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The Effects of Collaborative Summary Writing on University Students' L2 Writing Development*

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The purpose of the study is to investigate the effects of collaborative summary writing on Korean university students' second language (L2) writing development. Twenty-seven students were divided into control group (CG) and experimental group (EG), both of which were taught by the researcher with the same syllabus and textbook. Students in both classes were asked to do a short summary of a news article at the beginning of the class. CG students summarized individually and EG students underwent collaborative summary writing in pairs. The summaries were analyzed for L2 development using the L2 Syntactic Complexity Analyzer on nine syntactic structures and fourteen syntactic complexity indices. Significant gains were noted for both CG and EG after the summary writing treatment in terms of length, amount of coordination, degree of phrasal sophistication, and overall sentence complexity. Subsequent statistical analysis on the significant differences in gains made by the two groups showed EG used more coordinate phrases, coordinate phrases per T-unit, and verb phrases per T-unit, but less T-units per sentence, all of which indicate higher L2 development. Finally, pedagogical implications are discussed in the final section of the paper.

[collaborative summary writing/syntactic complexity/L2 writing development]

I. INTRODUCTION

The skill to write accurately and intelligibly in English is a must-have requirement for university students in their goal to succeed academically or professionally (Kellogg & Raulerson, 2007). In Korea, it is not until students enter college that they are alerted of the

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importance of writing well in English. Writing proficiency is required not only for academic coursework but also in the workplace where the students will eventually find themselves working after graduation. That said, the university shoulders a big responsibility in providing adequate education conducive to the development of learners' second language (L2) writing skills (Jordan, 1997).

Writing well requires a broad spectrum of different skills such as lexical knowledge, sentence structure, logical coherence, organization, grammatical accuracy, etc. (Condon, 2013), and it certainly comes across as a challenging task for English as a Foreign Language (EFL) learners like students in Korea (Kroll, 1993). The burden of writing in English affects not only the students but also the instructors who feel a big responsibility as English instructors to provide a motivating learning environment for students who fear English writing. There is a large body of literature that examines the importance of L2 writing and its relationship to various learner-related factors such as the instructional setting (Lu, 2011; Ortega, 2003; Yang, Lu, & Weigle, 2015). To date, a strand of research has been devoted to creating learning environments in which language learning becomes a rewarding and efficient experience (Foster & Ohta, 2005; Gaith, 2002; Naughton, 2006). An environment that satisfies such needs is a collaborative learning environment which is noted for its effectiveness in promoting confidence, responsibility, and cooperation between the learners (Strasma & Foster, cited in Li, 2000). However, it cannot be said that learning is acquired effectively if the written output is grammatically unintelligible and lacking solid basis of lexical and grammatical knowledge (Hinkel, 2013). Shehadeh (2011) investigated the effectiveness of collaborative learning environment on writing quality and found that students improved in terms of content, organization and vocabulary. Other strands of research explore various methodologies of teaching collaborative writing (e.g., online vs offline) to improve summary writing ability (Lee, 2010; Wichadee, 2010). An abundance of research findings corroborates the positive effects that collaborative writing environment has on EFL students' L2 writing skills. Needless to say, insights from existing studies about the positive influence of collaborative learning spark an interest in examining any causal link between collaborative learning environment and development in students' L2 writing.

Syntactic complexity refers to "the range of forms that surface in language production and the degree of sophistication of such forms" (Ortega, 2003, p. 492), and previous literature on L2 acquisition suggests a proportional relationship between the number of varied syntactic structures and development of L2 proficiency (Ortega, 2003). Therefore, a written output that scores high on the indices of syntactic complexity would reflect a positive development in L2 learners' writing development. To date, despite the importance of syntactic complexity in L2, studies that have examined the relationship of syntactic complexity and collaborative learning are still scarce. Lee's (2016) research finding

pinpointed syntactic error as the most common type of error made by Korean EFL students. Furthermore, Sajedi (2014) also reported no improvement in grammar and mechanics in his research on whether collaborative summary writing is effective for university students' L2 development. Collectively, these results call for a closer inspection of the effects of collaborative summary writing on L2 writing development in terms of syntactic complexity.

This study adopts summarization in a collaborative setting as an instructional tool. Among the different teaching methodologies on improving one's writing skill, summarization is considered an effective tool for the development of both writing and reading skills (Karbalaei & Rajyashree, 2010; Sjostrom & Hare, 1984). Summarization requires comprehension of the contents of the text that he/she has read and the ability to incorporate the main idea and information into a succinct written output (Segev-Miller, 2004). Empirical studies have shown summarization tasks to have indirect positive effects on the writing competence of students as well as direct effects on their reading competence and retention of information (Taylor & Beach, 1984). To measure the written output on syntactic complexity, the researcher uses the L2 Syntactic Complexity Analyzer which was developed by Dr. Lu Xiaofei at Pennsylvania State University in 2010 to measure the written output on the nine syntactic structures and fourteen indices of syntactic complexity (Lu, 2010).

