

Positive, negative, and nil effects of connectives in written stories: Analysis by proficiency groups*

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Kim, Haeun, Sungjin Koo, and Jungok Bae. 2015. Positive, negative, and nil effects of connectives in written stories: Analysis by proficiency groups. *Linguistic Research* 32 (Special Edition), 105-124. Inconsistent findings about the significance of connectives in prior studies may be due to the fact that connectives were not analyzed according to their different semantic types as well as language users' proficiency levels. The present study therefore divided connectives into four semantic types (additive, adversative, causal, and temporal) and examined how much their occurrences were related to the quality of free writing and whether the results varied because of proficiency levels. The participants were groups of different English writing proficiency ($N = 242$): Korean EFL elementary school immersion students and native English speakers who were middle or high school students attending an army-based American school. They were given a writing task which required them to create a story based on a picture. The stories were analyzed for connective occurrences and writing qualities such as content, text length, and vocabulary. The results show the following. As students become more proficient, the overall occurrences of connectives decreased. Additive and temporal connectives were most prevalent. However, their effects on writing qualities were different. In the stories by EFL students, the frequent occurrences of additive connectives negatively influenced the quality of content, while temporal connectives enhanced it. Such effects did not exist in the stories by native speakers; none of the connective types made any significant influence on the quality of content, indicating that with or without connectives content is comprehensible in the writings of proficient writers. (Kyungpook National University)

Keywords Connectives, conjunctions, adverbials, additive, adversative, causal, temporal, story-writing, proficiency levels, writing quality

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1. Introduction

Just as the name suggests, connectives are words that explicitly signal how information conveyed through spoken or written language is semantically connected to each other (Millis & Just, 1994). Connectives include adverbial connectors such as *however*, *thus*, and *in contrast* as well as conjunctions such as *but*, *or*, and *until*. They play an important part in organizing adjacent clauses and other elements of a discourse. Many scholars consider the ability to use these words important when producing a discourse that is cohesive and coherent (e.g., Castro, 2004; Choi, 1991; Halliday & Hasan, 1976; Hubbard, 1993). Therefore, much focus has been given to connectives in English language classrooms. Surprisingly, however, research findings contrary to these views have also been published: they have indicated that connectives do not have a significant relationship to writing quality (Bae, 2001; Jafarpur, 1991; Kim & Na, 2009). The inconsistent results can cause much confusion in the research and instruction of writing with respect to connective use.

In this study we hypothesize that certain types of connectives may influence the quality of writing more than other types and that this phenomenon may not be the same across different language proficiency groups. Under this hypothesis, four semantic categories, which will be detailed in the subsequent section, were employed to classify connective types. The participants in this study comprised of lower- and higher- level EFL elementary school students as well as native English speakers in junior and junior high schools (details: “Method”). Using the four semantic categories as a basis, the purpose of this study is to examine the extent to which each type of connective these students used affected their writing quality, and whether the results differed according to their proficiency levels. With this investigation, this study seeks to illuminate why there have been conflicting results in prior studies, thereby resolving the contradictory findings.

More specifically, the research questions are as follows:

- (1) Which types of connectives are more or less prevalent in free story writing in English?
- (2) To what degree are different types of connectives related to the qualities of writing in English?
- (3) To what degree do different types of connectives affect content quality

in English writing?

- (4) How do the results from question (3) above differ depending on the writers' level of English proficiency?

This approach will shed light on what types of connectives should be more focused in teaching and learning connectives and what differentiated emphasis might have to be given for students of different proficiency levels.

2. Literature review

2.1 Definitions and taxonomy of connectives

Connectives refer to words or phrases that link clauses, sentences, and other parts in language (DfEE, 1998). Along with other types of cohesive devices, connectives make a text maintain cohesion and coherence by explicitly signaling how a text is semantically connected and organized (Geva & Ryan, 1985; Graesser, McNamara & Louwerse, 2003; Halliday & Hasan, 1976; Sanders & Noordman, 2000).

