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Collaborative Writing in Individuals, Pairs, and Small Groups: A Classroom-based Study*

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Abstract—Collaborative writing is increasingly gaining popularity in EFL writing classes, as it is widely believed to have positive effects on the overall quality of the written texts and nature of the writing process (Fernández Dobao, 2012). Nonetheless, the majority of the prior studies were restricted to be in laboratory settings. Moreover, many of the studies only focused on the comparison of individual-pair differences or individual-group differences in the produced texts. Not much evidence is available regarding the comparison of texts composed by individuals, pairs, and groups. The present study was aimed to fill in the gaps. Two intact classes of first-year EFL undergraduates (n=71, mean age=18.47) were asked to write an argumentative essay in an English writing class. Instructions on the writing topic (included grammar reviews) were provided by the teacher prior to the task. Eight of the students worked individually. The rest of the students were randomly arranged to work in pairs or groups of 3-4 people (12 pairs ,12 groups). Quantitative and qualitative evaluations were performed on the produced written texts. According to the results, the students who worked individually spent significantly less time on the task, and produced significantly more words than the pairs and groups. Such differences were not observed between the pairs and groups. The pair- and group-written texts had significantly less errors than the works composed by individuals, despite that higher percentage of error free clause/clause was found in individually written texts. The differences of complexity among the texts written by individuals, pairs, and groups were found to be statistically significant highest (from the to the group>pair>individual). Moreover, the texts composed by groups received significantly higher global evaluation scores than individual- and pair-written works (from the highest to the lowest: group>pair>individual).

Keywords—collaborative writing; individual; pair; group; L2

I. INTRODUCTION

Collaborative writing refers to two or more learners' cooperative composing of a jointly written texts, which requires learners to work together throughout the entire process, share joint ownership and responsibility for the written text (Leonard & Wharton, 1994; Swain, 2011). As a type of collaborative learning activity, collaborative writing rests on strong theoretical and pedagogical rationales (Ellis, 2003; Shehadeh, 2011; Storch, 2005).

On theoretical level, collaborative activity concurs with

the social constructive perspective of learning. As Vygotsky's (1978) indicates, the development of human being is inherently a socially situated activity—more abled social members (experts) help children's (novices) cognitive and linguistic development in terms of stretching their current levels to higher levels by providing them with scaffolding, which is found to occur among peers in collaborative activities for L2 acquisition (e.g. Alegr á de la Colina & Garc á Mayo, 2007; Donato, 1994; Storch, 2002; Kim, 2008). As no two learners have the same strengths or weaknesses, they can both act as novices and experts to scaffold each other while working together. With the mediation of the construction of linguistic knowledge, collaborative work contributes to L2 learning as a result (Ohta, 2001; Storch, 2002; Swain, 1998, 2000, 2010; Swain et al, 2009).

From a pedagogical perspective, collaborative tasks are supported by the communicative and task-based approaches in L2 instruction. They are suggested to benefit L2 learning in terms of providing learners with more chances to use the target language for a wider range of functions than teachercentred activities; create a low anxiety context of stud; give instructors more chances to communicate with individual learners; make learners have a sense of ownership and commitment to the target task (Gere, 1987; Hill, 1990; McDonough, 2004), and as a result, have strong positive effect on the overall educational outcomes (Cooper, 1997).

As a form of collaborative activity, collaborative writing is noted to provide learners with an opportunity for a joint problem-solving activity in terms of collaborative dialog (Swain, 2000). Collaborative dialog helps learners pool individual recourses of ideas and knowledge, scaffold each other to achieve a higher level of performance than their individual level of competence (Donato, 1994; Ohta, 2001; Swain, 2000; Fernández Dobao, 2012; Kim, 2008; Storch, 2005; Swain & Lapkin, 1998; Wigglesworth & Storch, 2009). Particularly, research on L2 interaction found that learners may spend some time during collaborative dialog focuses on the language they produce, questioning the correctness and/or appropriateness of the language they use, which is named as language-related episodes (LREs) (Swain & Lapkin, 1998, p.326). Therefore, collaborative writing is suggested to be able to help L2 learners build knowledge about grammar, vocabulary, as well as mechanics as a whole (Alegr á de la Colina & Garc á Mayo, 2007; Garc á Mayo,

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2002; Leeser, 2004; Storch, 1999; Swain, 1998; Swain & Lapkin, 1998, 2001).

