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Effects of direct and indirect comprehensive corrective feedback on non-grammatical accuracy in ESL students' writing

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ABSTRACT

Keywords

Written Corrective Feedback, Comprehensive Corrective Feedback, Focused and Unfocused Feedback, Direct and Indirect Feedback, Error Correction

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This study investigated the effects of direct and two types of indirect comprehensive written corrective feedback (WCF) that differed in their degree of explicitness on students' revision accuracy as well as short-term and delayed transfer effects of WCF on new writings over time. Feedback treatment was provided three times to test the durability of the effect of feedback. Participants were fifty-three intermediate level adult ESL students studying at a private ESL school in Canada. In order to explore the differential effects of explicit and implicit WCF on non-grammatical accuracy participants were randomly divided into four groups: direct, two indirect (underlining only and underlining+metalinguistic cues), and control group. Participants were asked to produce four pieces of narrative writing from four different picture prompts. They also had to revise those narratives over a three-week period. To find out the delayed effects of feedback on accuracy, all groups were asked to write a new narrative two weeks after the last WCF treatment. Findings demonstrated that both Direct and Underline only feedback groups made significant gains in non-grammatical accuracy in revision tasks. However, none of the feedback groups displayed any significant short-term and delayed non-grammatical accuracy improvements.

Introduction

Written corrective feedback (WCF) has been defined by Ferris (2006) as feedback learners receive in response to their written errors. The role of WCF in accuracy improvement has been a topic of interest for L2 writing researchers and scholars for several decades and a large

volume of L2 writing studies have explored the effectiveness of written feedback in both ESL and EFL contexts. However, according to Hyland and Hyland (2006) and Bitchener and Ferris (2012), based on extensive reviews of existing WCF research, there is still no solid confirmation with regards to the effectiveness of WCF. In particular, until now, no particular type of feedback could establish clear effectiveness over another. Hyland and Hyland (2006) further argued that “while feedback is a central aspect of L2 writing programs across the world, the research literature has not been unequivocally positive about its role in writing development” (p. 83).

Numerous early studies examined the efficacy of WCF. Findings from several of these studies displayed no meaningful advantage for WCF (e.g., Kepner, 1991; Polio, Fleck, & Leder, 1998; Semke, 1984). However, several other studies claimed that correction of errors was useful (e.g., Fathman & Whalley, 1990; Ferris, 1997; Lalande, 1982; Robb, Ross, & Shortreed, 1986; Sheppard, 1992). Notably, most of these studies investigated the effects of revision on accuracy improvement, and only a handful of them measured the efficacy of WCF on new writing tasks (Ferris, 2010, 2012). Ferris (2004) argued that ability to revise an incorrect form may display that learners can fix an error they made previously, but it does not always guarantee that they would be able to use the correct form in new writing tasks (Ferris, 2004). Therefore, to find out if feedback has any learning effects, it is necessary to explore WCF’s effectiveness on the accuracy improvement in revision tasks as well as on the new writing tasks (Sheen, 2007; Truscott, 1999).

WCF studies have examined the effect of feedback as well as the differential effects of different WCF types. These types of studies investigated whether one kind of WCF was better than the other. However, the results from these studies are also inconclusive, and according to Shintani and Ellis (2013), deciding the superiority between direct and indirect feedback is controversial issue in the WCF literature. Furthermore, as Ferris (2010), Storch (2010), and Liu and Brown (2015) pointed out, most studies that have displayed a positive effect for WCF to date, targets only single or a limited number of errors. Ferris (2012) and Storch (2010) argued against providing WCF treatments on single errors. In their opinion, studies of feedback that targeted single errors may demonstrate accuracy gains on the selected target features, but these studies lack ‘ecological validity’ as teachers usually do not provide feedback on single error type, but rather they provide feedback on many different types of errors they observe in students’ writings. (Ferris, 2012; Storch, 2010). There is also evidence that the degrees of feedback explicitness play roles on the learners’ ability to recognize and revise their errors successfully. However, the degree to which the differential effect of feedback directness may interact with the type of feedback has not been explored (Ferris, 2006; Sheen, 2007, Van Beuningen, De Jong & Kuiken, 2008 & 2012). The present study intended to address the above-mentioned issues. It implemented comprehensive (or unfocused) WCF, in which all or most errors receive feedback. In particular, in the present study, feedback was provided on both grammatical and non-grammatical errors. The present study also compared the effectiveness of direct and indirect feedback but manipulated the degree of feedback explicitness at the same time. Finally, it examined the effects of WCF on both revision of the same writing as well as on the accuracy gains on learners’ newly produced writing. To achieve these goals, the study was designed in

a way that involved several feedback sessions and multiple pieces of writing. This design allowed tracing the effects of WCF on the subsequent revisions of the same draft as well as on learner accuracy of the subsequent new writings.

Literature Review

Numerous empirical studies conducted in the last twenty years have explored WCF's role on L2 acquisition and the improvement of L2 writing. However, a considerable portion of these studies primarily focused in general on the effectiveness of feedback and many of those studies examined the effectiveness of WCF on revisions only. In many early studies, comparisons were made between feedback conditions and no feedback conditions (e.g., Ashwell, 2000; Fathman & Whalley, 1990; Ferris & Roberts, 2001; Kepner, 1991; Polio et al., 1998; Semke, 1984). However, only a few studies compared the impact of various types of feedback, and even among those studies, the results were contradictory. For example, some studies found no differences between different types of feedback (e.g., Robb et al., 1986; Semke, 1984) and some studies discovered that indirect feedback groups performed better than the direct feedback groups (e.g., Lalande, 1982; Sheppard, 1992). There have also been a number of other methodological limitations with these studies, one of which is focusing on revisions only and not measuring accuracy gains in new writings. Several later studies tried to overcome the methodological limitations and also compared the effectiveness of different types of feedback with updated designs (e.g., Bitchener, 2008; Bitchener, Young, & Cameron, 2005; Bitchener & Knoch, 2009a, 2009b; Sheen, Wright, & Moldawa, 2009; Shintani & Ellis, 2013). However, there is no conclusive evidence about the effectiveness of direct and indirect feedback from these recent studies, and scholars have disagreements about the efficacy about these feedback types. For example, some favored direct feedback as it provided students clear guidelines on how to correct the errors (e.g., Bitchener, 2008; Ellis et al., 2008; Sheen, 2007). Others claimed that indirect feedback is better as it facilitates 'problem-solving learning' and thus helps students become autonomous learners (Ferris, 2003, 2006). Alternatively, some researchers argued in favor of metalinguistic feedback with combination of direct feedback (e.g., Bitchener et al., 2005; Bitchener, 2008; Bitchener & Knoch, 2008, 2009a, 2009b; Ellis et al., 2008; Shintani & Ellis, 2013). Most recently, Wondim et al., (2024) conducted a quasi-experimental study to examine the impact of written corrective feedback on the English language writing proficiency of university first year students. They found that students who received WCF in combination with metalinguistic explanations outperformed those in the indirect group who received WCF alone. Based on another most recent meta-analysis of 52 studies, Brown et al., (2023) declared that most effective type of feedback in the dataset was direct feedback with metalinguistic information. However, they clarified that the most common types of feedback were almost equally effective in different contexts

