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The Effect of Written Corrective Feedback on the Acquisition of Different Types of Linguistic Features

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Abstract

The current study investigated whether there exists a differential effect of direct and indirect corrective feedback (CF) on the acquisition of rule-based features (simple present) and item-based features (prepositions). Fifty students enrolled in an EFL writing class were divided into four groups. Each group received one of the following treatments: direct CF on simple present, indirect CF on simple present, direct CF on prepositions, or indirect CF on prepositions over three sessions. In this pretest/immediate posttest/delayed posttest design, students received written CF, revised writing tasks, and completed new tasks and tests. Results showed that simple present, a type of rule-based feature, responded better to indirect CF while prepositions, a type of item-based feature, responded better to direct CF. The findings suggest that teachers should consider addressing different types of linguistic features through different types of CF.

Keywords: corrective feedback, error correction, EAP, item-based, rule-based linguistic features, acquisition, L2 writing; direct CF, indirect CF

1. Introduction

Research on CF has produced different results in terms of its effectiveness. While the early research on CF produced either negative or inconclusive results in regard to the efficacy of CF (Kepner, 1991; Lalande, 1982; Polio, Fleck, & Leder, 1998; Semke, 1984), the more recent research has suggested that written CF has a positive effect on the acquisition of certain linguistic features (e.g. Bitchener & Knoch, 2010a, 2010b; Ellis, Sheen, Murakami, & Takashima, 2008; Sheen, 2007; Sheen, Wright, & Moldawa, 2009). However, many questions related to written CF are still in need of further investigation. One of these questions is the effect of different types of CF on the acquisition of different types of linguistic features, which is an important question for reasons related to theory, pedagogy, and the current state of the research on CF.

2. Literature Review

The present study investigates the differential effect of direct and indirect CF on the learning of two types of linguistic features. Direct CF is "the provision of the correct linguistic form by the teacher to the student" (Ferris, 2006, p. 83). Recent studies investigating direct CF suggest a positive effect of direct CF on language improvement (e.g. Ellis et al., 2008; Sheen et al., 2009). On the other hand, research investigating indirect CF has had different results. Indirect CF occurs "when the teacher indicates in some way, [such as circling the error], that an error has been made… but does not provide the correct form" (Ferris, 2006, p. 83). Many studies examining indirect CF have suggested either no or little positive effect on language learning (e.g. Sheppard, 1992; Truscott & Hsu, 2008). However, there is research suggesting a positive effect for the use of indirect CF on language learning (e.g. Ashwell, 2000; Chandler, 2003; Lizotte, 2001). These positive results were achieved under certain conditions which include, but are not limited to, providing more than one instance/session of CF (e.g. Lizotte, 2001) and making the given indirect CF more explicit by coding the students' error types or providing metalinguistic explanations to the error(s) (e.g. Ferris, Liu, Sinha, & Senna, 2013).

2.1 Research on the Differential Effect of Direct and Indirect CF

All the studies mentioned previously investigated the efficacy of one approach, either direct CF or indirect CF. These studies cannot be used to suggest the superiority of direct or indirect CF over each other. Only those studies that investigate the differential effect of the two approaches, by providing direct CF and indirect CF to

different groups of participants, can be used to suggest which approach is more facilitative for writing improvement and second language acquisition.

A limited number of studies have compared direct and indirect CF. Most of the early research on the differential effect of direct and indirect CF suggested no or limited effect for the two approaches (e.g. Robb, Ross, & Shortreed, 1986; Semke, 1984). More recent research, on the other hand, has produced different results. One study that compared the effectiveness of direct and indirect CF is Chandler (2003). This study investigated four types of CF, direct CF and three indirect options: underlining with error-type description, description of error type only, and underlining only. The results suggested that direct CF was superior to the three options of indirect CF in producing more accurate revised writing. The researcher attributed the results to the immediacy of the direct approach compared to the indirect approach. As for subsequent (new) writing, both direct corrections and underlining only led to writing improvement, and there was no statistically significant difference between them.

The efficacy of direct CF has also been found to be sustainable over time. Van Beuningen, Jong, & Kuiken (2008) investigated the effect of direct and indirect CF and the effect of writing practice on students' revised and new texts. The participants were divided into two experimental groups, direct and indirect CF, and two control groups, writing practice and self-correction. The results showed that both experimental groups outperformed both control groups in producing accurate text revisions. However, only the direct CF group produced more accurate subsequent (new) writing. The researchers concluded that direct CF can have long-term effect on accuracy improvement because it is faster in providing students with the needed corrections and, thus, it makes it easier for the students to internalize the given CF. Indirect CF, on the other hand, is disadvantaged by the additional delay for the students in knowing whether their self-corrections are accurate.