A number of studies have illustrated that collaborative writing, both in pairs and small groups, is beneficial for both the overall quality of the written texts and the nature of the writing process (e.g. Kim, 2008; Lapkin et al., 2002; Storch, 2008). For pair works, Storch (2005) compared 9 pairs and 5 individuals' writing performance with a graphic prompt. The participants worked in pairs were found to have spent more time on the task, composed shorter texts, yet with higher degree of syntactical complex and grammatical accuracy than those worked individually. A larger-scale study of collaborative writing in pairs was conducted by Wigglesworth & Storch (2009). 48 individuals and 48 pairs of L2-English speakers were asked to compose an English argumentative essay. The results showed that the collaborative pair work impacted positively on accuracy, yet had no significant effect on fluency and complexity. Regarding collaborative study in small groups, Fernández Dobao (2012) examined L1-English of L2 Spanish learners' composition of Spanish texts produced by groups of four, pairs, and individuals. The texts produced by groups and pairs had higher accuracy than those composed by pairs and individuals. Moreover, it was noted that while completing the same writing task, learners working in small groups produced more LREs and had better performance in solving them than those working in pairs. It was explained by the fact that working in small groups may provide learners with more linguistic resources than working in pairs and individuals (Fern ández Dobao, 2012).

Nonetheless, the majority of the prior studies were either restricted to be in laboratory settings. Moreover, many of the studies only focused on the comparison of individual-pair differences or individual-group differences on the produced texts. Not much evidence is available regarding the comparison of texts written by individuals, pairs, and groups. The present study was aimed to fill in the gaps by answering the following research question:

What are the differences, if any, among texts produced by students of individuals, pairs, and groups?

II. METHODOLOGY

A. Participants

The study was conducted in an EFL writing course among two intact classes of the first-year EFL undergraduates at a large, public university in China (Class 1: n=30, female=18, male=12, mean age=18.40; Class 2: n=41, female=32, male=9, mean age=18.54). They were all L1-Mandarin of L2-English speakers. English Writing was a compulsory course for them. All the students volunteered to participate in the project. They were told that they could either choose to work alone or work in pairs/small groups. As a result, 3 students in Class 1 and 5 students in Class 2 preferred to work alone. The rest of the students were randomly allocated to work in pairs (5 pairs in Class 1; 7 pairs in Class 2) and small groups (3-4 students a group, 5 groups in Class 1, 7 groups in Class 2). The study was

carried out at the second semester of the academic year, thus the students were familiar with their classmates.

B. Procedure

An Oxford Quick Placement test was carried out prior to the study to find out the students' English Proficiency levels. Meanwhile a questionnaire that was used in Li (2017a, 2017b) was adopted to investigate the students' background information of L2-English. The EFL writing course lasted 90 minutes per session with 10-minute interval. The study was carried out at the 2nd session of the course. According to the syllabus, the first 20 minutes were allocated for the teacher to provide feedback on the students' written work of last session. Instructions and guidance on the writing of a new topic, including grammar reviews, were provided during the following 25 minutes. The remaining 45 minutes were left for the students to complete the writing task—an argumentative essay (topic: What are the advantages and disadvantages of living in big cities?). The students were asked to record how much time they spent on the task.

C. Analysis of the Compositions

The students' written texts were analysed in terms of accuracy, fluency, and complexity with a quantitative approach. Specifically, accuracy and complexity were assessed with a count of T-units and clause analysis. Fluency was measured based on the total number of words (Hunt, 1996, p. 735, Storch, 2005). A T-unit, which refers to a main clause plus subordinate clauses that are attached to or embedded within it (Hunt, 1996, p. 735), is widely employed in the measurement of written and oral discourse (Foster, Tonkyn, & Wigglesworth, 2000). Regarding clauses analysis, the number of dependent clauses and independent clauses were counted. There are different opinions regarding the definition of clauses. The present study followed Foster et al. (2000) and defined a dependent clause as one which contained a finite or a non-finite verb and at least one additional clause—subject, object, complement or adverbial. Whereas an independent clause was defined as one which could be used on its own (Richards, Platt, & Platt, 1992).

