



Research Article

The Impact of Direct, Indirect, and Metalinguistic Corrective Feedback on Field Dependent and Field Independent (FD/I) EFL Learners' Writing Accuracy in an Asynchronous Learning Context

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ABSTRACT

Research on written corrective feedback in second language acquisition has advanced; however, debates continue about the most effective type of feedback. The current study examines the impact of unfocused direct, indirect, and metalinguistic written corrective feedback on the syntactic accuracy of 104 upper-intermediate Iranian EFL university students. Another critical aspect of this study involved examining the potential influence of cognitive style (FD/I) on the efficacy of written corrective feedback. This quasi-experimental study incorporated a pretest, seven treatment sessions, and immediate and delayed posttests. To investigate, a mixed-design Analysis of Variance (SPANOVA) was employed to examine the interaction between the between-group factors, including corrective feedback at four levels (direct, indirect, metalinguistic, and no feedback) and cognitive styles at two levels (FD/I), and the within-group factor, time at three levels (pre-intervention, post-intervention, and two-week delayed intervention). The results indicated that both direct and metalinguistic feedback types are more effective than no feedback. However, indirect feedback did not appear to have a significant impact compared to the absence of feedback. The three-way interaction among time, feedback, and cognitive style was non-significant for accuracy scores, indicating that the combined influence of these factors and accuracy scores was not significant. The findings of this study have significant implications for educators seeking to enhance their students' writing abilities in terms of syntactic accuracy.



Introduction

Over the past three decades, the topic of corrective feedback (CF) has gained significant attention within the field of second language acquisition due to its significant theoretical implications and practical applications in teaching methodologies. Providing feedback on student writing is regarded as an essential aspect of improving writing development (Hyland & Hyland, 2019). Despite conflicting evidence on its impact on student writing improvement (Ferris, 1997; Hyland & Hyland, 2019), concerns about the effectiveness of written corrective feedback (WCF) persist (Kang & Han, 2015; Lim & Renandya, 2020). Despite Truscott's (1996) assertion that written corrective feedback could be detrimental and should be discarded (see also Truscott, 2007), scholars and practitioners have conducted numerous studies in response, highlighting the advantages of such feedback. This has led to an abundance of research on the topic (see Lim & Renandya, 2020; Kang & Han, 2015). Contrary to Truscott's stance (e.g., Truscott, 2022), the field has reached a consensus that written corrective feedback often contributes to improvements in student learning and performance across various contexts.

Since Ferris' (2004) influential call to identify the most effective methods and contexts for providing written corrective feedback, research in this area has noticeably grown over the last few decades. As a result, researchers have examined the effect of direct versus indirect feedback (Bitchener, 2021; Ferris & Roberts, 2001; Van Beuningen, 2010) and comprehensive versus focused feedback approaches (Sheen et al., 2009; Van Beuningen et al., 2012). Some studies have studied the effect of feedback timing, investigating whether the effectiveness of feedback is influenced by providing it instantly after performance or after a time lapse (Eckstein et al., 2020; Shintani & Aubrey, 2016).

On the other hand, prior studies have demonstrated the impact of individual differences (Goo, 2012; Li, 2013; Sheen, 2007) on learners' ability to process feedback and benefit from various feedback types. While factors like working memory and language proficiency have been widely studied (Li, 2013; Goo, 2012; Mackey et al., 2010; Révész, 2012), the role of cognitive style in the efficacy of feedback remains relatively underexplored.

To overcome these drawbacks and due to inconsistencies in this domain, the current study used multiple assessment procedures to investigate the effects of direct, indirect, and metalinguistic feedback on upper-intermediate EFL learners' writing accuracy in an asynchronous learning context. As Li and Vuono (2019) pointed out that the role of learners' individual differences (IDs) in affecting WCF effectiveness has been underexplored, this study sheds light on the mediating effects of learners' cognitive styles (field-dependent and field-independent; FD/FI). The independent variables in the present study include three different types of written corrective feedback, i.e., direct, indirect, and metalinguistic feedback. The moderator variables include two types of cognitive style, i.e., FD/FI, and the dependent variable is learners' writing accuracy.

Research Questions

The current study aims to answer the following questions:

RQ1: Does direct written corrective feedback significantly improve Iranian EFL learners' writing accuracy in an asynchronous context?

RQ2: Does indirect written corrective feedback significantly improve Iranian EFL learners' writing accuracy in an asynchronous context?

RQ3: Does metalinguistic written corrective feedback significantly improve Iranian EFL

learners' writing accuracy in an asynchronous context?

RQ4: Which type of written corrective feedback is the most effective one to promote EFL learners' writing accuracy in an asynchronous context?

RQ5: Is there a relationship between cognitive style (FD/I) and gains in writing accuracy?

Literature Review

Different Theoretical Perspectives on Written CF

Despite the apparent lack of support for CF in SLA theories like generative theory and processability theory (Polio, 2012), a compelling theoretical foundation for WCF can be drawn from various older and more recent SLA perspectives. Long's (1991) Focus-on-Form approach, for instance, identifies error correction as a potential pedagogical tool. As a reactive Focus-on-Form method, CF effectively draws learners' attention to form within task performance, offering a personalized and individualized approach. This suggests that CF on written output holds promise as a Focus-on-Form intervention (Polio et al., 1998). Skill acquisition theory provides a basis for CF's role in transforming explicit knowledge into implicit and procedural knowledge, ultimately contributing to the overall acquisition process, as posited by Bitchener (2017). Interaction theory also offers robust support for CF, as it engages fundamental SLA processes, such as input, output, feedback, intake, and uptake, promoting language acquisition. CF enhances learners' awareness of discrepancies between the target language and interlanguages, gleaned from negative or positive evidence, thereby facilitating interlanguage adaptation and information retention.

The sociocultural perspective positions students as active participants in the WCF process, rather than passive receivers of feedback (e.g., Lantolf & Pavlenko, 2001). According to Bitchener and Storch (2016), WCF acts as an "assistance" tool

(p.73), providing a scaffold that promotes the learning of target forms, especially within the zone of proximal development, which distinguishes a learner's abilities with and without guidance.

