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Patterns of Sentence Connectors and the Effect of Instruction on ESL Learners' Writing

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This study investigates the effect of writing proficiency on patterns of sentence connectors in second language learners' writing and the effect of instruction on those patterns. First, to examine how writing proficiency affects use of sentence connectors, 87 ESL student placement tests were analyzed. The results reveal that more advanced-level participants used sentence connectors less often than lower-level participants, illustrating that the tendency to overuse sentence connectors may decrease as an ESL student's writing proficiency increases. Second, to examine whether instruction helps lower-level students overcome this tendency of overuse, sentence connector use was compared between a control group and an experimental group. Although the experimental group received instruction on connector use, the second experiment failed to reveal a significant difference between the two groups. These findings can be interpreted in two ways: 1) The overuse of sentence connectors decreases as a student's overall writing ability improves during the semester. 2) The effect of the instruction in the second study was not strong enough. To explore the effects of instruction more thoroughly, further material development will be needed in future studies.

[sentence connectors/L2 writing/instruction/문장연결어/제2언어작문/교수]

I. INTRODUCTION

In order to write cohesively in English, both ESL learners and native speakers of English depend on logic and cohesive devices. That is, in addition to clear presentation of ideas, they also depend on grammatical devices such as sentence connectors[1] to

[1] Sentence connectors are commonly called adverbial conjuncts. In this study, the term

make connections between previous and following ideas clear. While it has often been pointed out that English language learners use sentence connectors differently from English native speakers (Field & Oi, 1992; Goldman & Murray, 1992; Green, Christopher, Lam, & Mei, 2000; Hee-Jung Jung & Jie-Young Kim, 2008; Steffani & Nippold, 1997), some scholars have also suggested that differences may exist among English language learners themselves (Yunkyung Cho, 1998; Steffani & Nippold, 1997).

In order to see whether English language learners of different English proficiency show varying patterns in their use of sentence connectors, the first experiment in this study examines how learners' writing ability affects their use of sentence connectors. Yunkyung Cho (2004) has pointed out a methodological problem with most studies on grammatical competence: they often rely on learners' general L2 proficiency such as their TOEFL scores, length of stay, or length of study. Although the length of study has often been used as an indicator accounting for the difference in English language learners' use of sentence connectors, writing ability of the English language learners may be more closely related to their use of sentence connectors. This study examines how English language learners of different writing abilities differ in the use of the four different types of sentence connectors: additives, adversatives, causals, and sequentials. It is hypothesized that learners of different writing proficiency levels differ in their production of sentence connectors. It is believed that lower level learners produce more sentence connectors than high level learners do as the lower level learners' limited writing ability in English may prohibit them from making appropriate use of sentence connectors. In attempting to make their writing more cohesive, they may depend on these connectors so much that they overuse them.

Drawing on the findings from the first experiment, the second experiment investigates whether explicit instruction of sentence connectors can affect English language learners' usage. Whether grammatical feedback affects learners' performance in writing has been a much debated issue, but whether instruction on these sentence connectors can make a difference in learners' use has rarely been studied. It is hypothesized that instruction drawing on a context-based approach will help ESL learners decrease their tendency to overuse sentence connectors. Additionally, it is believed that if instruction is successful, the experimental group will reveal a pattern similar to that of higher-level students of the first experiment as concerns types of sentence connectors.

"sentence connector" is preferred because it implies their function more explicitly.

Hypothesis 1. Learners of different writing proficiency levels differ in their production of sentence connectors.

Hypothesis 2. Instruction on sentence connectors will make a difference in students' use of sentence connectors.

II. Literature Review

1. Sentence Connectors

Studies on English language learners' use of sentence connectors reveal that learners have more difficulty with the use and understanding of connectors than English native speakers (Field & Oi, 1992; Goldman & Murray, 1992; Steffani & Nippold, 1997). For example, Field and Oi (1992) compared the use of conjunctions such as *and*, *but*, *or*, and *so* between English native speakers and Cantonese speakers. They concluded that the Cantonese speakers used more cohesive devices than the native speaker group. Goldman and Murray (1992) also compared understanding of connector functions between native and non-native English speakers. They found that while the native speakers differentiate adversatives from additives and causals, the non-native speakers may understand only a general distinction between sequential connectors and the other types of connectors. Steffani and Nippold (1997) also showed that English language learners had more difficulty using and understanding connectors in both writing and reading tasks than Americans of their same age.