Several recent studies have investigated the effects of WCF on subsequent writings (e.g., Baker & Bricker, 2010; Bitchener & Knoch, 2008; Bitchener, Young, & Cameron, 2005; Frear & Chiu, 2015; Karim & Nassaji, 2018; Sheen et al., 2009; Shintani & Ellis, 2013; Storch & Wigglesworth, 2010; Truscott & Hsu, 2008; Van Beuningen et al., 2008, 2012). While these studies produced encouraging results, most of them did not find an effect beyond immediate revisions. Truscott and Hsu (2008) and Liu's (2008) studies, for example, demonstrated

improvement in accuracy gains on revision tasks, but not on the new writing tasks. Bitchener and Knoch (2008) found no significant improvement of accuracy among two groups (immigrant and international students), but they retained accuracy over seven weeks. However, Liu (2008) and Van Beuningen et al. (2008) found accuracy gains on revisions only from direct and indirect feedback; however, in case of delayed writing, only direct feedback displayed accuracy improvement. Part of the reason for these differences could be that the researchers used different types of feedback and also that different feedback types may interact differently with the effect of feedback on revision versus on new piece of writing. Considering the fact that most of these studies displayed significant revision effects, some of the most recent studies (e.g., Ekanayaka & Ellis, 2020, 2021; Kim & Emeljanova, 2021) investigated only the effects of revision on written accuracy. Both studies by Ekanayaka and Ellis (2020, 2021) investigated the effects of revisions after receiving WCF versus the opportunity to discuss errors in pairs only and found that revision following WCF groups outperformed the peer discussion group. In another most recent similar study, Kim and Emeljanova (2021) compared students' individual and pair work revision behaviors in the classroom. In this study, the pair-correction group displayed higher accuracy rate than the self-correction group. Thus, recent studies have also demonstrated that engaging in revision tasks significantly enhances writing accuracy.

Numerous past and recent studies have delved into the impacts of WCF on both grammatical (such as syntax and morphology errors) and non-grammatical errors (including word choice, capitalization, spelling, and punctuation errors). The interest in exploring WCF's effects on grammatical and non-grammatical accuracy was sparked by claims made by Ferris (1999; 2002; 2010) and Truscott (2001; 2007). Ferris (1999; 2002; 2010) suggested that CF could potentially enhance the accuracy of rule-governed or grammatical aspects, while Truscott (2001; 2007) contended that error correction might primarily aid in reducing non-grammatical errors. However, the results from the research on this issue is still inconclusive as studies produced mixed results. For example, based on the findings from a most recent study, Brown et al., (2023) concluded that WCF is more effective on rule governed error types (e.g., regular verb past tense) than on item-based errors (e.g., articles and prepositions). One issue identified in studies exploring the effects of Written Corrective Feedback (WCF) on grammatical accuracy is the prevalent use of focused feedback. This method involves targeting only specific or a limited set of grammatical structures (such as articles, prepositions, and past tense), rather than addressing a broader range of errors (e.g., Bitchener et al., 2005; Bitchener, 2008; Bitchener & Knoch, 2008, 2009a, 2009b; Ellis, Sheen, Murakami, & Takashima, 2008; Ekiert & di Gennaro, 2021; Shintani & Ellis, 2013). Focused feedback (where WCF is provided on all errors, not only on one particular type or selected errors) is thought to be more effective than comprehensive feedback because in focused feedback, learners' attention is directed more effectively towards a pre-selected target form (e.g., Bitchener & Knoch, 2008; Ellis et al., 2008; Nassaji, 2015; Sheen, 2007; Sheen et al., 2009). However, while concentrating feedback on a few or single errors may prove effective, some researchers, such as Ferris (2010), have raised concerns about the ecological validity of such studies and argue that in real L2 writing teaching scenarios, teachers typically do not correct only one type of error at a time. Storch (2010) highlighted that “researchers who focus only on one structure may find few instances of such structures in their students' writing” (p. 41).

Responding to this argument, a few recent studies have investigated the effect of comprehensive feedback (e.g., Frear & Chiu, 2015; Hartshorn, Evans, Merrill, Sudweeks, Strong-Krause, & Anderson, 2010; Hartshorn, Rice, Eckstein, & Evans, 2023; Karim & Nassaji, 2018; Liu, 2008; Sheen et al., 2009; Storch & Wigglesworth, 2010; Truscott & Hsu, 2008; Van Beuningen et al., 2008, 2012). These studies have produced varied outcomes. For instance, Van Beuningen et al. (2008) explored the impacts of both direct and indirect comprehensive feedback on both grammatical and non-grammatical errors and discovered that both types of feedback contributed to significant improvements in grammatical accuracy. In a subsequent study, Van Beuningen et al. (2012) again observed enhanced accuracy in both revised and new writing pieces from direct and indirect comprehensive WCF. Hartshorn et al. (2010 & 2023) investigated the effects of dynamic comprehensive written corrective feedback (DWCF) and noticed significant accuracy gains. Khalifa (2022) similarly documented higher writing scores for participants who received DWCF. Sheen et al. (2009) examined the effects of both focused and unfocused (i.e., comprehensive) feedback on grammatical accuracy but found no difference between the two types of feedback. Frear and Chiu (2015) also compared the differential effects of focused (targeting selected grammatical structures, such as weak verbs) versus unfocused errors, with both types of WCF demonstrating accuracy gains. However, there is a limited number of studies that directly compare focused and comprehensive feedback. Furthermore, only a handful of studies have investigated the effects of comprehensive WCF on both grammatical and non-grammatical accuracy, such as those conducted by Karim and Nassaji (2018), Truscott and Hsu (2008), and Van Beuningen et al. (2008, 2012).