The concept of activity within Activity Theory has been applied to elucidate the role of WCF (Bitchener & Storch, 2016). Viewing WCF as an activity situated within a particular educational context, Bitchener and Storch (2016) extend the notion of WCF beyond the provision of assistance. The subjects of the activity- teachers and students- are driven by motives, like language learning, and their actions aim to accomplish specific goals. While WCF offers an affordable learning chance, its effectiveness relies on additional actions from participating agents. Therefore, it is essential to study learners' interaction with and reactions to WCF to fully comprehend the role of WCF in language acquisition. The connections between WCF and SLA theories highlight the significant learning and teaching opportunities that WCF presents. Despite this potential, WCF remains a contentious topic, particularly concerning feedback types and methods of application.

Types and Focuses of Written CF

The discussion on WCF effectiveness has shifted from questioning its general usefulness to determining which specific type yields the most significant benefits. Ellis (2009) distinguished three forms of WCF based on the level of learner engagement in the correction process, namely direct, indirect, and metalinguistic feedback. In direct CF, teachers directly provide learners with accurate forms, offering explicit assistance for error correction, particularly for those who lack knowledge of the correct form (Ellis, 2009). In contrast to direct CF, indirect WCF entails signaling learners' errors without providing explicit corrections. This can be achieved by underlining mistakes or using margin crosses, without explicitly

providing the correct form (Ellis, 2009). The preference for indirect feedback stems from its focus on guided learning and problem-solving (Lalande, 1982). By promoting learners' reflection on linguistic forms, it is believed to enhance the potential for long-term learning (Ferris and Roberts, 2001). According to Ellis (2009), metalinguistic CF entails providing learners with explicit remarks regarding their errors, typically delivered in two forms. The most common involves the utilization of error codes, which are abbreviated labels identifying specific error types. These codes can be placed over the error itself or in the margin, with or without specifying the error's exact location. In both cases, learners must decipher the error code and apply the necessary correction.

A common query concerns whether WCF should adopt a selective approach or simultaneously tackle various error types. In the focused-unfocused dichotomy of error correction, the unfocused or comprehensive method corrects all errors in a learner's work, regardless of error type. Conversely, focused or selective CF targets specific linguistic features, such as errors in English article usage, leaving errors outside the chosen focus area uncorrected. Van Beuningen et al. (2012) highlight potential drawbacks of unfocused WCF, suggesting that learners may struggle to review all corrections when receiving extensive feedback on lengthy writing pieces. Additionally, Ellis et al. (2008) and Sheen et al. (2009) argue that learners might better notice and acquire forms with WCF targeting a single feature, as their processing capacity is limited. However, Ferris (2010) posits that researchers have focused on controlled studies of focused feedback due to ease of control rather than its demonstrated superiority over unfocused CF. Van Beuningen (2010) advocates for more research on unfocused WCF, emphasizing the importance of enhancing overall written accuracy_

not just one or two grammatical features_ as a primary objective of error correction.

Definitions and Operationalization of Accuracy

Accuracy, as defined by Skehan (1998), refers to the adherence to the target language's rules (p.23). Foster and Skehan (2013) offer a more concise definition, describing accuracy as the absence of errors in written tasks. Wolfe-Quintero et al. (1998) similarly define accuracy as the skill of accurately employing language in both written and oral communication, avoiding errors in the process. Although achieving writing accuracy can be challenging for EFL students, they should strive to enhance it for optimal readability (Montgomery & Baker, 2007). Consequently, EFL teachers often emphasize producing accurate writing (Montgomery & Baker, 2007).

Numerous operationalization methods have been applied to accuracy, including error-free T-units or errors per T-unit (Larsen-Freeman, 1991). More general accuracy measures, such as the percentage of error-free clauses or the number of errors per 100 words, have also been employed (Ellis and Barkhuizen, 2005). Accuracy based on specific measures is frequently used in research targeting a particular structure, such as focused CF studies. However, operationalizing accuracy through performance on specific forms in focused WCF studies may not accurately represent a learner's overall language use. Despite this limitation, accuracy is generally regarded as the most straightforward and internally consistent measure among the three complexity, accuracy, and fluency (CAF) components. Common accuracy measurements include error-free T-units, errors per T-unit, and the percentage of error-free clauses or the number of errors per 100 words.

Research-Based Findings on the Efficacy of Various Types of WCF

A considerable portion of initial research analyzed the impact of feedback in comparison to the absence of feedback. Investigations into corrective feedback (CF) have delved into both the consequences of feedback itself and the differing effects of various types of WCF.

Despite a consensus on the overall benefits of feedback, controversy persists over which type of feedback is most effective (Nassaji, 2016). A series of studies have empirically examined the relative effectiveness of direct and indirect feedback methods (e.g., Mirzaii & Aliabadi, 2013; Shintani & Ellis, 2013). Some research has demonstrated the superiority of direct feedback, particularly when supplemented with metalinguistic explanations (e.g., Ellis et al, 2008; Shintani & Ellis, 2013). The findings of Zhang and Hyland (2022) revealed that direct written corrective feedback had a significant positive impact on both L2 writing accuracy and complexity. The effectiveness of metalinguistic feedback, on the other hand, is believed to stem from its capacity to foster a more profound comprehension of the nature of errors (Bitchener, 2008; Nassaji, 2015).

It is crucial to recognize that conflicting findings or variations in outcomes related to feedback effectiveness should not be misinterpreted as a lack of support for corrective feedback; instead, they should be considered evidence of the multifaceted nature of corrective feedback and the numerous factors that may influence its efficacy (Nassaji, 2017).