These findings imply that English language learners' use of cohesive devices, different from native speakers, may be attributed to their lack of proficiency. But none of these studies has systematically investigated this developmental difference. Several studies have used English language learners' length of study as an indicator of their use of sentence connectors, but have not controlled it effectively. For example, after comparing the use of cohesive devices between native speakers and Japanese ESL students, Steffani and Nippold (1997) reanalyzed the results to see whether length of study or length of stay had a stronger effect on students' use of sentence connectors, but failed to obtain consistent results for either reading or writing tasks. Yunkyung Cho (1998) also

indicated that ESL learners revealed different patterns in the use of connectors according to their length of English study. She divided 18 junior school students into two groups based on their length of study (a two-year group and a three-year group), but as she admitted herself, the interval between two and three years of study is too small to serve as a distinguishing mark between the two groups.

In order to avoid these methodological issues, this study systematically investigates the effects of English language learners' proficiency level on their use of sentence connectors. This is achieved by using writing proficiency as a variable because students' writing ability does not always match their overall English language proficiency. At the U.S. university where this study was conducted, most international students whose TOEFL scores are from 173 to 250 must take ESL classes in the English Language Institute. For more specific writing courses, they are placed into three different classes according to their placement test results—intermediate ESL writing, advanced ESL writing, and regular English writing—or they are exempted when their writing is judged to be sufficient. However, their TOEFL scores do not necessarily predict their appropriate writing levels. Because of this kind of mismatch between overall proficiency levels and writing ability, it seems more reliable to depend on writers' writing ability rather than their overall English language proficiency in order to examine their use of connectors.

In this study I categorized advanced ESL and mainstream freshmen writing as separate levels, although they are officially considered to be the same level. This is because the advanced level consists of graduate students, while the freshmen writing course consists of undergraduate students. Students in these two courses are distinct from each other not only in their status but also in their writing problems. The majority of the advanced ESL writing students are international students who have graduated from universities in their respective home countries and who have come to the United States to pursue their graduate studies. On the other hand, the freshmen writing class has more immigrant students who came to English speaking countries when they were relatively young. As Byrd and Reid (1998) reveal, international students and immigrant students have distinct issues. Since immigrant students tend to have been exposed to an English environment early on, they tend to be better at speaking and listening than grammar. In contrast, many international students have learned English through grammar, so they tend to have better knowledge of English grammar. Because of these

differences inherent in the two groups, they were separated into individual groups. To recap, the target groups in this study are intermediate ESL, advanced ESL, freshmen writing, and exempt groups.

2. Writing Instruction

In the area of second language writing, the issue of instruction, which has been closely related to grammar correction, still appears controversial. For instance, Truscott (1996) argued that grammar correction has never been proven effective in improving learners' grammatical accuracy in writing. On the other hand, Ferris (1999) defends grammar teaching by claiming that ESL learners are eager for it and in the end, they are more able to revise their own writing after having received feedback. Around this heated debate on the usefulness of grammar correction, Lee (2002) found positive effects for teaching coherence on the writing of 16 ESL university students although she did not restrict her instruction to sentence connectors. In order to see specific effects of instruction on the use of sentence connectors, this study adopts a similar kind of pedagogical procedure as Lee, which will be referred to as "context-based approach" (Byrd & Reid, 1998). Cumming (1998) emphasizes the importance of context by arguing that various studies on the demands of second language writing (Leki, 1995; Spack, 1997; Zamel, 1995) reach the similar conclusion that "context is important in understanding whatever it is that student writers need in order to be successful" (p. 63). In addition, Frodesen (1991) states that a context-based approach can be effectively used for learners who know prescriptive grammar rules very well but have not learned how to apply them. In this study, most participants (except for those in freshmen writing) started learning English through the memorization of prescriptive grammar rules. So they were quite accustomed to them. However, they still need to learn how to utilize those grammar rules in writing.

III. Methodology

1. Experiment 1: Effect of Writing Proficiency

1) Participants

The participants were 87 ESL students at a university in the United States who were enrolled in intermediate ESL, advanced ESL, or regular freshmen writing courses, as well as those who were exempted from these writing courses. Thirty-two students were male, and 55 were female. All of them had TOEFL scores ranging from 173 to 250, and therefore were initially required to take English Language Institute (ELI) courses. In the beginning of the semester, they took a placement test which determined their placement or exemption.

2) Materials & Procedure

The ELI writing placement test was used to investigate the effects of writing proficiency on students' use of sentence connectors. During this 45-minute test, students chose one of two writing prompts to write about. For example, they could be asked to choose a political or cultural issue and then explain their point of view, supporting it with specific reasons or examples. The test was scored by three raters, being read only by a fourth rater only when there was a disparity between the three raters.