Giving the length of the Van Beuningen et al. study (2008), which was three weeks, Bitchener and Knoch's study (2010b) provided a stronger argument for the long-term effect of direct CF. Bitchener and Knoch (2010b) investigated the efficacy of three types of CF: written metalinguistic CF, indirect CF (circling), and written metalinguistic CF accompanied by oral form-focused instruction. The results revealed that all treatment groups outperformed the control group in the immediate posttest; however, only the direct CF groups were able to retain their level of improvement in the delayed posttest (i.e. the group of written metalinguistic CF and the group of written metalinguistic CF accompanied by oral form-focused instruction) suggesting that direct CF is more effective than indirect CF for long-term learning. However, what made the direct CF groups outperform the indirect CF groups was not direct correction, which was not provided for any group in this study, but the metalinguistic information on the target features, whether written only or accompanied by form-focused instruction. Sheen (2007, 2010) argued that, based on the Noticing Hypothesis, direct CF can promote noticing, whereas metalinguistic CF can promote understanding, which contributes to a deeper level of learning. Thus, the more explicit and direct the CF is, the more learning is expected to take place.

2.2 Research on How Different Types of Linguistic Features Respond to Different Types of CF

Linguistic errors have been classified in the literature as treatable and untreatable errors (Ferris, 1999). Whether an error is treatable depends on the nature of the linguistic feature, specifically whether the feature is "rule-based" (Bitchener, 2012). Treatable errors are errors that "occur in a patterned, rule-governed way" (Ferris, 1999, p. 6). They include, but are not limited to, subject-verb agreement, verb tense or form, articles, pronouns, and spelling (Ferris, 2006). Untreatable errors, on the other hand, are idiosyncratic by nature and, thus, cannot be treated by consulting a certain set of rules (Ferris, 1999; Bitchener, Young, & Cameron, 2005). They are also called "item-based features" (e.g. Bitchener, 2012). Untreatable errors, or item-based features, can belong to one of the following categories: word choice, idioms, and sentence structure (Ferris, 2006).

The knowledge of rule-based and item-based features represents separate domains of knowledge (Ferris, 1999, 2002). It has been suggested that syntactic knowledge and lexical knowledge are learned in different manners (Schwartz, 1993). One way of learning the rule-based features is through the explicit teaching of grammar rules, whereas the item-based features can be learned through practice, exposure to L2, and other means. For this reason, some researchers, such as Ferris (1999, 2002) and Bitchener et al. (2005), recommend using different types of CF with different types of linguistic features. However, there is not much research on the relationship between the type of the linguistic features being treated and the type of the given treatment (i.e. CF).

One of the few studies that looked at this relationship is Bitchener et al. (2005). The study examined the effect of direct CF on the acquisition of three linguistic features: past simple tense and the definite article (treatable features) and prepositions (less treatable features). The participants received one of the following treatments: direct, explicit written CF accompanied by student-researcher five-minute conferences; direct, explicit written CF only; or no CF. The results showed a significant improvement in students' use of the past simple tense and

the definite article when combining oral and written CF for students. However, no overall effect was found for any type of the given CF on the use of prepositions. These results suggested that direct CF is effective with only a certain type of linguistic features. It is more effective with treatable errors than with untreatable or less treatable errors.

The practices of L2 writing teachers seem to reflect this distinction as well. One of the research questions Ferris (2006) asked is, "Are different types and categories of errors affected differently by error treatment?" (p. 94). Surveying hundreds of texts produced by ESL students, it was found that teachers marked nearly 59% of treatable errors using indirect CF. The students, however, did not make progress in the use of these treatable categories in their second drafts, but towards the end of the semester, they improved in the use of those treatable categories. Conversely, it was found that teachers marked more than 65% of untreatable errors using direct CF. In their revised texts, students were successful in editing these errors based on the given direct CF but made no progress in the use of those untreatable errors over time. These results suggest that teachers usually provide indirect CF on treatable errors with the justification that since the errors are treatable, students will be able to self-correct them. On the other hand, teachers usually provide direct CF on untreatable errors with the justification that students will not be able to fix them easily.

In another study, Van Beuningen, Jong, and Kuiken (2012) addressed how different types of linguistic features respond to direct and indirect CF. The main goal of the study was to investigate the effect of direct CF, indirect CF, writing practice, and self-correction on language improvement. The findings showed that both experimental groups, direct CF and indirect CF, were able to retain their level of improvement gained from CF in the delayed posttest, unlike the two control groups. Then the researchers conducted a separate analysis to determine how grammatical and non-grammatical errors respond to different types of CF. The analysis showed that grammatical errors benefited more from direct CF whereas non-grammatical errors, such as spelling and capitalization errors, benefited from indirect CF. Still, the study did not address how untreatable or less treatable grammatical features respond to CF. Moreover, because the delayed posttest was administered only three weeks after the treatment, the study cannot be used to address the long-term effect of direct or indirect CF on the acquisition of different types of linguistic features. Based on these limitations and the limited body of research on the differential effect of direct and indirect CF on the acquisition of treatable and untreatable linguistic features, further research is clearly needed on this important topic to inform theory, research, and the writing classroom.