In terms of the efficacy of focused versus unfocused WCF, multiple studies (e.g., Ellis et al., 2008; Shintani & Ellis, 2013; Frear & Chiu, 2015) have contrasted the efficacy of focused and unfocused feedback, yielding conflicting results. Truscott and Hsu's (2008) study findings demonstrated that unfocused corrective feedback

enhanced revision quality but did not impact new guided narratives, suggesting minimal influence on students' writing development. However, this study was limited by its examination of only one feedback type. Conversely, Van Beuningen et al. (2012) observed improved accuracy in two new writing samples when using both direct and indirect unfocused written corrective feedback, compared to control groups. They concluded that unfocused WCF facilities increased accuracy and proficiency in text revisions and new texts. In agreement with the previous findings, Nicolás-Conesa et al.'s (2019) recent study found that unfocused written corrective feedback groups outperformed control groups not only in accuracy on text revisions but also on new texts over the long term. The results indicated significant short-term and long-term gains from the combined effect of WCF and written language. The limited number of studies contrasting focused and comprehensive feedback precludes definite conclusions on the matter. Additionally, the inconsistent results concerning the impact of these feedback types may be attributed to the intricacy of WCF and the myriad factors influencing its efficacy.

On the effect of cognitive style and written corrective feedback, various studies have established connections between field-independent/ dependent cognitive styles and receiving corrective feedback. Conversely, several studies have shown no significant relationship between field-dependent and field-independent cognitive styles and the effectiveness of written corrective feedback, suggesting that other factors might influence the success of such feedback in language learning.

Research on Written Corrective Feedback (WCF) over the past decade has been predominantly concentrated on focused WCF, likely due to practical considerations rather than definitive evidence supporting its superiority over

unfocused corrective feedback (Ferris, 2010; Bitchener & Storch, 2016). This has led to numerous studies for further investigation into the potential learning advantages offered by unfocused WCF (Xu, 2009; Bitchener & Storch, 2016). Considering the existing gaps in the literature about L2 writing and feedback for acquisition studies, along with the limited empirical evidence concerning the impacts of unfocused Written Corrective Feedback (WCF) on accuracy, the current study endeavors to bridge these gaps. Specifically, this study aims to scrutinize the effects of 3 types of corrective feedback, including direct, indirect, and metalinguistic feedback, on FD/FI learners' writing accuracy by comparing learners' performance on pretest, posttest, and delayed posttest. Another focal point of the study entails an in-depth examination of cognitive style as a moderator variable that may potentially influence the effectiveness of WCF.

Methodology

Participants

This study was conducted in Iran at the university level. In this research, the Oxford Quick Placement Test (OQPT) was administered to 186 Iranian EFL learners, resulting in the selection of 104 upper-intermediate participants, comprising 80 female and 24 male students, with an age range of 18 to 24. They were all classified into FD/FI learners through the Group Embedded Figures Test (GEFT). They were, then, randomly assigned to three experimental and one control group. Each experimental group received only one type of WCF; that is, direct, indirect, or metalinguistic feedback on their essay writing, and the control group received no feedback. Upper-intermediate EFL learners were selected because they were expected to have sufficient writing skills to produce the pieces of writing required.

Research Design

This study used a quasi-experimental design involving a pretest, seven treatment sessions, an immediate posttest, and a delayed posttest. Any improvements in learners' writing accuracy were examined in a pretest-posttest design. A pretest, a posttest, and a delayed posttest were administered to learners in the form of a written essay (cause and effect). Participants were divided into four groups: direct, indirect, metalinguistic, and no feedback. In this study, an asynchronous learning platform, e-mail, was used to facilitate the delivery and monitoring of feedback. In direct written corrective feedback, the errors were highlighted, and the correct forms corresponded above the errors, while in indirect written corrective feedback, the erroneous forms were indicated by only being highlighted without providing the target forms. As for metalinguistic corrective feedback, learners were provided with a brief grammatical explanation without receiving the correct form. Each type of feedback was applied to the writing assignments submitted by the learners via e-mail.

All participants provided informed consent with full awareness that they might or might not receive corrective feedback depending on group assignments. The control group did not receive corrective feedback during the experimental phase. This was made explicit in the informed consent form and debriefed afterward. All participants were treated respectfully and had the right to withdraw at any time. Steps were taken to minimize potential harm or perception of unfair treatment. To mitigate potential bias, we used random assignments and kept conditions as consistent as possible outside of the feedback intervention. Furthermore, participants were debriefed after the study to explain the rationale for the group placement. No participants expressed concerns or distress during the procedure.

Materials and Data Collection Procedure

This study followed an OQPT, GEFT, pre-test, treatment sessions, immediate post-test, and delayed post-test design. To ensure homogeneity among participants in terms of proficiency level, the Oxford Quick Placement Test (OQPT) was employed as the initial instrument in this study. Then the participants were classified based on their cognitive style (FD/FI). Various tests have been developed to determine the cognitive style (FD/FI) of learners, but the one widely used in many studies is the Group Embedded Figures Test (GEFT) developed by Witkin et al. (1971). In this quasi-experimental study, the learners were randomly assigned to four groups (three experimental and one control group). Each experimental group received one type of written corrective feedback, and the control group received no feedback. The first writing assignment was considered a pretest in which the participants were asked to write an essay on a given topic and send it via email to their teacher (one of the researchers in this study). Afterwards, over the next 7 weeks, all groups wrote seven 120-word essays (cause-and-effect essays). Each essay was followed by one type of corrective feedback, except for the control group. Learners had to revise their writing after receiving the teacher's feedback on their writing. At the end, learners were assigned to write an essay on a topic that was specified beforehand as a post-test, and after two weeks, another essay as a delayed post-test. The post-test and delayed post-test were designed to examine the performance of the experimental groups after the administration of the treatment, offering a basis for comparison and determination of the efficacy of the intervention. To control the test-retest effect, three different topics were specified for each testing session; that

is, pretest, immediate posttest, and delayed posttest.

Data Analysis Procedure

In this study, the participants' writing accuracy, which is considered as dependent variable, was calculated as the number of error-free clauses/ total number of clauses * 10; a ten-word ratio is used instead of the common hundred-word ratio due to the short length of essays (120 words).

To analyze the data, the Statistical Package for Social Sciences (SPSS version 27.0) was used. First, the descriptive statistics, regarding writing accuracy for the pretest, immediate posttest, and delayed posttest for all four groups (direct, indirect, metalinguistic, control) were analyzed. Then mixed between-within subject analysis of variance (SPANOVA) was used to assess the effect of the three different interventions (direct, indirect, and metalinguistic) on participants' scores on written accuracy across 3 time periods of pre-intervention, post-intervention, and 2-week follow-up. To examine whether there is a statistically significant difference in the effectiveness of the three types of WCF, the main effect of the 3 types of intervention was compared. Moreover, the interaction between cognitive style (FD/FI) and feedback types regarding writing accuracy was investigated.