Finally, most of the recent studies (e.g., Bitchener, 2008; Bitchener & Knoch, 2008; Bitchener & Knoch, 2009a; Bitchener & Knoch, 2009b; Sheen, 2007; Van Beuningen et al. 2008) have adopted 'one-shot' designs, wherein feedback was administered only once and on a single text. Liu and Brown (2015), in their recent review of research, pointed out 'one-shot' treatment as a methodological limitation. Storch (2010) also argued that while one-shot treatments might be methodologically convenient, their educational efficacy is doubtful. She added that in accordance with SLA theories, "learning requires extensive and sustained meaningful exposure and practice" (Storch, 2010, p. 42). Therefore, more studies are needed to investigate the long term effects of comprehensive WCF. Hence, additional studies are required to explore the long-term impacts of comprehensive WCF.

The Present Study

In order to add to the existing research on L2 corrective feedback, the current study sought to address several of the aforementioned issues. One key objective was to examine the distinct effects of different WCF types, i.e., direct versus indirect feedback, on non-grammatical accuracy. The study also explored the effects of comprehensive feedback, which addresses all errors, and investigated the effectiveness of two types of indirect feedback: underlining only and indirect feedback coupled with metalinguistic information. While previous research extensively examined various types of direct feedback, including direct correction alone or with oral or written metalinguistic explanation (e.g., Bitchener, 2008; Bitchener et al., 2005; Bitchener & Knoch, 2009a & b; Sheen, 2007; Sheen et al., 2009), only a limited number of

studies have compared different types of indirect feedback. Thus, the current study also addressed the issue of how the levels of explicitness in indirect feedback impact L2 writing accuracy.

The study also examined the effects of WCF on students' accuracy in revising their work and its transfer effects on new writing pieces. Unlike some prominent studies (e.g., Shintani & Ellis, 2013; Shintani et al., 2014; Truscott & Hsu, 2008; Van Beuningen et al., 2012) that administered the WCF treatment only once, the current study involved multiple WCF treatment sessions across various writing tasks. It assessed the effects of feedback not only on individual pieces of writing but also on subsequent writing attempts, thus evaluating the transfer effect of feedback over time. Overall, the study addressed the following four research questions:

RQ1: Does comprehensive WCF affect the accuracy of L2 learners' revisions of the same piece of writing?

RQ2: Does comprehensive WCF have a lasting effect on the accuracy of L2 learners' new writing pieces over time?

RQ3: Does the type of feedback (direct vs. indirect) influence its effectiveness?

RQ4: Does the effectiveness of WCF vary depending on the type of errors (grammatical vs. non-grammatical)?

Please note that while this study examined the impacts of comprehensive WCF on both grammatical and non-grammatical accuracy, only the findings related to non-grammatical accuracy are presented and discussed in this paper.

Methodology

Participants

Fifty-three adult ESL students at intermediate proficiency level, attending two ESL schools in Canada, comprised the participants of this study. Participation was voluntary, and the participants represented diverse ethnic backgrounds. Of the total participants, 17 were male (32%) and 36 were female (68%). Their ages ranged from 18 to 40, with an average age of 25.43 (SD = 5.0); the majority (81%) fell within the age range of 20 to 30. Intermediate level students were selected based on their perceived writing proficiency, as they were expected to have reached a level of competency necessary for the writing tasks involved. Additionally, according to Brown (2007), intermediate level students tend to experiment with various grammatical and lexical features in their writing, leading to the occurrence of grammatical and lexical errors. Participants' proficiency levels were assessed using placement tests administered by their respective ESL schools prior to their participation in the study.

Treatment Groups

The 53 participants were randomly assigned to four groups: Direct CF (n=14), Indirect Underline+metalinguistic CF (n=14), Indirect Underline only CF (n=13), and No CF (n=12). These treatment types represented different levels of explicitness in providing feedback, ranging from fully explicit (Direct CF) to less explicit (Underline+metalinguistic CF) to implicit (Underline only CF). The variation in feedback types aimed to explore potential differential effects among them.

Direct CF involved crossing out the incorrect forms and supplying the corresponding target forms above the errors. Underline+metalinguistic CF involved underlining the incorrect forms and presenting metalinguistic information above and below the errors, sometimes in the margins, without offering the correct form. Lastly, Underline only CF entailed simply underlining the incorrect forms.

Treatment Procedure

The study involved seven sessions: Writing 1, revision of Writing 1, Writing 2, revision of Writing 2, Writing 3, revision of Writing 3, and Writing 4 (delayed writing). The seven sessions spanned a duration of six weeks (as detailed in Table 1). The writing assignments involved writing narratives based on four picture prompts chosen from ESL textbooks. Each student generated four compositions corresponding to the provided images. All four groups produced Writing 1 on day one of week one. Participants were given 30 minutes to complete this writing task, they were directed to produce a minimum of 10 sentences or at least 100 words. Once completed, writings (task 1) were collected, and feedback was provided on all errors. Participants in the treatment groups received feedback, i.e., Direct CF, Underline+metalinguistic CF, and Underline only CF, respectively. The control group did not receive any feedback. On day 2, participants' Writing 1 with feedback were returned to them for revision. Participants in all the treatment and the control groups were given 10 minutes to read their original Writing 1 that received the corrections. Following this, participants were allocated 30 minutes to revise their initial draft of Writing 1. They were instructed to address all errors identified in the feedback. To prevent simple copying of corrections, the Direct CF group received feedback on photocopies of their original writings. These photocopies of Writing 1 were retrieved from participants after ten minutes. Participants were provided with their original written drafts just before beginning their revision task. The revisions were then collected.

Writing tasks 2 and 3 were conducted in weeks 2 and 3 respectively. The process of writing and revising Writing 2 and Writing 3 followed the same protocol, using fresh picture prompts. During the final week (week 6), participants in all four groups were instructed to produce one more new writing inspired by a different picture prompt. A two-week gap was implemented between treatment three and writing session four to assess the transfer or delayed learning effect resulting from the feedback. An overview of the procedure discussed above is presented in Table 1.

