Exploring the effect of matching cognitive learning style with focused written corrective feedback on English definite/indefinite article system learning

Hojjat Abedi*
(corresponding author)
Ph.D. candidate of TEFL, Department of English Language and Literature Shahid Beheshti University, Tehran, Iran
Email: ho_abedi@sbu.ac.ir

Seyed-Abolghasem Fatemi Jahromi**
Associate Professor of TEFL, Department of English Language and Literature Shahid Beheshti University, Tehran, Iran
Email: fatemijahromi@yahoo.com

Mohammad Reza Anani Sarab***
Associate Professor of TEFL, Department of English Language and Literature Shahid Beheshti University, Tehran, Iran
Email: reza_ananisarab@yahoo.co.uk

ABSTRACT

This study aimed to explore the extent to which matching cognitive learning styles (CLS) with written corrective feedback (WCF) can enhance the feedback efficacy in learning the English definite/indefinite article system. To this end, using a pre-test, immediate and delayed post-tests design, 75 pre-intermediate EFL learners were assigned to four groups: experimental direct-FD, experimental indirect-FI, comparison indirect-FD, and comparison direct-FI. As for data collection, several instruments were used in different stages of the study as follows: Oxford Placement Test (OPT), Group Embedded Figures Test (GEFT), WCF Preference Test, Narrative Tasks, and Error Correction Test. OPT, GEFT, and WCF Preference Test were used to assign the students to different groups, whereas Narrative Tasks and Error Correction Test were used as measures of learning gains. To analyze the data, ANCOVA was run to find any potential differences between the groups. The results revealed that the experimental groups outperformed the comparison groups in both narrative and error correction immediate and delayed post-tests, suggesting that the cognitive learning styles of learners can contribute to the efficacy of direct and indirect types of WCF if they are in harmony with each other. Based upon these findings, a number of implications along with new avenues of research at the intersection of WCF and CLS are suggested.

*   Hojjat Abedi is a PhD candidate of TEFL at Shahid Beheshti University. His main research areas are written corrective feedback, SLA, and E-learning.
** Seyed Abolghasem Fatemi Jahromi is Associate professor of TEFL. He has published several academic papers and books nationally and internationally in phonetics, reading, and SLA.
*** Mohammad Reza Anani Sarab is Associate professor of TEFL. His research interests include language curriculum, classroom-centered research and language testing & assessment. He has authored several articles in his areas of interest in local and international journals and a number of textbooks for teaching English as a Foreign Language.

1. Introduction

Focus on language forms has always been subject to controversy and investigation. There have generally been two major types of form-focused instruction in SLA. The former, "focus on forms" (FonFS), is concerned with selecting a particular set of linguistic features in advance by the teacher or textbook and teaching them in the language classroom. Whereas FonFS is a new term for traditional grammar instruction, "focus on form" (FonF) was relatively recently introduced by Long (1991) to give priority to meaning by limiting the focus on language forms only to incidental attempts to bring linguistic items in context to the foreground.

The pedagogy of FonF has led to the popularity and prevalence of corrective feedback (CF). This refers to the information given to learners indicating a hypothesis (of interlanguage) is incorrect (Ellis, 2008). There are two major types of CF, namely oral and written CF. Also, there are various other subcategories within each. For instance, Lyster and Ranta (1997) identified different oral CF such as recast, elicitation, clarification request, and so forth. As for written corrective feedback (WCF), there have been two dichotomies which stand out most in the literature: 1) direct versus indirect and 2) focused versus unfocused WCF. The former is concerned with whether the teacher provides the learner with the correct form. More specifically, in direct WCF the teacher supplies the correct form in one way or another, for instance by crossing out an unnecessary word, inserting a word, or writing the correct form near the erroneous part. In indirect WCF, in contrast, only an indication is provided to the learner showing that s/he has made an error, but the correct form is not given (Ellis, 2008). The advantage of direct WCF is that an explicit form of guidance is given to the learner. This can particularly prove quite helpful when the learner does not know the correct form or when s/he is at lower proficiency levels (Ferris & Roberts, 2001). However, as Ellis (2008) cautions, it has the disadvantage that it does not usually amount to long-term learning in that it does not require much processing on the part of the learner.

On the other hand, the second dichotomy pertains to whether the teacher deals with all the errors made by the learner (i.e., unfocused WCF) or s/he opts to address errors of certain ilk (i.e., focused WCF). For example, a teacher may decide to correct the errors related to tenses, in which case s/he is providing focused WCF. On the contrary, another teacher might prefer to provide corrections with regard to other error types in addition to the ones concerning tenses (i.e., unfocused). As was the case with direct and indirect WCF, focused and unfocused WCF have both pros and cons. In the focused way, the learner receives intensive feedback on a single error type several times but the feedback is limited to that error only. As for the unfocused one, on the other hand, the learner is provided with feedback on all his or her errors, but s/he cannot deeply process every error. That is, his or her processing load is scattered across a wide variety of errors (Ellis, 2008).