Result

Descriptive Statistics for Accuracy Scores

Table 1 presents the descriptive statistics for the four groups (direct, indirect, metalinguistic, control) and two cognitive styles (field dependent, independent) concerning accuracy scores across three distinct time points. This table details the mean (M), standard deviation (SD), and number of participants (N) for each group.

Table 1
Descriptive Statistics for Accuracy Scores

	Feedback	Cognitive Style	M	SD	N
Pretest	Control	FD	5.7769	.93377	13
		FI	5.9615	.82819	13
		Total	5.8692	.86984	26
	Direct	FD	5.2692	.88070	13
		FI	5.5769	.83781	13
		Total	5.4231	.85665	26
	Indirect	FD	5.0385	.62788	13
		FI	5.3846	.61758	13
		Total	5.2115	.63519	26
	Meta	FD	6.1538	.71835	13
		FI	5.9615	.59377	13
		Total	6.0577	.65310	26
	Total	FD	5.5596	.89141	52
		FI	5.7212	.75025	52
		Total	5.6404	.82386	104
Posttest	Control	FD	5.5000	1.08012	13
		FI	5.7692	.92681	13
		Total	5.6346	.99557	26
	Direct	FD	6.7692	.85672	13
		FI	7.0385	.80264	13
		Total	6.9038	.82485	26
	Indirect	FD	6.0385	.62788	13
		FI	6.1154	.98221	13
		Total	6.0769	.80861	26
	Meta	FD	7.0000	.61237	13
		FI	7.1923	.63043	13
		Total	7.0962	.61675	26
	Total	FD	6.3269	.99452	52
		FI	6.5288	1.02141	52
		Total	6.4279	1.00826	104
Delayed	Control	FD	5.1923	.72280	13
		FI	5.9615	.87706	13
		Total	5.5769	.87969	26
	Direct	FD	6.6154	.82041	13
		FI	6.5385	.55758	13
		Total	6.5769	.68836	26
	Indirect	FD	5.7308	.72501	13
		FI	5.9231	.70256	13
		Total	5.8269	.70629	26
	Meta	FD	6.5000	.73598	13
		FI	6.5769	.83781	13
		Total	6.5385	.77360	26
	Total	FD	6.0096	.93667	52
		FI	6.2500	.79521	52
		Total	6.1298	.87299	104

Assumption Tests

To evaluate the normality of the distributed data, the Shapiro-Wilk test was employed. Table 2 shows the results of this analysis, focusing on the accuracy scores obtained during the pretest, post-test, and delayed post-test stages. Based on the

Shapiro-Wilk test results displayed in Table 2, the data followed a normal distribution for pretest, post-test, and delayed posttest, as evidenced by p-values higher than 0.05 for all conditions ($p > .05$).

Table 2
Normality of Accuracy Scores' Distributions

	Feedback	Shapiro-Wilk		
		Statistic	df	Sig.
Pretest	Control	.953	26	.275
	Direct	.952	26	.256
	Indirect	.945	26	.173
	Meta	.940	26	.133
Posttest	Control	.949	26	.216
	Direct	.951	26	.240
	Indirect	.955	26	.308
	Meta	.936	26	.111
Delayed	Control	.954	26	.280

Feedback	Shapiro-Wilk		
	Statistic	df	Sig.
Direct	.939	26	.129
Indirect	.943	26	.159
Meta	.956	26	.321

To assess the assumption of homogeneity of variances, Levene's test of equality of error variance was conducted for the pre-test, post-test, and delayed post-test. Table 3 shows the results of this analysis.

Table 3
Levene's Test of Equality of Error Variances

	Levene Statistic	df1	df2	Sig.
Pretest	Based on Mean .777	7	96	.608
Posttest	Based on Mean 1.718	7	96	.114
Delayed	Based on Mean .438	7	96	.876

For the pre-test, Levene's test showed a significance level, p-value of 0.608 which suggests that there is no significant difference in variances among the groups for the pre-test ($p > .05$). Regarding the post test, the corresponding p-value was 0.114, indicating that the assumption of equal variances is not violated for the post-test measurements ($p > .05$). Lastly, for delayed posttest, a p-value of 0.876 ($p > .05$) supports the assumption of homogeneity of variance among the groups for delayed posttests. In conclusion, Levene's test demonstrated that the assumption of equal variances holds across all three measurements, with non-significant p values for the pretest, post-test, and delayed posttest.

To test the homogeneity of intercorrelations, Box's M statistics were computed with a p-value of > 0.05 . Table 4 shows the results of this analysis. The non-significant result (0.213) suggested that the assumption of equal covariance matrices was not violated in the data.

Table 4
Box's Test of Equality of Covariance Matrices

Box's M	54.717
F	1.167
df1	42
df2	15242.124
Sig.	.213

Table 5 displays the statistical findings relating to the within-subject effects on accuracy, highlighting the effects of time and its interactions with feedback and cognitive style. It reveals significant main effects of time and a significant interaction effect between time and feedback on accuracy scores. However, the interaction effect between time and cognitive style, as well as the three-way interaction among time, feedback, and cognitive style, was found to be non-significant for accuracy scores.