3) Analysis

In this study, I implemented Thewlis' (1997) model in order to classify sentence connectors according to both their form and meaning. Thewlis not only takes into account the meanings of connectors by using Halliday and Hasan's (1976) four categories (i.e., additive, adversative, causal, and temporal), but he also classifies connectors according to their forms (i.e., coordinating conjunctions, sentence connectors, and subordinating conjunctions) (see Table 1). Out of these three different forms of connectors, this study focuses only on sentence connectors. Through my observations as a writing instructor, students are likely to overuse sentence connectors rather than coordinating conjunctions or subordinating conjunctions. Therefore, it is hypothesized that sentence connectors are harder to acquire than the two types of conjunctions, and that high intermediate-level students have trouble using sentence connectors and tend to overuse them. Considering that the participants of this study were high-intermediates

whose TOEFL scores ranged above 173 and below 250, the focus of this study is restricted to their use of four different types of sentence connectors: additive, adversative, cause and effect, and temporal.

Table 1
Types of Connectors

Meaning	Form		
	Coordinating conjunctions	Sentence connectors	Subordinating conjunctions
Additive	And Not only… but also	In addition Besides Furthermore Indeed	In addition to Besides Not to mention
Adversative	But Yet	However On the other hand In contrast Even so Nevertheless	While Whereas Although Even though In spite of
Cause and effect	For So	Accordingly Consequently As a result Therefore	Due to Because/Since As a result of So that In order to Providing/If
Temporal	And	First Then Eventually Soon	After When Before

4) Results

The first experiment had two independent variables, connector type and proficiency level, and one dependent variable, the ratio of number of sentence connectors per clause. A clause is chosen as the unit of analysis drawing on Wolfe-Quintero, Inagaki, and Kim's study (1998). Frequency counts of sentence connectors were performed in order to see both how often they occurred and what types of sentence connectors were used in students' writings.

Table 2 shows the descriptive statistics for the first experiment. As proficiency level increased, the average length of the essays increased in terms of words and clauses. In total, 433 sentence connectors were used: 141 additives, 101 adversatives, 97 causal,

and 94 temporal. Two expert raters analyzed the data by calculating the number of clauses and sentence connectors, as well as each sentence connector type. Inter-rater reliability was measured at about .78 using the Kappa agreement coefficient, indicating substantial agreement between the two raters (Landis & Koch, 1977).

Table 2
Descriptive Statistics of Experiment 1

Group	Intermediate				Advanced				Freshmen writing				Exempt			
Average length of essays (words)	232.05				316.81				345.5				390.45			
Average length of essays (clauses)	27.35				33.90				42.14				43.36			
Types	Ad	Av	Ca	Tem	Ad	Av	Ca	Tem	Ad	Av	Ca	Tem	Ad	Av	Ca	Tem
Frequency	35	16	24	29	78	40	46	47	18	28	16	11	10	17	11	7

The descriptive statistics of the first experiment, which examine the relationship between writing proficiency and the ratio of number of sentence connectors per clause, are shown in Table 3. As presented in the table, except for adversative connectors, all of the other means decreased as student level increased.

Table 3
Ratio of Connectors per Clause by Type and Proficiency Level

Type	Additive				Adversative				Cause				Temporal			
Level	Int	Ad	FW	Ex	Int	Ad	FW	Ex	Int	Ad	FW	Ex	Int	Ad	FW	Ex
N	20	42	14	11	20	42	14	11	20	42	14	11	20	42	14	11
M	.072	.055	.032	.017	.028	.028	.050	.033	.041	.033	.031	.022	.055	.035	.017	.018
SD	.053	.042	.023	.026	.027	.027	.038	.038	.050	.032	.031	.029	.075	.044	.024	.026

Note. Int=Intermediate, Ad=Advanced, F=Freshmen Writing, Ex=Exempt

To check whether the differences between means were statistically significant, a two-way ANOVA with a repeated measure on one factor (sentence connector) was conducted. Before performing the two-way ANOVA, its assumptions were checked. First, all variables are independent from each other, and according to *z* tests of skewness and kurtosis, the distribution is approximately normal. Looking at the results of Levene's

equal variance test, it is unlikely that experiment 1 satisfies the assumption of equal variances, because the ratios of additive and causal types of sentence connectors reject the null hypothesis that the error variance of the dependent variable is equal across groups. Brown (1988) states that "the violation of this assumption apparently has little effect on the results if the sample sizes are equal" (p. 166). However, each group has a different sample size and the ratio of the smallest group to the largest group (11 to 42) is more than 1:3, which is a critical value according to Brown. Therefore, a more stringent α level (α = .025) was applied, as suggested by Tabachnick and Fidell (2001). In addition, Mauchly's test of sphericity shows that the first experiment violates the assumption of sphericity. To make Type 1 error probability small, the Greenhouse-Geisser correction is adopted, as suggested in Stevens (1992). The Greenhouse-Geisser method shows an *F*-value adjusted to the situation when the sphericity assumption is violated.