Table 1
Feedback Procedure

		Direct CF	Underline + Metalinguistic CF	Underline Only CF	NO CF
Week 1	Day 1	Writing 1	Writing 1	Writing 1	Writing 1
	Day 2	CF & Revision of Writing 1	CF & Revision of Writing 1	CF& Revision of Writing 1	Revision of Writing 1
Week 2	Day 1	Writing 2 (On new picture)	Writing 2 (On new picture)	Writing 2 (On new picture)	Writing 2 (On new picture)
	Day 2	CF & Revision of Writing 2	CF & Revision of Writing 2	CF & Revision of Writing 2	Revision of Writing 2
Week 3	Day 1	Writing 3 (On new picture)	Writing 3 (On new picture)	Writing 3 (On new picture)	Writing 3 (On new picture)
	Day 2	CF & Revision of Writing 3	CF & Revision of Writing 3	CF & Revision of Writing 3	Revision of Writing 3
Week 6		Writing 4 (On new picture)	Writing 4 (On new picture)	Writing 4 (On new picture)	Writing 4 (On new picture)

Scoring Procedures

An error ratio was used to measure overall accuracy in the present study following some previous research on the effectiveness of CF (e.g., Chandler, 2003, Truscott & Hsu, 2008; Van Beuningen et al., 2012). Based on Polio and Shea's (2014) investigation of measures of linguistic accuracy in L2 writing research, counting of number of errors was also found to be a reliable and valid accuracy measure. The error ratio was determined by dividing the total number of errors by the total word count, then multiplying by 100. Utilizing this ratio allowed for adjustments based on variations in the length of each piece of writing. First, the effect of feedback on overall accuracy of revisions was measured. For revision accuracy, the effects of feedback were examined on the same target form that had received feedback. For the feedback effect on the new piece of writing, the effects were measured on categories of errors, as it was hard to find the same exact target form in new pieces of writing. To this end, following previous studies, the target forms were divided into grammatical and non-grammatical errors (e.g., Van Beuningen, 2011). The non-grammatical category comprised errors related to word choice, spelling, capitalization, punctuation, and other non-grammatical errors. Each subgroup's accuracy rate was then calculated and compared (Van Beuningen, 2011). For both revision accuracy and accuracy of the target forms in new pieces of writing, error ratios were used. The researcher employed error codes to identify all errors in the participants' texts, which facilitated the counting of each error category. Additionally, both intra-rater and inter-rater reliability of the scoring were assessed.

Data Analyses

Quantitative analysis was conducted to assess and compare the varied outcomes of feedback treatments. The rates of improvement in accuracy from Writing 1 to Writing 2, Writing 2 to Writing 3, and Writing 3 to Writing 4 (Delayed Writing) were compared to examine the impact of CF on new writings. Additionally, to evaluate the effect of WCF on student revisions, accuracy gains across the three revision tasks among the four groups were compared. Data were inputted into IBM SPSS 19.0 software. Two-way Analysis of Variance (ANOVA) was

employed to discern both within-subject and between-subject effects on different dependent variables (i.e., grammatical accuracy, non-grammatical accuracy, and overall accuracy) during the treatment and revision sessions, as well as the delayed writing session. The two-way ANOVA was used due to the investigation into the effects of multiple independent variables—namely, CF treatments (i.e., Direct CF, Underline only, and Underline+metalinguistic CF) and revision tasks. Prior to conducting ANOVAs, assumptions regarding Homogeneity of Variance and Normality of Distribution were verified using Levene's test and Shapiro-Wilk test, respectively. As the results did not yield significance, it was concluded that the data met the assumptions. Effect sizes were calculated according to Cohen (1988), where values ranging from .01 to .05 indicate small effects, .06 to .13 suggest medium effects, and values equal to or exceeding .14 indicate large effects.

Results

Initially, a one-way ANOVA was conducted on the error rates for Writing 1 to determine if the participants in all the four groups had similar writing proficiency when they began the study. The results indicated that the proficiency levels among the four groups were not similar. Specifically, the mean error rates for the experimental groups differed significantly from that of the control group [$F(3, 49) = 3.89, p = .014$]. These variations suggested that, in terms of overall accuracy, there were insignificant disparities among the groups initially. The grammatical error rates between groups also exhibited significant differences ($p = .043$). However, regarding non-grammatical errors, the difference in error rates between the groups was not statistically significant ($p = .101$). Table 2 presents the descriptive statistics for error rates of all the 4 groups in Writing 1 (Session 1). The ANOVA results are presented in Table 3.

Table 2

Descriptive Statistics for Error Rate^a of Four Groups in Writing 1

Groups	Error Rates in Writing 1	
	M	S.D.
Underline+metalinguistic (N=14)	17.97	6.20
NoCF (N=12)	20.65	4.85
DirCF (N=14)	28.53	10.48
Underline only (N=13)	23.14	10.58
Total (N=53)	22.64	9.17

^aPercentage (Total number of errors/total number of words x 100)

Table 3

One-way ANOVA for Error Rates in Writing 1

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	842.909	3	280.970	3.897	.014
Within Groups	3532.883	49	72.100		
Total	4375.791	52			

Post hoc test with Bonferroni demonstrated that there was a significant difference in error rates between Direct CF ($M = 28.53, SD = 10.48$) and Underline+metalinguistic group ($M = 17.97,$

$SD = 6.20$). Instead of employing raw scores, gain scores were calculated for each writing, given the significant disparity in mean error rates between the two groups. These gain scores were also calculated for both the new writings and their revisions to assess improvements in accuracy. For the writings, gain scores were determined by subtracting the mean error rate of the initial composition from that of the subsequent one. For the revisions, gain scores were obtained by subtracting the mean error rates of the writings from those of their revised versions.

Revision Effects

A two-way ANOVA was conducted on the gain scores from revisions to explore the impact of feedback on the revision process. Prior to conducting the ANOVA tests, Levene's test and Kolmogorov-Smirnov test were conducted to assess the assumptions of Homogeneity of Variance and Normality of Distribution, respectively. The results displayed non-significant findings indicating that the data met the prerequisites for ANOVA. Moreover, the findings also revealed a significant effect of time [$F(2, 98) = 6.09; p = .003$], suggesting an improvement in overall accuracy across Revision 1 to Revision 2 and Revision 2 to Revision 3, regardless of the CF types. Additionally, the condition or feedback types also had a significant influence on revisions [$F(3, 49) = 18.65, p = .000$]. Descriptive statistics detailing the overall accuracy gains in the three revision tasks for all four groups are presented in Table 4.

Table 4

Descriptive Statistics for Overall Accuracy Gains in 3 Revision Tasks by Group

Groups	Accuracy Gain: Revision 1		Accuracy Gain: Revision 2		Accuracy Gain: Revision 3	
	M	S.D.	M	S.D.	M	S.D.
Underline+metalinguistic ($n=14$)	12.04	6.78	11.85	5.51	8.30	4.82
NoCF ($n=12$)	5.61	5.12	3.47	1.88	2.31	1.70
DirCF ($n=14$)	22.20	8.43	14.44	5.82	17.20	10.86
Underline only ($n=13$)	13.34	8.16	12.19	5.17	11.72	7.02
Total ($N=53$)	13.59	9.25	10.72	6.30	10.13	8.74

Revision Effects of CF on Non-grammatical Accuracy

A comparison was conducted among the revisions of non-grammatical errors across four groups to find out the impact of CF on non-grammatical accuracy in students' subsequent revisions. The results of the one-way ANOVA indicated that CF helped achieve significant improvements in non-grammatical error reduction for students revising Writing 2 [$F(3, 49) = 4.37, p = .008$] and Writing 3 [$F(3, 49) = 6.42, p = .001$]. However, the CF treatments in Writing 1 did not yield any significant effects on the reduction of non-grammatical errors [$F(3, 49) = 2.41, p = .078$]. To identify where the significant differences in non-grammatical accuracy improvement lay among all groups, Bonferroni post-hoc multiple comparison tests were performed.

