The Effect of Differential Feedback on L1-Korean College Students' English Writing Accuracy

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This study investigated which type of corrective feedback, direct feedback or indirect feedback, would be more effective for reducing the targeted errors－verb, noun, and determiner errors－in L2 writing. The 20 Korean EFL college students were divided into two feedback conditions: direct feedback and indirect coded feedback. The results of the study showed that only the errors in the noun category, not the other two categories, showed a significant decrease over time. There were no significant differences in the effect of the differential feedback. The post surveys and interviews revealed that the students in both groups had difficulty in understanding their errors and feedback on them, and they wanted to receive a more detailed explanation about their errors in order to fully understand them. The overall findings indicate that different types of corrective feedback need to be combined with other methods such as a one-to-one conference or mini-lesson for further helping students understand their errors and reduce other errors in the future. This study provides L2 teachers with valuable information on how to respond more effectively to the needs of L2 learners.

Key Words: corrective feedback, error correction, L2 writing, accuracy

I. Introduction

With the process-oriented writing spotlighted, the concern about errors and corrective feedback, which were emphasized in product-oriented writing, has become less stressed, putting more attention on fluency and students' drafting (Ferris, 2010). However, the importance of accuracy should not be underestimated since accuracy is one of the essential factors to determine the quality of writing.

The question as to whether teachers should correct second language (L2) students' errors in written production has been

controversial for the past a couple of decades. Truscott (1996) revealed his strong position against error correction. He argued that a) without consideration on students' stage of linguistic development, error correction is not valuable; b) error correction, which could be only a superficial form of knowledge, not affecting students' underlying system, cannot be beneficial for actual use of the language; c) teachers may fail to notice errors or correct them or students cannot understand teacher's feedback; d) error correction causes harmful effects like students' simplification of writing, frustration, or teacher's waste of time. Furthermore, he remarked that error correction could be even harmful, so it should be abandoned. This paper led to a number of discussion and empirical studies related to error correction (Chandler, 2003; Ellis, 1998; Ferris, 1999; Ferris & Hedgcock, 1998; Truscott, 1999).

Raising disagreements with Truscott (1996), Ferris (1999, 2004) claimed that his conclusion was premature and overly strong. Furthermore, she emphasized several important reasons to continue with error correction in L2 writing classes: a) effective error correction is helpful for at least some students; b) L2 students put emphasis on grammatical error correction; c) without error correction, L2 students might be at a disadvantage on the overall evaluation of their academic writing; d) error correction helps L2 students recognize the importance of revision skills and improves them. However, Truscott (1999) rebutted Ferris (1999) and claimed the beneficial effects of error correction that have been proved so far, are not sufficient enough to justify error correction. He stated that it is necessary to explore specific cases in which error correction might "not be a bad idea" (Truscott, 1999, p. 121). While many researchers have been discussing whether corrective feedback is beneficial, they have not reached an irrefutable conclusion. However, many teachers still provide corrective feedback on their students' writing (Evans, Hartshorn, & Tuioti, 2010). In addition, most students want to receive corrective feedback and still think that corrective feedback will be an asset to improve their writing (Chandler, 2003; Chin, 2007; Ferris, 1995; Ferris & Roberts, 2001; Ryoo, 2006). Considering this current situation in institutional settings, it is necessary for teachers who continue using corrective feedback to study how they can use corrective feedback more effectively so as to help students write accurately, rather than

investigate whether corrective feedback is beneficial or not (Hartshorn, Evans, Merrill, Sudweeks, Strong-Krause, & Anderson, 2010).

The aim of this study is to examine whether direct feedback or indirect coded feedback is more efficient on improving accuracy in the three categories of errors and how direct feedback and indirect feedback influence each category of errors. The three categories are verb, noun, and determiner errors. The following two research questions are formulated for this study.

(1) Do L2 college students reduce errors in three categories over time through direct and indirect corrective feedback in their writing?
(2) Which type of feedback is more effective for reducing errors in three categories on writing of L2 college students, direct feedback or indirect feedback?

Ⅱ. Literature review

1. Types of corrective feedback in L2 writing

In general, corrective feedback is considered the response to linguistic production where an error exists. Therefore, corrective feedback encourages L2 learners to alter their production, helping prevent erroneous forms of L2 learners from being fossilized (Brown, 2000). Corrective feedback, which focuses on linguistic forms, is largely divided into direct feedback and indirect feedback in written discourse. Direct feedback marks an error and provides the correct linguistic form while indirect feedback indicates that there exists an error, not providing correction (Ferris, 2002). Direct feedback shows explicit guidance about how to correct errors, so it is easy for students to revise their writing through this feedback (Ellis, 2008). It can be combined with oral and written metalinguistic description so as to help learners understand the error. On the other hand, indirect feedback makes it the responsibility of the students to find correct forms, as a teacher counts errors that have been made somewhere, show where an error is with underlining, or underline an error with the code which indicates the nature of the error. Therefore, it provokes guided-learning and problem-solving (Lalande, 1982). Teachers can provide corrective feedback for all the errors learners

made, which is extensive and unfocused feedback or teachers select specific errors and provide intensive and focused feedback considering the readiness of students.

2. Effectiveness of corrective feedback in L2 writing

Much research has been conducted in regards to error correction. However, it is improper to make any assertive conclusions about error correction since previous research has shown inconsistent results of corrective feedback (Ferris, 2004).