Table 4

Two-Way Repeated Measures ANOVA for Experiment 1

Source	Sum of Squares	Df	Mean Square	F	Sig.	Eta Squared	Observed Power
Between subjects							
Level	.022	3	.007	4.348	.007*	.136	.854
Within Groups	.139	83	.002				
Within subjects							
Connector	.007	2.706	.003	1.460	.229	.017	.363
Connector*Level	.030	8.117	.004	2.114	.035	.071	.843
Within Groups	.390	224.582	.002				

* $p < 0.25$

ANOVA results are presented in Table 4, showing that, of the two main effects—proficiency level and sentence connector type—only one, the effect of proficiency level, is significant. The interaction between connector type and proficiency level is not significant when a more stringent α level (< .025) is used. Therefore, it can be argued that only the main effect of proficiency level is significant. Power for proficiency level is high enough (.854) for the null hypothesis that there is no difference between all four groups to be safely rejected. On the other hand, Eta squared (.136) shows that only 13.6% of total variance can be attributable to the effect of proficiency

level. This means that a large amount of variance cannot be accounted for by the association between proficiency level and the ratio of sentence connectors per clause. This may be a result of having unequal sample size across proficiency groups. To clarify which pairs show a significant difference, Tukey and Scheffé tests were used. Both reveal the only difference to be between the intermediate and exempt groups.

5) Discussion

The results show that the lowest level (the intermediate group) is distinguishable from the highest level (the exempt group). However, the other two groups are not significantly different from the intermediate, from the exempt group, or from each other. It appears that lower-level students overuse sentence connectors in comparison with the highest-level students, but that the change is gradual across proficiency groups, so distinctions between them are not evident.

The four types of sentence connectors do not show any significant differences among them. When a more stringent α level (= .025) is applied, the interaction between connector types and proficiency level is not statistically significant. At the α =.05 level, the results can be considered to be statistically significant (p=.035). Therefore, it seems difficult to assert that the participants do not reveal distinct patterns in the use of sentence connectors according to their writing proficiency level. Although there are no significant differences between the four types of sentence connectors, the plot (Figure 1.) indicates that intermediate and advanced groups have a somewhat different pattern from freshmen writing and exempt in the use of the four types of sentence connectors. The intermediate and advanced groups appear to use additive and temporal types more often than adversative and causal types. On the other hand, freshmen writing and exempt groups use adversatives most often when compared with the other types of sentence connectors. Although this study measured frequency of sentence connectors, unlike Goldman and Murray (1992), who measured frequency of correct uses of connectors, both sets of results reveal the possibility that connector patterns vary according to proficiency level. Goldman and Murray found that the least proficient students understand the general distinction between temporal and the other three types, and the most proficient students differentiate adversatives from additives and causes. Likewise, this study shows that lower levels might use additives and temporals more frequently

than the other types while higher levels might use adversatives more often than other types.

