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Variability in Peer-peer Scaffolding during Writing Tasks in L2 English

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ABSTRACT

Although the literature on collaborative writing has revealed the advantages of collaboration in improving the writing quality of learners, few studies have examined the development of the interaction qualities during collaboration. Thus, the present study tracked the development of scaffolding episodes (SEs) in the collaborative performance of two purposively selected pairs (from among eight pairs) of EFL learners within the frameworks of sociocultural theory (Vygotsky, 1978) and dynamic systems theory (Thelen & Smith, 1994). The pairs were asked to write on eight tasks during the semester. The microgenetic analysis of the pairs' interactions in terms of SEs showed that suggesting was the most frequently used SE by Pair C and Pair D; instructing was the least frequently used SE by Pair C; translating was the least frequently used SE by Pair D. In addition, the analysis of the language related episodes (LREs) used during the scaffolding process indicated that although Pair C produced more turns than Pair D, the frequency of LREs per turn was more in the productions of Pair D. Moreover, among different types of LRE (i.e., form, lexis and mechanics), lexis was produced most frequently by both pairs.

Keywords: pair performance; L2 writing; scaffolding episodes; language related episodes; development

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Introduction

Peer-peer interaction has been considered an important source of second language learning. From a theoretical point of view, the use of peer-peer interaction in language learning is supported by the sociocultural theory of mind (Vygotsky, 1978), which focuses on the social and cultural processes as mediators of individuals' activity and thought. In other words, it advocates that the psychological processes emerge as a result of the social processes.

One of the processes facilitating learning as a social practice advocated by sociocultural theory is scaffolding, which is a temporary support that occurs within a learner's ZPD. In other words, a learner is assisted by others to be able to achieve more than what he does on his own. Scaffolding refers to the detailed circumstances of such activity in the ZPD (Malik, 2017; Neumann & McDonough, 2015; van Lier, 2004). In addition, language related episodes (LREs), another process facilitating learning, are 'occasions where linguistic form is explicitly discussed by the learners (Ellis, 2000, p. 201).

Despite the importance of collaboration, peer-peer interaction and scaffolding process (e.g., Boggs, 2019; Brauer, Korhonen & Siklander, 2019; Hanjani, 2015; Mimi & Zhu, 2017; Qiu & Lee, 2020; Rezaee, Saeedakhtar & Rouhi, 2014; Villarreal & Gil-Sarratea, 2019), they seem to have been chiefly examined in the studies targeting oral skill in second language contexts (Kayi-Aydar, 2013; Lyster, Saito & Sato, 2013; McDonough, 2004; Shehadeh, 2004). In fact, fewer studies have investigated the nature of collaboration in the learners' pair written texts. Moreover, the studies on scaffolding in writing do not seem to be sufficiently representing its importance (Tajeddin & Kamali, 2020).

From another point of view, despite the existence of measures indicating learners' language performance (e.g., complexity, accuracy, and fluency measures), dynamic systems theory (Thelen & Smith, 1994) shows developmental differences within an individual as well as across groups. In other words, there is variation due to both intra-individual and inter-individual differences. Accordingly, the theory holds that learning a second language is an individualized nonlinear endeavour (Larsen-Freeman & Cameron, 2008).

Following sociocultural and dynamic systems theories as the theoretical frameworks, the present study intends to fill the gap in the literature regarding the development and variation in SEs and LREs in peer-peer interactions during writing tasks. Thus, the following research question is posed:

How do EFL pairs writing collaboratively generate SEs and LREs over time?

Review of Literature

The use of the term scaffolding has undergone several changes since its original use; it moved from the elaboration of mother-child interaction to that of teacher-learner interaction, and finally to the elaboration of learner-learner interaction in the classroom (Boblett, 2012). Scaffolding has some characteristics. According to van Lier (2004), the first one is continuity, referring to the connectivity of activities. The second one is contextual support, which focuses on the importance of a safe and supportive environment. Inter-subjectivity, highlighting the rapport and nonthreatening participation in a community of practice, is the third characteristic. Scaffolding is also characterized by contingency, which means activities are adjusted depending on the learners' behavior and utterances. Takeover, which focuses on the shift of responsibility from the teacher to the learners as soon as they are ready, is another attribute. Finally, scaffolding is described to

have flow, which suggests the balance between skills and challenges.

Van Lier (2004) also acknowledges four sources of learner scaffolding: being assisted by an expert (when the learner receives guidance, advice and modeling), collaborating with other learners (when learning is constructed together), assisting a lower-level learner (when both have opportunities to learn), and working alone (when internalized practices and strategies, inner speech, and inner resources are used). These situations offer the learner different types of opportunities to learn. When assisted by a more capable one, a learner can experience models of successful learning or participate in more complex social activities. Working together with other learners would assist a learner in discovery and joint construction. While teaching a less competent peer, a learner needs to organize their thoughts and achieve clarity in expression. Finally, one can internalize teaching and learning strategies by relying on one's inner resources and knowledge.

A number of studies have explored scaffolding strategies and mechanisms learners use when they collaborate in performing activities. For instance, De Guerrerro and Villamil (2000) tried to detect the mechanisms at play during learners' mediated interactions. The microanalysis of the interactions of two intermediate ESL learners who interacted during a revision task showed that both the writer and the reader were active. The reader recruited the interest of the writer, marked critical discrepancies in the text, instructed the writer, gave some hints on grammar and mechanics, and presented a model. Moreover, his supportive behaviour showed intentionality to affect his peer. He tried to make the task manageable, presented some comments on the emerging problems, elicited clarification on what was unclear, and used humour as an affective strategy. As for the writer, although he was passive at the outset of the interaction, he shouldered more responsibility, presented comments, rejected the comments of his peer, and initiated revision. Furthermore, both learners continuously used their first language (Spanish) to mediate their interaction and communication.