In the study of Ashwell (2000), treatment groups (receiving content feedback; indirect uncoded feedback) were compared to a control group when they revised their drafts. While the results signaled a positive effect of form-focused feedback in accuracy, no change or even deterioration in accuracy was noticed when only content feedback was given or when neither feedback was given. The results indicated that the importance of form-focused feedback should not be underestimated in the improvement of accuracy. Bitchener (2008) has also claimed that corrective feedback is beneficial in improving accuracy in the article system. He examined the efficacy of corrective feedback to 75 ESL students of low-intermediated level for two months. Assigning different types of direct feedback to three treatment groups (direct feedback with written and oral metalinguistic explanation; direct feedback with written metalinguistic explanation; direct feedback only) as opposed to a control group, they found out that there existed significant improvement in accuracy through intensive and focused feedback. Moreover, the effect of the corrective feedback in accuracy was retained in the delayed post-test, which was conducted two months later.

On the other hand, Polio, Fleck, and Leder (1998) reported the opposite results. The participants were 65 undergraduate and graduate ESL students enrolled in academic writing class. They gave additional grammar exercises and error correction to the experimental group while giving neither grammatical exercises nor feedback to the control group. Analyzing the results of the pretest and post-test, they noticed slight linguistic improvement in the post-test after 15 weeks, appearing only due to the environmental exposure to English and ESL instructions. However,

they failed to find any considerable difference between the control group and the experiment group with error correction.

Each research examined the effects of corrective feedback under different conditions, so it is not easy to answer for sure whether or not corrective feedback is beneficial.

3. Effectiveness of differential types of corrective feedback in L2 writing

While some researchers have found no significant positive effects of error correction, many teachers believe that it is critical to give students corrective feedback on their written productions, and they spend considerable amount of time and effort doing so (Evans et al., 2010). Moreover, L2 students appreciate teacher feedback and want to receive this feedback on their errors, since they feel that this kind of feedback helps improve their writing (Chandler, 2003; Chin, 2007; Ferris, 1995; Ferris & Roberts, 2001; Ryoo, 2006). There could be some differences between the preference of students and teachers. Students are likely to prefer more explicit feedback while teachers prefer to use less explicit feedback which requires students to be responsible for error corrections (Amrhein & Nassaji, 2010). However, it seems clear that both students and teachers feel the need of corrective feedback in most cases (Chin, 2007; Diab, 2005; Evans et al., 2010; Ferris, 1995; Lee, 2004). This might be the reason many researchers and teachers have been working on error correction. Many researchers, believing in its effectiveness, have set hypotheses, kept refining their research design, and made efforts to demonstrate what kind of corrective feedback is most effective in improving L2 writing. Based on their own hypotheses and research designs, studies have widely investigated the relative effectiveness of those different types of feedback. Considering the studies that compared direct and indirect types of feedback, most of these studies have demonstrated the effectiveness of either direct or indirect feedback, or both (Bitchener, 2008; Bitchener & Knoch, 2008; Bitchener, Young, & Cameron, 2005; Chandler, 2003; Ferris & Robert, 2001; Kim, 2009; Lalande, 1982; Robb, Ross, & Shortreed, 1986; Ryoo, 2006).

Chandler (2003) investigated the comparative effectiveness of direct and indirect feedback, letting high-intermediate/advanced ESL

students take part in experiments. She gave each student different types of corrective feedback (direct correction; indirect underlined feedback with marginal description of type of error; indirect feedback with marginal description of type of error; and indirect underlined feedback). She demonstrated that direct corrective feedback resulted in the most remarkable increase in accuracy for both revision and subsequent writing. Moreover, direct feedback ranked as the most favorable type of feedback for students because it is understandable and easiest way to correct errors while indirect feedback makes students confused and uncertain of whether their own corrections are accurate.

On the other hand, Lalande (1982) has reported better efficiency in indirect feedback, comparing the effect of direct feedback and indirect feedback marked by error code. The results of the research indicated that those who received indirect feedback outperformed those who worked on direct feedback in grammatical and orthographic quality. Indirect coded feedback informed students what types of errors were and where the locations were, facilitated guided learning and problem solving.

While both direct feedback and indirect feedback affected accuracy improvement in the experiment with lower to upper intermediate Korean EFL college students, Ryoo (2006) revealed that there was no significant difference in the accuracy improvement of the groups which were under different types of feedback: direct feedback; direct feedback along with metalinguistic feedback; indirect coded feedback; or indirect coded feedback along with metalinguistic feedback. However, the statistics of error reduction showed that two groups with metalinguistic feedback improved more in accuracy than the other groups.

Kim (2009) suggested that the level of L2 proficiency turned out to be one of the most important variables to influence the effectiveness of the same feedback. She collected data from beginner-level and intermediate-level Korean EFL college students in order to compare the effect of direct feedback with metalinguistic explanation to indirect coded feedback. As for beginner-level groups, both direct feedback and indirect feedback resulted in better improvement than the control group. In addition, direct feedback with a detailed explanation was more effective for those who were less proficient in production of the L2. Meanwhile, the group with direct feedback was inferior to the control group in the

intermediate-level students. They benefited more from indirect coded feedback which made students use deeper internal processing.