As CF does not occur in vacuum but rather by a CF provider (usually the teacher) received by a student, learner and teacher variables should be of great importance. Students enter classrooms with different abilities and characteristics, which can pose problems in the learning process if not taken into consideration (Asgari, 2019). The characteristics that a particular student has most

certainly will affect the efficacy of CF (Evans, Hartshorn, McCollum, & Wolfersberger, 2010). Of such learner variables, cognitive learning style (CLS) is recognized as one of the most influential factors in the efficacy of a particular instruction. Surprisingly, such a variable has been ignored to a great extent in the area of CF in general and written corrective feedback (WCF) in particular, even though its importance has been voiced repeatedly by scholars (Rassaei, 2015).

The notion of CLS pertains to the persuasive way individuals acquire, structure and process information. It is concerned with how an individual perceives, thinks, solves problems and learns. Differences in this construct are seen to indicate a general ability for cognitive restructuring which people can have to varying degrees (Witkin & Goodenough, 1981). Field-dependence (FD) signifies people with lower cognitive restructuring ability, while field-independent (FI) individuals are marked by higher cognitive restructuring ability. According to Witkin, Moore, Goodenough, and Cox (1977) and Goodenough (1976), people who are FD adopt a holistic approach, are less discriminating and have a tendency to be highly affected by their surrounding environment. On the contrary, FI people take an analytic approach, heed more attention to less salient cues in context and can effectively detect pertinent cues in misleading circumstances.

It follows that the two extremes of a CLS should not be labeled as good or bad but rather different (Hoffman, 1997). On this ground, FI students are considered to be more analytical and thereby are expected to perform better in activities that require cognitive restructuring to detect and extract components out of a complex context. By contrast, students who are FD are deemed to have a better performance in activities which demand psychological proximity, social sensitivity, and empathy (Johnson, Prior, & Artuso, 2000).

There are several investigations, mostly correlational research, which have striven to find out whether there is a relationship between the construct of FD/FI and L2 acquisition and communication. These studies have found significant relationships between FD/FI and linguistic and communicative skills and achievement (Hansen & Stanfield, 1981). Despite the fact that previous studies have demonstrated that FD versus FI students benefit differently from different instructional practices, previous CF investigations have overlooked the issue of matching error correction techniques to learners' CLS (Rassaei, 2015). In fact, to the best knowledge of the researchers, no study has investigated WCF in relation to cognitive learning style.

Therefore, the purpose of the present study was mainly (1) to find if there is a relationship between the type of WCF (i.e., direct vs. indirect) that learners prefer to receive on their writings and their cognitive styles (i.e., FD vs. FI), and (2) to explore whether the effectiveness of WCF increases when tailored to their cognitive styles. In the light of the above argument, the following questions led the current research:

1. Is there a statistically significant relationship between FD/FI and type of WCF learners prefer to receive?

2. Does matching focused WCF with learners' FD/FI cognitive learning styles have any short- and long-term impact on WCF efficacy?

2. Literature Review

Written Corrective Feedback

The majority of the early investigations into WCF examined whether direct WCF is more beneficial than indirect types. Previous research examining the effectiveness of WCF on students' accuracy culminated in conflicting results (e.g., Chandler, 2003). Whereas a number of studies have reported favorable evidence for the efficacy of indirect CF (Ferris, 2006; Lalande, 1982), others have demonstrated that direct CF is more effective (Van Beuningen et al., 2008, 2012; Chandler, 2003). Lalande (1982) investigated sixty intermediate German learners and found that indirect CF (coding) was more effective than direct WCF, even though the observed difference between the performance of the groups was not significant in statistical terms.

In addition, other studies such as Bitchener (2008) and Bitchener and Knoch (2010a, 2010b) have investigated different forms of direct CF, concluding that all the direct CF types equally contributed to the learning of their linguistic targets. Moreover, studies on the mediating role of learner characteristics such as learner beliefs indicate that the type of feedback that is most beneficial may vary from learner to learner. For instance, when a learner believes that the type of CF he or she is provided with is effective, he or she may be keener to engage with the CF than a learner who believes otherwise (Rummel & Bitchener, 2015).