Table 5*Test of Within-Subjects Effects for Accuracy*

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squ
Time	WL	.530	42.181b	2.000	95.000	.000	.470
Time * Feedback	WL	.615	8.722b	6.000	190.000	.000	.216
Time * Cognitive Style	WL	.998	.078b	2.000	95.000	.925	.002
Time * Feedback * Cognitive Style	WL	.946	.885b	6.000	190.000	.507	.027

*Wilks' Lambda

There was a significant main effect of time on accuracy scores ($p < 0.05$), Wilk's Lambda = .530, $F(2, 95) = 42.181^b$, $p < .05$, partial eta squared = .470, indicating that accuracy scores varied significantly across the different time points. The interaction effect between time and feedback was also significant for accuracy scores ($p < 0.05$), Wilk's Lambda = .615, $F(6, 190) = 8.722^b$, $p < .05$, partial eta squared = .216, suggesting that the impact of time on accuracy scores differed depending on the type of feedback received by the participants. The interaction effect between time and cognitive style

was non-significant for accuracy scores, with a p-value of .154 ($p > .05$), Wilk's Lambda = .998, $F(2, 95) = .078^b$, $p > .05$, partial eta squared = .002 implying that the influence of time on accuracy scores did not differ based on the participants' cognitive style. The three-way interaction among time, feedback and cognitive style was non-significant for accuracy scores with a p-value of .507 ($p > .05$), Wilk's Lambda = .946, $F(6, 190) = .885^b$, $p > .05$, partial eta squared = .027 indicating that the combined effects of time, feedback and cognitive style did not significantly impact accuracy scores.

Table 6*Tests of Within-Subjects Contrasts (Main Effect of Time)*

Source	Time	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	Linear	12.456	1	12.456	24.154	.000	.201
	Quadratic	20.427	1	20.427	54.466	.000	.362
Time * Feedback	Linear	13.891	3	4.630	8.979	.000	.219
	Quadratic	10.300	3	3.433	9.155	.000	.222
Time * Cognitive Style	Linear	.081	1	.081	.157	.693	.002
	Quadratic	1.603E-5	1	1.603E-5	.000	.995	.000
Time * Feedback * Cognitive Style	Linear	1.823	3	.608	1.179	.322	.036
	Quadratic	.721	3	.240	.640	.591	.020
Error (Time)	Linear	49.505	96	.516			
	Quadratic	36.004	96	.375			

Table 7*Tests of Between-Subjects Effects (Main Effect of Feedback and Cognitive Style)*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	11480.560	1	11480.560	12041.061	.000	.992
Feedback	44.646	3	14.882	15.608	.000	.328
Cognitive Style	3.160	1	3.160	3.314	.072	.033
Feedback * Cognitive Style	1.456	3	.485	.509	.677	.016
Error	91.531	96	.953			

Analysis of within-subjects contrasts and tests of between-subjects effects highlighted significant main effects of time and feedback as well as a significant interaction between these variables. According to table 6, presenting the results of between-subject effects, there was a significant main effect of time on writing accuracy ($P = .000$), also the interaction between time and feedback was significant ($P = .000$). However, the main effect of cognitive style ($P = .693$) and the three-way interaction between time, feedback and cognitive style ($P = 0.322$) were not significant, implying that cognitive style and the combination of all three variables did not significantly impact writing accuracy. Table 7 displays the main effect of feedback, which was significant ($P = .000$), and cognitive style, which was not significant ($P = .072$). The interaction between feedback and cognitive style was also not significant ($P = .677$), indicating that the relationship between feedback and writing accuracy did not depend on cognitive style.

Multiple Comparison of WCF Types

Table 8 shows the results of multiple comparisons of various types of written corrective feedback. To address the first research question, the results revealed a statistically significant difference in writing accuracy when comparing direct feedback to the control group ($P = .001$), indicating that direct feedback is more effective than no feedback. Addressing the third research question concerning the effect of metalinguistic feedback, the results indicated a statistically significant difference when comparing metalinguistic feedback to the control group ($P = .000$), suggesting that metalinguistic feedback improves writing accuracy as well ($P = .000$).

However, regarding the second research question, there was no statistically significant difference in writing accuracy between the indirect feedback group and the control group ($P = 1.000$), implying that indirect feedback did not significantly impact writing accuracy compared to no feedback.

Table 8*Post Hoc Test: Multiple Comparisons of Written Corrective Feedback on Writing Accuracy*

(I) Feedback	(J) Feedback	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Control	Direct	-.6077	.15636	.001	-1.0289	-.1865
	Indirect	-.0115	.15636	1.000	-.4328	.4097
	Meta	-.8705	.15636	.000	-1.2917	-.4493
Direct	Control	.6077	.15636	.001	.1865	1.0289
	Indirect	.5962	.15636	.001	.1749	1.0174
	Meta	-.2628	.15636	.576	-.6841	.1584
Indirect	Control	.0115	.15636	1.000	-.4097	.4328
	Direct	-.5962	.15636	.001	-1.0174	-.1749

(I) Feedback	(J) Feedback	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Meta	Meta	-.8590 [*]	.15636	.000	-1.2802	-.4377
	Control	.8705 [*]	.15636	.000	.4493	1.2917
	Direct	.2628	.15636	.576	-.1584	.6841
	Indirect	.8590 [*]	.15636	.000	.4377	1.2802

*. The mean difference is significant at the .05 level.

To address the fourth research question, a comparative analysis of different feedback types was conducted. The results indicated that direct feedback led to significantly higher writing accuracy than indirect feedback ($P=.001$) but did not differ significantly from metalinguistic feedback ($P=0.576$). Therefore, both direct and metalinguistic feedback were similarly effective in enhancing writing accuracy. The findings also showed that indirect feedback did not significantly

impact writing accuracy compared to no feedback (control group). The results of the multiple comparisons showed that certain types of written corrective feedback, such as direct and metalinguistic feedback, were more effective in improving writing accuracy than no feedback (control group). However, there was no statistically significant difference in the writing accuracy between the indirect feedback group and the control group.

Table 9

Pairwise Comparisons of Cognitive Styles (FD/I)

(I) Cognitive Style	(J) Cognitive Style	Mean Difference (I-J)	Std. Error	Sig. ^a	95% Confidence Interval for Difference ^a	
					Lower Bound	Upper Bound
FD	FI	-.201	.111	.072	-.421	.018

To answer the fifth question, the pairwise comparison of cognitive style further supports the previous findings, as it examines the differences in writing accuracy between field-dependent and field-independent learners. Overall, the results from this analysis suggest that cognitive style may not have a significant impact on writing accuracy ($P=.072$). P values indicate that the differences in writing accuracy between field-dependent and independent learners did not reach statistical significance.