In brief, there exists no consensus about the effectiveness of different types of written corrective feedback. Under various contexts and conditions of the experiments, researchers have been attempting to reach further persuasive results. Their efforts should be continuous to figure out which kind of corrective feedback is better for L2 students and how L2 teachers can optimize the corrective feedback.

4. Categories of errors

Ferris and Roberts (2001) introduced five error categories which were analyzed as the most frequent error types in ESL students' writings (see Table 1).

TABLE 1

Description of Error Categories Used for Feedback and Analysis (Ferris & Robert, 2001)

Error Category	Description
Verb Errors	All errors in verb tense or form, including relevant subject-verb agreement errors.
Noun Ending Errors	Plural or possessive ending incorrect, omitted, or unnecessary; includes relevant subject-verb agreement errors.
Article Errors	Article or other determiner incorrect, omitted, or unnecessary.
Wrong Word	All specific lexical errors in word choice or word form, including preposition and pronoun error. Spelling error only included if the (apparent) misspelling resulted in an actual English word.
Sentence Structure	Errors in sentence/clause boundaries (run-ons, fragments, comma splices), word order, omitted words or phrases, unnecessary words or phrases, other unidiomatic sentence construction.

Five categories above could be distinguished as treatable ones and untreatable ones. Ferris (1999) indicated that students could succeed in self-editing their own errors when the errors were patterned and rule-governed, because there were rules to help solve the problem. She

distinguished these errors such as morphological errors into treatable ones. On the other hand, untreatable errors such as word choice are idiosyncratic, so it is not easy for students to self-correct them since they have to utilize acquired knowledge of the language (Ferris, 2002). Many researchers adapted and used these categories for investigating the effects of differential corrective feedback. However, the effects of corrective feedback in each category of error, varied.

Ferris and Robert (2001) examined how treatable and untreatable errors changed through indirect coded feedback, indirect underlined feedback, and no feedback. As a result, students showed greater success of correcting their errors in the treatable categories (verb errors, noun ending errors, and article errors) than in the untreatable categories (word choice and sentence structure) when they received corrective feedback. Direct feedback as well as indirect feedback influenced grammatical accuracy of treatable errors. Bitchener, et al. (2005) researched how these types of feedback affected the three types of errors (preposition, the past simple tense, and the definite article). In the case of prepositions which was less treatable, students showed no significant difference on improving these errors regardless of the type of feedback. However, the past simple tense and the definite article, which were more treatable, were improved significantly through direct feedback combined with oral conference feedback.

Liu (2008) investigated how direct feedback and indirect underlined feedback affected errors on the writings of ESL students, categorizing them into three types of errors: morphological errors, semantic errors, and syntactic errors. Morphological errors corresponded with treatable errors in that morphological errors included all errors in verb tense or form, plural or possessive ending, subject-verb agreement, article or other determiners. Likewise, semantic errors (errors in word choice, omitted or unnecessary words) and syntactic errors (errors in sentence/clause boundaries, word order, sentence construction) were equivalent to the untreatable errors. Having received corrective feedback, when students revised their essays, they showed reduction of both morphological errors and semantic errors in both direct and indirect groups. However, the difference between morphological errors and semantic errors appeared in the new essays which students wrote four weeks later. While the error ratio in semantic errors remained the same or

possibly increased, morphological errors were reduced, maintaining the positive effects of corrective feedback. In addition, students who received indirect underlined feedback produced fewer morphological errors than students who received direct feedback.

Ⅲ. Methodology

1. Participants

The participants of this study were 20 university students (12 males and 8 females) in Gwangju, South Korea. Their ages ranged from 20 to 24. Their majors included business, German language and literature, food and nutrition, applied chemical engineering, statistics, mechanical systems engineering and so on. However, there was no student who majored in English. Their English proficiency levels varied with their TOEIC scores ranging from 513 to 905. These twenty students were randomly divided into two groups − direct feedback and indirect coded feedback groups.

2. Procedures

Students met once a week for four weeks, and completed their essays on a given topic, in a designated classroom. During the first week, questionnaires were filled out in order to gather their background information, and a pre-test was administered for 40 minutes. The following week, they received corrective feedback which was direct feedback for one group, and indirect coded feedback for the other group. Corrective feedback was given on selective errors, taking into consideration the limited time period of the study, and students who can be overwhelmed by countless corrections. Two types of corrective feedback were as follows:

(1) Direct feedback for group 1:
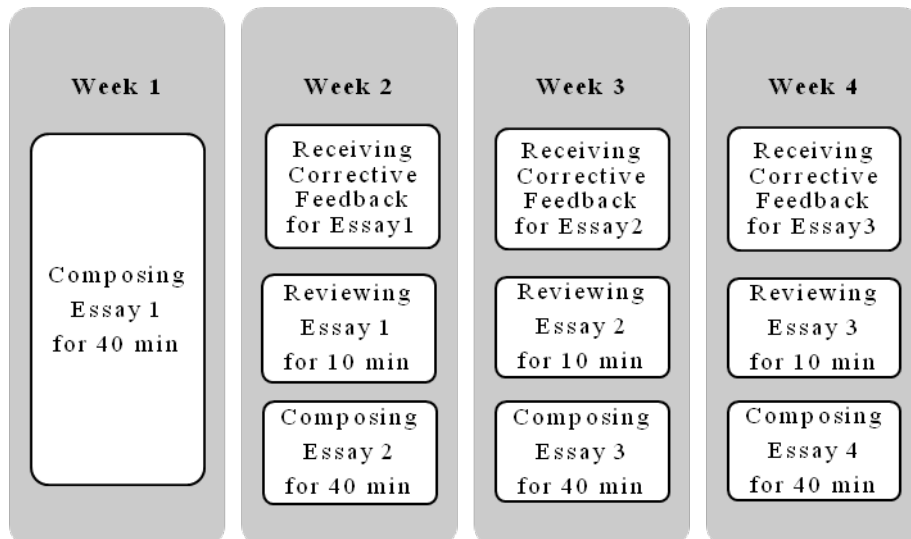e.g. When I was young, I <u>have to</u> study English.
                              had to