II. LITERATURE REVIEW

1. Collaborative Summary Writing

Much of the literature on collaborative L2 learning environment attests to its effectiveness on L2 development albeit mainly in the scope of oral interaction (McDonough, 2004). For example, McDonough (2004) attributed the improvement of grammatical and lexical accuracy to increased time to speak the target language. The effectiveness of collaborative learning is grounded on the notion that interaction among learners provides social support to each other and also offers more opportunities for linguistic development through collaboration. Collaborative learning is effective not only during oral interaction but also in other modalities such as writing (Ortega, 2007). Collaborative writing is a joint production or the coauthoring of a text by two or more writers (Storch, 2011). Kuiken and Vedder (2002) found that when students collaborated to produce a written output there was a significant improvement in their writing quality. In the same vein, Dobao (2012) also showed that collaboration was conducive to enhancing grammatical and lexical accuracy of writing. More specifically, Storch (2005) conducted a study in which she compared the writing of individuals and pairs by using a range of

quantitative and qualitative measures. Results showed pairs produced shorter text, but more accurate and more syntactically complex. The differences, however, turned out not to be statistically significant due to the small sample size. Another study with a bigger sample size was conducted by Wigglesworth and Storch (2009), but the study yielded no statistical significant differences between the texts produced by pairs and by individuals in terms of fluency and complexity. There, however, was a statistically significant gain in accuracy of the written outputs of pairs over those of individuals (Wigglesworth & Storch, 2009). Storch (2008) attributed the effectiveness of collaborative writing on L2 development not to language knowledge but to the depth of attention and engagement of L2 while the learners participated in collaborative writing. To bolster that claim, Gutierrez (2008) argued that lack of ability to articulate language knowledge does not necessarily reflect lack of knowledge. Watanabe and Swain's (2007) study highlighted the patterns of pair interaction for its role in positively affecting the posttest scores. In a nutshell, previous research findings attest to the positive role of collaborative experience in enhancing students' L2 writing development.

The findings of previous research pinpoint negotiation of meaning during collaboration as the main reason for the improvement in L2 development (McDonough, 2004). Lyster (2001) argued that the act of signaling mismatches between target language production and nontarget-like production facilitates peer- and self-repair. Moreover, Gass and Varonis (1994) stated "that the awareness of the mismatch serves the function of triggering a modification of existing L2 knowledge, the results of which may show up at some later point in time" (p. 299). Shehadeh (2011) investigated the effectiveness and students' perceptions of collaborative writing in L2. He used 38 first-year students in two classes at a university. The experimental group consisted of 18 students and the control group consisted of 20 students. Shehadeh (2011) found that the experimental group who engaged in collaborative work improved in writing quality in terms of content, organization, and vocabulary.

In another study, Gallego de Blibeche (1993) compared the post-treatment compositions of two groups of elementary level college students of Spanish. The experimental group was involved in prewriting discussion, free writing, pair work, drafting and peer review, and the control group received direct grammar instruction, did written grammar exercises, and wrote drafts of their compositions which were later marked for grammar errors. The experimental group outperformed the control group in terms of improvement on composition length and quality of organization but the groups made equal gains in content, language use, grammar, and error-free production (Gallego de Blibeche, 1993). In another similar study, Dobao's (2012) findings indicated that there was a significant difference among the performance of individuals, students in dyads, and students working in groups of four. The students working in groups of four reached a higher percentage of correctness

in their writings than students in pairs. Collaborative work is most efficient when all involved parties adopt a collaborative mindset and are open-minded about sharing ideas and suggestions. Conversely, if even one member acts disruptively and is not willing to cooperate with other group members, the interaction becomes less effective and cooperative (Dobao, 2012; Furnham, 2005). In general, various factors (e.g., different language backgrounds of the participants, different language proficiency, differences in age, gender, motivation, etc., different types of tasks, etc.) affect collaborative work.

Summary writing has been widely practiced among L2 learning students. For an EFL student, when given a summary writing task to complete individually, the first reaction is that of diffidence and intimidation. Summarizing is a frequently used activity in academic settings and it requires cognitive thinking; however, given that the language with which he or she must summarize is L2, the learner feels a great sense of burden (Kirkland & Saunders, 1991). One way to alleviate the overwhelming amount of pressure at having to summarize on one's own is to work together with a fellow student. By having a fellow learner to count on for support and advice of linguistic knowledge, the learner can produce a better quality output with combined effort. It has been proven that collaboration allows for peer feedback and noticing of gaps in interlanguage which leads to consolidation of language knowledge (Storch, 1998). In the process of collaborative summary writing, students have been observed to provide more comments on their own and their partners' writing (Li, 2000). Furthermore, collaborative work promotes active learning and rapport among students in terms of forming a mutually beneficial social relationship among the participants involved (Foote, 2009). In the same vein, McDonough (2004) claimed that throughout the process of completing a summary writing task, L2 learners are naturally put in a position where there is more opportunity to speak in the target language thereby boosting learner autonomy and engaging in self-directed learning.

A number of studies have examined Korean EFL students' summarization performance in terms of L2 proficiency. According to Oh's (2007) finding, lower proficiency group copied more frequently from the source text than the higher proficiency group. In contrast, the higher proficiency group excelled in paraphrasing over their counterpart (Oh, 2007). In fact, Kim (2009) suggested that copying strategies used by EFL students differed by the student's language proficiency level. Kim (2015) reported similar findings; she compared instances of paraphrasing in the summaries of two low L2 proficiency groups and found that lower proficiency students used significantly more exact copies and near copies, and slightly higher but still low English proficiency students produced significantly more moderate revisions. As seen above, language proficiency has a significant effect on L2 learner's summarization performance as well as the summarizing behavior.