The Bonferroni analysis revealed significant differences in non-grammatical error rates between the Direct CF group ($M = 5.88, SD = 4.83$) and the No CF group ($M = 1.24, SD = 2.59$), as well as between the Underline only CF group ($M = 5.06, SD = 3.27$) and the No CF group during Revision 2. Both the Direct CF and Underline only CF groups outperformed the

No CF group. Similarly, during Revision 3, compared to the No CF group, both Direct CF and Underline only CF treatments were more effective in improving students' non-grammatical accuracy. Significant differences in non-grammatical error rates were observed between the Direct CF group ($M = 6.47$, $SD = 4.71$) and the No CF group ($M = 1.04$, $SD = 1.92$), as well as between the Underline only CF group ($M = 5.42$, $SD = 3.56$) and the No CF group.

Transfer Effects

To examine differences both within and between groups during the writing sessions, initially, a two-way ANOVA was conducted. The results indicated that time did not yield any significant effect. In other words, there was no notable improvement from Writing 1 to Writing 2, Writing 2 to Writing 3, and Writing 3 to Delayed Writing, regardless of the types of corrective feedback [$F(2, 98) = 2.08$; $p = .130$]. Additionally, there was no main effect observed for conditions [$F(3, 49) = 1.73$; $p = .173$]. However, an interaction between time and condition (i.e., feedback types) was observed [$F(6, 98) = 2.50$; $p = .027$]. This interaction suggested that learners might have experienced some improvements over time due to the feedback condition. Given the interaction between time and condition, individual one-way ANOVAs were conducted to identify specific effects.

Short-term Effects on Non-grammatical Accuracy

To investigate the short-term effects of CF treatments on the improvement of non-grammatical accuracy between Writing 1 and Writing 2, and from Writing 2 to Writing 3, a one-way ANOVA test was utilized to compare the mean gains in non-grammatical accuracy across four groups. Table 5 illustrates the descriptive statistics for non-grammatical accuracy gains within groups and sessions.

Table 5

Descriptive Statistics for Short-term Non-grammatical Accuracy Gains

Groups	Accuracy Gain: Writing 1 to Writing 2		Accuracy Gain: Writing 2 to Writing 3	
	M	S.D.	M	S.D.
Underline+metalinguistic ($n=14$)	.761	6.26	2.01	4.11
NoCF ($n=12$)	1.53	5.70	2.26	3.98
DirCF ($n=14$)	3.39	4.74	0.293	4.50
Underline only ($n=13$)	1.38	7.87	1.31	5.87
Total ($N=53$)	1.78	6.13	1.29	4.65

As indicated by the results of the one-way ANOVA, there were no significant discrepancies in the average non-grammatical accuracy gains between Writing 1 to Writing 2 and Writing 2 to Writing 3 across the four groups. Subsequently, a Bonferroni-corrected post-hoc pairwise comparison test was conducted to identify any significant differences. When comparing the mean gain scores from Writing 1 to Writing 2 and from Writing 2 to Writing 3, the analysis indicated no statistically significant difference in non-grammatical accuracy gains between the control group and the groups receiving CF treatment.

Delayed Effects on Non-grammatical Accuracy

According to the findings of the one-way ANOVA, there was no significant difference in non-grammatical accuracy gains from Writing 3 to the final or Delayed writing across all four groups. The descriptive statistics for grammatical accuracy gains in the Delayed writing session for each of the four groups are illustrated in Table 6.

Table 6

Descriptive Statistics for Delayed Non-grammatical Accuracy Gains by Group and Session

Groups	Accuracy Gain: Writing 3 to Writing 4	
	M	S.D.
Underline+metalinguistic (n=14)	.242	3.32
NoCF (n=12)	2.13	3.39
DirCF (n=14)	1.96	5.07
Underline only (n=13)	.896	3.60
Total (N=53)	1.28	3.90

As per Bonferroni test, there was also no significant difference in the improvement of non-grammatical accuracy among the three treatment groups, nor between these groups and the control group. Similarly, there were no notable differences observed in non-grammatical accuracy gains when comparing Writing 1 (Week 1) to the Delayed writing (Week 6).

Discussion

The results indicated that, with regards to the non-grammatical accuracy in revisions, both Direct CF and Underline-only CF contributed significantly to the improvement of students' non-grammatical accuracy compared to the No CF treatment group during the second and third revision tasks. However, regarding the short-term and delayed effects of WCF on non-grammatical accuracy, neither direct nor indirect WCF demonstrated any significant impact. Thus, the findings suggest that both direct and indirect WCF were effective solely in improving participants' non-grammatical accuracy during their revision tasks. The findings of the present study, indicating the potential of comprehensive WCF to improve non-grammatical accuracy, is in line with recent research by Hartshorn et al. (2023), which reported significant accuracy improvements in treatment groups receiving comprehensive dynamic written feedback. Similarly, the positive effects of revisions on written accuracy observed in this study resonate with the outcomes of recent studies by Ekanayaka and Ellis (2020, 2021) and Kim and Emeliyanova (2021), which investigated the impact of revision tasks on grammatical accuracy and found them to be beneficial. Moreover, the findings of this study contribute to existing research demonstrating the positive effects of feedback on revision tasks, as seen in previous studies such as those by Ashwell (2000), Bitchener (2008), Bitchener and Knoch (2008, 2009a), Ferris and Roberts (2001), and Sachs and Polio (2007). However, it is worth noting that in most of these previous studies, CF primarily targeted single errors (e.g., Bitchener, 2008; Bitchener & Knoch, 2008, 2009a, 2010b; Sheen, 2007, 2010).

According to Truscott and Hsu (2008), being able to successfully reduce errors during revision may not be considered as learning. Based on this argument, the direct and indirect CF's success in the present study might not be indicative of learning of the non-grammatical structures.