(2) Indirect coded feedback for group 2:
e.g. When I was young, I <u>have to</u> study English.
VT(Verb Tense)

The students in indirect feedback group were instructed what each code for indirect coded feedback meant.

From the second week, each student carefully read their preceding essay on which the researcher added corrective feedback. They studied it for 10 minutes in their own way. In order to prevent students from disregarding the feedback, the researcher made students pay attention to only corrective feedback for a given time. Students answered that 10 minutes is enough to review their essay, and the average number of words on their first essays was 193.75. Therefore, the researcher assumed that 10 minute was enough time for students to check their errors and feedback on them. Although students were allowed to ask more time if necessary, there was no student who requested extra time. After that, they composed another essay on a new topic in 40 minutes (see Figure 1 for overall procedure).

FIGURE 1
Treatment Procedure

The participants were required to write a new essay on a new topic each time for the following reasons: a) revisions after receiving direct

feedback can lead to just mechanically copying the correct form given (Ferris & Roberts, 2001), so error reduction in revision could not mean a measure of learning and improvement of grammatical accuracy (Kim, 2009; Truscott, 2007; Truscott & Hsu, 2008), b) the researcher considered that writing a new essay about the same topic is not helpful. Students might write old sentences from the prior writing verbatim, or they could focus on improving accuracy more with the same content from the prior writing. During the 40 minutes, students were not allowed to use a dictionary. Reflecting their preferences based on the questionnaires, the topics for each essay were chosen among the topics which were used previously for their discussions. Therefore, all students were familiar with the topics in order not to have a difficulty in writing essays due to the lack of background information about the given topic. Table 2 shows the topics chosen for the essays.

TABLE 2

Topics of the Essays

Essay	Topic
Essay 1	Why do we have to study English?
Essay 2	Should the government provide free meals for all students or only poor students?
Essay 3	What can we do to be harmonious with multicultural families?
Essay 4	What is your opinion about the educational policy with keen competition in Korea Advanced Institute of Science and Technology (KAIST) having caused many students to commit suicide?

3. Data analysis

The three categories of errors used in this study, which were considered as treatable errors, were taken from Ferris and Roberts (2001). Examples for each category in Table 3 were extracted from the participants' original writings.

TABLE 3

Description of Error Categories

Error Category	Description
Verb Errors	All errors in verb tense or form, including relevant subject-verb agreement errors. e.g. (a) When I was young, I *have to* (→had to) study English. (b) If then, someone who *have* (→has) no child *have* to (→has to) pay the fee.
Noun Errors	Plural or possessive ending incorrect, omitted, or unnecessary; includes relevant subject-verb agreement errors. e.g. (a) We have many *chance* (→chances) to go abroad. (b) It is not necessary to execute it for every *students* (→student).
Determiner Errors	Article or other determiner incorrect, omitted, or unnecessary. e.g. (a) These days, *the* (→Ø) English is *a* (→an) international language. (b) *That* (→Those) reasons were tax and people who don't have (Ø→a) *child*.

The percentage of erroneous usage of each targeted category of words was calculated. In other words, the number of erroneous uses of the targeted category (verb category, noun category, and determiner category) was divided by the number of obligatory occasions of the targeted category and then multiplied by 100 to make comparison easier. The error ratio for each category was calculated by following formula.

$$\text{Error Ratio (\%)} = \frac{\text{Erroneous Uses in the Error Category}}{\text{Obligatory Occasions in the Error Category}} \times 100$$

One of the researchers and another experienced EFL teacher checked the errors and provide feedback on each student's writing simultaneously. Based on the calculation of inter-rater reliability, two raters showed a high agreement on all three categories of errors. It was shown that Cronbach's alpha was .987 in determiner category, .928 in noun category, and .989 in verb category. After consultation, the two raters reached an agreement for the errors where they had prior different points of views. Total 80 writings were used for the data analyses. No one dropped out of the study over the experimental period. SPSS 17.0 for Windows was used for the data analyses and the significance level was set at $p <. 05$, nondirectional. First, the researcher conducted one-way ANOVA using the first essays so as to confirm that there was no difference for all three error categories between the two groups. Second, two-way repeated-measures ANOVA was used in order to see how differential feedback had influenced the three categories of errors over four weeks. Finally, in order to investigate other individual factors that influenced the results and students' attitude toward direct and indirect feedback and to back up the quantitative data, post surveys and interviews were also carried out.

Ⅳ. Results and discussion

1. The effect of corrective feedback

To make sure students in both groups showed no significant difference for all three categories of errors from the beginning, the researcher conducted one-way ANOVA using the first essays. The two groups did not show significant differences in each category of the errors in their pre-test results (see Table 4, 5, 6, 7).