2. Measurement of Syntactic Complexity

This study uses the L2 Syntactic Complexity Analyzer which was developed by Dr. Lu Xiaofei at Pennsylvania State University in 2010. It takes the written production as input and produces nine syntactic structures and fourteen indices of syntactic complexity of the sample based on these measures. The fourteen syntactic complexity indices, including length and density measurement, offer a holistic assessment of the syntactic complexity development of language learners. The fourteen indicators adopted in this study (Lu, 2010) were classified into several groups. The first group concerns the length of production units. There are three indices in this group: mean length of sentence, mean length of T-unit, and mean length of clause. The second group focuses on the internal structures and is further divided into three subcategories: subordinating structures, coordinating structures, and coordinate phrases per clause. The third group is called particular structures; these include verb phrases and complex nominal structures as measurements. The fourteen indices of syntactic complexity are shown in Table 1 adapted from Lu (2010).

TABLE 1

Syntactic Complexity Indices Used in the Study

Measure	Code	Definition
Syntactic Structures		
Word count	W	No. of words
Sentence	S	No. of sentences
Verb phrase	VP	No. of verb phrases
Clause	C	No. of clauses
T-unit	T	No. of T-units
Dependent clause	DC	No. of dependent clauses
Complex T-unit	CT	No. of complex T-units
Coordinate phrase	CP	No. of coordinate phrases
Complex Nominal	CN	No. of complex nominals
Syntactic Complexity Indices		
Length of Production Unit		
Mean length of sentence	MLS	No. of words/No. of sentences
Mean length of T-unit	MLT	No. of words/No. of T-units
Mean length of clause	MLC	No. of words/No. of clauses
Amount of subordination		
Clauses per T-unit	C/T	No. of clauses/No. of T-units
Complex T-units per T-unit	CT/T	No. of complex T-units/No. of T-units
Dependent clauses per clause	DC/C	No. of dependent clauses/No. of clauses
Dependent clauses per T-unit	DC/T	No. of dependent clauses/No. of T-units
Amount of Coordination		

Coordinate phrases per clause	CP/C	No. of coordinate phrases/No. of clauses
Coordinate phrase per T-unit	CP/T	No. of coordinate phrases/No. of T-units
T-units per sentence	T/S	No. of T-units/No. of sentences
Degree of phrasal sophistication		
Complex nominals per clause	CN/C	No. of complex nominals/No. of clauses
Complex nominals per T-unit	CN/T	No. of complex nominals/No. of T-units
Verb phrases per T-unit	VP/T	No. of verb phrases/No. of T-units
Overall sentence complexity		
Clauses per sentence	C/S	No. of clauses/No. of sentences

The software is open to public use by accessing it at http://www.personal.psu.edu/xxl13/downloads/l2sca.html. Syntax refers to the systematic ways in which discrete units (e.g., words) can be combined to create meaningful utterances (e.g., sentences) (Fromkin, Rodman, & Hyams, 2013). Generally, long sentences that can accommodate numerous clausal subordinations are considered syntactically complex (Biber, Gray, & Poonpon, 2011). Recently, however, the focal point of syntactic complexity is moving from subordination function to phrasal complexity (Biber et al., 2011). In Korea, syntactic complexity measures are positively related to the quality of L2 argumentative writing (Hwang, 2013). The syntactic complexity measures she suggests include mean length of T-units (MLT), clauses per sentence (C/S), and complex nominals per clause (CN/C) (Hwang, 2013). Becker (2010) also reports number of clauses per T-units and the number of words per T-unit to be helpful in distinguishing proficiency levels. Yang (2013) observed that as proficiency level went up for Korean EFL students, the mean length of T-unit (MLT) and clauses per T-unit (C/T) increased. In the case of Chinese EFL students, Qin and Wen (2007) explored the syntactic complexity of English majors in China and found that the students' length of T-unit and clause increased linearly as they advanced in their studies. Bao (2009) and Shen and Bao (2010) investigated the length and density of sentences. These authors found similar results in terms of length development in the students' writing in these studies. However, Bao (2009) also pointed out that in comparison to native English writers, English learners showed an inadequacy in their density index development. Xu (2013) compared the length of T-units and clauses, sentence density as reflected in embedded clauses which includes the ratios of clauses to T-units and of dependent clauses to clauses, as well as the syntactic structures covering independent and dependent clauses, passives and reduced structures. The study revealed that Chinese students differed significantly from native speakers in terms of sentence length and density. Despite the apparent attention on the effectiveness of collaborative writing, there is not enough empirical evidence to support the argument in terms of syntactic complexity. Thus, this paper investigates the effects collaborative summary writing has on the written outputs of

Korean university EFL students in terms of syntactic complexity. The research questions are:

1) Does summary writing, individual and collaborative, have any effect on students' L2 writing development in terms of syntactic complexity?
2) Is there a significant difference between the two groups in terms of the gains made?
3) How does individual summary writing and collaborative summary writing compare in terms of syntactic complexity?

III. METHODOLOGY

1. Subjects and Procedure

A total of 27 students from a university in Seoul participated in this study. The participants were students from two classes of the International Business English course which the researcher taught in the 2nd semester of 2017. This course is an elective course in the English Department and is open to all English majors and double majors. As seen in the descriptive statistics (Table 2) most of the students were juniors and seniors who had more than 10 years of English education with TOEIC scores that ranged from 820 to 980. Class 1 consisted of 17 students and they made up the Control Group (CG) and Class 2 consisted of 10 students and they were the Experimental Group (EG). CG participated in summary writing individually and EG engaged in collaborative summary writing. International Business English class took place two times a week and each class lasted 75 minutes. The research was carried out over a period of 10 weeks; the first and the last weeks were spent on taking the pre- and post-test and the actual treatment took 8 weeks. Over the period of 8 weeks, 14 pieces of written summaries were collected.