According to the National Literacy Strategies (DfEE, 1998), two types of words are lumped together under connectives: conjunctions and connecting adverbs. First, conjunctions are frequent examples of connectives (Graesser, McNamara, & Louwerse, 2003). Conjunctions were first categorized semantically by Halliday and Hasan (1976) as follows (pp. 238-273): additive (e.g., Mom is happy, *and* I am, too); adversative (e.g., It rained, *but* I had an umbrella); causal (e.g., He was thirsty, *so* he drank water); and temporal (e.g., Tom was mopping the floor, *and then* he found a ring).

Connectives also include connecting adverbs and adverbial phrases. They include, for example (DfEE, 1998), addition (e.g., *furthermore*, *also*, *besides*), opposition (e.g., *however*, *in contrast*), time (e.g., *just then*, *very soon*, *meanwhile*, *later*, *subsequently*, and *at last*), result (*therefore*, *as a result*), and explaining and reinforcing (e.g., *in other words*, *that is to say*, *after all*, *anyway*). These adverbs and adverbial phrases help maintain a text cohesive and coherent; like conjunctions, they are typical examples of connectives.

A number of studies have classified connectives into several categories. For

instance, according to a summary by Graesser, McNamara, Louwerse, and Cai (2004), there are clarifying connectives (e.g., *in other words*, *namely*); additive connectives (e.g., *also*, *however*, and *moreover*); temporal connectives (e.g., *after*, *until*, and *before*), and causal/intentional connectives (e.g., *because*, *so*, *in order to*, and *consequently*). Graesser et al (2004) also introduce another dimension of connectives: positive connectives (e.g., *also*, *moreover*) vs. negative connectives (e.g., *however*, *nevertheless*, *although*). Corpus programs produce indices for connectives in categories such as causal, logical, adversative, temporal, additive, positive, and negative connectives.

While there are different ways to classify connectives, many studies in text relations have used the traditional four-type categories of connectives (e.g., Bae, 2001; Halliday & Hasan, 1976; Kim & Na, 2009; McCulley, 1985; Witte & Faigley, 1981). The present study will also use this taxonomy, specifically, as follows:

Additive: e.g., *and*, *also*, *too*, *secondly*, *in addition*, *similarly*, *besides*;

Adversative: e.g., *but*, *however*, *in contrast*, *even though*, *on the other hand*, *nonetheless*;

Causal: e.g., *so*, *because*, *therefore*, *for this reason*, *consequently*, *as a result*, *and thus*;

Temporal: e.g., *then*, *at last*, *on a rainy day*, *when*, *before*, *after*, *during*, *while*, *sooner or later*, *this week*, *one day*.

Although other ways of categorizing connectives may be useful, we find the four-type classification to be parsimonious and sufficiently elaborate for our purpose. Therefore, this classification was chosen as the unit of analysis.

2.2 Conflicting findings about the significance of connectives

A consensus has not been reached upon whether connectives have a positive, negative, or nil effect on the quality of discourse. Some studies show that connectives and discourse quality are highly correlated, while there are others which show that connectives do not always play a positive role in discourse quality.

For example, Hubbard (1993) examined the density of conjunctive expressions in expository writing and indicated that conjunctive cohesion is important for coherence.

Hubbard (above) also commented that conjunctive cohesion is the only type of cohesion that regularly links the meanings of textual units as wholes and that this is probably one reason for its importance in coherence (p. 67).

Castro (2004) reported that high occurrences of conjunctions characterized well-written essays. Roen (1984) investigated the effect of conjunctions in reading, and the results showed the better recall of information due to cohesive conjunctions. Tseng and Liou (2006) taught conjunctions using online materials and concluded that by explicitly teaching conjunctions writing quality was enhanced. Ramasawmy (2009) examined the density of conjunctive cohesion in compositions and concluded that increased conjunction use was significantly related to writing quality.

However, some other studies showed contrasting results. Many studies on text processing suggested that a more sparing use of connectives is beneficial to readers (Jones, 2010). Vivanco (2005) examined publicity texts and found that despite the general scarcity of connectives, the texts remained highly coherent. Brevity without connectives, she commented, may make it is easier to store information in the “mental reservoir” (p. 1233).

The trivial role of connectives was also resonant in many studies that observed L2 writing samples. These studies indicate that connectives are superfluous in students’ writing. Jones (2010) argued that logical connectives were frequently overused and misused by ESL writers. Kim and Na (2009; Kim, 2013) examined expository writing by EFL students and found no significant relationship between conjunction use and writing quality. Poorly rated EFL students tended to overuse the same connectives, such as *and* and *so* to connect sentences overtly, although their use was often unnecessary.