The accuracy of the written texts was measured in terms of the proportion of error-free clauses (EFC/C) of all clauses and the number of errors per word (EPW). As argued by Storch (2005), although such measures suffered from criticisms concerning the lack of distinguishing between type or severity of errors (Bardovi-Harlig & Bofman, 1989, 1992), the measure of EPW does help account for the distribution of errors regarding the production unit. In specific, syntactical errors, morphological errors, and errors in lexis were counted.

Considering that the students may achieved a high accuracy in terms of relying on simple and well-controlled expressions, it was necessary to take complexity into consideration. In fact, there could be a trade off between complexity and accuracy. The more complex sentences are more likely to contain errors than the less complex ones (Foster & Skehan, 1996). There are different approaches for complexity measurement. In the present study, the proportion of clauses to T-units (C/T) and the proportion of dependent clauses to clauses (DC/C) were employed. C/T was revealed to be reliable as it correlates well with other



measures of complexity (Foster & Skehan, 1999). DC/C was helpful for the examination of degree of embedding in a composition (Wolf-Quintero, Inagaki, & Kim, 1998).

In addition, a 9-point scale scheme that followed IELTS writing measurement was used for the global evaluation. Half points were allowed to be given. To ensure the interrater reliability, the global evaluation of each written text was conducted by two raters. They were both native English speakers who were doing MA in Linguistics in U.K. For each text, the average score was taken if the difference between the two raters' evaluation was less than 2 points. Otherwise a third rater would be asked to check the text again (This case did not happen).

III. RESULTS

Language background information: According to the students' responses to the questionnaire, as summarized in "Table I", most of the students were about 18 years old and had never been abroad. Those who reported to have been abroad (n=11) only travelled/studied in Europe and/or Asian countries for a short period of time. The majority of them did not start English study until 9-12 years old. It might be because the students were not English majors, they frankly reported to be not very interested in English study, and the majority of the student spent less than 3 hours in English study in their spare time. Moreover, the Oxford Quick Placement testing results indicated that about half of the students' English level was upper intermediate. Only 3 of them had pre-advanced English proficiency level. The rest of the students' English levels were intermediate and lower intermediate.

TABLE I. THE STUDENTS' LANGUAGE BACKGROUND INFORMATION
(PARTIALLY ADOPTED FROM LI (2017)

Questions	Statistics	Results			
Age	Mean	18.47			
Onset Age of English study	Mean	9.42			
	Minimum	4			
	Maximum	13			
Years of English study	Mean	9.05			
Have ever been abroad?	Yes	11			
	No	60			
Degree of interests in English study?	0 (not interested at all)	11			
	1 (a little bit interested)	30			
	2 (fairly interested)	21			
	3 (very much interested)	9			
Amount of time spent in English study after class	1 (no time)	13			
	2 (1-3 hours per week)	46			
	3 (4-6 hours per week)	9			
	4 (7-10 hours per week)	3			
	5 (more than 10 hours per	0			
	week)	Ŭ			
English proficiency level	Pre-advanced	3			
	Upper intermediate	36			
	Intermediate	19			
	Lower intermediate	13			

Quantitative and qualitative analysis results: "Table II" summaries the evaluated results of the students written texts. To further test the hypothesis that the students who worked

individually, in pairs, and in groups performed differently, a Post Hoc Test was carried out with One-Way ANOVA. The allocation (whether worked in individuals, pairs, or groups) was coded as independent variable. The calculated data (evaluations) of the students' written texts was coded as dependent variable. As shown in "Table III", the students who worked individually spent significantly less time on the task and produced significantly more words than pairs and groups. Whereas such differences were not found between the pairs and groups.