2. Data Analysis

Learners took part in a summary writing task at each of the fourteen sessions over a period of eight weeks. The source text was a business news article reported by a major newspaper and it was selected by the instructor prior to class based on the following reasons. First, in consideration of the class that the students are enrolled in, International Business English, the news had to pertain to current global business issue. Second, the article had to be of reasonable length so that the students would feel comfortable reading it at least two times within the 10-minute time period given and subsequently write a

summary in ten minutes. Finally, the news had to be interesting enough to capture the attention of the students (Appendix A). Once the news article was chosen, the website address was posted on e-class at the beginning of the class so that all the students could gain access to the website. The students were given ten minutes to read the article individually on their mobile phones. After time was up, the phone was put away and the students were asked to write a summary about the news article they had just read. The students were given ten minutes to engage in summarization; CG students did their summarization individually and EG students in pairs (Appendix B). The allotted time of twenty minutes for the article reading and summarizing before the regular class fit well into the 75-minute class plan in terms of priming the students for the business contents to be learned and tapping into their existing L2 knowledge. For each session, the students in EG had different partners who were appointed by the instructor on a random basis. After completion of the summarization task, the teacher collected the written outputs from the students and kept them as data for the study. Prior to beginning the research, the students were informed that the sole purpose of the summary writing was for research and the collected summaries would not be counted toward their course grade.

Keeping in mind that the types of tasks and writing time influence syntactic complexity, the researcher took extra caution to choose a suitable topic for the pre- and post-test written production. The pre- and post-test topics should reflect the main theme of the class which is business English and be familiar enough so that the students can easily tap into their linguistic knowledge and demonstrate their usual writing level. For the pretest, the participants were given seven questions from a list of mock job interview questions scheduled on their syllabus for the semester and asked to write down answers in complete sentences. Truscott and Hsu (2008) claimed that "evidence on learning necessarily involves a comparison between two independently written works" (p. 293), that is, "a comparison between accuracy on the initial writing and that on a new writing task" (ibid, p. 295). In line with the argument, a different set of questions was given from the list of mock job interview questions for the posttest. The guidelines for the pre- and post-test composition were identical for CG and EG. The students were provided with an A4 paper with detailed explanation about the research and seven questions to write answers to. A minimum of three to four complete sentences were required to be written down as answers to the given questions in 20 minutes (Appendix C). The pretest and the posttest scripts were collected and analyzed using the L2 Syntactic Complexity Analyzer on the nine syntactic structures and fourteen syntactic complexity indices (Ai & Lu, 2013; Lu, 2010). For statistical analysis, SPSS 23 was used.

IV. FINDINGS AND DISCUSSION

First, the researcher summarized a descriptive statistics of the entire subjects on their TOEIC scores and school year (Table 2).

TABLE 2

Descriptive Statistics of TOEIC Scores and School Year

	TOEIC SCORES				SCHOOL YEAR			
	N	M	SD	SE of M	N	M	SD	SE of M
CG	17	870	43.804	10.624	17	3.35	.606	.147
EG	10	892	74.1326	23.443	10	3	.81639	.258

Before we could begin the statistical analysis, it was pertinent to confirm homogeneity of the students' proficiency. To gauge the students' proficiency, the researcher used their TOEIC scores which they must submit before the final grading. TOEIC scores are required for all students who take English major classes and they take up five percent of the final grade. An independent samples *t*-test was conducted based on the TOEIC scores for any significant differences. The results show that the two classes are homogeneous in their proficiency with a *t*-value of 0.9749 and *p*-value of 0.1695. Now, we run a paired sample *t*-test in CG and EG to discern whether any significant differences are detected in the syntactic complexity measures after the 8-week summary writing task treatment; CG individually and EG collaboratively.

TABLE 3

Improvement in CG's Syntactic Complexity

Measure	Mean (post-pre)	SD	*t*-value	*p*-value
Syntactic structures				
W	54.4118	14.2746	3.8118	0.0008*
S	2.4706	1.3343	1.8516	0.0413*
VP	5.0588	2.4741	2.0447	0.0288*
C	3.6471	2.0668	1.7646	0.0484*
T	3.7059	1.5477	2.3945	0.0146*
DC	-0.1176	1.3690	-0.0859	0.5337
CT	0.6471	1.2185	0.5310	0.3014
CP	1.7647	0.7303	2.4165	0.0140*
CN	5.2941	2.0683	2.5597	0.0105*
Syntactic complexity indices				
Length of production unit				
MLS	2.1214	0.7159	2.9634	0.0046*
MLT	1.1239	0.7725	1.4549	0.0825*
MLC	1.1635	0.2469	4.7124	0.0001*

Amount of subordination				
C/T	-0.1246	0.1174	-1.0611	0.8478
CT/T	-0.0432	0.0834	-0.5183	0.6943
DC/C	-0.0375	0.0432	-0.8688	0.8011
DC/T	-0.1222	0.1117	-1.0936	0.8548
Amount of coordination				
CP/C	0.0574	0.0317	1.8123	0.0444*
CP/T	0.0537	0.0561	0.9557	0.1767
T/S	0.0746	0.0470	1.5866	0.0661*
Degree of phrasal sophistication				
CN/C	0.1041	0.0436	2.3851	0.0149*
CN/T	0.1098	0.1246	0.8811	0.1957
VP/T	-0.1595	0.0995	-1.6033	0.9358*
Overall sentence complexity				
C/S	-0.0369	0.1146	-0.3216	0.6241