3. Research Questions

Two questions were investigated in the study:

1) What is the effect of written CF on the grammatical accuracy of EFL learners' use of the target features over an eight-week period?
2) What is the differential effect of direct CF and indirect CF on the accurate use of different types of linguistic features, rule-based and item-based linguistic features?

4. Method

4.1 Participants

Fifty female students participated in the study. The participants were nursing students in their first year of their undergraduate program in a large public university in Saudi Arabia. The age range for the participants was between 19 and 21 years old. The students' level in English was intermediate based on the fact that all the students completed a year in an intensive English program before they were admitted to the nursing program.

4.2 Target Structures

Two target features were selected based on preliminary data collected during a visit to the university the year before the study began. After reviewing 60 samples of students' English writing and surveying the teachers, a list of the most common writing errors in this EFL context was prepared. For the purpose of the study, these errors were categorized as either rule-based linguistic features or item-based linguistic features. The errors that can be treated according to a clear set of grammatical rules are categorized as rule-based features whereas the errors that are idiosyncratic and do not follow clear fixed rules are categorized as item-based features (see Bitchener et al., 2005; Ferris, 1999).

From the rule-based features, the present simple tense was selected, and the use of prepositions was selected as an item-based feature. These choices were made based on several reasons. First, both structures were addressed in the participants' previous years of learning English. It is argued that CF is more effective when targeting linguistic features that the learners began to acquire than when targeting entirely new linguistic features which

the learners may not be ready to acquire (Ellis et al., 2008). Second, although the simple present tense and prepositions are partially known to the students and seem simple to describe, they continue to constitute problems for EFL learners. Research has shown that copula Be, third person singular present tense –s, and prepositions cause serious problems for ESL/EFL learners even at a high proficiency level in English (Celce-Murcia & Larsen-Freeman, 1999). Thus, it is beneficial for the students to receive CF on them to further draw their attention to these problematic features and, in turn, learn more about them and hopefully acquire them. Third, errors made within these categories can be easily identified in students' writing, which provides the opportunity for more reliable data coding. Fourth, obligatory uses of these features appear in many types of writing, which provides the researcher the opportunity to examine the students' use of these features in their writing (Ellis et al., 2008).

Examples of correcting the present simple tense include verbs in the base form or –s form, such as water *freezes* at 0 degrees centigrade; copula Be verbs, such as the world *is* round; and the verbs "has" and "have" to express possession, such as I *have* a meeting (Azar, 1986; Celce-Murcia & Larsen-Freeman, 1999; Hacker & Sommers, 2011). As for prepositions, while most are idiomatic, a small number are less so and can be used according to certain grammatical rules, such as the prepositions of time and place (e.g. in, at, and on). Nevertheless, even this type of prepositions can be troublesome, for example, "a person rides *in* a car but *on* a bus, plane, train, or subway" (Hacker & Sommers, 2011, p. 286). Therefore, prepositions, even the less idiomatic, do not work according to clear, fixed rules. CF was provided on all the prepositions that appeared in students' writing on the basis that all of them are item-based features to a certain degree.

4.3 Design

The present study used a quasi-experimental design to collect and analyze quantitative data. Since the writing tasks and tests which were used in the study were also part of the class work, it would have been unethical to include a control group that did not receive any type of CF. To compensate for the lack of an empirical control group, the participants acted as a control group for themselves by completing two pretests with time interval between them at the beginning of the study.

The study was divided into two stages, a control stage and a treatment stage. In the first stage, the participants acted as a control group. In week 1, they completed pretest 1. During this stage, from week 1 to week 5, the students continued their writing classes as usual, not including any writing practice, written CF, or instruction on the target features. In week 5, the students completed pretest 2. Pretest 2 was used to reveal if there was any improvement in students' writing when compared to pretest 1 before any treatment was provided.

In the second stage, from week 5 to week 12, the participants acted as experimental groups. This stage started where the first stage ended. Pretest 2 was used to determine the accuracy level of students' use of the target features at the beginning of the second stage. Pretest 2 was also used as the first writing task on which the students received CF in the following week. In this stage, the participants were divided randomly into four experimental groups: A, B, C, and D. Group A received direct written CF on simple present tense. Group B received indirect written CF on simple present tense. Group C received direct written CF on prepositions. Group D received indirect written CF on prepositions

In the following week, week 6, all groups received back pretest 2 (i.e. task 1) with the assigned type of CF for each group. All groups were given 10 minutes to review the given CF on their writing. Then, they were given 20 minutes to rewrite task 1 in class based on the given CF. When rewriting the task, the students were instructed to copy the corrections if the corrections were provided (as in the direct CF groups) or to self-correct the underlined errors if no corrections were provided (as in the indirect CF groups); they were also told to try to improve the overall quality of their writing by considering both content and accuracy. When the students finished rewriting task 1, they were given task 2, a new piece of writing, to complete in 40-45 minutes.