Bae (2001) found that the use of conjunctions in children’s story writing was only moderately related to the overall writing quality, such as grammar ($r = .364$), content ($r = .472$), and coherence ($r = .414$). Some students used few or no conjunctions but received a high score in coherence and content, and this indicated that the frequent use of conjunctions did not necessarily affect the overall quality of writing (Bae, 2001). In another study on cohesion and coherence, Bae (2012) examined story-writing and letter-writing samples and found that conjunction use was significantly yet slightly *negatively* related to coherence in both genres ($r = -0.19$, both genres). The use of conjunctions was somewhat “destructive” to coherence (p. 18).

These findings counter the general recognition that connectives promote cohesive

and coherent ties between parts and ideas. However, several more studies not discussed in this section (e.g., McCulley, 1985; Reshadi & Aidinlou, 2012; Yang & Sun, 2012) consistently yielded results that conjunctive use does not necessarily enhance writing quality.

3. The need for the study and its significance

Two issues and their related deficiencies can be extracted from reviewing the confusing results about the role of connectives above, which lead to the need for the present study. The first issue is which types of connectives were investigated in those studies. Most research has been interested in analyzing connectives as a whole rather than based on their different types. At times, only a single type of connectives would be analyzed. The different semantic categories of connectives and their relationships with writing quality had not been the focus of investigation in previous studies. Each of the different connective types has its own unique functions. Thus, only looking at these connectives as a whole can lead to unclear findings, making it hard to clearly establish the relationship between connectives and writing quality.

The same limitation applies when studies only observe one type of connective and then generalize its conclusions to all types of connectives.

The present study therefore focuses on a range of different connectives instead of lumping all connectives together or considering only one type of connective. Such examinations are expected to provide a finer understanding of the relationship between connectives and discourse quality.

The inconsistent results in the literature may also be related to the study participants. Most studies on connectives examined language samples produced by ESL/EFL learners: samples from native speakers or proficient users of English were not observed together. Thus, the question arising is whether connectives still have a negative or no effect if those studies used writing samples written by native speakers or proficient language learners? With this in mind, the present study includes participants of different proficiency groups so that the use of connectives can be analyzed according to each group. By using different proficiency groups, this study can provide some insight on any unnoticed relationships between connective use and writing quality.

4. Method

4.1 Source data

The data used in this study were part of a small corpus entitled “Computer and Person with Arms Raised” (Bae, 2015). This corpus is a collection of stories written in English by students in a variety of grade levels ranging from elementary school students to high school students. Accordingly, the authors of these stories had various levels of English writing proficiency as will partly be confirmed in the “Results” section.

The participants as well as the writing task used in the present study to be described below are extracted from the companion manual (Bae, 2015) which describes the corpus mentioned above.

4.2 Participants

Stories written in English by 242 students, which were part of the corpus mentioned above, were used in this study. The English proficiency of these students ranged from lower to native-speaker levels, as follows.

EFL Elementary Immersion Group:

The first group of students was from a private elementary school in South Korea. English writing samples were gathered from 141 students in this school, ranging from third to sixth graders. The school has run immersion education since 2003. While most of the curricula are taught in Korean (i.e., the students’ first language), three subjects (English language arts, science, and math) are taught in English by native speakers of English. The students’ exposure time to English is relatively high: the English-taught classes take up ten class hours a week, which provides a learning context for students to be better achievers of English. Therefore, these students naturally developed substantial English skills as they progressed to higher school grades. Fifth and sixth graders can usually produce a 2 ~ 3 page writing (A4 paper) in 30 minutes without difficulty. Compared with lower grade-level students, they generally write longer stories and have better vocabulary and syntactic ability, which

will be demonstrated in the “Results” section.

For this study, the participants needed to be sufficiently proficient in English writing as the task provided in this study was to create a story without utilizing other language resources. For this reason, the first and second graders did not participate in the study as they were unable to write adequately long passages that allowed us to observe their language use.

Native Speaker Group:

These students were from a foreigner school (D American School) in South Korea. They were children from American military families and spoke English as their native language. A total of 101 English writing samples (44 from middle school students and 57 from high school students) were collected from this group.