* indicates marginally significant difference at $p<0.1$

As shown in Table 3, there was a statistical significance in all syntactic structures except dependent clauses (DC) and complex T-units (CT) in CG. In terms of the length of production units, there was a significant improvement in all three indices. Longer production units indicate higher proficiency, so the repetitive summary writing (14 times over an 8-week period) must have facilitated the process of tapping into their linguistic knowledge so that the linguistic forms could be reflected in their written output and thus produce longer production units. CG improved in using coordination as shown in the increase in usage of CP/C and T/S. Moreover, CG's increase in complex nominals per clause (CN/C) indicate increased usage of 1) nouns plus adjective, possessive, prepositional phrase, adjective clause, participle, or appositive, 2) nominal clauses, and 3) gerunds and infinitives in subject, clearly a sign of phrasal sophistication (Lu, 2011). Consequently, it could be said that repetitive summary writing treatment itself induced students to use more complex nominals. The significant differences detected were not all positive though, there was a drop in the usage of verb phrases per T-unit (VP/T). As will be reported later in the section, there was a significant increase in VP/T in EG. The usage of verb phrases is considered to take place in the last L2 developmental stage (Hwang, 2013). Therefore, given the significant decrease of verb phrases in CG, it is safe to assume that CG, despite making improvements in other measures, failed to reach the advanced stage of L2 development (Hwang, 2013). Now, we look at the improvement made by EG after the collaborative summary writing.

TABLE 4

Improvement in EG's Syntactic Complexity Indices

Measure	Mean (post-pre)	SD	*t*-value	*p*-value
Syntactic structures				
W	79.0000	65.4523	3.8168	0.0021*
S	3.8000	5.2026	2.3098	0.0231*
VP	10.5000	12.1769	2.7268	0.0117*
C	6.4000	9.9577	2.0325	0.0363*
T	3.3000	4.7854	2.1807	0.0286*
DC	2.2000	4.8717	1.4281	0.0935*
CT	1.3000	3.8887	1.0572	0.1590
CP	3.6000	2.1705	5.2449	0.0003*
CN	6.6000	7.4117	2.8160	0.0101*
Syntactic complexity indices				
Length of production unit				
MLS	0.3997	4.1794	0.3024	0.3846
MLT	1.8383	3.5330	1.6454	0.0671*
MLC	0.7275	1.7276	1.3316	0.1079
Amount of subordination				
C/T	0.0521	0.2755	0.5986	0.2821
CT/T	0.0049	0.1919	0.0809	0.4686
DC/C	0.0031	0.0843	0.1144	0.4557
DC/T	0.0295	0.2121	0.4402	0.3351
Amount of coordination				
CP/C	0.0858	0.0880	3.0812	0.0066*
CP/T	0.1626	0.1214	4.2374	0.0011*
T/S	-0.0990	0.2836	-1.1045	0.8510
Degree of phrasal sophistication				
CN/C	0.0309	0.3399	0.2874	0.3901
CN/T	0.0936	0.5623	0.5264	0.3057
VP/T	0.1091	0.5321	0.6481	0.2666
Overall sentence complexity				
C/S	-0.1139	0.2016	-1.7866	0.9462*

* indicates marginally significant difference at $p<0.1$

EG shows a significant increase in all syntactic structures except complex T-units (CT) (Table 4). Compared to CG who showed a significant increase in all three indices of length, EG showed marginally significant increase in only the mean length of T-unit (MLT). Given the insignificant increase of the mean length of sentences and clauses, the decrease in the number of clauses per sentence (C/S) can be explained. With regard to the amount of coordination, EG showed a strong increase in the number of coordinate phrases per clause (CP/C) and coordinate phrases per T-units (CP/T). According to Biber et al. (2013), complexity at phrasal level plays a paramount role in writing quality, therefore, it would not be too premature to say that EG displayed better writing quality over CG. To ensure that the two groups are different, we run a two-tailed Analysis of Variance (ANOVA) to compare the results of syntactic complexity measures between the two groups.

TABLE 5

ANOVA Results of CG and EG

Measure	Source of variance		F-value	*t*-value	*p*-value
	Between groups	Within groups			
		Syntactic structures			
W	3806.6231	93980.1180	1.0126	1.0063	0.3239
S	11.1277	727.8353	0.3822	0.6182	0.5420
VP	186.4107	2999.4412	1.5537	1.2465	0.2241
C	47.7176	2054.2824	0.5807	0.7620	0.4532
T	1.0373	857.6294	0.0302	0.1739	0.8634
DC	33.8205	723.3647	1.1689	1.0811	0.2900
CT	2.6843	539.9824	0.1243	0.3525	0.7274
CP	21.2078	187.4588	2.8283	1.6818	0.1051
CN	10.7373	1657.9294	0.1619	0.4024	0.6908
		Syntactic complexity indices			
Length of production unit					
MLS	18.6655	296.5976	1.5733	1.2543	0.2213
MLT	3.2132	274.6447	0.2925	0.5408	0.5934
MLC	1.1973	43.4447	0.6890	0.8300	0.4144
Amount of subordination					
C/T	0.1966	4.4312	1.1092	1.0532	0.3023
CT/T	0.0146	2.2223	0.1641	0.4051	0.6889
DC/C	0.0104	0.5707	0.4535	0.6734	0.5069
DC/T	0.1449	3.7998	0.9534	0.9764	0.3382
Amount of coordination					
CP/C	0.0051	0.3427	0.3699	0.6082	0.5486
CP/T	0.0748	0.9900	1.8885	1.3742	0.1816
T/S	0.1898	1.3247	3.5819	1.8926	0.0700*
Degree of phrasal sophistication					
CN/C	0.0337	1.5574	0.5412	0.7357	0.4688
CN/T	0.0016	7.0674	0.0058	0.0763	0.9398
VP/T	0.4539	5.2386	2.1662	1.4718	0.1535
Overall sentence complexity					
C/S	0.0374	3.9390	0.3822	0.4869	0.6306