Truscott and Hsu (2008) observed that the positive impact of indirect CF on revision didn't carry over to a new writing task a week later, leading them to conclude that there's no correlation between successful error revision and learning (as evidenced by improved accuracy in subsequent writing tasks). The current study's findings that WCF failed to yield short-term and delayed improvements in non-grammatical accuracy, support Truscott and Hsu's (2008) findings. However, the results regarding the lack of accuracy gains in non-grammatical accuracy do not support Truscott and Hsu's (2008) claim that error correction might only be useful in reducing non-grammatical errors only. But the results are consistent with the study by Van Beuningen et al. (2012) who also explored the effects of comprehensive CF on both grammatical and non-grammatical errors. Their research indicated that non-grammatical accuracy saw greater benefits from indirect CF. Consequently, they concluded that "both grammatical and non-grammatical errors are amenable to CF but they benefit from different types of corrections" (p. 33).

Both direct and indirect WCF were unsuccessful in non-grammatical accuracy improvement in new writings. As Van Beuningen (2011) also pointed out, this could be due to the fact that the indirect approach might have posed cognitive demand on the participants (Van Beuningen, 2011). Participants in the current study probably lacked sufficient language proficiency to process or utilize the indirect CF. The learners might have successfully addressed linguistic errors they were capable of correcting independently, such as spelling and punctuation errors (Van Beuningen, 2011). Furthermore, as the current research provided comprehensive WCF (i.e., feedback was provided extensively on all errors) it could have overwhelmed participants cognitively, potentially impeding their feedback processing. Some of the other reasons that could have affected learners' successful correction of non-grammatical errors were their attitudes towards the errors as well as their insufficient English non-grammatical knowledge (i.e., spelling, vocabulary, etc.).

The findings of the current study made some significant contributions to the theoretical understanding of the role WCF plays in Second Language Acquisition (SLA). The current study's findings make significant contributions to the theoretical understanding of WCF in SLA. One noteworthy contribution is to the ongoing debate on the effectiveness of focused versus unfocused WCF. Advocates of focused WCF (e.g., Bitchener, 2008; Ellis et al., 2008; Sheen, 2007) argue that targeting specific types of errors may be more advantageous than addressing all or a broad range of error categories. They posit that comprehensive WCF might not be as beneficial in promoting SLA, considering that many learners have limited processing capacity, and correcting all errors could potentially overwhelm them cognitively. In the current research, comprehensive WCF did not demonstrate positive effects on the enhancement of non-grammatical accuracy in subsequent writing tasks. Thus, these findings align with the notion that unfocused CF might pose excessive cognitive demands on certain learners. However, these findings should not discourage L2 writing teachers to avoid using comprehensive WCF. Although it can be time consuming for the teachers to provide comprehensive WCF and also to correct all errors, it can be found useful and motivating for students (Yu et al., 2021a). Students' needs and contexts should be considered before implementing WCF types. As Mao

et al. (2024) also have argued, teachers should accept a variety of WCF options and adjust them based on the requirements of their students.

Additionally, the findings of the present study make significant contributions to the ongoing theoretical debate regarding the effectiveness of both direct and indirect forms of WCF. In this study, both direct and indirect WCF were found to contribute to improvements in non-grammatical accuracy during revision tasks. Thus, these results lend support to the effectiveness of both direct and indirect CF approaches. Furthermore, metalinguistic WCF proved successful in reducing non-grammatical errors in the revision tasks, which corroborates Sheen's (2007) argument that metalinguistic feedback is superior as it assists learners in both recognizing linguistic forms and understanding the underlying rules governing them.

While the present study contributes to our understanding of written corrective feedback, it is important to consider its limitations when interpreting the results. Firstly, the study was conducted outside of the classroom setting. Consequently, while the findings offer insights with implications for classroom teaching, they may not be entirely transferable to classroom contexts. Thus, conducting a replication study with a similar design within a naturalistic classroom setting could yield more practical results directly applicable to classroom environments.

In terms of the sample size in this study, a total of 53 learners participated, which might seem relatively small. Thus, it is recommended that future research replicate these findings using larger sample sizes. However, it is important to note that each participant in this study produced four new pieces of writing and revised three of them. This produced a sizable amount of data to analyze.

Finally, concerning the difficulty level of the tasks (picture prompts), efforts were made to ensure their similarity as much as possible. Nevertheless, there is a possibility that the degree of difficulty varied among the picture prompts, resulting in participants reacting differently to the tasks and producing diverse narratives at different times. If this was the case, it suggests that the task effect may have contributed to the differences observed in the impact of feedback on accuracy in both the revision tasks and the new writings.

Conclusion

The findings of the present study indicate that both direct and indirect comprehensive WCF, delivered through underlining and underlining combined with metalinguistic information, can significantly enhance non-grammatical accuracy during the revision of previously written texts. This study is among the handful of research endeavors that have implemented comprehensive CF treatment in students' writing tasks, revealing its positive impact on revising the same writing. This then suggest that comprehensive or unfocused direct CF has potential learning values. However, the findings did not show any improvements in non-grammatical accuracy in new writings, possibly due to cognitive overload as participants attempted to correct a wide range of non-grammatical errors. Nevertheless, the observed accuracy improvements in the revision tasks underscore the importance of comprehensive CF in

reducing errors in L2 writing at the intermediate level. In essence, while the effectiveness of focused WCF is well-established in research literature, the findings of this study affirm that comprehensive WCF can also serve as a valuable tool for L2 teachers aiming to assist learners in enhancing their writing accuracy.