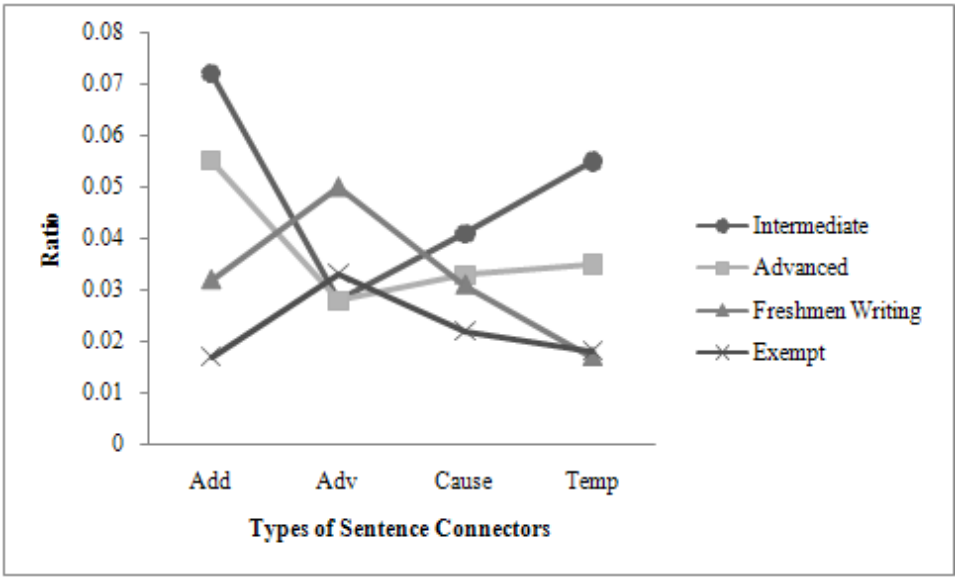

Figure 1. Plot for experiment 1 (ratio of number of sentence connectors per clause).

2. Experiment 2: Effect of Instruction

1) Participants

The participants were 23 students, 10 male and 13 female, enrolled in two sections of intermediate level writing at the same university during the same semester as those in the first experiment. Eleven of them participated in the first experiment as well. Thirteen were in the control group and 10 in the treatment group. The treatment group was a class the researcher taught, the other group being taught by another instructor. Because both were intact classes, their preexisting differences were assessed. Both groups received a pre-test immediately preceding treatment and a post-test immediately following treatment. The pre-test for one group served as the post-test for the other group, and vice versa (see Appendix).

2) Materials & Procedure

The search for materials for this study returned surprisingly few options focusing on sentence connectors as a distinct grammatical feature. Because of this scarcity, materials dealing with other types of connectors as well as sentence connectors were included in the review. Nevertheless, it was still difficult to find materials on connectors using a context-based approach. Even those materials which claim to draw on a context-based approach (Benson & Byrd, 1989; Celce-Murcia & Larsen-Freeman, 1999; Frodesen & Eyring, 1997; Thewlis, 1997) are likely to fail to satisfy high-intermediate or advanced learners who desperately need to know how connectors are used in authentic texts. These materials are useful in that they increase students' awareness about connectors by providing students a chance to analyze the use of connectors through varied exercises and by allowing students to combine simple sentences into complex sentences. However, students do not have the chance to learn how they can use connectors, especially sentence connectors, appropriately, without overusing them. Based on the first experiment's implications that ESL learners need to know in what contexts sentence connectors are used or how they can express their ideas without using connectors, an activity was devised to enhance students' awareness (see Appendix).

The activity was conducted across four consecutive classes occupying about an hour of class time in total. It consisted of five steps, with the first four steps taking 15 minutes in four consecutive classes and the last step, a homework assignment, exceeding 15 minutes:

Step 1 (15 minutes). The participants were given a mini lesson on sentence connectors. The semantic and functional categories of connectors were explained, as shown in Table 1, and later the four types of sentence connectors (additive, adversative, causal, and temporal) were introduced.

Step 2 (15 minutes). The participants were asked to compare sample academic papers to their own writing in terms of the number of sentence connectors used. This step was designed to provide the students with an academic context. The article under comparison was their first paper for their writing class, which was a five- or six-page paper on any academic topic of their choosing. After calculating how many sentence connectors were used in the first 100 words of the sample papers, they calculated

the number of sentence connectors in their writing in the same way. By doing this, they could easily see the difference between the sample and their writing. Generally, they found that they used many more sentence connectors than were in the sample papers.

Step 3 (15 minutes). The participants were asked to figure out how sentence connectors were used in their sample paper and then explain. This step was designed to make them aware of appropriate usage of sentence connectors in that context—to teach the use of sentence connectors as well as their form and meaning.

Step 4 (15 minutes). The participants were given the chance to think about other ways to connect sentences without using sentence connectors. First, they were asked to look for sentences that did not start with sentence connectors. Then they were asked to figure out what contributes to connecting these sentence with previous sentences (e.g., pronouns referring to phrases in the previous sentence, a paraphrase or summary of the previous key idea, repeating the same words). After a brief small-group discussion, they reported what they discussed to the class.

Step 5 (exceeding 15 minutes). The participants were required to revise their paper based on what they had learned in class, reflecting particularly on their use of sentence connectors. This step was taken to complement sentence-level or paragraph-level practice, as these drills could have given the students the wrong impression that each sentence should be connected with some kind of sentence connector, which could have resulted in their overuse.