Measuring both short- and long-term effects of WCF, van Beuningen et al. (2008, 2012) and Bitchener and Knoch (2010b) carried out studies with secondary school students in Dutch classrooms and advanced English students, respectively. The studies found that, although the learners benefited both from direct and indirect WCF in the short-term, it was the direct WCF which made a more significant contribution to their English learning.

In one of the most recent studies, Kurzer (2018) examined the effect of dynamic WCF at three different levels of ESL writing classes over the course of three terms with three hundred and twenty-five ESL learners. It was revealed that English learners who received dynamic WCF as treatment outperformed their peers who received only traditional grammar instruction. Global, local, and mechanical error types were also examined. The data analysis produced significant results regarding all error types at all language levels, suggesting that dynamic WCF can prove to be an effective teaching tool to improve English learners' linguistic accuracy.

Nevertheless, these contradictory results could emanate from discrepancies or defects in the design of the studies (for a detailed account of such shortcomings see Bitchener & Ferris, 2012; Goo & Mackey, 2013; Van Beuningen et al., 2008). As a case in point, research studies by Ashwell (2000) and Ferris and Roberts (2001) found that WCF is effective; nonetheless, the post-test they administered was in the form of revising the learner's previous writings. Other investigations that provided positive evidence for the efficacy of WCF failed to include a control group (Chandler, 2003; Lalande, 1982), making it difficult to conclude that learning gains were the result of the treatment rather than instruction in general. On the contrary, Polio, Fleck and Leder (1998) discovered that WCF was not beneficial, but the instruments used in the pre- and post-tests were different, making it possible for one to conclude the results were due to instrument variability. On the grounds of these conflicting findings, there is still more need for research on this area. In particular, it could be

speculated that the discrepancies might be attributed to lack of teasing the moderator variables in these studies.

Field-dependence/Field-independence and Second Language Acquisition

The correlation between FD/FI and second language acquisition has been extensively investigated so far (e.g., Chapelle & Roberts, 1986; Hansen, 1984; Hoffman, 1997; Johnson et al., 2000). They, by and large, found an overall positive correlation between FD/FI and L2 acquisition. However, the relationship between the development of different skills and cognitive styles is controversial. Some studies have suggested that FI individuals are at an advantage in language learning, particularly in tests measuring linguistic competence or integrated skills (Hansen & Stanfield, 1981), mainly because FI learners enjoy greater cognitive restructuring ability. Nonetheless, other scholars have argued that the interpersonal-orientation of FD people help with development of their communicative competence. For instance, Johnson and Rosano (1993) and Johnson et al. (2000) discovered that FD students had a better performance on communicative tests. The third line of research has indicated that FI learners are generally at an advantage in SLA, regardless of test types. According to Chapelle and Roberts (1986), all proficiency measures, such as grammar, dictation, and communicative tests, were significantly predicted by FI scores. In the same vein, Carter (1988) found that FI learners outperformed their FD counterparts on both linguistic as well as communicative competence measures.

The above-mentioned research studies have all probed into the correlation between FD/FI and second language acquisition. Thus, it is still unknown if FD/FI can invariably predict language learning gains through various teaching methods. What is more, confounding variables including differences in teaching methods, learning environments, individuals' linguistic and communicative competence, which can interact with FD/FI in affecting language gains, are not taken into consideration. Ultimately, as Guo & Yang (2018) put it, "a more theoretically interesting and pedagogically significant question is whether different kinds of instruction match with learners of different cognitive styles" (p. 846).

As mentioned in the previous section, the results regarding the efficacy of CF are mixed. These contradictory results might be, at least in part, due to individual differences such as cognitive style (Guo & Yang, 2018; Hinkel, 2011). As for empirical research investigating FD/FI vis-à-vis CF, we could only find two studies: Rassaei (2015) and Guo and Yang (2018). Adopting a quasi-experimental design, Rassaei (2015) examined the hypothesis that FD and FI individuals benefit differently from recasts in the sense that FI learners might detect less salient cues in the context more effectively compared to FD learners who, instead, might learn more efficiently when contextual cues are in harmony with activities which demand holistic processing. To test this hypothesis, seventy-six intermediate Iranian EFL students were assigned to four experimental and control groups. In so doing, the students were categorized as FD or FI on the basis of their scores on GEFT – the widely-used FD/FI test. Therefore, four groups were constituted: recasts–FD, recasts–FI, control–FD, and control–FI. The analysis of data obtained from writing and picture description tasks revealed that the students in the recast-FI group

statistically had a more significant performance than their counterparts in the other three groups on the post-test as well as the delayed post-test. The author concluded that recasts are arguably more suitable for FI learners.