Bradley and Bradley (2004) elaborated on how simplification of the language, completion request and provision of the visuals can serve as effective scaffolding mechanisms. More specifically, they explicated how the provider of scaffolding can simplify the language through shortening the sentences, speaking in the present tense and avoiding the use of idioms. Moreover, instead of asking learners to generate utterances, they suggest, the teacher can ask them to choose answers from the provided list or to complete a partially finished text. Furthermore, they recommend the teacher to deliver information and ask the learners to respond through the use of graphic organizers, tables, charts, outlines and graphs. In addition, Berk (2002) explained how providing examples, questioning, and breaking the content into simpler and manageable parts can function as useful scaffolding mechanisms.

Further, Fung (2010) enumerated the common defining features of collaborative writing, i.e. mutual interaction, negotiations, conflict, and shared expertise. Through mutual interaction, learners jointly plan and generate ideas. In fact, in addition to presenting their own views, learners listen to others to broaden their ways of thinking. Negotiation, as the second defining feature, refers to the modification and restructuring of interaction when there is a comprehension problem during the interaction. The problem may be indicated through clarification requests, confirmation and comprehension checks. The third defining feature, cognitive conflict, refers to the dichotomy of opinions of learners interacting, which is important in problem-solving and thinking processes. Finally, shared expertise points to the fact that learners benefit from their partners' expertise and produce a higher quality writing.

Adopting a sociocultural approach, Rahimi and Noroozisiam (2013) showed that raising learners' consciousness of second language writing strategies and scaffolding mechanisms would help them

strategically to mediate their writing and improve their writing quality. The transcription of the learners' interactions showed that learners who received the instruction used more sociocultural strategies when practicing than those who did not. Specifically, learners in the experimental group used more rhetoric-mediated strategies, time-mediated strategies, evaluation-criteria-mediated strategies, and literary-work-mediated strategies during their productions.

As a result of a microanalysis of 32 EFL learners' collaborative interactions during a group writing task, Soozandehfar and Sahragard (2015) came to the conclusion that learners improve their language knowledge and their sociocultural identity through providing assistance in collaborative writing activities. When the teacher leaves their traditional role of teaching and controlling, and lets learners work collaboratively in the class, learners develop facilitative behaviors including the use of first language, 'intentionality, joint regard, affective involvement, communicative ratchet, and contingent responsivity' (p. 146).

Furthermore, Simeon (2016) examined the writing strategies ESL learners used when they wrote collaboratively. The field notes and transcriptions of learners' interactions showed that learners used five categories of writing strategies, namely, brainstorming, using background knowledge, using first language, humor, and peer-scaffolding. Using brainstorming helped learners to discuss the way of their collaboration, their views on the task, and the organization of the task. Through the use of background knowledge, learners discovered connections between their experience and their written products. Using first language assisted learners in managing the content, revising their production, and generating ideas. The use of humor resulted in a warm and stress-free atmosphere which helped learners to amuse their partners. Finally, peer-scaffolding strategy contributed to the learners' establishing connection between ideas in the revision stage of the production.

Quite recently, Tajeddin and Kamali (2020) proposed a new typology of scaffolding in language classrooms with four categories of meta-scaffolding, linguistic scaffolding, affective scaffolding, and under-scaffolding. In fact, meta-scaffolding includes metalinguistic scaffolding, gestural scaffolding, resource providing, contextualization, and audiovisual organizers; linguistic scaffolding encompasses the subcategories of reformulation, extension, modeling, elicitation, echoing, teacher's use of learners' first language, and teacher's shift to second language. Affective scaffolding subsumes encouraging, emotional scaffolding, and shy tracking. Finally, misscaffolding, falsifying scaffolding, and non-comprehended scaffolding comprise under-scaffolding.

In addition, some studies have examined the learning opportunities provided by collaborative activities through focusing on LREs (e.g., Chen & Yu, 2019; Ellis, 2000; García, Marídel, Imaz Agirre, 2019; Mayo, 2002; Murphy & Larios, 2010; Storch, 2008; Storch & Wigglesworth, 2010; Swain & Watanabe, 2013; Zhang, 2019). They considered LREs as instances in which linguistic form is explicitly discussed by the learners.

As the above literature review indicates, a limited number of studies investigated the SEs in the learners' interactions; however, to the best of the researchers' knowledge, no study has yet depicted and compared development of SEs and LREs in the performance of learners writing in pairs. Accordingly, the purpose of the present study is to fill the mentioned gap by scrutinizing and comparing SEs and LREs of two pairs when they were writing collaboratively.

Methods

Participants

Participants of the study were four EFL learners taking a writing course in Shiraz University, Shiraz, Iran. As explained below, they were purposively selected from among the 16 learners who had enrolled in the Academic Writing course, a two-credit course held once a week for a 16-week semester. During the semester, all the learners in the class wrote paragraphs in pairs. However, the two pairs were chosen based on the scores they obtained on complexity, accuracy and fluency (CAF) features of a writing task done individually at the outset of the study. In fact, one of the pairs got the minimum scores (Pair C) and the other the maximum scores (Pair D) on CAF features. Both members of Pair C were females whereas Pair D consisted of one male and one female.

The rationale behind selecting equal-ability students in each pair was that the study intended to track and compare the behaviour of two pairs at different writing ability levels. As such, compared with other learners in the class, members of Pair C were both less competent while members of Pair D were both more competent in terms of CAF features. It is worth mentioning that the appropriate measure of general syntactic complexity was determined based on the results of the Oxford Placement Test (2001) administered to the students in the class before the study started. Since all the learners turned out to be at the intermediate level of language proficiency, subordination measures were estimated in the writing task done individually as the best predictor of learners' general syntactic complexity (Norris & Ortega, 2009).

Materials and instruments

As mentioned above, Oxford Placement Test (2001) was used to estimate the learners' language proficiency level, and thereby yield clues for the choice of appropriate measure of syntactic complexity. The internal consistency of the items in the test estimated through Cronbach's alpha was .85, which indicates that the test enjoyed a rather high level of reliability (Pallant, 2007) and was appropriate for the purpose of the current study.