TABLE 4
ANOVA Results for Initial Determiner Error Ratio

	SS	*df*	*MS*	*F*	*Sig.*
Between-Groups	15.28	1	15.28	.19	.67
Within-Groups	1429.76	18	79.43		
Total	1445.04	19			

p <. 05

TABLE 5
ANOVA Results for Initial Noun Error Ratio

	SS	df	MS	F	Sig.
Between-Groups	21.82	1	21.82	.54	.47
Within-Groups	733.09	18	40.73		
Total	754.91	19			

p < .05

TABLE 6
ANOVA Results for Initial Verb Error Ratio

	SS	df	MS	F	Sig.
Between-Groups	1.43	1	1.43	.02	.90
Within-Groups	1632.04	18	90.67		
Total	1633.47	19			

p < .05

TABLE 7
ANOVA Results for Initial Error Ratio of the Total Error Categories

	SS	df	MS	F	Sig.
Between-Groups	.08	1	.08	.00	.96
Within-Groups	552.04	18	30.67		
Total	552.12	19			

p < .05

Therefore, we concluded that both direct and indirect feedback groups were initially equivalent in grammatical accuracy of determiner, noun, and verb errors. Table 8 shows how the three categories of error were influenced by corrective feedback over four weeks in each group. It displays the descriptive statistics for each category of error. Students made the greatest ratio of errors on the determiner, followed by verb error and noun error in descending order. This result is related to the fact that

determiner, especially article in English, is well-known as one of the most difficult parts to acquire for L2 learners.

TABLE 8
Mean of Error Ratio for All Three Categories

Time	Feedback	Determiner		Noun		Verb		Total	
		Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
	Direct	17.50	8.36	8.46	7.28	13.27	9.45	13.12	5.52
1	Indirect	15.75	9.43	10.55	5.34	12.73	9.59	13.25	5.55
	Total	16.62	8.72	9.51	6.30	13.00	9.27	13.19	5.39
	Direct	20.55	6.01	11.55	9.06	19.17	9.23	16.72	4.40
2	Indirect	18.06	6.89	12.59	6.25	13.83	10.40	14.89	5.04
	Total	19.31	6.42	12.07	7.59	16.50	9.95	15.81	4.70
	Direct	18.99	7.15	12.48	9.36	13.48	8.08	14.86	4.72
3	Indirect	16.17	5.70	12.12	8.38	12.22	9.49	13.67	6.16
	Total	17.58	6.46	12.30	8.65	12.85	8.60	14.27	5.37
	Direct	15.22	4.41	5.63	3.41	14.89	5.34	11.54	3.35
4	Indirect	15.93	7.72	6.48	6.06	13.65	7.83	11.93	5.32
	Total	15.58	6.13	6.05	4.80	14.27	6.55	11.74	4.33

Table 9 indicates the results of repeated-measures ANOVA for the sum of all three categories over time. Based on the results, differential feedback did not make a significant difference between the two groups. This result is in line with Ryoo (2006) that revealed there was no significant differential effect between direct feedback and indirect feedback. Moreover, the interaction effect by time and feedback type did not result in a significant difference. However, the time effect over 4 weeks showed .01 of significance level. It means students made a statistically significant improvement over 4 weeks in the error ratio of the sum of all three categories. Figure 2 shows that error ratio of all three categories decreased over time. Both groups showed similar patterns of
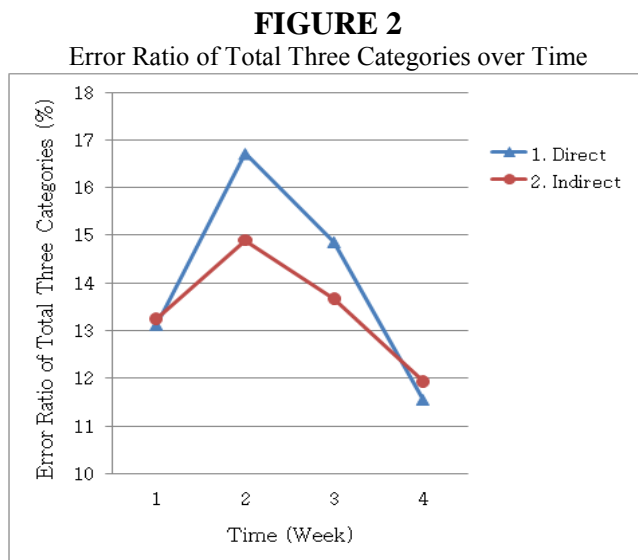
improvement and decline over the weeks. Although the error ratio increased in the second writing, it started to decrease afterwards, and in the fourth writing it became lower than the first one.

TABLE 9
Two-Way Repeated-Measures ANOVA Results
for Error Ratio of the Total Error Categories over Time

Source	SS	df	MS	F	Sig.	Partial $\eta2$	Observed Power
Between-Subjects							
Feedback	7.83	1	7.83	.12	.73	.01	.06
Error	1176.30	18	65.35				
Within-Subjects							
Time	177.42	3	59.14	4.72	.01	.21	.88
Time × Feedback	16.72	3	5.57	.45	.72	.02	.13
Error	676.18	54	12.52				

$p < .05$

Note: Feedback means two different types of corrective feedback, and time means each week when the participants wrote an essay.

FIGURE 2

Error Ratio of Total Three Categories over Time

Consequently, we investigated how each category of error was influenced by feedback over time in order to get clearer picture in that which category of error caused the total error ratio to decrease.