In week 7, all groups received a second session of CF with the same steps which were done in the previous week. They received back task 2 with the assigned CF types, were given 10 minutes to go over the given CF, and were given 20 minutes to rewrite task 2 in class. Then, they were given task 3, a new piece of writing, to complete in 40-45 minutes. In week 8, a third session of CF was conducted followed by the immediate posttest, a new piece of writing, to complete. From week 9 to week 12, the students did not do any writing tasks and, in turn, they did not receive any written CF or instruction on the target features. In week 12, all groups completed the delayed posttest, a new piece of writing, in 40 to 45 minutes.

4.4 Tools and Instruments

The study used six written texts. Depending on their function, four texts were called "writing tests" while the remaining two were called "writing tasks". The writing tests, which include pretest 1, pretest 2, immediate posttest, and delayed posttest, were used to measure the students' accurate uses of the target features, and thus they were scored/coded for analysis purposes. The writing tasks, on the other hand, were used for treatment purposes only. They were completed by the students in the CF sessions, corrected by the researcher, and returned to the students in the following class meeting to examine the given CF and rewrite them. The six texts were adapted from two writing textbooks. The first was *Interactions 2* (Pavlik & Segal, 2007), and the second was *First Steps in Academic Writing* (Hogue, 2008).

4.5 Procedure for Data Scoring and Coding

The four writing tests were scored using the "obligatory occasion analysis" method (Ellis & Barkhuizen, 2005). The obligatory occasion analysis "constitutes a method for examining how accurately learners use specific linguistic features… it involves a comparison between the forms used by the learners and target language norms" (Ellis & Barkhuizen, 2005, p. 73). In this analysis method, all obligatory occasions of the target features are first identified in the student's text. Then the student's text is examined to determine whether or not the student used the target features in all the occasions. The score is then calculated by dividing the student's accurate uses of the target feature by the total number of the obligatory occasions. The score is expressed as a percentage.

However, since this analysis method does not account for the overuse of features, another analysis method was needed for scoring papers that contained overuse of morphemes. One of these methods is the 'target-like use analysis' method proposed by Pica (1984) (as cited in Ellis & Barkhuizen, 2005). In the target-like use analysis method, the number of the student's accurate uses of the feature is divided by the number of the obligatory occasions *plus the number of the non-obligatory occasions* (i.e. the number of overuse).

Example: the composition has 9 obligatory occasions; the student used the target feature 6 times correctly, and overused the target feature one time. In this case, the score would be: 6 divided by 9+1=.6, and the percentage is 60%.

4.6 Procedure for Data Analysis

A three-way mixed ANOVA was performed to answer the research questions. In this three-way mixed ANOVA, the test scores were entered as a dependent variable while time (three levels: pretest 2, immediate posttest, and delayed posttest), CF type (two levels: direct CF and indirect CF), and linguistic feature (two levels: simple present and prepositions) were entered as independent variables.

5. Results

5.1 Groups' Performance at Baseline

The scores of pretest 1 and pretest 2 were subjected to analysis to determine if there were any group differences at both points of time before treatment started. A one-way ANOVA was performed on the scores of pretest 1. The test revealed that there were no statistically significant differences between the four treatment groups at baseline, $F = 1.41$, $p = .25$. Another one-way ANOVA was performed on the scores of pretest 2. The test indicated that group means are not statistically significantly different ($F = 1.02$, $p = .39$). Thus, the two one-way ANOVAs which were conducted to compare the four treatment groups in pretest 1 and in pretest 2 suggested the same conclusion: the four treatment groups (i.e. groups A, B, C, and D) started at a similar level in the use of the target features before CF was provided.

Moreover, the scores of both pretests were subjected to a paired-samples t-test. The students completed the two pretests with a four-week time interval between them. Pretest 2 was used to confirm the level of the students' use of the target features and also to see if any changes in performance took place in pretest 2 when CF was not provided between the two pretests. The t-test indicated that there were no statistical significant differences in scores between pretest 1 and pretest 2 ($p = .101$). Since the t-test did not reveal statistical differences between pretest 1 and pretest 2, it was decided that pretest 2 is the pretest that will be used when carrying out the main analyses to investigate the research questions.

5.2 Groups' Performance after Treatment

To answer the first and second research question, a three-way mixed ANOVA and pairwise comparisons using Bonferroni adjustment were computed. This section reports the descriptive statistics and the inferential statistics of the mixed ANOVA and the pairwise comparisons.

Table 1 shows the descriptive statistics (the mean scores and standard deviations) for the accuracy scores for each treatment group on each of the three test occasions, pretest 2, immediate posttest, and delayed posttest.