Further, a total of 16 paragraphs by the two pairs (eight paragraphs written by each) and 16 voice recordings relating to the 16 collaborative tasks the pairs did during the semester comprised the materials of the study. To do the assigned task in each session, the pairs were given 40 minutes to write a paragraph of 150-200 words long. The prompts for the tasks were *a place you enjoyed visiting, a problem at the university, your least favourite TV program, absence makes the heart grow fonder, description of your favourite person, how to make a happy home, definition and classification of natural resources,* and *your dream*, which were all familiar to the learners because they had either discussed them in their earlier conversation classes or read about them in the textbooks they had already covered.

Data collection procedures

In the first session, Oxford Placement Test (2001) was administered; furthermore, all the learners in the class were asked to individually write a paragraph based on which the pairs for the study were selected as explained above. In the following session, learners were asked to select a partner for the whole semester and each pair was randomly assigned a letter of English alphabet. Indeed, similar to other pairs in the class, the selected pairs were asked to write on eight prompts during the semester. The interactions and discussions of each pair of the learners were recorded by their own mobile phones during their collaborative writing, and then were handed in to the instructor. It is noteworthy that the pairs collaborated at different stages writing, from generating ideas in the

first draft to revising their final drafts. Moreover, time limits were set for every writing task: the pairs were given 40 minutes to write their paragraphs.

Data analysis procedure

Initially, to determine the quality of the learners' first written paragraphs, based on which the two pairs for the study were selected, CAF measures were calculated for the first paragraphs written by the students individually. The underlying reason was that 'a full picture of language development in L2 writing can only be obtained by engaging CAF measures at various linguistic levels' (Lu, 2011 p. 38). Therefore, the T-units and clauses in each paragraph were first coded. A T-unit is defined as an independent clause and its required modifiers, a non-independent clause punctuated as a sentence, or an imperative (Schneider & Connor, 1991). Subsequently, CAF measures were calculated as explained below.

Analysis of CAF features

Norris and Ortega (2009) argued that complexity or phrasal elaboration can be determined in terms of coordination, subordination or sub-clausal complexity; however, the effectiveness of each measure depends on the learners' proficiency level. They maintain that complexity at the beginning proficiency level may best be determined through effective coordination, whereas effective subordination can best show complexity at the intermediate and upper-intermediate proficiency levels. Finally, the best indicator of complexity at the advanced proficiency level is sub-clausal complexity. As the participants of the present study enjoyed an intermediate level of proficiency, the general syntactic complexity was determined based on subordination measures. Hence, following Foster and Skehan (1998) and Wofe-Quintero, Inagaki and Kim (1998), syntactic complexity was examined by calculating the proportion of clauses to T-units, and the proportion of dependent clauses to all clauses, respectively.

Following Dobao (2012) and Wigglesworth and Storch (2009), the accuracy of the students' writings was measured in terms of the proportion of error-free T-units to all T-units and the proportion of error-free clauses to all clauses. As a matter of fact, errors included a) syntactic errors such as word order errors and missing elements and b) morphological errors like verb tense and subject-verb agreement errors, errors in the use of articles and prepositions, and errors in word forms. Word choice errors were considered if they led to obscurity in meaning and spelling and punctuation errors were totally neglected.

As for fluency in the paragraphs, three measures of the average number of words, T-units and clauses per text were employed, just as Wigglesworth and Storch (2009) did. It should be stated that since the paragraphs were first typed in exactly the same as they had been written manually, the number of words used in each paragraph was automatically counted by the option *Word Count* in Microsoft Office Word (2016) and then the average number of words was determined.

As for coding reliability, the following points were taken into consideration. First, given that the computer automatically counted the number of words in each paragraph, the estimation was precisely done. However, it was necessary to ascertain the exactness of the number of T-units, dependent clauses, overall clauses in each text, error free clauses and error free T-units because these estimates had a crucial role in estimating CAF measures. Therefore, the second researcher coded the paragraphs and estimated the measures again in a four-week time span. Afterwards, agreement index was obtained to make sure about intra-coder reliability. The reliability indices estimated for each of the above measures were .95, .93, .93, .91 and .91, respectively. Additionally, to estimate inter-coder reliability, a Ph.D. student in TEFL, who had already received the necessary training was recruited to code T-units, dependent clauses, overall clauses in each text,

error free clauses and error free T-units. Inter-coder agreement indices were then estimated to be .93, .90, .94, .89 and .90, respectively.

Analysis of the pair discussions

Based on Nassaji and Swain's (2000) study done from the sociocultural perspective and given the significance of qualitative approaches to the study of peer interactions (Storch, 2002), the data were analyzed microgenetically to explore the two pairs' development in terms of SEs and LREs across the eight tasks. At first, all their interactions were transcribed and then the transcribed pair talks were analyzed for SEs. Following Watanabe (2014), the transcriptions were analyzed in terms of 11 scaffolding categories: *repeating*, *reading*, *affective support*, *translating*, *questioning*, *suggesting*, *assessing*, *justifying*, *eliciting*, *restating* and *instructing*.

Consistency and dependability of the coding and hence as the results of data analysis were ensured through conducting intra-coder and inter-coder reliability. The SEs in each of the transcriptions was coded twice by the second researcher in a one-month time span. Using Kappa formula, the degree of consistency in the two coding attempts by a single coder (i.e., intra-coder reliability) was found to be .95. In addition, the sample was coded once more by another coder (i.e., the same Ph.D. student referred to above). The Kappa coefficient for the inter-coder reliability was found to be .92. The two reliability indices imply a high level of consistency in the codification of the data.

Furthermore, following Storch and Aldosari (2012), LREs were classified based on the aspects of language (i.e., grammatical form, lexis or mechanics) they dealt with. More specifically, form-based LREs deal with the aspects of morphology or syntax (e.g., the choice of verb tenses, articles, pronouns, prepositions, and sentence structures), lexis-based LREs focus upon word meanings and word choices, and mechanics-based LREs are concerned with punctuation and spelling.