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References

- Ashwell, T. (2000). Patterns of teacher response to student writing in a multi-draft composition classroom: Is content feedback followed by form feedback the best method? *Journal of Second Language Writing*, 9, 227–57. [https://doi.org/10.1016/S1060-3743\(00\)00027-8](https://doi.org/10.1016/S1060-3743(00)00027-8)
- Baker, W., & Bricker, R. H. (2010). The effects of direct and indirect speech acts on native English and ESL speakers' perception of teacher written feedback. *System*, 38, 75-84. <https://doi.org/10.1016/j.system.2009.12.007>
- Bitchener, J. (2008). Evidence in support of written corrective feedback. *Journal of Second Language Writing*, 17, 102–18. <https://doi.org/10.1016/j.jslw.2007.11.004>
- Bitchener, J., & D. Ferris. (2012). *Written corrective feedback in second language acquisition and writing*. Routledge.
- Bitchener, J., & Knoch, U. (2008). The value of written corrective feedback for migrant and international students. *Language Teaching Research Journal*, 12, 409–31. <https://doi.org/10.1177/1362168808089924>
- Bitchener, J., & Knoch, U. (2009a). The relative effectiveness of different types of direct written corrective feedback. *System*, 37, 322–29. <https://doi.org/10.1016/j.system.2008.12.006>
- Bitchener, J., & Knoch, U. (2009b). The contribution of written corrective feedback to language development: A ten month investigation. *Applied Linguistics*, 31, 193-214. <https://doi.org/10.1093/applin/amp016>
- Bitchener, J., & Knoch, U. (2010b). Raising the linguistic accuracy level of advanced L2 writers with written corrective feedback. *Journal of Second Language Writing*, 19, 207-217. <https://doi.org/10.1016/j.jslw.2010.10.002>
- Bitchener, J., Young, S., & Cameron, D. (2005). The effect of different types of corrective feedback on ESL student writing. *Journal of Second Language Writing*, 9, 227–58. <https://doi.org/10.1016/j.jslw.2005.08.001>
- Brown, D. H. (2007). *Teaching by principles: An interactive approach to language teaching* (3rd ed.). Longman/Pearson Education.
- Brown, D., Liu, Q., & Norouzian, R. (2023). Effectiveness of written corrective feedback in developing L2 accuracy: A Bayesian meta-analysis. *Language Teaching Research*, 0(0). <https://doi.org/10.1177/13621688221147374>
- Chandler, J. (2003). The efficacy of various kinds of error feedback for improvement in the accuracy and fluency of L2 student writing. *Journal of Second Language Writing*, 12, 267–96. [https://doi.org/10.1016/S1060-3743\(03\)00038-9](https://doi.org/10.1016/S1060-3743(03)00038-9)
- Ellis, R., Sheen, Y. Murakami, M., & Takashima, H. (2008). The effects of focused and unfocused written corrective feedback in an English as a foreign language context. *System*, 36, 353-371. <https://doi.org/10.1016/j.system.2008.02.001>

- Ekanayaka, W. I., & Ellis, R. (2021). Which is the most effective technique for inducing learners' attention to Written Corrective Feedback (WCF): Revision or discussion? Approximate replication of Ekanayaka and Ellis (2020). *SSRN Electronic Journal*. <http://dx.doi.org/10.2139/ssrn.3809061>
- Ekanayaka, W. I., & Ellis, R. (2020). Does asking learners to revise add to the effect of written corrective feedback on L2 acquisition? *System*, *94*, 102341. <https://doi.org/10.1016/j.system.2020.102341>
- Ekiert, M., & di Gennaro, K. (2021). Focused written corrective feedback and linguistic target mastery: Conceptual replication of Bitchener and Knoch (2010). *Language Teaching*, *54*(1), 71–89. <https://doi.org/10.1017/S0261444819000120>
- Fathman, A. K., & Whalley, E. (1990). Teacher response to student writing: Focus on form versus content. In B. Kroll (Ed.), *Second language writing: Research insights for the classroom* (pp. 178-190). Cambridge University Press.
- Ferris, D. (1999). The case for grammar correction in L2 writing classes: A response to Truscott (1996). *Journal of Second Language Writing*, *8*, 1-11. [https://doi.org/10.1016/S1060-3743\(99\)80110-6](https://doi.org/10.1016/S1060-3743(99)80110-6)
- Ferris, D. (2002). *Treatment of error in second language student writing*. University of Michigan Press.
- Ferris, D. (2003). Responding to writing. In Kroll, B. (Ed.), *Exploring the dynamics of second language writing* (pp.119–140). Cambridge University Press.
- Ferris, D. (2004). The “grammar correction” debate in L2 writing: Where are we, and where do we go from here? (and what do we do in the meantime ...?). *Journal of Second Language Writing*, *13*, 49-62. <https://doi.org/10.1016/j.jslw.2004.04.005>
- Ferris, D. (2006). Does error feedback help student writers? New evidence on the short- and long-term effects of written error correction. In K. Hyland, & F. Hyland (Eds.), *Feedback in second language writing: Contexts and issues* (pp. 81-104). Cambridge University Press.
- Ferris, D. (2010). Second language writing research and written corrective feedback in SLA. *Studies in Second Language Acquisition*, *32*, 181-201. <https://doi.org/10.1017/S0272263109990490>
- Ferris, D. (2012). Written corrective feedback in second language acquisition and writing studies. *Language Teaching*, *45*(4), 446-459. <https://doi.org/10.1017/S0261444812000250>
- Ferris, D., & Roberts, B. (2001). Error feedback in L2 writing classes: How explicit does it need to be? *Journal of Second Language Writing*, *10*, 161–184. [https://doi.org/10.1016/S1060-3743\(01\)00039-X](https://doi.org/10.1016/S1060-3743(01)00039-X)
- Frear, D., & Chiu, Y. H. (2015). The effect of focused and unfocused indirect written corrective feedback on EFL learners' accuracy in new pieces of writing. *System*, *53*, 24-34. <https://doi.org/10.1016/j.system.2015.06.006>
- Hartshorn, K. J., Rice, S. H., Eckstein, G., & Evans, N. W. (2023). Dynamic written corrective feedback frequency, and its effects on ESL writing fluency, accuracy, and complexity. *Feedback Research in Second Language*, *1*, 7-32. <https://doi.org/10.32038/frsl.2023.01.02>
- Hartshorn, K. J., Evans, N. W., Merrill, P. F., Sudweeks, R. R., Strong-Krause, D., & Anderson, N. J. (2010). Effects of dynamic corrective feedback on ESL writing accuracy. *TESOL Quarterly*, *44*, 84-109. <https://doi.org/10.5054/tq.2010.213781>
- Hyland, K., & Hyland, F. (2006). Feedback on second language students' writing. *Language Teaching*, *39*, 83–101. <https://doi.org/10.1017/S0261444806003399>
- Karim, K., & Nassaji, H. (2018). The revision and transfer effects of direct and indirect comprehensive corrective feedback on English-as-a-second-language (ESL) students' writing. *Language Teaching Research*, *24*(4), 519-539. <https://doi.org/10.1177/1362168818802469>
- Kepner, C. G. (1991). An experiment in the relationship of types of written feedback to the development of second-language writing skills. *Modern Language Journal*, *7*, 305-313. <https://doi.org/10.1111/j.1540-4781.1991.tb05359.x>
- Khalifa, N. M. E. A. (2022). Using online collaboration and dynamic written corrective feedback to enhance EFL secondary school students' writing skills. *College of Education Journal*, *119*(4), 207-228.
- Kim, Y., & Emeliyanova, L. (2021). The effects of written corrective feedback on the accuracy of L2 writing: Comparing collaborative and individual revision behavior. *Language Teaching Research*, *25*(2), 234-255. <https://doi.org/10.1177/1362168819831406>
- Lalande, J. F. (1982). Reducing composition errors: An experiment. *Modern Language Journal*, *66*, 140-149. <https://doi.org/10.1111/j.1540-4781.1982.tb06973.x>
- Liu, Y. (2008). The effects of error feedback in second language writing. *Arizona working papers in SLA and teaching*, *15*, 65-79. <https://journals.uair.arizona.edu/index.php/AZSLAT/article/view/21254>
- Liu, Q., & Brown, D. (2015). Methodological synthesis of research on the effectiveness of corrective feedback in L2 writing. *Journal of Second Language Writing*, *30*, 66-81. <https://doi.org/10.1016/j.jslw.2015.08.011>
- Mao, Z., Lee, I., & Li, S. (2024). Written corrective feedback in second language writing: A synthesis of naturalistic classroom studies. *Language Teaching*, 1–29. <https://doi.org/10.1017/S0261444823000393>
- Nassaji, H. (2015). *The interactional feedback dimension in instructed second language learning: Linking theory, research, and practice*. Bloomsbury.