Table 1. Descriptive Statistics

	CF Type	Linguistic Feature	M	SD	N
Pretest 2	Direct CF	Simple Present	88.71	8.39	13
		Prepositions	82.79	11.42	13
		Total	85.75	10.27	26
	Indirect CF	Simple Present	87.91	8.38	12
		Prepositions	84.42	11.22	12
		Total	86.16	9.84	24
	Total	Simple Present	88.32	8.22	25
		Prepositions	83.57	11.12	25
		Total	85.95	9.97	50
Immediate Posttest	Direct CF	Simple Present	89.27	6.82	13
		Prepositions	91.14	6.82	13
		Total	90.20	6.75	26
	Indirect CF	Simple Present	95.94	4.37	12
		Prepositions	84.98	12.07	12
		Total	90.46	10.49	24
	Total	Simple Present	92.47	6.60	25
		Prepositions	88.18	9.99	25
		Total	90.33	8.66	50
Delayed Posttest	Direct CF	Simple Present	91.91	6.05	13
		Prepositions	91.86	6.04	13
		Total	91.89	5.92	26
	Indirect CF	Simple Present	91.73	8.69	12
		Prepositions	87.55	7.47	12
		Total	89.64	8.21	24
	Total	Simple Present	91.82	7.27	25
		Prepositions	89.79	6.98	25
		Total	90.81	7.13	50

The descriptive statistics in Table 1 show that the total mean scores for the four treatment groups increased from pretest 2 to the posttests. It was 85.95 in pretest 2, and then increased to 90.33 in the immediate posttest and 90.81 in the delayed posttest. This suggests that the given treatment had some effect on the students' performance in the posttests.

The three-way mixed ANOVA showed that there was a statistically significant interaction between the three variables: time, CF type, and linguistic feature on the grammatical accuracy of students' use of the target features, $F(2,92) = 5.334$, $p = .006$, partial $\eta^2 = .104$. To determine where the differences lie between the treatment groups and at what times, a post hoc pairwise comparisons using Bonferroni adjustment was computed.

The results of the pairwise comparisons revealed that groups B and C (i.e. indirect CF/simple present group and direct CF/prepositions group) were the only groups which achieved statistically significant improvement in the accurate use of the target features over time. For group B, the increase in accuracy was statistically significant between the pretest and the immediate posttest (*Mean difference* = 8.03, *SE* = 2.45, $p = .006$). However, the performance of group B in the delayed posttest did not reach the significant value when compared to the pretest, $p = .329$, or the immediate posttest, $p = .249$. Group C, on the other hand, achieved a statistically significant increase in accuracy between the pretest and immediate posttest (*Mean difference*= 8.35, *SE* = 2.35, $p = 003$) and also between the pretest and delayed posttest (*Mean difference*= 9.08, *SE* = 2.25, $p = 001$). As for the difference between the immediate posttest and the delayed posttest for group C, the pairwise comparisons revealed no

significant difference between the two posttests ($p > .05$) which means that the students' accuracy levels gained in the immediate posttest were retained in the delayed posttest.

Conversely, groups A and D (i.e. direct CF/simple present group and indirect CF/prepositions group) did not achieve a statistically significant improvement in their use of the target features between pre-intervention and post-intervention ($p > .05$). However, when examining the profile plots, given in Figure 1, we can see some improvement for both groups between pre-intervention and post-intervention. Also, the profile plots showed that the performance lines for groups A and D are almost parallel. This suggests that they performed similarly from the pretest to the immediate and delayed posttests. They both did not improve much in the immediate posttest, but then they achieved higher accuracy scores in the delayed posttest; these higher scores, however, did not reach the significance level.

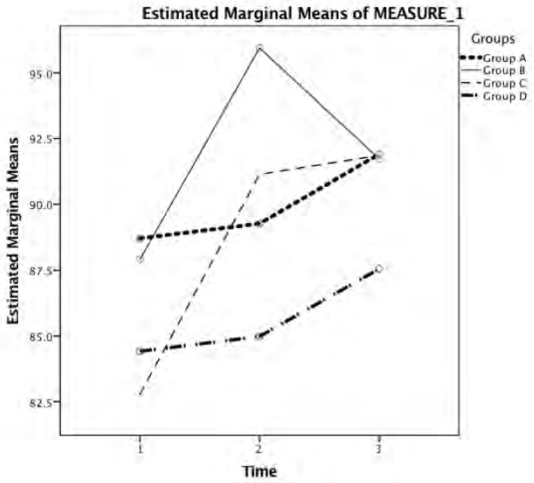

Figure 1. Profile Plots for the Four Treatment Groups

6. Discussion

The first research question concerned the effect of written CF, regardless of its specific type, on EFL learners' accurate use of the target features over time. The results indicated that written CF had a positive effect on the grammatical accuracy of the target features across the three time points. Accuracy improved significantly from the pretest to the immediate posttest, and the gains in accuracy were retained a month later in the delayed posttest.