This native-speaker group was used as a reference group. The understanding of the language features of ESL/EFL students would not be complete without referencing their features to those of native speakers. The use of connectives by the Korean EFL students above should be compared to that of native speakers for us to have a wider knowledge of connectives. This use of native speaker groups is to achieve our purpose, namely comparing connectives by different proficiency levels. We note that military families may not represent the typical native English speakers from the American population and that typical native English speakers would provide more useful data for reference. Although access to such native data was limited in a monolingual society like Korea, we were fortunate to have access to D American School where children of American military families are enrolled. The data from this school are sufficiently representative of proficiency levels definitely higher than that of the EFL elementary students described below: This higher level is demonstrated in the forthcoming “Results” section. Therefore, while the groups used in the present study were, so to speak, ‘convenient samples’ instead of experimental groups, one purpose of this study, comparing connective occurrences in the writings of different proficiency groups, would be fulfilled.

Ideally, native speakers of English who are elementary school students would make the comparisons of proficiency groups more thorough. However, we did not have access to such groups. More importantly, the purpose of this study is not so much to compare the EFL immersion elementary school students with their

native-speaker *peers* as to compare the specified EFL students to those with definitely higher English writing proficiency. It can safely be said that the native-speaker middle and high school students are appropriate groups for achieving the present purpose.

4.3 Writing task and test administrations

The writing task, from which the written data were generated for the present study, was a picture-based story-writing task. On this task, the picture prompt depicted a boy holding his hands up in the air. The boy looked surprised, and there was a personal computer placed on a desk on his right side. The students were asked to create a story in English based on the picture scene, including what happened before, during, and after the present scene. The participants were instructed to use their imagination and to be as creative as they could, as long as they based their stories on the picture.

While this test was implemented as a larger part of data collection to study various features of English writing development and acquisition (Bae, 2015, above), the data from this writing test were well-suited to achieve the purpose of studying connectives. We opted to use data generated from a free writing task, such as the story-writing task here, because it allowed us to observe the *naturally occurring* use of different connective types. We opted not to use a controlled writing task which would require students to write sentences using connectives. Although such a task would be useful to observe writers' use of connectives according to a researcher's intention, those tasks would not allow the present study to observe the natural, spontaneous use of connectives appearing in free writing, which is our interest.

The writing task was designed by the corresponding author of this study, who coordinated the entire testing procedure on all testing occasions. The test was administered during the students' regular class periods class by class. In the immersion school, the test administrations were part of the school's regular writing assessment practices in cooperation with the mentioned author; in the army school, the data collection was done at the request of the author as a larger effort to construct the corpus. The homeroom teachers administered the test following a written manual prepared by the mentioned author to ensure the consistency across all test administrations. The students were given 20 minutes to plan and to write their stories.

4.4 Variables and scoring

Most variables in this study were scored using the Coh-Metrix, an online computational tool. It automatically analyzes texts by providing a wide range of language and discourse measures (McNamara, Graesser, McCarthy, & Cai, 2014).

Connectives. The number of connectives that occurred in the writing samples was obtained using the Coh-Metrix. For each type of connective, an incidence score (that is, the number of occurrence per 1000 words) as calculated by the Coh-Metrix was used. A higher incidence represents more occurrences.

Writing Quality. Four indicators were chosen to represent writing quality, namely, vocabulary diversity, text length, syntactic ability, and content. Based on McCarthy and Jarvis' (2010) recommendation, MTLT was used to represent vocabulary diversity. To assess syntactic ability, "the number of words before the main verb" was used because McNamara, Crossley, & McCarthy (2010) indicated that this index was the best indicator of syntactic complexity. Text length refers to the word count, and it generally indicates how much a student can write.