LREs were also coded based on the guideline developed by Storch and Wigglesworth (2010). In other words, the total number of LREs, the total number of turns (i.e., each time a partner spoke), the proportion of LREs to the turns, and the percentages of each type of LRE during each pair's collaborative performance were calculated.

In addition, following Storch and Wigglesworth (2010), the use of each type of LRE was further analyzed in terms of limited engagement and extended engagement. In the limited engagement, one member of the pair just gives feedback and the other simply acknowledges or repeats it once, without making any other additional comments. However, in the extended engagement, learners offer suggestions, counter-suggestions, explanations, or any comments showing evidence of meta-awareness of the feedback received. Extended engagement also includes episodes where the correction is repeated by learners a number of times.

To ensure the reliability of the coding, intra-coder and inter-coder reliability were checked through estimating agreement index. To determine the reliability coefficient, 10% of the whole LREs in each of the transcribed tasks were selected randomly for the analysis of the type of LREs and the degree of engagement. The data were, then, coded twice by the second researcher in a one-month time span. The degree of consistency in the two coding attempts by a single coder (i.e., intra-coder reliability) estimated through Kappa formula was found to be 1 and .92 for the type of LREs, and the degree of engagement, respectively.

The selected sample was also coded once more by another coder (the same Ph.D. student mentioned before). The Kappa coefficients of the inter-coder reliability were found to be .94 and .85 for the type of LREs and the degree of engagement, respectively.

Results

The following excerpts selected from the pair talks analyzed in this study exemplify the scaffolding categories proposed by Watanabe (2014).

Excerpt 1 (*repeating*)

26. very normal to me at first, but when I continued, when I continued, continued

27. continued …..

Excerpt 2 (*reading*)

122. aha, we can say, as you finish your day in the park

— ‖ as you finish your day in the park…

The only thing that comes into your mind is….

— ‖ The only thing that comes into your mind is....

123. is a……

Excerpt 3 (*affective support*)

66. What is your idea about the outline?

67. It is perfect… go on.

Excerpt 4 (*translating*)

15. What is 'من از این قاعده مستثنی نیستم' in English?

16. I am not a part of….no, ….. I am not an exception.

Excerpt 5 (*questioning*)

130. What other adjective do you want to use?

131. Different.

132. No, wonderful is better.

Excerpt 6 (*suggesting*)

89. Therefore, in the 'ancient place' section, we can name Arg…. I mean the historical places.

90. Where?

91. Historical places, such as Arg.

92. Ok.

Excerpt 7 (*assessing*)

37. As it is known, central park is a big…. A big rectangle.

38. Big … or huge?

39. Enormous rectangle.

40. Aha.

41. Gigantic rectangle …… no, the word gigantic cannot be used here. It has volume……it is a huge rectangle, it is better.

42. Ok.

Excerpt 8 (*justifying*)

207. Do you want to say the advantages?

208. No, here we are not talking about the advantages….we should name some examples.

Excerpt 9 (*eliciting*)

105. Why don't we look at the beginning? …. I don't know what to say. You should say something.

106. Ok. Let me think ….

Excerpt 10 (*restating*)

7. Let's write disorganized exams.

8. You mean inconsistent exams.

Excerpt 11 (*instructing*)

51. You could went-

52. = no, could go. 'Could' is a modal. After it we need a simple verb.

With regard to the dominant SEs in the performances of the pairs, as Figure 1 shows, *questioning*, *suggesting* and *justifying* were among the prevalent SEs produced by Pair C. *Questioning* and *suggesting* were dominantly used in all of the eight analyzed transcriptions; *justifying* was dominantly used in five transcribed tasks among the eight ones. Similarly, *questioning*, *suggesting*, *repeating* and *justifying* were among the prevalent SEs produced by Pair D. *Questioning* and *suggesting* were dominantly used

in seven analyzed transcriptions; *repeating* was dominantly used in five transcribed tasks; *justifying* was dominantly used in four transcribed tasks.

In addition, among the non-prevalent SEs produced by Pair C, *instructing*, *supporting*, *assessing* and *restating* had the lowest percentages of occurrences in the productions of the learners, respectively. *Instructing* gained the lowest percentage during six tasks; *supporting* had the lowest percentage in five tasks; *assessing* and *restating* had the lowest percentage in three tasks. Conversely, *instructing*, *translating*, *supporting* and *restating* were the SEs with the lowest percentages of occurrence in the productions of Pair D, respectively. *Instructing* and *translating* gained the lowest percentages during five tasks; *supporting* and *restating* had the lowest percentages uring three tasks (See Figure 1).