3) Results

As in the first experiment, the ratio of number of each type of sentence connector per clause in students' pre-test and post-test was calculated. The descriptive statistics for the second experiment are presented in Table 5. In the pretest, the control group produced 74 sentence connectors: 19 additives, 23 adversatives, 18 causals, and 14 temporals. The average length of control group pretest essays was 225.92 words or 28.62 clauses. In the post-test, the control group used 68 sentence connectors: 16 additives, 18 adversatives, 15 causals, and 19 temporals. The average length of the

post-test essay was 224.46 words or 25.62 clauses in the control group. On the other hand, the experimental group produced fewer sentence connectors than the control group both in the pre-test and the post-test. In the pre-test, 37 sentence connectors (12 additives, 12 adversatives, 5 causals and 8 temporals) were used, and in the pre-test, 32 sentence connectors (12 additives, 13 adversatives, 4 causals and 3 temporals) were used. Their average length of essays was shorter than that of the control group as well. The experimental group produced 187.1 words or 24.6 clauses in the pre-test and 175.9 words or 23.4 clauses in the post-test.

Table 5
Descriptive Statistics of Experiment 2

Group	Control								Treatment							
Test	pre-test				post-test				pre-test				post-test			
Average length of essay (words)	225.92				224.46				187.10				175.90			
Average length of essay (clauses)	28.62				25.62				24.6				23.4			
Type	Ad	Av	Ca	Tem	Ad	Av	Ca	Tem	Ad	Av	Ca	Tem	Ad	Av	Ca	Tem
Frequency	19	16	12	12	23	18	12	13	18	15	5	4	14	19	8	3

The Kappa coefficient for the categorization between the two raters was .96, showing strong agreement between raters (Landis & Koch, 1977). In this experiment, a three-way repeated-measures ANOVA was conducted to show whether the treatment was effective or not, with sentence connector type, treatment, and pre/post test as the three independent variables. It was also checked whether the final production of the treatment group showed a pattern similar to those of the higher-level group in the first experiment.

The descriptive statistics of the second experiment, which investigated the effect of instruction on the use of connectors, are presented in Table 6. As Table 6 reveals, in the pre-test results, except for causal connectors, the means of the treatment group and the control group do not seem to be drastically different from each other. In the case of causal connectors, the treatment group mean (=.021) is lower than the control group mean (=.053) in the pre-test. On the other hand, most means decreased from

the pretest to the post-test, except for the control group's additive and temporal and the treatment group's adversative. In particular, temporal means show the biggest disparity between the two groups. While the control group's temporal mean increases, the treatment group's mean decreases.

Table 6

Ratio of Connectors per Clause by Type, Treatment, and Test

	Additive				Adversative				Cause				Temporal			
Ctr/ Treat	Ctr		Treat		Ctr		Treat		Ctr		Treat		Ctr		Treat	
Pre/ Pst	Pre	Pst	Pre	Pst	Pre	Pst	Pre	Pst	Pre	Pst	Pre	Pst	Pre	Pst	Pre	Pst
N	13	13	10	10	13	13	10	10	13	13	10	10	13	13	10	10
M	.046	.058	.061	.057	.059	.052	.049	.053	.053	.047	.021	.017	.039	.053	.035	.012
SD	.052	.063	.064	.068	.042	.041	.027	.034	.058	.040	.029	.031	.054	.055	.051	.020

To compare pre-test and post-test results in both groups, a three-way ANOVA with repeated measures on two factors (test and connector type) was performed. Before the ANOVA was run, it was necessary to check whether or not this second experiment satisfied the assumptions of ANOVA. As in the first experiment, each variable is independent from each other, and histograms reveal that the distribution of each variable is approximately normal. As for equal variances, Levene's test reveals that only the post-test temporal results reject the null hypothesis that the error variance of this variable is equal across groups. Unlike the first experiment, the second experiment showed that the sample size of the control group (N=13) and the treatment group (N=10) are similar. So the violation would not seem to seriously affect the results. Finally, the assumption of sphericity is violated. Because of this, as with the first experiment, the Greenhouse-Geisser method was adopted and the F-value was adjusted.

The ANOVA results are shown in Table 7. Table 7 does not reveal any significant results, either significant main effects or significant interaction effects. These results seem closely related to fairly low observed power and Eta squared. Even the highest Eta squared does not reach more than .122, which means that only 12.2 percent of total variance is due to the treatment effect. It is possible that better results could have been obtained by including more participants and reinforcing the treatment. The limitations of this second experiment will be discussed more in the conclusion.