In a similar vein, Guo and Yang (2018) examined the effects of recasts and prompts on learning the third-person singular "s" added to the end of main verbs in the simple present tense in English and the potential role FD/FI can play regarding the extent to which CF is effective. Writing and text-completion tests were employed to check learning gains. One hundred and seventy-five EFL learners from four intact classes were divided to four groups: form-focused instruction (FFI) using recasts, FFI using prompts, FFI, and control. The GEFT was deployed to measure the degree to which learners were FD/FI. It was revealed that the FFI-prompt group turned out to have a better performance in comparison to the other groups both on the immediate post-test and the delayed post-test in the written test. As for the text-completion test, nevertheless, there was not any significant difference among the four groups. The results of regression analyses indicated that in the text-completion test, FD/FI had a mediating role in the efficacy of recasts on the immediate post-test. That is, FI students tended to benefit from recasts more than their FD peers in the short term, which substantiated the results reported by Rassaei (2015).

3. Methodology

Design

Being quantitative in nature, this study aimed to investigate possible effects of WCF when matched with students' cognitive learning styles. Accordingly, a quasi-experimental pre-test,

immediate post-test, and delayed post-test design was adopted. The students were assigned to four groups: experimental direct-FD, experimental indirect-FI, comparison indirect-FD, and comparison direct-FI. In the experimental groups, the type of WCF provided to the participants was matched with their cognitive learning styles, while the comparison groups did not have this matching condition. The grouping was done based on cognitive style (FD and FI) matched with their WCF preference as the independent variable, while the dependent variable was the learning gains pertaining to the definite and indefinite articles through WTC.

Participants

Seventy-five pre-intermediate Iranian EFL learners took part in this study. They were chosen based on the results of the Oxford Placement Test (OPT), WCF preference, as well as Group Embedded Figures Test (GEFT). There were both male and female students whose age ranged between 18 and 23. Moreover, they were all university students majoring in Computer Engineering in Tehran, Iran and were selected based on convenience sampling. All the participants consented to take part in this research project at the outset.

Instruments

A number of instruments were employed in this study to collect preliminary as well as main data as follows.

Oxford Placement Test

First, the participants' general proficiency was assessed using the standardized OPT to ensure the homogeneity of the groups at the very beginning of the experiment. The test comprised 60 questions regarding grammar and vocabulary. After administration and test scoring, the students

whose scores were between 30 and 39 were chosen as pre-intermediate English learners. The test was piloted before its administration, which resulted in a Cronbach's alpha of .85, a quite satisfactory reliability level.

Group Embedded Figures Test

The Group Embedded Figures Test (GEFT) was deployed to categorize the participants into a dichotomy of FD and FI learners. The test, which was developed by Witkin and his colleagues, is scored based on the number of correct responses in the time allowed (Oltman, Raskin, & Witkin, 1971). Each item represents a simple geometric figure embedded in a complex design. The students were asked to trace simple figures embedded in complex designs. To do so, they had to break the complex and misleading patterns to locate the less salient features of the embedded figure. A learner's score in the GEFT is the sum of items for which the simple shapes are identified in the complex patterns. Higher scores represent a more FI cognitive style while lower scores show more FD cognitive style. To measure the reliability of the test (internal consistency), Spearman-Brown Prophecy formula was used. The reliability coefficient for the test was found to be 0.92.

WCF Preference Test

This test was used to identify the students who preferred direct WCF and those who would rather receive indirect WCF. They were provided with the two forms of feedback to choose from: a) the direct type of WCF, in which the teacher provided the student with the correct form, and b) indirect WCF, which took the form of an indication in the margin that an error or errors have taken place in a line of text (Ellis, 2008). The students were given the explanation of direct and indirect WCF along with examples to choose from as follows:

Example:

I study my English textbook last night.

I ~~study~~ studied my English textbook last night.

I study my English textbook last night. (In the margin, the learner is notified of the occurrence of an error in the sentence)

Narrative Tasks

Narrative stimuli taken from "Intermediate Anecdotes in American English" by Hill (1980) were used to elicit article errors from the participants. To reduce the processing load on the part of the students when reproducing the narrative, some difficult words in the original fable were replaced with easier ones and a few sentence structures were simplified. The narratives contained easy vocabulary with seven indefinite and ten definite articles. Two experienced English teachers and two experts in the field were consulted, who considered the tasks suitable for pre-intermediate students, yet expected that the students would often make article mistakes. Inter-rater reliability (Kappa) was also checked for 25% of the writings of the pre-test, post-test, and delayed post-test, which was found to be .90.

Error Correction Test

This test comprised 17 items. There were two related statements in each item, one of which was underlined and contained an error that the learners were supposed to correct in writing. Four distracter items were also included. An example from the test are presented below along with the correct answers.

