads to cognitive development (Lantolf & Poehner, 2014).

The success of STI in the present study could also be attributed to the fact that learners in STI groups carried out the verbalization phase in their L1. In STI, there is no obligation that the verbalization is in L2. In fact, as an attempt to apply Vygotsky's concept-based instruction in pedagogy, STI encourages the use of L1 concepts while teaching L2 concepts on the premise that a full understanding of L2 grammatical concepts on the part of learners occurs only when they become aware of those concepts in their L1 (Negueruela & Lantolf, 2005). This orientation towards L1 can make STI a good candidate for teaching grammatical concepts in EFL classrooms where communicative use of language is not the primary concern and the focus of language courses are usually on grammar and reading comprehension.

The second research question in the present study was proposed to compare the impact of three different conceptualizations of STI in terms of the type of verbalization applied, that is, dialogic thinking communicated thinking, and communicated plus dialogic thinking. The results showed that both communicated and communicated plus procedures have been more effective than the dialogic one in improving learners' grammatical knowledge of passive structure both in the immediate and delayed posttests. Overall, this finding corroborates previous STI studies especially those operationalizing their verbal phase through interpersonal interaction whether conducted through pair or group work (Ganém-Gutiérrez & Harun, 2011; Ng & Zhao, 2018; Yánéz-Prieto, 2008, among others). Furthermore, the almost equal performance of communicated and communicated plus dialogic groups both in the post and delayed posttests and their advantage over the dialogic group leads us to a common denominator in their treatments which is missing in the dialogic procedure. This common denominator is the interpersonal component existing in both communicated thinking and communicated plus dialogic procedures. In other words, the interpersonal nature of verbalization in the two procedures seems to be the causative factor responsible for their edge over the dialogic type of verbalization. This thesis could be further supported and explained by the

following two theoretical models within the sociocultural theory.

The first theoretical explanation could be found in the three types of mediation recognized in Vygotsky's writing: a) first-order mediation that occurs in interpersonal communication; b) second-order mediation which is mediation through cultural tools or concepts; and c) third-order mediation which is mediation through macro-cultural institutions such as education, play, etc. (Miller as cited in Lantolf & Poehner, 2014). Among all the three conceptualizations of STI used in this study, i.e. dialogic, communicated, and communicated plus dialogic thinking, second-order mediation prevails since teaching through scientific concepts is considered as the backbone of STI. However, what induced communicated thinking and communicated plus dialogic thinking performs better than the other groups seems to reside in the first order mediation realized through interpersonal interaction present in both communicated thinking and communicated plus dialogic thinking. This type of mediation occurs in interpersonal communication during pair and group works in which participants collaborate to carry out a task. During this collaboration, they guide, observe, and correct the action of each other which in turn leads to the self-regulation of the participants (Lantolf & Poehner, 2014).

The second theoretical support to invoke is the *Mediated Development* (MD) framework (Poehner & Infante, 2016). This framework seeks to combine the positive aspects of STI with those of dynamic assessment, that is, the mediation through concepts of STI with the mediation through the interaction of DA. This combination is believed to facilitate the internalization of linguistic concepts when presented in the learners' ZPD. Interestingly, such a combination is by nature present in any operationalization of verbal phase having an interpersonal element, that is, communicated plus dialogic and the communicated procedures. In fact, by delivering a given grammatical concept within the learners' ZPDs, the two aforementioned procedures facilitate the internalization of that concept and consequently lead to better performance on the part of learners.

CONCLUSION AND IMPLICATIONS

The findings of the present study highlight the nature of verbalization and its significant role in the overall effectiveness of STI. When realized interpersonally, verbalization is believed to lead to the internalization of the targeted grammatical concepts. This achievement on the part of the learners is directly linked to the nature of interpersonal verbalization itself which combines the benefits of two types of mediation in one place, that is, mediation through concepts and mediation through interaction. In other words, interpersonally operationalized verbalization combines the benefits of the mediation through concepts of STI with those of the mediation through the interaction of DA (Poehner & Infante, 2016) through presenting the grammatical concepts within the ZPDs of the learners. All in all, this finding can be used to encourage L2 teachers to consider the interpersonal verbal mediation of STI in their classrooms while teaching grammatical concepts. The positive results of the present study present STI as a promising pedagogical candidate with direct implications for L2 classrooms. STI in general or its communicated thinking conceptualization in particular with its focus on interpersonal verbalization seems an effective model for teaching grammar. Additionally, if conducted in the target language, interpersonal verbalization could also improve the learners' conversational skills. Furthermore, the positive attitude of STI toward the use of the students' native language as was the case in this study makes STI also a good pedagogical option for teaching grammar in those EFL classrooms where the focus is on grammar rather than communication skills. This in turn presents STI as a viable pedagogical option for L2 teachers to consider while teaching L2 grammatical concepts both in communicative and non-communicative contexts. In conclusion, it must be noted that the classroom benefits of STI are not confined to teaching grammar. Inspired by the findings of Mostafaei Alaei, Kardoust, and Saeedian (2019), we believe that STI has much to offer in teaching other aspects of language such as language skills.

In any piece of research, there are a set of limitations, and the present study is no exception. Some of these limitations are related to its methodology: First, the use of convenient sampling which might decrease the generalization of the findings. Second, the impact of the treatment was only measured through the learners' performance on grammar tests while other subjective measures could also have been used to determine the possible effect of the treatment on the learners' change in understanding. Given the aforementioned limitations, the findings of the present study must be approached with care until future research addresses the shortcomings and examines the issue with different participants and different target structures.

Furthermore, the inferior performance of the dialogic group in this study could be somehow attributed to their difficulty in self-explaining as was evidenced by the teacher's acknowledgment of the students' obvious confusion during this phase. This confusion might have resulted from either the novelty of the self-explanation activity for the learners or the inappropriateness of the tasks used for this group. It must be noted that all the groups participating in this study were given the same task while the nature of dialogic thinking or self-explanation activities might require a special task. The same explanation could also be used to account for the less than expected performance of communicated plus dialogic procedure since theoretically the communicated plus dialogic conceptualization is expected to excel other ones while in this study it didn't surpass the communicated procedure. This is left to be further investigated by future researchers while utilizing or creating special tasks that help and encourage learner's self-explanation.

Finally, it must be noted that the communicated plus dialogic group in the present study were treated with a task consisting of two sections, that is, a communicated component followed by a dialogic one. This begs the question of how the results would turn out if the task was presented in reverse order. That is, what the results would be if the learners were given the dialogic task first followed by the communicated task? This is left to be

explored by future research.

Disclosure statement

No potential conflict of interest was reported by the authors.

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