Discussion

This research aimed to investigate the impact of direct, indirect and metalinguistic written corrective feedback on EFL students' writing accuracy in an asynchronous context. Moreover, it intended to

identify if cognitive style (FD/I) served as a moderating factor in the effectiveness of unfocused written corrective feedback. A significant improvement in writing accuracy was observed when comparing direct feedback to the control group ($P=.001$). These findings indicated that direct feedback was more effective than no feedback for writing accuracy. In conclusion, the results of the multiple comparisons under the post hoc test provided evidence that direct written corrective feedback significantly improved writing accuracy compared to no feedback. The positive results for direct feedback align with the Noticing Hypothesis (Schmidt, 1990, 2001), which posits that conscious attention to linguistic forms promotes language development. In this context, corrective feedback serves as a focused form of intervention that can

facilitate SLA. It can be argued that written CF increases learners' awareness of linguistic features, enabling them to recognize disparities between their interlanguage production and foreign language input (Swain, 1991). Furthermore, when learners are given written corrective feedback, they have sufficient time and cognitive capacity to compare their output with the feedback received, heightening their chances of identifying discrepancies in their interlanguage. The current study's results indicate that written corrective feedback may contribute to learners' cognitive processing of information, leading to improvements in written syntactic accuracy. This conclusion is consistent with the work of Gas and Mackey (2015).

The current study's results correspond with McLaughlin's (1990) information processing model and Anderson's (1993) ACT (Adaptive Control of Thought) model, which emphasize controlled and automatic information processing. Both models highlight the shift from controlled to automatic processing during their learning process. In this context, the intentional learning promoted by corrective feedback in the present study likely played a crucial role in the control phase, eventually enabling the automatization of language use via practice and repeated activation. This notion is also supported by other scholars in the field (see e.g., Bitchener & Ferris, 2012).

The results also showed no statistically significant difference in writing accuracy between the indirect feedback group and the control group ($p=1$), indicating that indirect feedback does not significantly impact writing accuracy compared to no feedback. Chandler (2003) pointed out that when errors are corrected indirectly, learners are left to make their assumptions about the correct form. This uncertainty might hinder the learning process since learners do not receive immediate confirmation of their hypotheses. The delay in

accessing the correct form (caused by indirect corrective feedback) could diminish any potential benefits associated with the extra cognitive effort required in this type of feedback. In other words, although indirect corrective feedback might encourage learners to think more deeply and critically, this effort may be less effective if learners remain uncertain about the correct form. The results of this study are in line with the findings of Li and Yang (2022), in which they investigated the impact of direct and indirect written corrective feedback on Chinese EFL learners' writing. Li and Yang found that indirect feedback had a limited effect on accuracy.

The analysis revealed a significant improvement in writing accuracy when metalinguistic feedback was compared to the control group ($p=0.000$ for our comparisons). This finding indicated that metalinguistic feedback is highly effective in enhancing EFL learners' writing accuracy compared to the absence of feedback. The efficacy of metalinguistic feedback corresponds with Schmidt's (2001) Noticing hypothesis, which suggests that conscious attention to linguistic form contributes to or is even essential for language development. In this vein, corrective feedback functions as a focused form of intervention that supports the SLA process. It can be argued that written corrective feedback bolsters learners' awareness of linguistic elements, helping them identify disparities between their interlanguage production and foreign language input, consequently enhancing their language acquisition (Swain, 1991).

Comparing different feedback types, direct feedback led to significantly higher writing accuracy than indirect feedback ($P=0.001$). Metalinguistic feedback also showed a significant difference when compared to indirect feedback ($p<0.05$). However, no significant difference was found between direct and metalinguistic feedback ($P=0.567$), suggesting

that both types may be similarly effective. In conclusion, the results of the multiple comparisons under the post-hoc test provided evidence that metalinguistic written corrective feedback, as well as direct corrective feedback, were the most effective types for improving accuracy, while indirect feedback did not appear to have a significant impact compared to the absence of feedback. Several factors may contribute to this outcome, one of which is the influence of the learners' proficiency level. It is plausible that intermediate learners, due to their developing metalinguistic awareness, are more inclined to benefit from metalinguistic feedback as compared to indirect feedback. This may be attributed to their ability to comprehend and apply explicit linguistic guidance (brief explanation in this study), even if they are not yet at an advanced level, to consistently make accurate revisions when relying solely on indirect feedback.

The three-way interaction among time, feedback, and cognitive style was non-significant for accuracy scores, indicating that the combined influence of these factors and accuracy scores was not significant. The pairwise comparison of cognitive styles reinforced earlier findings by analyzing differences in writing accuracy between field-dependent and field-independent learners. Overall, the analysis suggested that cognitive Style did not have a significant effect on writing accuracy, as the observed differences failed to reach statistical significance according to the p-value.

One possible explanation is that, although cognitive styles may affect how learners process information, they might not necessarily determine the overall outcomes of corrective feedback in terms of accuracy. In other words, field-dependent learners may prefer a more holistic approach, and field-independent learners may favor a more analytical approach; both groups can still benefit from the guidance provided by corrective feedback

to improve their writing performance. Furthermore, the absence of a significant relationship between cognitive styles and the impact of corrective feedback can also be related to the Complexity Theory (Larsen-Freeman & Cameron, 2008). This theory emphasizes the interconnectedness and interaction of various factors in the language learning process, suggesting that no single factor, such as cognitive styles, can fully account for learners' development in accuracy. Instead, the complex interplay of multiple factors, such as motivation, aptitude, and learning context, contributes to language learning outcomes.

Conclusion

To determine the most effective type of written corrective feedback for improving writing accuracy, a series of comparisons was made between various feedback types and the control group that received no feedback. The results indicated significant improvements in writing accuracy when comparing direct and metalinguistic feedback to the control group, indicating both direct and metalinguistic feedback are more effective than no feedback. Moreover, the results of the multiple comparisons under the post-hoc test provided evidence that metalinguistic written corrective feedback, as well as direct corrective feedback, were the most effective types for improving accuracy, while indirect feedback did not appear to have a significant impact compared to the absence of feedback.