* indicates marginally significant difference at $p < 0.1$

As we can see in Table 5, there is a marginally significant difference in the number of T-units per sentence (T/S) between EG and CG in the category of sentence coordination. Hunt (1965) proposed the sentence coordination ratio, more specifically T/S, as a reliable measure for L2 proficiency; it decreases as L2 proficiency becomes higher (Wolfe-Quintero, Inagaki, & Kim, 1998). To ascertain the significant differences noted in CG and EG, we run a one-way ANOVA to examine exactly whether there is any statistical significance between differences shown in CG and EG.

TABLE 6

Significance Between Group Differences on Syntactic Complexity

Measure	Mean (EG-CG)	SD	p-value	t-value
Syntactic structures				
W	24.5882	61.3124	1.0063	0.1620
S	1.3294	5.3957	0.6182	0.2710
VP	5.4412	10.9534	1.2465	0.1121
C	2.7529	9.0648	0.7620	0.2266
T	-0.4059	5.8571	-0.1739	0.5683
DC	2.3176	5.3791	1.0811	0.1450
CT	0.6529	4.6475	0.3525	0.3637
CP	1.8353	2.7383	1.6818	0.0525*
CN	1.3059	8.1435	0.4024	0.3454
Syntactic complexity indices				
Length of production unit				
MLS	-1.7218	3.4444	-1.2543	0.8893
MLT	0.7144	3.3145	0.5408	0.2967
MLC	-0.4361	1.3183	-0.8300	0.7928
Amount of subordination				
C/T	0.1767	0.4210	1.0532	0.1512
CT/T	0.0481	0.2981	0.4051	0.3444
DC/C	0.0406	0.1511	0.6734	0.2534
DC/T	0.1517	0.3899	0.9764	0.1691
Amount of coordination				
CP/C	0.0284	0.1171	0.6082	0.2743
CP/T	0.1090	0.1990	1.3742	0.0908*
T/S	-0.1736	0.2302	-1.8926	0.9650*
Degree of phrasal sophistication				
CN/C	-0.0732	0.2496	-0.7357	0.7656
CN/T	-0.0162	0.5317	-0.0763	0.5301
VP/T	0.2685	0.4578	1.4718	0.0768*
Overall sentence complexity				
C/S	-0.0770	0.3969	-0.4869	0.6847

* indicates marginally significant difference at p <0.1

The differences in the gains shown in Table 6 are insignificant except in the number of coordinate phrases (CP), number of coordinate phrases in T-units (CP/T), and verb phrases per T-units (VP/T). This implies that EG's written outputs carry more of phrasal-level complexification that are prevalent in the writing of advanced students (Bardovi-Harlig, 1992; Ortega, 2003). Wolfe-Quintero et al. (1998) also claimed that advanced L2 learners produce more reduced forms (e.g., phrases) instead of complex sentences. It could be inferred that through negotiation of meaning in collaborative summarizing, more verb phrases and coordinating phrases were engendered. Furthermore, according to McNamara, Crossley, and McCarthy (2010), learners' complex usage of verb phrases could indicate writing quality, therefore, EG students' outperformance of using more verb phrases per T-unit than their CG counterparts is exhibitive of better writing. To note, the best predictors for syntactic complexity are found to be mean length of clause (MLC), mean length of T-

unit (MLT), clauses per T-unit (C/T), dependent clauses per clause (DC/C), dependent clauses per T-unit (DC/T), and verb phrases per T-unit (VP/T) (Lu, 2011; Ortega, 2003; Wolfe-Quintero et al., 1998). The fact that VP/T is marginally higher in EG corroborates the positive effects of collaborative summary writing in enhancing L2 writing proficiency. It has been proven in previous researches that longer production units have also been found to correlate with higher levels of proficiency (Lu, 2011; Ortega, 2003). In other words, more proficient students use more words when constructing a sentence, i.e., they use more number of words per sentence and more number of words per T-units. However, when the number of T-units is taken into account, students with better writing ability used less T-units, i.e., they used more complex sentences, and less proficient students used more T-units, i.e., they used more simple sentences (Houck & Billingsley, 1989). In contrast with the gains noted in CP, CP/T, and VP/T, there is a significant decrease in the number of T-units per sentence (T/S). This finding supports the results reported in Lu's (2011) research that as proficiency rises from low to advanced level, the number of T-units per sentence decreases. Wolfe-Quintero et al. (1998) also claim that T/S decreases as L2 proficiency becomes higher. Consequently, EG's comparatively lower number of T-units per sentence demonstrates the effectiveness of collaborative summary writing in enhancing the writing quality.