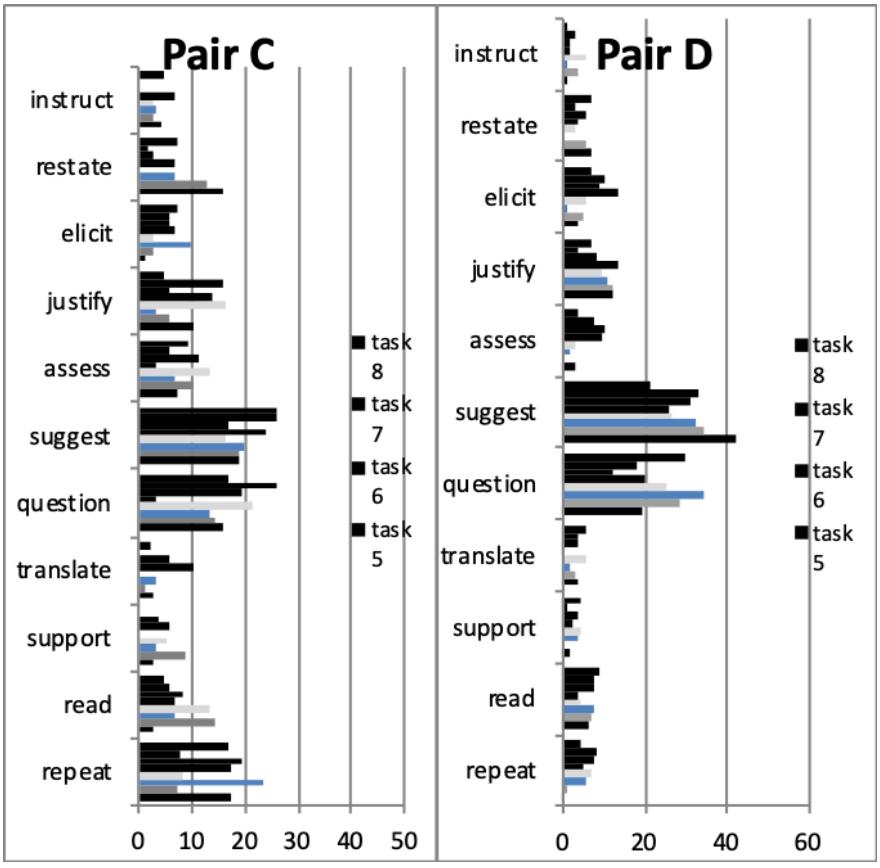


Figure 1. SEs used by Pair C and Pair D during the writing tasks

As for the types of LREs, Excerpts 12, 13 and 14 chosen from the pairs' transcripts illustrate form-focused, lexis-focused and mechanics-focused LREs, respectively.

Excerpt 12 (Form-focused LRE)

35. They spent a day or two together.

36. spend?

37. spent …we are talking about past tense.

Excerpt 13 (Lexis-focused LRE)

56. different types of trees

57. among different types of trees

58. =trees such as…

59. oaks….what else do you know?

60. mangos … apple trees, orange trees,…elm trees.

Excerpt 14 (Mechanics-focused LRE)

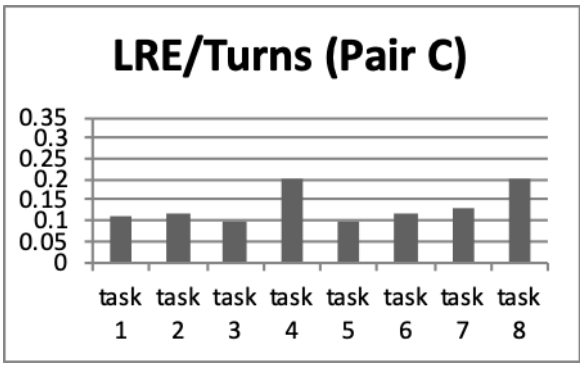
53. How do you spell tears?

54. It is T-E-A-R-S.

Table 1 summarizes the frequencies of LREs and turns in the interactions of Pair C and Pair D during their performances on the writing tasks. Moreover, Figure 2 shows the proportion of LREs to the number of turns produced by Pair C and Pair D during each task. As it is evident, Pair D used more LREs per turn during five tasks (i.e., task 1, task 2, task 3, task 5, and task 6).

Table 1
Frequencies of LREs and Turns in the Interactions of Pairs during the Eight Tasks

	Pair C		**Pair D**	
Tasks	Turns	LRE	Turns	LRE
task 1	218	25	124	28
task 2	153	19	106	19
task 3	173	17	56	19
task 4	136	28	67	13
task 5	177	18	70	13
task 6	131	16	45	11
task 7	104	14	67	8
task 8	108	22	68	8



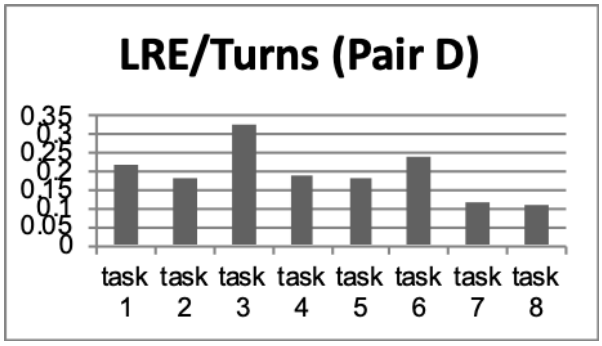


Figure 2. Proportion of frequency of LREs to the number of turns used by Pair C and Pair D in each task

In addition, Figure 3, illustrates the percentage of each of the three types of LREs (i.e., form, lexis, and mechanics) in each pair's performance on the tasks. As it is evident in this figure, Pair C produced more lexis-based LREs during the first three collaborative performances, more form-based and mechanic-based LREs during the fourth task, and more lexis-based LREs during the fifth, sixth, seventh and eighth tasks. In addition, Pair D produced more lexis-based LREs during the first task, more form-based LREs during the second task, and more lexis-based LREs during the third, fourth, fifth, sixth, seventh, and eighth tasks.