The three-way interaction among time, feedback, and cognitive style was non-significant for accuracy scores, indicating that the combined influence of these factors and accuracy scores was not significant. Overall, the analysis suggested that cognitive style did not have a significant effect on writing accuracy, as the observed differences failed

to reach a statistical significance according to the p-value.

The findings of this study have significant implications for educators seeking to enhance their students' writing abilities in terms of accuracy. In terms of accuracy, the implementation of direct and metalinguistic corrective feedback had a significant impact on the students' writing performance. This suggests that teachers who aim to improve the accuracy of their students' writing should consider employing these types of feedback. Direct feedback, which involves providing explicit corrections, and metalinguistic feedback, which offers hints or explanations about language rules, appeared to be the most beneficial approaches for enhancing accuracy.

Further research could adopt a longitudinal approach to assess the long-term effects of various corrective feedback types on students' writing development, enabling a more comprehensive understanding of their enduring impact. While this study explored the role of cognitive styles, further investigations could examine the potential influence of other individual differences, such as motivation, language learning strategies, and prior language learning experiences, on the effectiveness of written corrective feedback. Replicating the present study with a larger participant sample encompassing various language proficiency levels could yield comparative data on the impact of written corrective feedback across diverse learner groups. Such an approach would contribute to a more comprehensive understanding of feedback efficacy in different stages of language development. Additionally, the current research focused solely on cause-and-effect essays. Further studies might examine the effectiveness of written corrective feedback in the context of other writing genres.

References

- Anderson, J. R. (1993). Problem solving and learning. *American Psychologist*, 48(1), 35-44.
- Bitchener, J. (2008). Evidence in support of written corrective feedback. *Journal of Second Language Writing*, 17(2), 102-118. <https://doi.org/10.1016/j.jslw.2007.11.004>
- Bitchener, J. (2017). Why do some L2 learners fail to benefit from written corrective feedback? In H. Nassaji and E. Kartchava (eds) *Corrective Feedback in Second Language Teaching and Learning* 129-40. New York: Routledge. <https://doi.org/10.4324/9781315621432-10>
- Bitchener, J. (2021). Written corrective feedback. In H. Nassaji & E. Kartchava (Eds.), *The Cambridge handbook of corrective feedback in second language learning and teaching* (pp. 207-225). Cambridge University Press. <https://doi.org/10.1017/9781108589789.011>
- Bitchener, J., & Ferris D. R. (2012). *Written corrective feedback in second language acquisition and writing*. New York, NY: Routledge. <https://doi.org/10.4324/9780203832400>
- Bitchener, J., & Storch, N. (2016). *Written corrective feedback for L2 development*. Multilingual Matters.
- 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)
- Eckstein, G., Sims, M., & Rohm, L. (2020). Dynamic written corrective feedback among graduate students: The effects of feedback timing. *TESL Canada Journal*, 37(2), 78-102. <https://doi.org/10.18806/tesl.v37i2.1339>
- Ellis, R. (2009). A typology of written corrective feedback types. *ELT journal*, 63, 97-107.
- Ellis, R., & Barkhuizen, G. (2005). Analysing learner language. In R. Ellis & G. Barkhuizen (Eds.), *Analysing learner language* (pp. 5-21). Oxford University Press.
- Ellis, R., Sheen, Y., Murakami, M. and Takashima, H. (2008). The effects of focused and unfocused written corrective feedback in an English as a foreign language context. *System* 36, 353-71. <https://doi.org/10.1016/j.system.2008.02.001>
- Ferris, D. R. (1997). The influence of teacher commentary on student revision. *TESOL Quarterly*, 31(2), 315-339. <https://doi.org/10.2307/3588049>
- Ferris, D. R. (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(1), 49-62. <https://doi.org/10.1016/j.jslw.2004.04.005>
- Ferris, D. R. (2010). Second language writing research and written corrective feedback in SLA: Intersections and practical applications. *Studies in Second Language Acquisition*, 32(02), 181-201. <https://doi.org/10.1017/S0272263109990490>
- Ferris, D., & Roberts, B. (2001). Error feedback in L2 writing classes: How explicit does it need to be? *Journal of Second Language Writing*, 10(3), 161-184.
- Foster, P., & Skehan, P. (2013). Anticipating a post task activity: the effects on accuracy, complexity, and fluency of L2 language performance. *Canadian Modern Language Review*, 69(3), 249-273.
- 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>
- Gas, S., M. & Mackey, A. (2015). *Input, interaction, and output in second language acquisition*. In VanPatten, B., & Williams, J. (eds.), *Theories in second language acquisition*. New York: Routledge, 180-206.
- Goo, J. (2012). Corrective feedback and working memory capacity in interaction-driven L2 learning. *Studies in Second Language Acquisition*, 34(3), 445-474.
- Hyland, K., & Hyland, F. (2019). Contexts and issues in feedback on L2 writing. In Hyland, K., & Hyland, F. (Eds.), *Feedback in second language writing: Contexts and issues* (pp.1-22). Cambridge University Press. <https://doi.org/10.1071/9781108635547.003>
- Kang, N. & Han, Z. (2015). The efficacy of written corrective feedback in improving L2 written accuracy: A meta-analysis. *The Modern Language Journal*, 99 (1), 1-18. <https://doi.org/10.1111/modl.12189>
- Lalande, J. F. (1982). Reducing composition errors: an experiment. *Modern Language Journal*, 66, 140-9. <https://doi.org/10.1111/j.1540-4781.1982.tb06973.x>
- Lantolf, J. & Pavlenko, A. (2001). (S)econd (L)anguage (A)ctivity theory: Understanding second language learners as people. In M. P. Breen (ed.), *Learner Contributions to Language Learning: New Directions in Research* (pp. 141-158). London: Longman.
- Larsen-Freeman, D. (1991). Second language acquisition research: Staking out the territory. *TESOL Quarterly*, 25, 315-350. [10.2307/3587466](https://doi.org/10.2307/3587466)
- Larsen-Freeman, D., & Cameron, L. (2008). Research methodology: A framework for understanding research. In D. Larsen-Freeman & L. Cameron (Eds.), *Complex systems and applied linguistics* (pp. 1-15). Oxford University Press.
- Li, S. (2013). The interactions between the effects of implicit and explicit feedback and individual differences in language analytic ability and working memory. *Modern Language Journal*, 97(3), 634-654.
- Li, S., & Vuono, A. (2019). Twenty-five years of research on oral and written corrective feedback in system. *System*, 84, 93-109. <https://doi.org/10.1016/j.system.2019.05.006>
- Li, L., & Yang, W. (2022). Understanding the effects of written corrective feedback strategies on L2 English writing development: A meta-analysis. *TESOL Quarterly*, 56(1), 17-49.
- Lim, J. M. H., & Renandya, W. A. (2020). Written corrective feedback: Recent trends and future directions. *Language Teaching*, 53(3), 335-346.
- Long, M. H. (1991). Focus on form: A design feature in language teaching methodology. In K. de Bot, R. B. Ginsberg, & C. Kramsch (Eds.), *Foreign language research in cross-cultural perspective* (pp. 39-52). John Benjamins Publishing.
- Mackey, A., Adams, R., Stafford, C., Winke, P. (2010). Exploring the relationship between modified output and working memory capacity. *Language Learning*, 60(3), 501-533. <https://doi.org/10.1111/j.1467-9922.2010.00565.x>
- McLaughlin, B. (1990). "Conscious" versus "unconscious" learning. *TESOL Quarterly*, 24(4), 617-634. <https://doi.org/10.2307/3587111>
- Mirzaei, M. and Aliabadi, R., B. (2013). Direct and indirect written corrective feedback in the context of genre-based instruction on job application letter writing. *Journal of Writing Research* 5, 191-213. <https://doi.org/10.17239/jowr-2013.05.02.2>
- Montgomery, J. L., & Baker, W. (2007). Teacher-written feedback: Student perceptions, teacher self-assessment, and actual teacher performance. *Journal of Second Language Writing*, 16(1), 82-99. <https://doi.org/10.1016/j.jslw.2007.04.002>
- Nassaji, H. (2015). *The Interactional Feedback Dimension in Instructed Second Language Learning: Linking Theory, Research, and Practice*. London: Bloomsbury
- Nassaji, H. (2016). Anniversary article: interactional feedback in second language teaching and learning: a synthesis and analysis of current research. *Language Teaching Research*, 20, 535-62. <https://doi.org/10.1177/1362168816644940>
- Nassaji, H. (2017). The effectiveness of extensive versus intensive recasts for learning L2 grammar. *Modern Language Journal*, 101, 353-68. <https://doi.org/10.1111/modl.12387>