TABLE II. CALCULATED RESULTS OF THE TEXTS WRITTEN BY INDIVIDUALS (I), PAIRS (P), AND GROUPS (G)

Evaluations	Mean			SD		
Evaluations	I	P	G	I	P	G
Time on task (minutes)	39	41.9	42.2	3.2	2.4	2.8
No. of words	159.9	133.8	135	13.3	11.7	10.1
No. of T-units	9.3	9.1	10	2.2	2	1.7
No. of clauses (C)	12.9	14.8	16.2	2.2	2.3	1.6
Dependent clauses (DC)	6.6	8.9	12.2	1.7	2.9	2.3
No. of errors	14.9	11.3	11.1	4.1	1.7	2.5
No. of error free clauses (EFC)	8.9	9.2	10.4	3.9	3.1	2.2
EFC/C(%)	67	60.8	64.2	18.3	13.4	10.5
EPW	0.1	0.1	0.1	0	0	0
Word/T	18.1	15.4	13.8	4	3.8	2.1
C/T	1.4	1.7	1.7	0.2	0.2	0.3
DC/C(%)	51	59.6	75.1	5.2	13	11
Global evaluation results (/9)	5.7	6	6.9	0.7	0.8	0.7

Regarding accuracy, the texts written by individuals had the highest EFC/C (67%). Slightly lower EFC/C was found in texts composed by groups (64.2%). The texts produced by pairs had the lowest EFC/C (60.8%). Nonetheless, none of the differences was statistically significant (p>0.05). Moreover, the mean results of EPW were the same among texts composed by individuals, pairs, and groups (0.1). Yet, the individually composed texts showed significantly larger number of errors than the pairs and groups.

As for complexity, the texts produced by pairs and groups had the same mean result of C/T (1.7), which was larger than that of the individuals (1.4). The individually written texts also had the lowest percentage of DC/C (51%) than that of the pairs (59.6%) and the groups (75.1%). The Post Hoc test results showed that the individual-group and pair-group differences in DC/C were statistically significant, whereas the individual-pair difference was statistically nonsignificant. On the whole, the group-written texts had the highest degree of complexity, while the individually written ones had the lowest degree.

Considering the global evaluation results, the group-written texts received significantly higher scores than the pair-written and individually written ones. The pair-written texts received slightly higher scores than the individually written ones, which was statistically nonsignificant (p>0.05).



TABLE III.

POST HOC TESTS RESULTS (I-P: INDIVIDUAL-PAIR; I-G: INDIVIDUAL-GROUP: P-G: PAIR-GROUP)

Evaluations	Comparison	Sig.	
	I-P	0.01	
Time on task	I-G	0.01	
	P-G	0.97	
No. of words	I-P	0.00	
	I-G	0.00	
	P-G	0.96	
	I-P	0.98	
No. of T-units	I-G	0.68	
	P-G	0.49	
	I-P	0.13	
No. of clauses	I-G	0.00	
•	P-G	0.22	
	I-P	0.12	
Dependent clauses	I-G	0.00	
2 openaem etauses	P-G	0.01	
	I-P	0.02	
No. of errors	I-G	0.01	
,	P-G	0.97	
	I-P	0.96	
No. of error free clauses	I-G	0.5	
	P-G	0.6	
	I-P	0.65	
EFC/C	I-G	0.9	
	P-G	0.88	
	I-P	0.83	
EPW	I-G	0.73	
	P-G	0.98	
	I-P	0.19	
Word/T	I-G	0.02	
	P-G	0.46	
	I-P	0.07	
C/T	I-G	0.08	
	P-G	0.99	
	I-P	0.23	
DC/C	I-G	0.00	
	P-G	0.01	
	I-P	0.7	
Global evaluation	I-G	0.03	
	P-G	0.1	