The positive results of the current study are in line with several previous CF studies (Bitchener, 2008; Bitchener & Knoch, 2010a; Ellis et al., 2008; Ferris et al., 2013; Sheen, 2007; Sheen et al., 2009; Van Beuningen et al., 2012). These studies examined the effect of different types of CF, direct, indirect, focused, and unfocused, and the findings indicated the same result: written CF had a positive effect on the accurate use of the target features, not only in revised writing, but also in new pieces of writing, which can suggest long-term benefits. Since the target features in the current study were different from those in the above-mentioned studies, the present study adds to the current evidence that supports the effectiveness of CF.

The study suggests that CF can affect linguistic features other than articles, the most commonly addressed target feature in recent CF studies. Written CF can positively affect the accurate use of simple present and prepositions. These two types of features are different from articles in many ways. First, the use of simple present involves many rules, such as the use of copula Be, the use of third person singular –s or no –s for first and second person singular and plural, and the use of "have" to express possession. On the other hand, only two functions of the article system have been targeted in many recent studies, "a" for first mention and "the" for subsequent mention (e.g. Ellis et al., 2008). Second, articles are rule-based items, whereas prepositions, one of the target features in the present study, are item-based. These comparisons suggest that CF can lead to improvement in the use of not only rule-based features when CF targets two functions only, such as the two main functions of the article system, but also rule-based features when CF targets many functions, such as all the uses and forms of simple present, as well as item-based features, such as prepositions, which do not function according to clear grammatical rules.

However, when the participants were divided into groups that considered both treatment and feature, the results indicated that although all the groups improved in the use of the target features from the pretest to the two posttests, not all of them had achieved statistically significant gains. In the use of simple present, group B, which

received indirect CF, outperformed group A, which received direct CF. In the use of prepositions, group C, which received direct CF, outperformed group D, which received indirect CF.

The focus of the second research question was the differential effect of direct CF and indirect CF on the accurate use of rule-based and item-based linguistic features. Analysis of the scores of the writing tests showed that there was an interaction effect between time, type of linguistic feature, and type of CF. The results of additional analysis showed that group B (indirect CF on simple present) and group C (direct CF on prepositions) achieved statistically significant gains in the use of the target features while group A (direct CF on simple present) and group D (indirect CF on prepositions) failed to do so. To respond to the second research question, the findings suggest that direct and indirect CF have differential effects: in this study, indirect CF was more effective than direct CF when targeting a rule-based feature, simple present, while direct CF was more effective than indirect CF when targeting an item-based feature, prepositions.

Immediate posttest scores for Group B, which received indirect CF on simple present, indicated statistically significant gains while those of group A, which received direct CF on the same target features, were not statistically significant. Simple present tense is a rule-based feature; it works according to a clear set of grammatical rules. Receiving indirect CF on something that is governed by clear rules appears to be sufficient and more effective than receiving direct CF. Moreover, because simple present had been taught to the students several times in previous years of education, it was familiar to them and as such had been partially acquired. In this case, the students may have needed only a reminder or a trigger to activate their knowledge of the target feature, which was done through underlining (i.e. indirect CF). Further, asking the students to rewrite their tasks in a second draft in each CF session may have helped them to attend to the given CF by comparing their errors, in their current language, to the target language, a concept called 'noticing the gap' by Schmidt (1995; 2001). It is possible that by rewriting their tasks based on the received CF, group B were engaged in a thinking process in which the previous knowledge was activated in order to self-correct their errors. Because of this cognitive processing, the students were able to use the target features more accurately in the new piece of writing (i.e., the immediate posttest). This result supports what Lalande (1982) suggested as the benefit of indirect CF, which is promoting problem-solving and guided learning.

In the delayed posttest, however, the results showed that although group B's scores showed gains from pretest to the delayed posttest, these gains were not statistically significant. This means that the performance of group B dropped in the delayed posttest compared to their performance in the immediate posttest. One possible reason was the complex nature of the target feature. Present simple tense involves the use of many rules: copula Be, "have" to express possession, third person singular –s, and no –s for first and second person singular and plural. All of these rules may have needed a more explicit and detailed type of CF than only marking the error to achieve long-term learning effect.

On the other hand, group A, which received direct CF on simple present, did not achieve statistically significant gains in either the immediate or the delayed posttests. These results differ from the current research which mostly reports positive effect for the use of direct CF with rule-based features (e.g. Bitchener, 2008; Bitchener & Knoch, 2010a; Sheen, 2007). These different results could be due to a number of factors. The first factor might be the complexity of the target feature, as mentioned previously. The rules of simple present are more complicated than the rules of articles examined in previous research, leading to the different results between the current study and the previous research in regard to the effect of direct CF on rule-based features.