2. The differential effect on each category of error

Among three categories of error, the determiner category was the greatest ratio of error in this study. As shown in Table 10, differential feedback did not make a significant difference between groups in this category. Nevertheless, there was a slight difference in change of error ratio between groups.

In Figure 3, two groups showed similar patterns from the first to the third writing, but direct feedback group showed a rapid decline in contrast to indirect feedback group between the third and the fourth writing. As a result, students in direct feedback group made a decline of error ratio while students in indirect feedback group increased in their error ratio, comparing the first and the fourth writings. Based on the survey, students had a difficulty in understanding feedback and figuring out their errors, especially errors in determiner category. In case of direct

feedback group, students knew what the correct form was through the feedback.
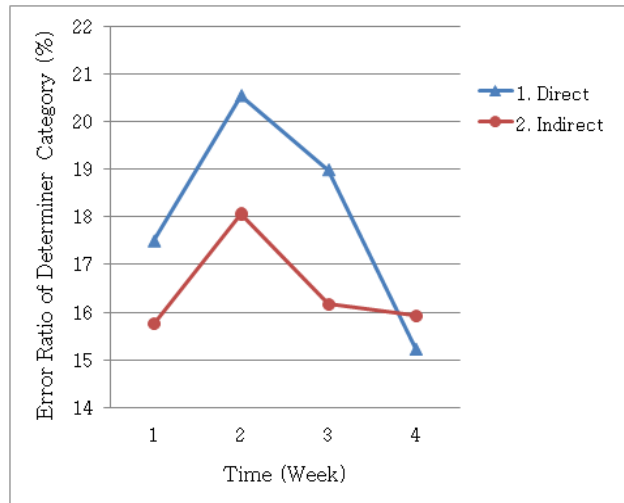
TABLE 10
Two-Way Repeated-Measures ANOVA Results for Error Ratio
of Determiner Category over Time

Source	SS	df	MS	F	Sig.	Partial $\eta2$	Observed Power
Between-Subjects							
Feedback	50.36	1	50.36	1.05	.32	.06	.16
Error	866.64	18	48.15				
Within-Subjects							
Time	150.47	3	50.16	.98	.41	.05	.25
Time × Feedback	37.95	3	12.65	.25	.86	.01	.09
Error	2779.09	54	51.47				

$p < .05$

However, it was probable that they were likely not to understand why it was correct and how they applied the rule in a new piece of writing. Meanwhile, students who received indirect coded feedback experienced more serious difficulties.

FIGURE 3

Error Ratio of Determiner Category over Time

Through indirect feedback, they noticed there were errors, but they did not know how they should handle the errors and why they were incorrect. The degrees of difficulty in which students of each group felt from the differential feedback, might have caused a difference in the effect of the error correction. In order to improve accuracy and promote learning, students might need to receive more explicit explanation for understanding. Furthermore, determiners, which precede nouns, are closely related to the lexical aspect in that usage of a determiner can vary depending on what a writer wants to express with the following noun. The errors in the lexical category are known as untreatable ones, so it might be difficult for students to decrease their error ratio in the determiner category. Reflecting the fact that most Koreans have great trouble in acquiring the article system, it is natural that students did not show a significant improvement in the determiner category.
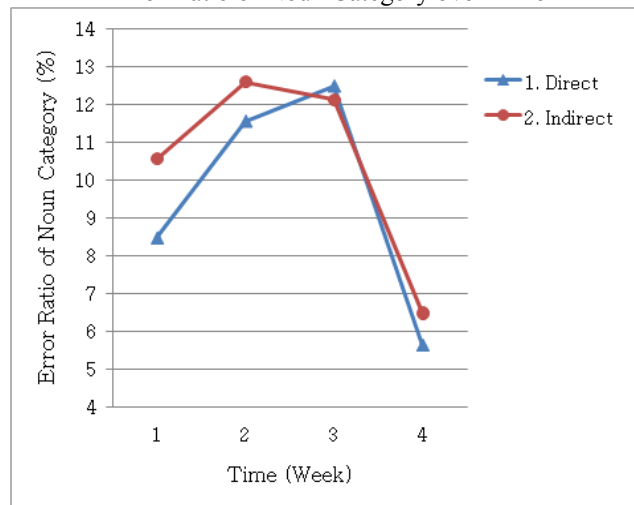
The noun category was the only one where students showed a statistically significant difference over time. While direct feedback and indirect feedback made no significant difference (see Table 11), both group showed decreases in their error ratio in the last writing compared to the beginning of it (see Figure 4). From the beginning, students made the least errors in the noun category compared to the other two categories of errors.

TABLE 11
Two-Way Repeated-Measures ANOVA Results for Error Ratio
of Noun Category over Time

Source	SS	df	MS	F	Sig.	Partial $\eta2$	Observed Power
Between-Subjects							
Feedback	16.29	1	16.29	.17	.69	.01	.07
Error	1734.56	18	96.36				
Within-Subjects							
Time	508.00	3	169.33	4.71	.01	.21	.87
Time × Feedback	15.15	3	5.05	.14	.94	.01	.07
Error	1943.13	54	35.98				

p < .05

FIGURE 4
Error Ratio of Noun Category over Time

This result seems to be related to a learning system in Korea since L2 learners in Korea tend to start to learn English focusing nouns first rather than verbs or determiners. Also, they learn distinction between

singular and plural nouns from the beginning. Therefore, noun category has been exposed to the L2 learners longer than the other two categories. Consequently, it might be easier for students to treat errors in the noun category. Furthermore, this result might imply that the noun category of errors has a possibility to improve in a shorter period of time than the other two categories of errors. That is, each kind of error category could take different amounts of time and feedback for improving accuracy.