IV. DISCUSSION

The first finding of the present study was that the students who worked individually spent significantly less time on the task than the pairs and groups. This finding was in accordance with some previous studies, such as Storch (2005). It might be because working alone saved the students some time in discussion and brain storming, despite these process may be beneficial for the production of a better writing. It might also be one of the reasons why writing is traditionally perceived as a solitary and individual activity (Storch, 2013). Considering that there were more students worked in groups than in pairs, we might hypothesize that the groups would produce more LREs (Swain & Lapkin, 1998) and/or relevant conversations than the pairs. Consequently, they would have spent more time on the task than the pairs. The average results, however, showed that the difference of time on task was statistically nonsignificant between pairs and groups. It might be explained by the random allocation of the pairs and groups. As it was found in many prior studies, students' L2 proficiency plays a

significant role in collaborative writing performance (Cumming, 1989; Watanabe & Swain, 2007, 2008; Williams, 1999). Specifically, more proficient L2 learners may play a leading role and speak more than less proficient L2 learners (Lightbown, 1998; Mackey & Philp, 1998). Detailed examination of the pairs and groups found that the many of the pair-working students had upper intermediate level. Whereas the majority of the group-working students had lower English levels.

The individually working students also produced texts with larger number of words than that of the pairs and groups. As fluency was measured based on the total number of words, we may tend to draw a conclusion that the individually written texts were more fluent than that of the pair- and group-written ones. However, detailed examination of the texts composed by individual students found that they preferred to used simple-structured and colloquial sentences rather than academic ones as the pair- and group-written texts did. It was further confirmed by the evaluations of the No. of clauses and No. of independent clauses.

Moreover, the evaluation of EFC/C indicated that the individually written texts were more accurate than the pairand group-written ones. At the first glance, this finding was at odds with that in some previous studies (Storch, 2005; Wigglesworth & Storch, 2009). Nonetheless, the individually written texts were found to have significantly more number of errors than that of the pair- and group-written works, despite that they had the same EPW as the pairs and groups. Moreover, as Foster & Skehan (1996) indicates, there could be a trade off between complexity and accuracy. The high EFC/C of the individually written texts could be resulted from the choice of less complex sentences than those composed by pairs and groups. In fact, it was true if we take a look at the evaluations of complexity of the texts. For instance, both C/T and DC/C were employed for the examination of complexity. The average C/T was 1.7 among the pair- and group-written texts, whereas it was 1.4 among the individually written texts. The pair- and group-written texts also had significantly higher percentage of DC/C than that of the individually written ones. Particularly, the groupwritten texts displayed the highest DC/C, which was statistically higher than that of the pair-written ones. This finding may have confirmed the positive effects of collaborative activity in L2 writing. In particular, working in small groups may have contributed more to the complexity of writing works than working in pairs.

The global evaluation results further confirmed the positive effects of collaborative writing. The pair-and group-written texts received significantly higher scores than the individually written ones. Although higher scores of global evaluation was observed in group-written texts than the pair-written works, the statistical difference was revealed to be nonsignificant. It might also be explained by the fact that the pairs included students of higher English levels than that in groups. According to the placement test results, few of the students had high English levels, despite that most of them had been learning English for more than 9 years. It might be partially attributed to the fact that the students were not quite interested in English. They were taking the course because it



was compulsory for all the freshmen at the university. Thus it was unsurprising to find that most of them did not spend much time in self-learning English in their spare time (see "Table I"). On the whole, more obvious positive effects of group-working might be observed if the allocation of students was balanced according to the students' English proficiency.

V. CONCLUSION

The present study compared the texts written by individuals, pairs and groups. Two intact classes of non-English majors were asked to compose an argumentative essay in an ESL writing class. Eight of them worked individually. The rest of them were allocated randomly to work in pairs or in small groups. Quantitative and qualitative approaches were employed for the analysis of the written texts. It was found that the students who worked individually spent significantly less time on the task and produced more words than the pairs and groups. Although a higher percentage of EFC/C was found in the texts produced by the individually worked students, a significantly larger number of errors also shown by them. The differences of complexity among the texts written by individuals, pairs, and groups were found to be statistically significant (from the highest to the lowest: group>pair>individual). Moreover, the texts composed by groups received significantly higher global evaluation scores than individual- and pair-written works (from the highest to the lowest: group>pair>individual). On the whole, the present study may have confirmed that collaborative work could be beneficial for the production of texts of higher quality. Moreover, group-working seemed to be more effective than pair-working in L2 writing.

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