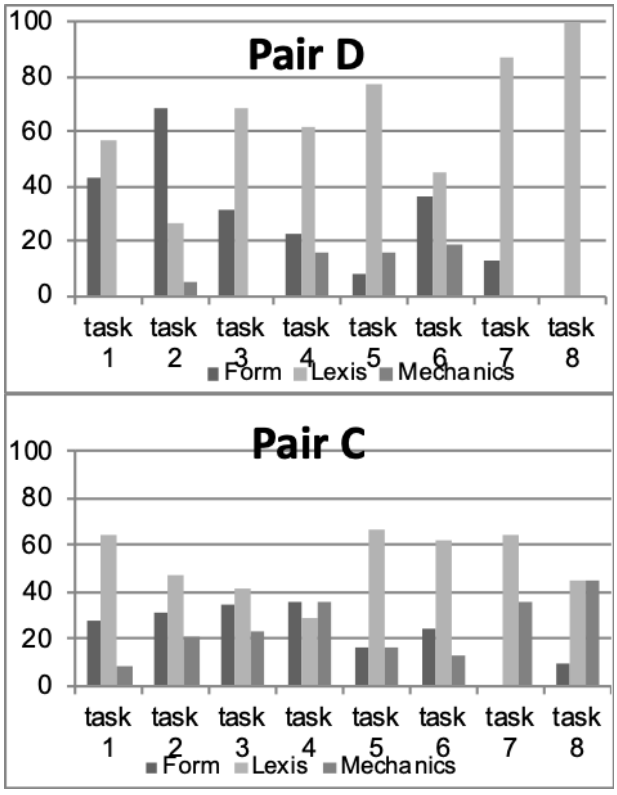
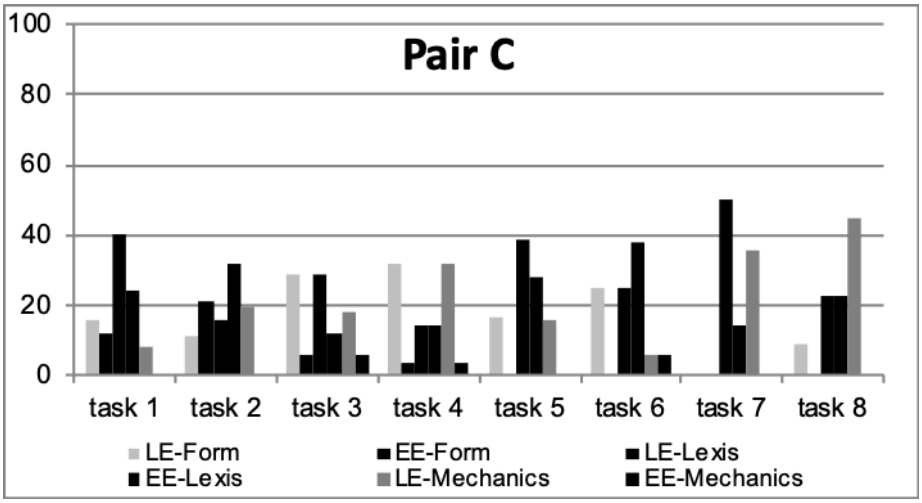


Figure 3. Percentages of the types of LREs during each pair's collaborative performances on the eight tasks

Moreover, Figure 4 illustrates the percentages of LREs with limited engagement and extended engagement during the performance of each task by each pair. Considering Pair C's performance, during the first task, they produced more limited engaged forms, more limited engaged lexis and more limited engaged mechanics. During the second task, less limited engaged forms, less limited engaged lexis, and more limited engaged mechanics were produced. The learners' interactions during the third task showed more limited engaged forms, more limited engaged lexis, and more limited engaged mechanics. In the fourth task, more limited engaged forms, similar percentages of limited engaged lexis and extended engaged lexis, and more limited engaged mechanics were illustrated. In the process of accomplishing the fifth task, Pair C produced more limited engaged forms, more limited engaged lexis, and more limited engaged mechanics. As for the sixth task, they showed more limited engaged forms, less limited engaged lexis, and similar percentages of limited engaged mechanics and extended engaged mechanics. These learners produced similar percentages of limited engaged forms and extended engaged forms, more limited engaged lexis, and more limited engaged mechanics in the seventh task. Pair C's final task exhibited more limited engaged forms, similar percentages of limited engaged lexis and extended engaged lexis, and more limited engaged mechanics.

With respect to Pair D's performance, during the first task, they produced more limited engaged forms, less limited engaged lexis, and similar percentages of limited engaged mechanics and extended engaged mechanics. During the second task, produced more limited engaged forms, less limited engaged lexis, and more limited engaged mechanics were produced. Their performance on the third task displays more limited engaged forms, more limited engaged lexis, and similar percentages of limited engaged mechanics and extended engaged mechanics. The accomplishment of the fourth task exhibits less limited engaged forms, similar percentages of limited engaged lexis and extended engaged lexis, and more limited engaged mechanics. During the fifth task, the partners in Pair D got involved in more limited engaged forms, more limited engaged lexis, and more limited engaged mechanics. In the sixth task, Pair D produced more limited engaged forms, more limited engaged lexis, and more limited engaged mechanics. As for the seventh task, these learners showed less limited engaged forms, more limited engaged lexis, and similar percentages of limited engaged mechanics and extended engaged mechanics. Finally, during the eighth task, similar percentages of limited engaged forms and extended engaged forms, similar percentages of limited engaged lexis and extended engaged lexis, and similar percentages of limited engaged mechanics and extended engaged mechanics were produced.



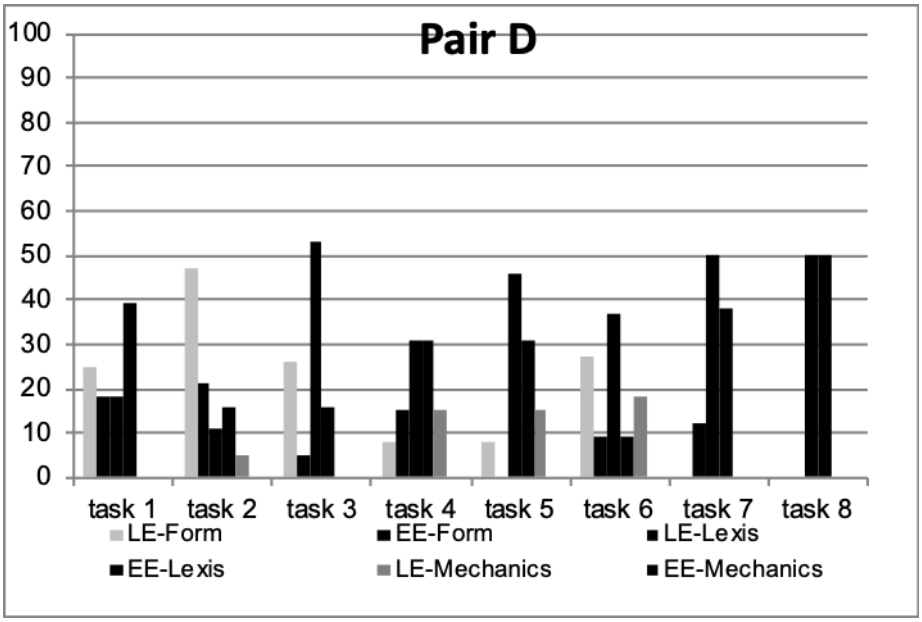


Figure 4. Percentages of limited and extended engagement in different types of LREs generated during the performance of each task by each pair

Discussion

A microgenetic analysis of the transcriptions of the learners' interactions during their joint performance on the tasks made the observation of various scaffolding strategies possible. The use of these strategies by learners showed how they provided mediated assistance to facilitate development through the writing tasks. As mentioned above, both Pair C and Pair D used various SEs to mediate their written productions. Nevertheless, the overall percentage of each SE used by the pairs differed. For instance, Pair D generally used more *repeating* than Pair C when doing the writing tasks. However, Pair C generally used more *questioning* than Pair D while writing their tasks.