In the case of the verb category, students showed irregular change over the four weeks with the same pattern in both groups (see Figure 5). There was no significant difference between the groups, and significant effects over time did not appear, either (see Table 12). Among word categories, verbs play a central role in conveying the meaning of a sentence. In order to convey various meanings, it is necessary to alter the verb form depending on context. However, without knowing the attributes of each verb, it is not easy to make a correct inflection of the verb. Attributes of the verb and semantic relationships with other word categories can also influence verb form. For example, whether the subject is an agent or a patient might determine the active or passive form of the verb. If writers don't care about semantic relationships, they will make an error in the verb category.

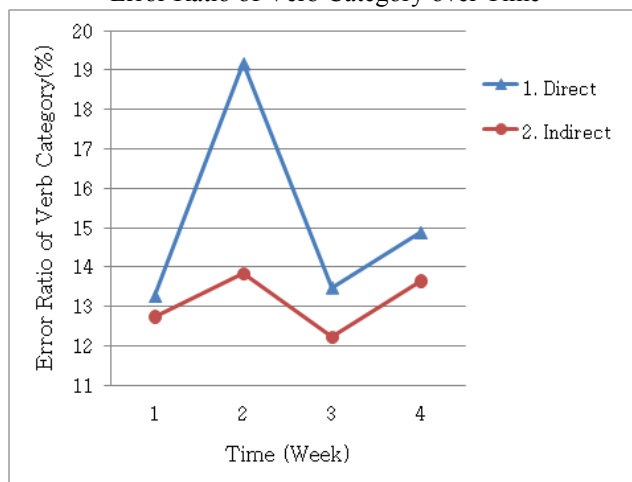**FIGURE 5**
Error Ratio of Verb Category over Time

TABLE 12
Two-Way Repeated-Measures ANOVA Results
for Error Ratio of Verb Category over Time

Source	SS	df	MS	F	Sig.	Partial $\eta2$	Observed Power
Between-Subjects							
Feedback	87.63	1	87.63	.45	.51	.02	.10
Error	3521.31	18	195.63				
Within-Subjects							
Time	171.13	3	57.04	1.50	.23	.08	.37
Time ×Feedback	71.98	3	24.00	.63	.60	.03	.17
Error	2056.96	54	38.09				

p < .05

In each category, both groups showed a sharp rise of their error ratio in the second writing, which was written after they received the first feedback. This result can indicate that students might have paid attention to their errors and feedback, tried not to make the same errors, and experimented with their own rules. Also, the level of difficulty on given topics could have influenced the change of error ratio. The researcher conducted a survey after treatment to figure out which topic was the most difficult to write about. Students were asked to rank the topics depending on the level of difficulty in descending order. As a result, the researcher found out that the second topic was the most difficult and the first topic was the least difficult for them. Therefore, it seems inevitable that students showed a sharp increase of error ratio in the second writing.

3. Students' responses and expectation on corrective feedback

There might have existed various individual factors which had influenced on the effects of feedback. According to the post survey and interview, the participants had trouble in treating errors through feedback.

Not only students receiving indirect feedback but also those receiving direct feedback had difficulty grasping errors and feedback. The following examples were from the interview with students in direct feedback group. Students answered in Korean, and the researcher transcribed them into English.

Example 1. (Direct feedback group)
English translation: *I was most frustrated when I did not know why the error was corrected that way.*

Example 2. (Direct feedback group)
English translation: *I could identify where the errors were and what the correct forms for those errors were. I understood them once I knew the grammatical rules related to them. However, when I didn't know the rules, I couldn't understand the feedback even though I knew what the correct forms were.*

Providing correction was not enough for them to understand their errors and internalize the grammatical rule. Lack of knowledge about the grammar and error categories, seemed to prevent the students from understanding the feedback they were given and the errors they were making. In the cases of students who received indirect feedback, they might have had greater difficulty understanding their errors since they did not even know what the correct forms were. Followings were from those who received indirect feedback.

Example 3. (Indirect feedback group)
English translation: *The feedback just let me know that there was an error related to article. But I did not know whether or not I should put an article and whether I should put 'a' or 'the'. So it was not easy for me to correct my errors. I think this feedback was difficult for me to identify the correct forms immediately.*

Example 4. (Indirect feedback group)
English translation: *Of course, learners can guess what is correct. However, they cannot be certain whether their guess is correct without a doubt.*

Example 5. (Indirect feedback group)
English translation: *Even though I noticed that it was incorrect through the feedback, I could not understand why.*

Indirect feedback is known as an effective way because it causes students to reflect on their errors and engage actively in treating errors. However, it seems more challenging for students to reduce errors, if students don't know how to correct errors or if students just guess what is correct without confirming whether their guess is right. One of the students who received indirect feedback suggested that, in the future, she wants to receive indirect feedback which allows her to try correcting errors and then gives corrections.