All indicators of writing quality were scored by the Coh-Metrix except for content. Content had to be assessed by human readers. It was assessed using the criteria for scoring content appearing in Bae (2001) and its updated version provided in Bae, Lee, and Bentler (2015), a validation study on content. Four raters, including the first and the second authors of this study, scored content. Two raters had an MA degree, and the other two were in an MA program. They consisted of one native speaker, one near-perfect bilingual speaker, and two Korean speakers who were proficient in English. Rater training was coordinated by the corresponding author, who had several years of experience in assessing story content. After the rater training, the four raters scored each sample independently. Therefore, each story received four scores. Out of the four scores, the pair that had the scores closest to each other were averaged and used as the final content score for each story. Rater correlations and rater reliability calculated for the pairs of the content scores were very high (Pearson $r = .965$, Cronbach alpha = .982, $N = 242$): the high reliability was expected because we purposefully used the closest two ratings out of the four ratings to be most reliable.

5. Results

Research Question 1

Research question 1 asked: Which types of connectives are more or less prevalent? To answer this question, mean comparisons were used. Table 1 shows the means for all variables. Figure 1 highlights the mean occurrences of connectives only. In both the table and the figure, the means are reported for the four proficiency groups.

Table 1. Mean comparisons (*N* = 242)

Variables		Group	EFL immersion		Native	
			3 rd ,4 th graders	5 th ,6 th graders	Middle school	High school
Connectives	All connectives (total)		148.86	151.38	142.98	138.50
	Additive		72.36	60.40	48.15	46.66
	Adversative		16.94	17.41	14.45	13.01
	Causal		26.49	33.92	29.74	24.15
	Temporal		33.07	39.65	50.64	54.68
Writing qualities	Content		1.09	2.09	2.66	2.76
	Vocabulary diversity		30.19	42.87	63.74	66.88
	Text length		103.99	175.19	206.07	210.63
	Syntactic ability		1.73	2.27	2.89	3.11

* Values are incidence scores (i.e., occurrences per 1,000 words)

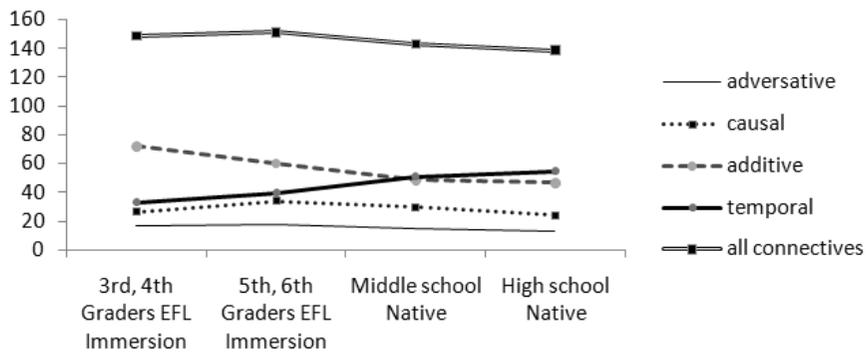


Figure 1. Mean occurrences of connective types

Let us first compare the writing proficiency of these four groups. For this purpose, the means for the writing qualities (content, vocabulary, text length, and syntactic ability) were compared across the four groups. The multivariate analysis of variance (MANOVA) was performed for this assessment. The main effect of group was significant, $F(12, 711) = 16.98, p < .001, \eta^2 = .223$. Post-hoc tests (Bonferroni) were performed to check where the significant differences in means lay.

As for content, the means for each group were significantly different, except that the native-speaker groups, the middle and high schools students, had statistically similar means. The same results held true for vocabulary diversity and syntactic ability. As for text length, however, the immersion 3rd and 4th graders produced significantly shorter stories than the immersion 5th and 6th graders, who produced, however, significantly shorter stories than the two native-speaker groups did.

Therefore, it could be confirmed, overall, that the writing proficiency levels of these four groups have the following order: the native-speaker middle and high school groups had similar writing proficiency; their writing proficiency was better than that of the immersion 5th and 6th graders, who were more proficient than the 3rd and 4th graders. Therefore, the approximate categorization of these ability groups, as arranged in this study, could generally be valid, while the two native groups could be treated as the same ability group depending on needs.

Let us compare the means for the occurrences of the connectives. Comparison of the means for ability groups in Table 1 and Figure 1 show that the total number of connectives (all four types) used in the stories generally decreased from 148.86 to 138.50. However, when this result is broken down based on connective types, only the numbers for additive connectives showed a sharp decrease. The number of adversative connectives also decreased but only a little. The number of causal connectives had no relation with proficiency levels, but the number of temporal connectives showed a gradual increase.