In his qualitative analysis of the interaction patterns in pairs, Storch (2002) found out that there are a number of features which distinguish between patterns of pairs' interaction. These features—including requests, explanations and repetitions—are more frequent in collaborative patterns of interaction than the dominant/dominant patterns of interaction. The above-mentioned features frequently occurred in the analyzed interactions of both pairs in the present study when they were doing the writing tasks. Moreover, Webb, Nemer, Chizhik, and Sugrue (1998) showed the relationship between the amount of participation and contribution of each learner to group discussion according to their cognitive level. Accordingly, high amount of participation includes making suggestions and offering comments, asking questions about an item, and paraphrasing what is mentioned. Medium amount of participation includes repeating and agreeing with what was said without more explanations. Low amount of participation includes listening to the partner without making any contribution, suggestion and question. Following this classification, it could be mentioned that both Pair C and Pair D displayed high-level participation during their joint activities.

With respect to each of the dominant SEs (i.e., *questioning*, *suggesting*, *justifying* and *repeating*) and non-dominant ones (i.e., *instructing*, *restating*, *supporting* and *translating*) used by the learners in the pairs, the following points are worth mentioning. First, learners in both pairs frequently asked questions. Asking questions is a substantial action during learners' interactions. Although learners ask questions to gain new information, *questioning* serves other functions, too. It shows the areas in which learners encounter difficulties, helps learners think and detect the appropriate answer, and establishes closer relationship between learners (Casem, 2013). Second, *suggestion* was dominantly used by learners in both pairs. Making suggestions is a non-imposing directive speech act (Salazar, Esteve & Codina, 2005). As learners provide comments and make suggestions, they show the collaborative spirit of teamwork (Bataineh & Obeiah, 2016). Furthermore, learners' ability to make suggestions, as a pragmatic competence, would develop through collaborative activities; learners working collaboratively would make more varied and appropriate suggestions (Salazar, Esteve & Codina, 2005). Third, learners in both pairs frequently made justifications to scaffold their productions in their collaborative endeavor. Providing explanation provides learners with beneficial information about language, clarifies and organizes one's own knowledge (Storch, 2002). Similarly, Storch (2008) advocated that making justification on what one is presenting and offering arguments to show the correctness of the choices (instead of just verbalizing the choices) may result in more language learning opportunities during joint productions. Fourth, *repetition* was among the strategies frequently used by learners. According to Tannen (1987, p. 584), repetition 'sends a message of personal involvement'; repetition can serve both social and cognitive functions. When serving a social function, it is a sign of listenership, solidarity and acceptance. When serving a cognitive function, it may provide evidence of uptake by learners (Ohta, 2000; Tannen, 1987). Furthermore, repetition unifies the learners. It also indicates that a partner noticed the mismatch between his production and the correct form. Therefore, the internalization of the repeated form would be facilitated (Storch, 2002).

Conversely, *instructing* was among the SEs which gained the lowest percentages of occurrence during the learners' interactions. The limited use of this SE can be accounted for by referring to what Ishii (2011) mentioned about instruction. Accordingly, since providing instruction on a language item is not easy for learners, and is embedded in the learners' past experiences, they usually neglect this strategy (Ishii, 2011). Moreover, according to Angelillo (2003, p. 28), 'paraphrase—putting the meaning of the text into new words— makes you pay close attention to the author's ideas and thereby improves your level of understanding. In paraphrasing, you constantly keep the meaning of the original in mind but express the same ideas in a different way'. Although in the present study, learners minimally used *restating*, pairs in Ishii's (2011) study dominantly used it during their collaborative activity. This discrepancy can be attributed to the differences in the focus of the two studies. In the present study, learners were to collaborate during all phases of writing; however, in Ishii's study, learners were to collaborate just in the revising phase of writing. Furthermore, although previous studies mentioned the provision of *affective support* (expressing interest and encouragement while seeking and providing assistance) as a useful and common strategy used during jointly performed tasks (De Guerrero & Villamil, 2000; Li & Kim, 2016; Foster & Ohta, 2005; Tajeddin & Kamali, 2020), the pairs in this study rarely used this strategy. In addition, although some studies in the literature (e.g., Angelo & Steele, 2020; Murphy & Larios, 2010) considered *translation* a useful strategy for improving second language writing, in the present study, *translating* was rarely used by learners in Pair D (i.e. gaining the minimum percentage during five tasks) and in Pair C (i.e. gaining the minimum percentage during two task). *In fact,* the learners did not consult a dictionary or peer to find an appropriate word or the meaning of a word efficiently to improve the quality of their productions.

In sum, this study was the first attempt to show variations in SEs within and across the pairs. What was detected is in line with dynamic systems theory, which addresses the variation within an individual and among individuals' productions (Lambert & Kormos, 2014; Larsen-Freeman,

2009). Moreover, variation in data is a feature of any system, and it indicates development (Verspoor, Lowie & van Dijk, 2008). Therefore, the variation in the use of each of the SEs by the pairs can be accounted for by the process of development, which is non-linear and unpredictable. From another perspective, different percentages of various SEs during each task can be accounted for by trade-off hypothesis (Larsen-Freeman, 2009; Skehan, 2009). A close consideration of the data shows that in performing each task, the learners in each pair used one of the SEs more than the others. It can be concluded that due to the limitations of cognitive capacity, the learners could not focus on all of the SEs simultaneously. Therefore, the SEs seem to have competed for attention.