As for why group A did not improve in the use of simple present when group B achieved significant improvement in the use of the same target features, one possible factor was that group A received direct CF while group B received indirect CF. Since the students in group A were provided with direct corrections, they were not required to self-correct their errors in the second drafts. It is possible that the students in group A copied the given corrections in the second draft without paying much attention to the errors and how they were corrected. This means that the students did not process the given feedback or attend to it seriously because they were not required to do anything with it in their second drafts, unlike the students is group B who were asked to figure out the corrections by themselves and therefore experienced more thinking processes. Another possible factor affecting group A's results may have been the impact of the students' advanced level in the use of the target features. In the pretest, group A achieved higher scores in the use of the target feature than what the other groups achieved. Although these scores did not lead to significant differences between the four treatment groups at baseline, they still indicate that group A started at a higher level than that of the other groups. Consequently, it is possible that because of a ceiling effect, group A was not able to achieve further gains in the posttests to exceed their already high performance in the pretest.

For the preposition groups, group C, which received direct CF, achieved statistically significant gains in the immediate posttest, and they maintained this level of improvement one month later in the delayed posttest. On the contrary, group D, which received indirect CF, did not achieve a statistically significant improvement on any of the two posttests. Because of the nature of prepositions as item-based, idiosyncratic, and difficult to master even at a high proficiency level, it is highly probable that the students were not able to correct their preposition' errors by themselves or by consulting a grammar book. Receiving direct corrections in this case was imperative as the errors could not be fixed easily or perhaps at all by the student. Through direct CF, the students in group C were able to know/understand why some of their prepositions were marked as errors and what the correct forms were.

Conversely, group D (i.e. indirect CF on prepositions) received what was probably the least effective type of CF that can be used with item-based features. This was because indirect CF provided very little information, if any, on a linguistic feature that did not function according to clear grammatical rules. If the given CF did not provide much information on the type of error, the related grammatical rule, or the correct form, and the error could not be fixed easily by consulting a grammar handbook, how would the student be able to self-correct it? Thus, the study results suggest that if the linguistic feature is clear (i.e. rule-based), indirect CF might be enough and can save teacher time, whereas if the feature is not clear in terms of its usage (i.e. item-based), it is important to provide a clear type of CF, such as direct CF, which could be the only source of the right answer for some students, and warrants teacher intervention.

The results of the study on the differential effect of direct and indirect CF differ from some of the previous research done to investigate the same question. For example, Bitchener and Knoch (2010b) suggests that direct CF is more effective than indirect CF for the acquisition of rule-based features, unlike the current study which suggests the opposite. Bitchener and Knoch (2010b) compared direct and indirect CF on the acquisition of articles, a rule-based feature, and suggested a longitudinal effect of direct CF on the use of rule-based features. The given direct CF in Bitchener and Knoch's study (2010b) was in the form of metalinguistic information, not direct corrections. The participants may have improved in the use of articles because of the metalinguistic information given in a handout that explained the usage rules and provided examples of the accurate use of articles. The current study, on the other hand, provided direct CF in the form of direct corrections only, making the given direct CF less explicit than direct CF provided in the form of metalinguistic information.

Furthermore, Chandler (2003) suggested that direct CF is more beneficial than indirect CF in producing accurate revised and subsequent writing. However, the difference between the effect of direct and indirect CF on subsequent writing was not statistically significant in Chandler (2003) suggesting that direct and indirect CF were probably equally effective. As for the difference between the effects of direct and indirect CF on revisions in Chandler's study, it cannot be used to suggest that direct CF is more effective than indirect CF because all the students needed to do to produce more accurate revised work was to copy the given direct corrections. The current study suggests that both approaches, not only the direct approach as in Chandler (2003), can be effective depending on the linguistic feature targeted.

Van Beuningen et al. (2008) also suggested that direct CF is more helpful than indirect CF in producing more accurate new writing when targeting nine error categories including verb form, word choice, spelling, capitalization, and punctuation. Therefore, Van Beuningen et al. (2008) suggested that direct CF is more effective than indirect CF for the learning of almost all types of linguistic features, whether rule-based or item-based. However, what made the indirect approach ineffective for the learning of any type of linguistic features in Van Beuningen et al. (2008) was probably providing CF on all errors in students' writing. Providing CF on only one or two types of errors can help the student focus more on the marked errors, discover the pattern or the link between them, and then use his/her previous knowledge or refer to any source, such as a grammar book, to self-correct the errors. All of this cognitive effort was not possible in Van Beuningen et al. (2008) due to the mass correction given on all errors. Conversely, the current study provided indirect CF on one type of errors limiting the number of errors in each task. Therefore, one of the reasons for the positive effect of indirect CF in this study might have been the use of the focused approach.

One explanation for why different types of linguistic features respond differently to different types of CF, as the current study suggests, is that different types of linguistic features may represent different domains of knowledge (Ferris, 2002). It has been suggested that syntactic knowledge and lexical knowledge are learned in different manners (Schwartz, 1993). For this reason, they should be treated/taught differently. Ferris (1999; 2002) suggested using different types of CF with different types of linguistic features, underlining for treatable errors (rule-based) and a combination of direct correction and strategy training for untreatable errors (item-based).