With regard to the first research question, the results show that additive connectives were most prevalent in story writing. Temporal connectives, causal connectives, and adversative connectives (in the subsequent order) were found to be less prevalent. In the case of more proficient students, however, temporal connectives were the most prevalent, with additive connectives being the second most used type.

Research Question 2

Research question 2 asked: To what degree are the different types of connectives related to writing quality? To answer this question, correlations were calculated. As mentioned, writing quality was represented by content, vocabulary diversity, text length, and syntactic complexity. The correlations between connectives and these qualities are presented in Table 2.

Table 2. Correlations between connective occurrences and writing qualities

	Additive	Adversative	Causal	Temporal	Content	Vocab diversity	Text length
Adversative	.293**						
Causal	-.071	.145*					
Temporal	-.092	-.104	.100				
Content	-.360**	-.059	-.042	.212**			
Vocab diversity	-.398**	-.085	-.057	.338**	.543**		
Text length	-.297**	-.040	-.043	.157*	.744**	.430**	
Syntactic	-.059	-.020	.019	.183**	.290**	.324**	.228**

* Significant at $p < 0.05$, ** $p < 0.01$; $N = 242$ for all variables

Table 2 shows that the occurrences of additive connectives were significantly related to the indicators of writing quality (-.360, -.398, -.297). The occurrences of temporal connectives were also significantly related to the writing quality indicators (.212, .338, .157, .183). However, a difference existed between the two findings. The occurrences of additive connectives were *negatively* correlated to the writing quality indicators, while the occurrences of temporal connectives were *positively* correlated to the writing quality indicators. As for the adversative and causal connectives, their occurrences were not significantly related to writing quality.

Research Questions 3 and 4

Research question 3 asked: To what degree do different types of connectives affect content quality? The degree of this effect is answered by multiple regression analysis. For this analysis, content was chosen as our focus because it is the most

important aspect in stories: it was used as the dependent variable. The four types of connectives were used as the independent variables. With these variables, the regression analysis examined the strength with which each connective type influenced content quality. This analysis was performed separately for each proficiency level in order to address Research Question 4: that is, whether the results would differ depending on the writers' level of English proficiency. In this analysis, the four proficiency groups were simplified into two groups, so that the two immersion groups were analyzed as one group, and the two native-speaker groups as the other. The results are presented in Table 3.

Table 3. The influence of connective types on content quality

	Contributors	Beta	<i>t</i>	Sig	Tolerance	<i>R</i> ²
EFL	Additive	-.329	-3.859	.000	.882	.107
Immersion- Elementary School	Adversative	.117	1.393	.166	.914	
	Causal	-.011	-.131	.896	.907	
	Temporal	.181	2.215	.028	.960	
	Additive	-.087	-.830	.409	.895	.009
Native- Middle/High School	Adversative	.057	.524	.601	.843	
	Causal	-.106	-1.000	.320	.887	
	Temporal	-.153	-1.509	.135	.966	

As seen in the table, additive and temporal connectives significantly affected content quality: this was observed in the stories by the EFL group. Among these types, the additive connectives had a negative effect ($\beta = -.329$, $p < .001$). The 'negative' effect here refers to the minus (-) sign of the effect, meaning that there was an inverse relationship between two variables. It indicates that the frequent use of additive connectives lowered the quality of story content, and this effect was to a relatively moderate degree ($\beta = -.329$): that is, the more the additive connectives were used, the worse the content of a story became.

The temporal connectives, however, had a positive effect ($\beta = .181$, $p = .028$) on content quality in the stories of the EFL students. The 'positive' effect here refers to the plus (+) sign of the effect.¹ It means that the frequent use of temporal

¹ The boundary between negative and positive effects is a nil (i.e., zero) effect, which means that the effect has no significant effect.

connectives enhanced the quality of story content to a weak yet significant degree ($\beta = .181$): i.e., the more the temporal connectives were used, the better the content of a story became. However, in the data from the native speaker group, none of the connective types significantly influenced content quality.

Moreover, the adjusted R^2 indicated the extent to which all four connective types, collectively, explained content quality. For the immersion students, who were relatively less proficient than the native-speaker students, the results showed that approximately 11% ($R^2 = .107$) of the total variance in content quality were contributed to by all connectives combined (but mainly by additive and temporal connectives). For the native group, however, up to 1% ($R^2 = .009$) of the total variance in content quality were explainable by the use of all connective types combined.