With regard to LREs, based on the sociocultural theory, language is a tool which mediates learners' learning; through language use, learners pay attention to meaning and try to solve the emerging linguistic problems as well (Swain & Watanabe, 2013). On the other hand, several researchers argued that LREs show the process of second language learning (e.g., Chen & Yu, 2019; Fortune, 2005; García et al., 2019; Leeser, 2004; Mayo, 2002; Storch, 2008; Stoch & Aldosari, 2012; Williams, 2001; Zhang, 2019). Hence, the analysis of the data collected in the present study showed that members of both pairs produced some LREs, indicating they were engaged in the learning process and were trying to solve their linguistic problems.

Nevertheless, although Pair C produced more turns than Pair D, LREs per turn were more frequent in the productions of Pair D than those of Pair C. Thus, it could be mentioned that when members of a pair interact to perform a task jointly, they are not necessarily focusing on language related episodes. In other words, more interactions of the members of a pair do not necessarily mean more attention to language-related issues.

Among different types of LREs (i.e., form, lexis and mechanics), the ones relating to lexis were produced most frequently in almost all performances of both pairs; members of each pair provided deliberations on word meaning, searched for a word, and suggested alternative words/phrases. Moreover, in almost all cases, lexis was followed by form and mechanics, respectively. Therefore, the two pairs focused on similar aspects of language while writing collaboratively. Furthermore, the pairs' frequent use of LREs having to do with lexis is in line with Murphy and Larios' (2010) findings about the areas of language on which EFL learners focus while producing texts. As they state, learners in all proficiency levels have problems in finding the appropriate words to express what they mean. Therefore, collaborative writing in this study was a good choice for learners to find their required words properly.

On the other hand, as indicated in the literature (García et al., 2019; Storch, 2008; Mayo, 2002), the type of task which learners perform affects the type of LREs they use. In other words, in form-focused tasks, such as dictogloss, text reconstruction, passage editing, multiple choice items, and cloze tasks, learners give a high amount of attention to form. However, in the present study, since both meaning and form were important in conducting the tasks, learners did not merely focus on form; lexis was also focused upon.

Moreover, with respect to the use of different types of LREs during each of the eight transcribed tasks, it should be noted that in the performance of each task, one type of LREs was dominant. In this respect, it can be claimed that trade-off hypothesis gains supportive evidence. In other words, when learners focused on one aspect of language (i.e., lexis), they paid less attention to the other aspects (i.e., form and mechanics); they could not take into account three aspects of form, lexis and mechanics simultaneously because of the limited cognitive capacity.

As for the nature of engagement in each type of LREs (i.e., limited engagement vs. extended engagement), in almost all of the generated LREs in each task, members of the two pairs dealt with more limited engagement than the extensive one. In other words, one member of each pair

more often provided feedback and the other simply acknowledged or repeated it once, without making any other additional comments. Nevertheless, instances of extensive engagement were not absent in the two pairs' productions. There were some occasions in which the partners 'offered suggestions and counter-suggestions, explanations, or any comments that showed evidence of meta-awareness of the feedback received' (Storch & Wigglesworth, 2010, p. 311). It was also found that both Pair C and Pair D more extensively engaged with lexis than form and mechanics. Additionally, extensive engagement is achieved through deeper attention to language. It leads to a deeper understanding, which is more effective in language learning or at least in a longer memory of learnt language items. Furthermore, limited engagement might be effective just for the partner who is engaged. The other partner might not gain any benefit from this engagement (Storch, 2008).

Conclusion and implications

As the first attempt to show variations in the SEs generated by learners during collaborative writing performance, this study investigated the interactions of two pairs of EFL learners writing on eight successive paragraphs. The microgenetic analysis of the transcriptions of the learners' interactions made the observation of various scaffolding strategies and their development possible. In fact, both less proficient (Pair C) and more proficient (Pair D) pairs used various SEs to mediate their written productions. The graphs showed similarities and differences between the pairs in terms of their patterns of development. Moreover, the overall percentage of each SE used by each pair differed during the productions.

Considering the development of language-related discussions during the scaffolding process, although the less proficient pair produced more turns, the more proficient pair talked more about language during their productions (i.e., produced more LREs). Meanwhile, among different types of LREs (i.e., form, lexis and mechanics), episodes having to do with lexis were prevalent in almost all of the performances of both pairs. As for the nature of engagement in each type of LREs (i.e., limited engagement and extended engagement), in almost all of the generated LREs in each task, members of the two pairs exhibited more limited engagement than the extended one.

In sum, the findings of this study supported dynamic systems theory (Thelen & Smith, 1994), which addresses intra-individual and inter-individual variations in producing language and the non-linearity of second language learning process, and also Trade-off hypothesis (Skehan, 2009), which advocates that learners' focus on one aspect of language at a time due to their limited cognitive capacity.

With respect to the implication of the study, materials developers and teachers should consider the trade-offs while teaching the SEs and LREs. In other words, they should be aware of the fact that learners cannot focus on all dimensions of language simultaneously. Thus, materials developers should devote separate sections on different SEs and LREs; similarly, teachers should not focus on all categories of SEs and LREs simultaneously. In addition, teachers can listen to the learners' interactions and pay attention to the type of language (i.e., form, lexis and mechanics) which the learners discuss; they can detect the learners' problems, and provide learners with some hints to solve their problems.

A number of areas in which interested researchers can conduct further studies are suggested. First, more research studies can investigate the development of SEs and LREs in the interactions of learners performing on pair writing tasks. Second, the development of SEs and LREs in the interactions of learners writing in pairs and those writing in groups of three or four can be

compared in a study. As a final suggestion, the development of SEs and LREs can be tracked in the learners' performance on oral tasks.

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