Ferris' suggestions are in accordance with the suggestion made by the current study: using indirect CF for rule-based features and direct CF for item-based features.

However, there are studies that provide different suggestions. Van Beuningen et al. (2012) suggested that grammatical features benefit more from direct CF whereas non-grammatical linguistic features, such as spelling and capitalization, benefit more from indirect CF. This means that all grammatical features, whether rule-based or item-based, are affected more positively by direct CF. Further, Bitchener et al. (2005) suggested that direct CF does not have a positive effect on the use of prepositions. The different results between the current study and these studies may be attributed to differences in the design of the studies. Van Beuningen et al. (2012) provided unfocused CF on Dutch writing in the Netherland, while the current study provided focused CF on English writing in an EFL context. Bitchener et al. (2005) provided CF on three linguistic features: the definite article, the past simple tense, and prepositions, in each piece of writing, unlike the present study which was highly focused and targeted only prepositions for group C. The approach used in Bitchener et al. (2005) was less focused and thus may have distracted the students' attention from prepositions to the other target features which might seem more important to the learner. This might be why the participants in Bitchener et al. (2005) were able to achieve short- and long-term gains in the learning of the rule-based features while no improvement was achieved in the use of prepositions. The current study, on the other hand, suggested that learning of prepositions can respond to certain types of CF. Based on the results of the present study, when asked about the most effective type of written CF and the type of linguistic features which respond better to CF, the answer can be "it depends". Whatever type of CF is appropriate for one type of linguistic feature can be ineffective for another type of linguistic feature.

7. Conclusion

The current study has a number of limitations that should be considered when interpreting the findings. The first one was the lack of a control group. The writing tasks and tests were part of the class work, which means that all students participated in them. Students in this context expect to receive some type of feedback on their writing. As such, including a control group that does not receive any type of meaningful CF for research purposes only could be considered unethical and ecological invalid in this context. Thus, it was decided not to include a control group.

Not including a control group in any study can invalidate the results because the effect achieved by the end of the study could be the result of factors other than the given treatment. In this study, however, two features support the validity of the results. First, the significance levels achieved were high indicating low probability of error and suggesting that the effect created was not a coincidence but the result of the given treatment. Second, the study was designed to include two pretests. By including two pretests with time interval between them, it was possible to examine how the students perform without treatment and then compare this pre-treatment performance to their performance after treatment. Including two pretests may have had an advantage as well in that the same participants were compared to themselves in two periods of time, one with treatment and one without treatment, whereas when including a control group that does not receive any type of treatment, two different groups of people with many individual differences, that could affect the results, are compared.

Another possible limitation was the researcher acting as the class instructor. I was given access to the class by the department on the condition that I teach the class for the entire semester. Playing this dual role can affect different dimensions of the study including the students' voluntariness and anonymity and the effect of the power relationship between the instructor and students. To lessen these effects, a research assistant was assigned to manage the tasks that were related to the research project, but not related to the class work, such as inviting the students to participate in the study and signing the consent letters. However, there may have been a positive side to this dual role as it gave me a better understanding of the context and the participants.

The findings of the current study add to the body of research on written CF by providing suggestions on how different types of CF could have different uses and purposes. These findings also raise many questions in need of further investigation. One of them is, what variables have an impact on the effectiveness of the given treatment? In future research, there is a need to investigate these variables/factors to discover how some students benefit from CF while other students fail to do so. These factors could include individual differences, such as motivation, preferences, aptitude, learning strategies, and attitude towards language learning in general and CF in specific. This can be done through qualitative studies, such as case studies in which the writing of a small number of learners is examined and analyzed closely to discover how some learners gain or fail to gain any improvement from the given CF.

Moreover, there is a clear need for more studies investigating the treatable/untreatable contrast with different linguistic features. Most of the previous research examined the effect of CF on fairly easy features which were also partially known to the participants. Future research needs to examine other linguistic features which are either new to the students or more complex than the ones examined so far. Without this type of research, some of Truscott's arguments against CF (1996; 2008) might be true, in that CF may be ineffective for the acquisition of complex grammatical features (Ellis et al., 2008).

The topic of the effect of CF on writing development and second language acquisition is complicated as it involves many variables that could affect its results. Teachers spend considerable time providing their students with written CF. Providing effective CF can ensure that this time is not wasted. Although recent research has already established that written CF has a positive effect on L2 writing and learning, many practices related to how to use CF to its maximum benefit are still not clear or have not yet been fully explored. The current study was an attempt to address one of the important issues related to CF practices- how to address different types of linguistic features through CF. Based on the results, the study supported recommendations for specific practices to help teachers provide more effective CF on their students' writing.

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