Overall, combining speaking and writing is more conducive to language learning than solitary writing because as the learners engage in collaborative writing, they are able to utilize many functions such as providing each other with feedback, reviewing collaboratively usage of words, grammar, etc. that cannot be done when the learner is involved in solitary writing (Weissberg, 2000). In fact, interaction with a partner, i.e., collaborative dialogue, to produce an intelligible written output, i.e., collaborative writing, involves the role of scaffolding by one party which is beneficial to L2 development (Swain, 2000). Despite the claims made by Lu (2011) that the two best measures to predict L2 writing proficiency are mean length of clause (MLC) and complex nominal (CN), this study yielded no statistical significance in those indices. In fact, this study supports the finding of Bao (2009) who claimed that C/T and DC/C do not distinguish language proficiency in L2 writing.

V. CONCLUSION

This study examined the effects of collaborative summary writing on L2 writing development of EFL Korean university students in terms of syntactic complexity. Firstly, both CG and EG improved in terms of using more syntactic structures after the treatment of repetitive summary writing in indices of W, S, VP, C, T, CP, and CN. In terms of

syntactic complexity indices, significant gain was demonstrated in MLS, MLT, MLC, T/S, C/T, CP/C, CN/C for CG whereas there was a significant decline in VP/T. For EG, there was a significant gain in MLT, CP/T, and CP/C whereas a significant decline was shown in C/S. Second, students who engaged in collaborative summary writing showed a marginally significant gain in using CP, CP/T, and VP/T, which suggests complexity at phrasal level, an indication of higher L2 development (McNamara et al., 2010). The findings suggest that EG students made L2 development in coordination as a result of the collaborative summary writing treatment. The decline in T/S also indicates that writing proficiency went up for students in EG (Lu, 2011, Wolfe-Quintero et al., 1998). Third, MLT showed a marginally significant gain for both groups which indicates that repetitive summary writing does indeed raise their writing proficiency, however, the difference in gains failed to produce statistically significant results.

Weissberg's (2000) research findings suggest that learners are likely to use varied forms of new syntactic forms in their writing rather than when they are speaking. He claims that learners process their linguistic knowledge deeply as they write as compared to when they speak and are likely to reflect on language during the process of writing (Weissberg, 2000). By engaging in collaborative writing with peers, EFL students will feel less daunted and more at ease to experiment with new and more syntactically complex forms and gradually develop their writing ability. The results of the statistical analysis of this study leave us with many pedagogical implications and valuable insights for teachers of EFL university students.

VI. LIMITATIONS AND IMPLICATIONS

One conundrum English writing instructors face is the heavy load of correcting and grading their students' written productions. There is no denying that corrective feedback is a necessary component in teaching writing so that students can learn from their mistakes and also upgrade the level of sophistication in future writing, but the burden of ceaseless correcting and reading of the written outputs weighs heavily on the shoulder of the instructors. From the perspectives of both teacher and student, pedagogical implementation of collaborative summary writing can alleviate the strain from L2 writing and induce enhanced development in L2 writing. More specifically, students are less likely to feel writing anxiety in such a rapport building learning climate and likewise teachers are obviated of the onus of providing corrective feedbacks for every student's written production.

There, however, are several limitations to this research. First, due to the small sample size, significant differences were detected in only two groups of the syntactic complexity

indices, i.e., the amount of coordination and degree of phrasal sophistication. If the sample size had been larger, this study could have rendered clearer results. For example, the frequency of subordination clauses increases with proficiency levels in writing (Ishikawa, 1995; Wolfe-Quintero et al., 1998), however, the results of this study did not yield any significant differences in that regard. Second, business news articles were chosen for the summarizing task in this study. Varying the types of writing task may yield different results and further research is warranted. Third, the results may differ depending on the process of summary writing. This study required that students draw from their existing L2 knowledge when reading and writing summaries of the source text. To that end, the students were given the source text on the spot to be read and summarized on a piece of paper with a pencil. However, if the students were required to type the summary and post it online, results of the data analysis could have been different. Given that there are various psychological factors working in sync with writing, future studies will have to be carefully designed to incorporate such variables. Lastly, depending on the type of coding instrument, the statistical analysis could have rendered different results. The finding of this study leaves room for more examination into L2 writing and syntactic complexity.

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APPENDIX A

Newspaper Article Used for Summary Writing

Amazon says it received 238 proposals for second headquarters (By ASSOCIATED PRESS)
OCT 23, 2017 | 8:20 AM

Amazon has opened the search for a second headquarters, promising to spend more than $5 billion on the site. (September 7, 2017) Amazon said Monday that it received 238 proposals from cities and regions in the United States, Canada and Mexico hoping to be the home of the company's second headquarters. The online retailer kicked off its hunt for a second home base in September, promising to bring 50,000 new jobs and spend more than $5 billion on construction. Proposals were due last week, and Amazon made clear that tax breaks and grants would be a big deciding factor on where it chooses to land.

Amazon.com Inc. said the proposals came from 43 U.S. states as well as Washington and Puerto Rico, three Mexican states and six Canadian provinces. In a tweet, the company said it was "excited to review each of them." Besides looking for financial incentives, Amazon had stipulated that it was seeking to be near a metropolitan area with more than a million people; be able to attract top technical talent; be within 45 minutes of an international airport; have direct access to mass transit; and be able to expand that headquarters to as much as 8 million square feet in the next decade.