- Nicolás-Conesa, F., Manchón, R. M., & Cerezo, L. (2019). The effects of unfocused direct and indirect written corrective feedback on rewritten texts and new texts: Looking into feedback for accuracy and feedback for acquisition. *Modern Language Journal*, 103(4), 848-873. <https://doi.org/10.1111/modl.12592>
- Polio, C. (2012). The relevance of second language acquisition theory to the written error correction debate. *Journal of Second Language Writing*, 21, 375-389. <https://doi.org/10.1016/j.jslw.2012.09.004>
- Polio, C., Fleck, C., & Leder, N. (1998). Differential effects of oral and written corrective feedback in the ESL classroom. *Journal of Second Language Writing*, 7, 43-68.
- Révész, A. (2012). Working memory and the observed effectiveness of recasts on different outcome measures. *Language Learning*, 62(1), 93-132.
- Schmidt, R. (1990). The role of consciousness in second language learning. *Applied Linguistics*, 11(2), 129-158. <https://doi.org/10.1093/applin/11.2.129>
- Schmidt, R. (2001). Attention. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 3-32). Cambridge University Press.
- Sheen, Y. (2007). The effect of focused written corrective feedback and language aptitude on ESL learners' acquisition of articles. *TESOL Quarterly*, 41(2), 255-283. <https://doi.org/10.1002/j.1545-7249.2007.tb00059.x>
- 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(4), 556-569. <https://doi.org/10.1016/j.system.2009.09.002>
- Shintani, N. & Aubrey, S. (2016). The effectiveness of synchronous and asynchronous written corrective feedback on grammatical accuracy in a computer-mediated environment. *Modern Language Journal*, 100(1), 296-319. <https://doi.org/10.1111/modl.12317>
- 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(3), 286-306. <https://doi.org/10.1016/j.jslw.2013.03.011>
- Skehan, P. (1998). *A cognitive approach to language learning*. Oxford University Press.
- Swain, M. (1991). French immersion and its offshoots: Getting two for one. In B. Freed (Ed.), *Foreign language acquisition research and the classroom* (pp. 91-103). Lexington Books.
- Truscott, J. (1996). The case against grammar correction in L2 writing classes. *Language Learning*, 46(2), 327-369. <https://doi.org/10.1111/j.1467-1770.1996.tb01238.x>
- 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. (2022). *Working memory in the modular mind*. New York: Routledge.
- Truscott, J. and 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. (2010). Corrective feedback in L2 writing: Theoretical perspectives, empirical insights, and future directions. *International Journal of English Studies*, 10(2), 1-27. <https://doi.org/10.6018/ijes/2010/2/119171>
- 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), 1-41. <https://doi.org/10.1111/j.1467-9922.2011.00674.x>
- Witkin, H.A., Oltman, P.K., Raskin, E. R. (1971). *Group embedded figures test*. Palo Alto, CA: Consulting Psychologists Press.
- Wolfe-Quintero, K., Inagaki, S., & Kim, H.-Y. (1998). *Second language development in writing: Measures of fluency, accuracy, and complexity*. Second Language Teaching and Curriculum Center, University of Hawaii. <https://doi.org/10.1017/s0272263101263050>
- Xu, F. (2009). *Corrective feedback and learner uptake in Chinese-as-a-foreign-language classrooms: A study of form-focused instruction*. (Doctoral dissertation, The University of Hong Kong, Hong Kong).
- Zhang, Z., & Hyland, K. (2022). Fostering student engagement with feedback: An integrated approach. *Assessing Writing*, 51. <https://doi.org/10.1016/j.asw.2021.100586>