Table 7
Three-Way Repeated Measures ANOVA for Experiment 2

Source	SS	Df	MS	F	P	Eta Squared	Observed Power
Between Subjects							
Treatment	.0076	1	.0076	2.922	.102	.122	.371
Within Groups	.055	21	.0026				
Within Subjects							
Pre/Pst	.00014	1.000	.00014	.142	.710	.007	.065
Pre/Pst*Treat	.0010	1.000	.0010	1.084	.310	.049	.169
Within Groups	.020	21.000	.00096				
Connector	.018	2.188	.0082	1.732	.186	.076	.361
Connect*Treat	.0096	2.188	.0044	.929	.410	.042	.208
Within Groups	.218	45.957	.0047				
Pre/Pst*Connect	.00053	1.907	.00028	.111	.887	.005	.066
Pre/Pst*Connect*Treat	.0037	1.907	.0020	.775	.462	.036	.170
Within Groups	.101	40.047	.0025				

*p < .025

4) Discussion

In spite of the great difference in the use of temporal sentence connectors in the post-test, the second experiment failed to produce any significant results. The results of the study do not support the hypothesis that the treatment effectively improves students' use of sentence connectors. This can be interpreted in two ways: perhaps instruction does not work in the use of sentence connectors, or perhaps the treatment was not rigorous enough to be effective. Taking into account the fact that the instruction took only 60 minutes in total, it would be premature to assert that instruction does not make a difference in second language learners' use of sentence connectors.

Even though this experiment failed to obtain significant differences among each sentence connector type, the plot (see Figure 2.) does indicate that the treatment group experienced some change. In the treatment group, the temporal mean decreased from .35 to .12, and the adversative mean slightly increased from .49 to .53. This pattern is not found in the control group, in which the adversative and cause means decreased while the means of additive and temporal types increased. In other words, after treatment, students adhered more closely to the pattern of more advanced groups of students. In the first experiment, more advanced groups seemed to use adversative types of sentence connectors more often than the other three connector types.

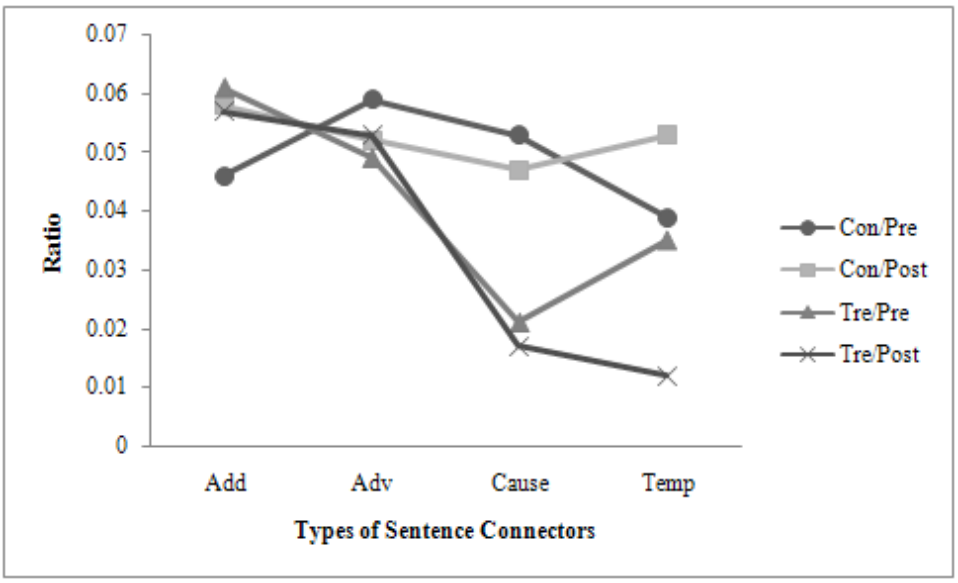

Figure 2. Plot for experiment 2 (ratio of number of sentence connectors per clause).

IV. CONCLUSION

The results of this experiment suggest that ESL learners may have distinct patterns in their use of connectors in accordance with their writing proficiency level. This finding is consistent with those of other studies that have indicated the relationship between learners' use of connectors and their amount of experience with the English language, whether length of English study (Yunkyoung Cho, 1998; Steffani & Nippold, 1997) or levels of English language proficiency (Goldman & Murray, 1992). This study does propose, however, that writing ability or proficiency of learners may be another candidate to predict use of sentence connectors. Here it was found that more advanced groups are prone to use adversative types of sentence connectors out of the four types. Lower level groups are likely to use additives and temporals more often than other types of sentence connectors. Also, in examining the effects of instruction on the learners' use of sentence connectors, although a significant difference between the control group and the experimental group was not obtained, I noticed instruction did seem to have some effect. The experimental group started to use sentence connectors in a similar way to that of the more advanced group; unlike the control group, they tended to use more adversative types of sentence connectors.