- Polio, C., & Shea, M. (2014). Another look at accuracy in second language writing development. *Journal of Second Language Writing*, 23, 10-27.
- Polio, C., Fleck, C., & Leder, N. (1998). 'If only I had more time': ESL learners' changes in linguistic accuracy on essay revisions. *Journal of Second Language Writing*, 7, 43-68. [https://doi.org/10.1016/S1060-3743\(98\)90005-4](https://doi.org/10.1016/S1060-3743(98)90005-4)
- Robb, T., Ross, S., & Shortreed, I. (1986). Salience of feedback on error and its effect on EFL writing quality. *TESOL Quarterly*, 20, 83-95. <https://doi.org/10.2307/3586390>
- Sachs, R., & Polio, C. (2007). Learners' use of two types of written feedback on a L2 writing revision task. *Studies in Second Language Acquisition*, 29, 67-100. <https://doi.org/10.1017/S0272263107070039>
- Semke, H. (1984). The effects of the red pen. *Foreign Language Annals*, 17, 195-202. <https://doi.org/10.1111/j.1944-9720.1984.tb01727.x>
- Sheen, Y. (2004). Corrective feedback and learner uptake in communicative classrooms across instructional settings. *Language Teaching Research*, 8, 263-300. <https://doi.org/10.1191/1362168804lr146oa>
- Sheen, Y. (2007). The effect of focused written corrective feedback and language aptitude on ESL learners' acquisition of articles. *TESOL Quarterly*, 41, 255-283. <https://doi.org/10.1002/j.1545-7249.2007.tb00059.x>
- Sheen, Y. (2010). The role of oral and written corrective feedback in SLA. *Studies in Second Language Acquisition*, 32, 169-179. <https://doi.org/10.1017/S0272263109990489>
- Sheen, Y. (2010b). Differential effects of oral and written corrective feedback in the ESL classroom. *Studies in Second Language Acquisition*, 32, 201-234. <https://doi.org/10.1017/S0272263109990507>
- Sheen, Y., Wright, D., & Moldawa, A. (2009). Differential effects of focused and unfocused written correction on the accurate use of grammatical forms by adult ESL learners. *System*, 37, 556-569. <https://doi.org/10.1016/j.system.2009.09.002>
- Sheppard, K. (1992). Two feedback types: do they make a difference? *RELC Journal*, 23, 103-110. <https://doi.org/10.1177/003368829202300107>
- Shintani, N., & Ellis, R. (2013). The comparative effect of direct written corrective feedback and metalinguistic explanation on learners' explicit and implicit knowledge of the English indefinite article. *Journal of Second Language Writing*, 22, 286-306. <https://doi.org/10.1016/j.jslw.2013.03.011>
- Shintani, N., Ellis, R., & Suzuki, W. (2014). Effects of written feedback and revision on learners' accuracy in using two English grammatical structures. *Language Learning*, 64, 103-131. <https://doi.org/10.1111/lang.12029>
- Storch, N. (2010). Critical feedback on written corrective feedback research. *IJES*, 10, 29-46. <https://doi.org/10.6018/ijes/2010/2/119181>
- Storch, N., & Wigglesworth, G. (2010). Learners' processing, uptake, and retention of corrective feedback on writing: Case studies. *Studies in Second Language Acquisition*, 32, 303-334. <https://doi.org/10.1017/S0272263109990532>
- Truscott, J. (1996). The case against grammar correction in L2 writing classes. *Language Learning*, 46, 327-369. <https://doi.org/10.1111/j.1467-1770.1996.tb01238.x>
- Truscott, J. (2001). Selecting errors for selective error correction. *Concentric: Studies in English Literature and Linguistics*, 27(2), 93-108.
- Truscott, J. (2007). The effect of error correction on learners' ability to write accurately. *Journal of Second Language Writing*, 16, 255-72. <https://doi.org/10.1016/j.jslw.2007.06.003>
- Truscott, J., & Hsu, A. Y. (2008). Error correction, revision, and learning. *Journal of Second Language Writing*, 17, 292-305. <https://doi.org/10.1016/j.jslw.2008.05.003>
- Van Beuningen, C. G. (2011). *The effectiveness of comprehensive corrective feedback in second language writing* [Unpublished doctoral dissertation]. University of Amsterdam. <http://dare.uva.nl/en/record/374645>
- Van Beuningen, C. G., De Jong, N. H., & Kuiken, F. (2008). The effect of direct and indirect corrective feedback on L2 learners' written accuracy. *International Journal of Applied Linguistics*, 156, 279-296. <https://doi.org/10.2143/ITL.156.0.2034439>
- Van Beuningen, C. G., De Jong, N. H., & Kuiken, F. (2012). Evidence on the effectiveness of comprehensive error correction in second language writing. *Language Learning*, 62, 1-41. <https://doi.org/10.1111/j.1467-9922.2011.00674.x>
- Wondim, B. M., Bishaw, K S., & Zeleke, Y. T. (2024). Effectiveness of teachers' direct and indirect written corrective feedback provision strategies on enhancing students' writing achievement: Ethiopian university entrants in focus. *Heliyon*, 10, 1-18. E24279. Retrieved February 18, 2024, from <https://www.cell.com/action/showPdf?pii=S2405-8440%2824%2900310-4>
- Yu, S., Geng, F., Liu, C., & Zheng, Y. (2021a). What works may hurt: The negative side of feedback in second language writing. *Journal of Second Language Writing*, 54, 100850. <https://doi.org/10.1016/j.jslw.2021.100850>