Those who did not feel any difficulty in understanding feedback did not necessarily succeed in treating errors. There could be miscommunication between the feedback and the students. One student who received direct feedback inferred the grammatical rule of determiner from the feedback. However, it was wrong, so it could be possible for the student to make other errors because of the misunderstanding.

Example 6. (Direct feedback group)
English translation: *After I reviewed my errors and feedback, I certainly realized that 'the' should precede noun while 'a' should precede adjective or adverb. But there were some exceptions. I need to organize them specifically.*

Students who did not fully understand their errors had limitations on improving their grammatical accuracy although they paid more attention to grammar when they wrote new essays. Interestingly, according to the survey, 16 out of 20 students answered that their grammatical accuracy had improved after receiving corrective feedback even though statistical results of this study did not fully demonstrate this. These responses show students' rooted perception about positive effect of

corrective feedback. Also, several students said they were inspired to study more.

> Example 7. (Indirect feedback group)
> English translation: *I did not know how to correct errors when I made errors in the determiner category. I want to know how to correct those errors.*

> Example 8. (Direct feedback group)
> English translation: *I focused on my errors, but I kept making errors. I am probably not well-informed of the rules. I will study more to fully understand it.*

At least for some students, corrective feedback seems to make them aware of the necessity of grammatical accuracy in writing and motivate them to study more. However, two types of corrective feedback which were used in this study need to be complemented to be more effective. Some students in direct feedback group recognized that they did not reflect on their errors and just scanned through the corrections they received. Because of this, they thought they could not fully comprehend their errors and made similar errors in the new essays. Other students in indirect feedback group remembered that they were frustrated when they did not know how to correct errors and why the errors were incorrect. Those students called for sufficiently clear explanation for the errors. It seems clear that supplementary methods are required in order to improve accuracy in a short period of time.

> Example 9. (Direct feedback group)
> English translation: *Feedback, error correction, is a really good method, but I hope they explain why it is corrected that way.*

> Example 10. (Direct feedback group)
> English translation: *I think it is better to mark the location of the error, provide the correct form, and add a brief explanation about the grammar related to the frequent errors.*

Example 11. (Indirect feedback group)
English translation: *I did not seek information for my errors after class. I think it might be a good idea to take the time to ask someone about my errors when I feel most curious about why the errors are incorrect, I mean, as soon as I receive feedback.*

Example 12. (Indirect feedback group)
English translation: *I hope someone explains my frequent errors one to one for about three to five minutes after receiving feedback.*

Based on the results and students' responses, it might not be sufficient to improve grammatical accuracy through direct feedback and indirect coded feedback in a short period of time. To help comprehend their errors more clearly, metalinguistic explanation or a one-on-one conference needs to be added with it considering the level of L2 learners. When students received feedback and revised the writing based on the feedback, they understood and corrected their errors. However, they made similar errors again in subsequent writings because they could not internalize the grammatical rules. Therefore, adequate practice which requires internal cognitive processing of students needs to be considered for improving their accuracy in writing.

V. Conclusion

This study investigated whether L2 college students reduce three categories of errors in writing through differential corrective feedback, direct feedback and indirect coded feedback. It also aimed to explore which corrective feedback is more effective for reducing those errors. The major findings of this study were as follows.

First, students reduced error ratio of the total three categories as time went by. Even though both groups showed an increase of error ratio in the second writing, it seemed that the level of difficulty in topics influenced the error ratio. After then, students showed a decline of error ratio, as a result, they showed statistically significant difference over time in total three categories. However, except noun category, the error ratios

in both determiner and verb categories did not show significant decline over time.

Secondly, there were no significant differences over the type of corrective feedback between groups. Judging from the mean differences, there were slight differences in the effect of differential feedback. Direct feedback was more effective than indirect feedback in determiner category. In case of noun category, indirect coded feedback led to a bigger drop in error ratio. Furthermore, in verb category, where both groups showed irregular changes and increased the error ratio at the end, the indirect feedback group showed error ratio which increased less than the direct feedback group.

Lastly, the students in both groups seemed to have difficulty in understanding errors and feedback. Students felt trouble in comprehending their errors through feedback because they did not know either why the errors were incorrect or how they corrected the errors. Moreover, there existed miscommunication between feedback and the students who received it. It caused students to make wrong generalizations of the grammatical rule. As a result, those students in both groups wanted to get more explicit explanation for their errors. Some students suggested one-to-one conference with a teacher.

The current study suggests several pedagogical implications for English writing of L2 college students in Korean EFL context. First, each error category should be treated through a differential fine-tuned way. Based on the results of this study, each category showed different patterns of change in error ratio to differential corrective feedback, and the time required to reduce error ratio seemed to be various for each category. In other words, the type of corrective feedback needs to vary depending on the types of errors. Second, in order to improve accuracy of L2 writing in a short period of time, corrective feedback should be complemented with other methods like a one-to-one conference or a mini-lesson for building grammatical knowledge. Third, regardless of the effect of corrective feedback in improving accuracy of writing, corrective feedback affects students positively. In this study, students believed their accuracy in writing improved through corrective feedback, and corrective feedback motivated some students to study more. Therefore, providing corrective feedback is desirable, at least for some students.

L2 writing teachers should keep in mind that corrective feedback could be more constructive for students if the feedback is optimized for them. It cannot be true that a certain type of corrective feedback is beneficial to all L2 learners. Therefore, L2 teachers should make an effort to fine-tune the corrective feedback considering individual differences and differential features of corrective feedback.

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