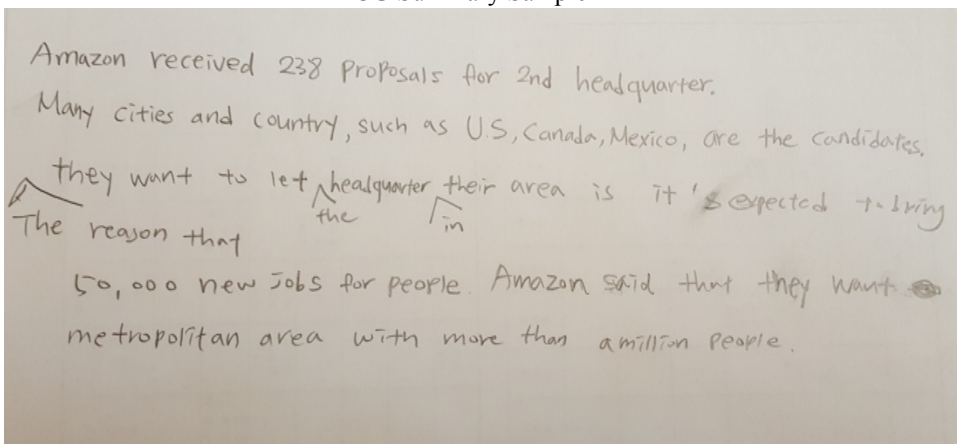
Generous tax breaks and other incentives can erode a city's tax base. For the winner, it could be worth it, since an Amazon headquarters could draw other tech businesses and their well-educated, highly paid employees.

The seven U.S. states that Amazon said did not apply were: Arkansas, Hawaii, Montana, North Dakota, South Dakota, Vermont and Wyoming. Ahead of the deadline, some cities turned to stunts to

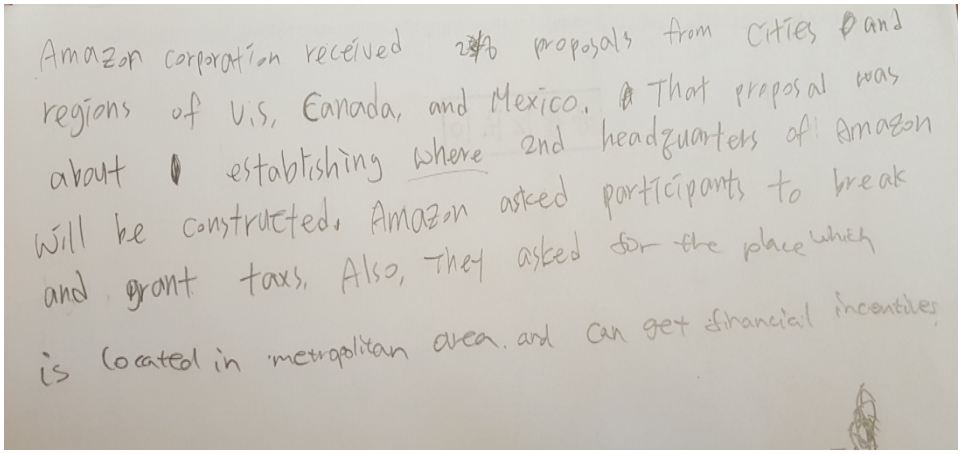
try and stand out: Representatives from Tucson sent a 21-foot-tall cactus to Amazon's Seattle headquarters; New York illuminated the Empire State Building in orange to match Amazon's smile logo. The company plans to remain in its sprawling Seattle headquarters, and the second one will be "a full equal" to it, founder and CEO Jeff Bezos said in September. Amazon has said that it will announce a decision sometime next year.

APPENDIX B

CG Summary Sample


Amazon received 238 proposals for 2nd headquarter.
Many cities and country, such as U.S, Canada, Mexico, are the candidates.
they want to let headquarter their area is it's expected to bring
the in
The reason that
50,000 new jobs for people. Amazon said that they want
metropolitan area with more than a million people.

EG Summary Sample


Amazon corporation received 238 proposals from cities and
regions of U.S, Canada, and Mexico. That proposal was
about establishing where 2nd headquarters of Amazon
will be constructed. Amazon asked participants to break
and grant taxs. Also, they asked for the place which
is located in metropolitan area. and can get financial incentives

APPENDIX C

Posttest Sample

I can say I'm a good team player because as a team player, I always coorperate with members. I tend to listen other's opinions carefully, and get to know about what they want. With this personality, I can get along and cooperate with any other person. The biggest accomplishment that I made so far is my grade. I couldn't get a good grade when I was freshman and sophomore because I was having a hard time to do both part-time job and studying. However, I tried hard to find the way to overcome this, and I successed to improve my grade. I usually have time with my friends in my spare time. I work hard on week days, so I can't have much time with my friends, so I make appointments with friends in my spare time. Meeting with them, we talked a lot, and sometimes we do meaningful works such as volunteer working. The best idea that I've had in the last month was making my mind to write diary. Writing diary helped me to organize my own thinking and emotion. Especially, I could save good ideas with working in my diary. Mistakes that made was impacted my life. I made many mistakes during my life, and it was helpful for me. I could learn lessons from them, and I could become a better person than before.

Examples in: English

Applicable Language: English

Applicable level: Tertiary

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