6. Conclusion and discussion

This study investigated the different types of connectives that occur in written stories. We introduced in the literature review that there were conflicting results about whether connectives played a positive, negative, or no role in writing. The results of the present study generally show that the influence of connectives was not as significant as originally thought as described in previous literature. As the language ability of participants increased, the overall number of connectives decreased. As learners became more proficient, the influence of connectives on writing quality became less.

The results of this study show that the negative, positive, or nil effects of connectives on the writing qualities depended on the types of connectives. As shown, the different types of connectives could be either facilitative or destructive towards the writing qualities. Additive and temporal connectives were found to be the most prevalent types of connectives in story writing. However, their effects on writing quality were different.

Taking all of the proficiency groups together, additive connectives were prevalent but had negative correlations with most of the writing quality indicators. With particular respect to content, the negative effect of additive connectives was even more pronounced in the writings of EFL children.

With all proficiency groups taken together, temporal connectives had a positive correlation with all of the writing quality indices. With particular respect to content, temporal connectives had a positive influence on the content quality of the EFL students' stories.

However, for the native speaker group, none of the connectives had any influence on content quality. Any type of connective did not make any difference to the writing quality of these proficient students.

Although only true for less proficient students, the reason why only temporal connectives positively influenced the quality of written stories can be explained by the characteristics of the story genre. According to Fleischman (1990), stories tend to develop in a dynamic temporal order, which makes temporal features central to a story norm. Polkinghorne (1991) also writes that stories operate as a schematic structuring of temporal events. The idea of an event, Polkinghorne (above) comments, is something that takes time, has "temporal thickness," and has a beginning and end (p. 140). In short, temporal connectives were prominent in stories and played positive roles in content quality because stories consist of events in a time sequence.

Given the time sequential characteristic of stories, it is natural for one to expect the same effect on more proficient students' writing. However, it is notable that none of the connective types had any significant effect on the content quality of writings by students proficient in English. Several possible reasons may explain these findings. As noted by Millis and Just (1994), connectives are elements that explicitly signal to a reader that two clauses should be integrated together. For proficient writers, it may not be necessary to always "explicitly" signal the temporal relationships within a story. Rather, they may use other discourse devices that implicitly convey the sequence of events to the reader. It is more likely for advanced writers to be accustomed to other writing techniques that are equally or more effective than using connectives. Subsequent research is needed to precisely divulge how advanced writers express temporal features without using temporal connectives.

The present study has provided unique findings that may help resolve the conflicting results in prior studies. This confusion would not have been resolved without our findings, which came by analyzing connectives based on their types and using different proficiency groups. At the same time, the present study focused on the quantitative evaluation of connective occurrences, focusing on the number of

connective occurrences according to proficiency levels and connective types. Therefore, its qualitative applications, such as the appropriate use of connectives, can somewhat be limited. Subsequent research should deal with the topic of appropriateness of connective use, beyond the amount of connective use. In addition, different writing genres, such as argumentative and expository texts, could also be examined for a deeper and more thorough understanding of the roles of connectives.

Nonetheless, the results of the present study have the following clear pedagogical implications. Teachers should advise less proficient students to use additive connectives sparingly. English language learners should overcome the phenomenon observed in studies such as Kim (2013) where students overused additives without evaluating whether they are necessary. Instead, a pedagogical emphasis should be given to temporal connectives, especially when handling story texts. Less proficient English learners should increase the repertoire of temporal adverbials through which time can be freely expressed.

Finally, we suggest that future studies should focus on temporal connectives. Although only true for less proficient writers, the current study indicated that temporal connectives were the only type of connectives which facilitated writing quality. Time is one of the basic categories of our experience and cognition (Klein, 2014; Yoon, 2008). Yet, temporal dimension has received relatively little attention in the literature (Rinck, Hähnel, & Becker, 2001); research on temporality is focused on two grammar categories of time and aspect, whereas far less is known about temporal adverbials (Klein, 2014). Therefore, it is recommended that more empirical studies investigate the efficacy and benefits that temporal connectives may offer.

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