This study has some limitations. In the first experiment, even though the participants

were placed into separate groups based on their placement results, initially they were a highly homogeneous group whose TOEFL scores range from 173 to 250. This is consistent with the findings in Wolfe-Quintero et al. (1998), who found that very few studies distinguish adjacent proficiency levels, even though there is an overall effect and overall gradual change across proficiency levels. Another limitation in the first experiment is the unequal sample size of the writing proficiency levels. Because of unequal sample size, the assumption of equal variances was violated. To adjust for this problem, the alpha level was lowered, making it more difficult to find significant results.

Because the second experiment used intact classes, and because ESL classes are usually small, there were a small number of participants. This small sample size might have led to insignificant results. As the research design of the second experiment was more complicated than the first experiment, an increased N size would have contributed to increased statistical power. The treatment effect is another limitation of the second experiment, as it may not have been strong enough to make a difference between the two groups. The low observed powers for several effects in the second experiment confirm that a stronger treatment should have been applied (Tabachnick & Fidell, 2001). The students should have had more practice time as well as more knowledge of other cohesive devices than sentence connectors. Although the current treatment included only one step for this—step four, in which the students were asked to figure out ways of connecting sentences other than sentence connectors—that step does not seem to have been enough. Future studies in a larger scale and for a longer period of time might reinforce the results of the current study.

This study focuses on the frequency of sentence connector use, but studies on the correct use of sentence connectors depending on learners' writing proficiency would be helpful to increase our understanding of ESL learner acquisition. The teaching of ESL can benefit from more knowledge of ESL learners' acquisition of sentence connectors. If research reveals what levels of learners need greater knowledge of specific sentence connectors (e.g., this study suggests that lower-level students need to learn about adversative and causal types of sentence connectors) and what kind of instruction works well in certain contexts, then English language teachers can adjust their teaching to students' needs more effectively.

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APPENDIX

Teaching Material

Step 1. Sentence Connectors

Usually ESL learners are likely to overuse sentence connectors. They have learned about connectors, but they do not know how to use them in their writing. The purpose of this activity is to help them to find out how to use connectors, especially sentence connectors.

Connectors

Meaning	Form		
	Coordinating conjunctions	Sentence connectors	Subordinating conjunctions
Additive	and, not only… but also	in addition, besides, furthermore, indeed	In addition to, Besides, Not to mention
Adversative	but, yet	however, on the other hand, in contrast, even so,	while, whereas, although, even though, in spite of

		nevertheless	
Cause and effect	for, so	accordingly, consequently, as a result, therefore	due to, because/since, as a result of, so that, in order to, providing/if
Temporal	and	first, then, eventually, soon	after, when, before

Step 2. How Many Connectors Are Used

Bring a sample paper on a topic related to your own topic. Calculate how many sentence connectors are used per 100 words in the sample paper and then in your writing. By doing that, you can easily catch differences between the sample and your writing in the aspect of connectors.

Step 3. How Connectors Are Used

Figure out how the sentence connectors are used in the sample paper and then examine the use of them in your paper. Discuss how your use of sentence connectors differs from the use in the sample paper with your group members.

Step 4. Ways to Connect sentences

Look for sentences that do not start with sentence connectors in the sample paper and figure out what connects these sentences with previous sentences (e.g., pronouns referring to phrases in the previous sentence, a paraphrase or summary of the previous key idea, repeating the same words). Discuss your findings with your group members and report them to the class.

Step 5. Revision

Revise your writing based on the previous three steps.

Pre-test/post-test

(Type I)

Code # _____ **Undergraduate** ___ **Graduate** ___

Native Language _____

Direction

You have 30 minutes to write a composition on the question.

Question

Some students prefer to work in groups in their writing class. Others prefer to work individually. Which do you prefer? Use specific reasons and examples to support your opinion.

(Type II)

Code # _____ **Undergraduate** ___ **Graduate** ___

Native Language _____

Direction

You have 30 minutes to write a composition on the question.

Question

Some students believe that a language teacher should be a native speaker of that language. Others believe that non-native teacher understands better them and s/he can be a good teacher as well. With which do you agree most? Use specific reasons and examples to support your opinion

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