Example:

I saw an interesting movie last night. <u>I forgot the name of movie.</u>

Answer:

I forgot the name of the movie.

The error correction test was scored on a discrete item basis. One point was given for each correct supply of an article in the 13 obligatory contexts in the underlined sentences. With the exclusion of the distracters, 13 points was the complete score for the test. This test also proved to be reliable after piloting using Spearman-Brown Prophecy formula (r = .81).

Procedure and Data Collection

Prior to both the pilot and main phases, the students' consent to participate in this research project was secured. In the pilot phase, all of the tests were administered to thirty-three students who were similar in characteristics to those in the main phase. Next, the main phase began. After homogenizing and assigning the participants to their corresponding groups using the OPT, WCF preference, and GEFT, the pre-tests (narrative and error correction tests) were conducted, which served as the covariates. This was followed by ten treatment sessions in which narrative tasks were used. The learners were given enough time to read the narratives and write some key words if needed. Next, the narratives were taken before they were asked to reproduce them based on their own wording. These narratives were used in all of the treatment sessions for all the experimental and comparison groups. In the experimental direct-FD and comparison direct-FI, direct, focused WCF on their reproduced writings was provided to the students as illustrated previously. The students in the experimental indirect-FI and comparison indirect-FD, on the other hand, received indirect, focused WCF. After the treatment ended, the immediate post-tests (narrative and error correction) were given. Three months later, the delayed post-tests, which

609

included the same type of tasks, were administered to measure long-term effects of matched and unmatched WCF with cognitive learning style.

Data Analysis

SPSS v.22 was used for descriptive and inferential statistics. Specifically, the mean and standard deviation among others were used along with the normality test and other statistical procedures for checking the requirements of parametric tests. As for inferential statistics, the chi-square (research question 1) was run on the categorical data from FD/FI and WCF preference tests, and ANCOVA (research questions 2, 3, & 4) tests were employed on the data related to narrative and error correction tasks.

4. Results

Research Question 1

A chi-square test was run on two types of categorical data (i.e., FD/FI style and type of WCF preference). This phase of the analysis intended to investigate whether participants with different cognitive styles had different preferences with regard to WCF. Table 1 shows both the observed and expected numbers of students in each cell. According to Table 2, there is a strong correlation between FD/FI and WCF of the participants ($\chi^2 = 9.41$, p < .05). More specifically, it was found that the FD students tended to prefer direct WCF, whereas indirect WCF was mostly preferred by FI students.

Table 1. FD_FI * WCF_Preference Crosstabulation

			WCF_Preference	
			Direct	Indirect
FD_FI	FD	Count	22	12
		Expected Count	15.4	18.6
	FI	Count	12	29
		Expected Count	18.6	22.4

Table 2. Chi-Square Tests for FD/FI and WCF Preference

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.41	1	.00
N of Valid Cases	75		

Research Question 2

The second question intended to provide evidence showing the effect of matching the type of feedback with the type of cognitive style. To do so, first measures of descriptive statistics were used and then a number of ANCOVA tests were administered. As the tests were conducted at three times (once before the treatment, then immediately after the treatment, and finally three months after the treatment), the statistics are presented below in order of their administration.

To gauge the short- and long-term effects of the intervention, an ANCOVA test was run for both the immediate and delayed post-tests. It is important at this point to note that the assumptions for the ANCOVA test, as mentioned in Dancey and Reidy (2007), were checked. For brevity, related tables and graphs are excluded. Suffice it to say that all of the assumptions were met. Tables 3 and 4 suggest that the difference in the mean scores of the two groups on the narrative test as an immediate post-test is approximately 8 points and that this difference is statistically significant (F = 8.36, p < .05). That is, the matching condition helped the students outperform their peers in the unmatched group on the narrative test.

Table 3. Descriptive Statistics of Narrative Test 1

Group	Mean	Std. Deviation	N
matched	69.03	14.85	36
unmatched	61.16	13.89	39

Table 4. Tests of Between-Subjects Effects for Narrative Test 1

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	4290.81	2	2145.40	12.94	.00	.26
Intercept	14724.71	1	14724.71	88.83	.00	.55
Narrative1	3130.00	1	3130.00	18.88	.00	.20
Group	1386.29	1	1386.29	8.36	.00	.10
Error	11934.94	72	165.76			
Total	332529.02	75				
Corrected Total	16225.76	74				

The same procedure was followed for the error correction as an immediate post-test as well. As shown in Table 5, the mean score of the students in the matched group was 7.63, while their peers who received unmatched WCF achieved 6.66 as their mean score. It is noteworthy that the maximum score was 13 on this test. As can be seen in Table 6, the matched group significantly outperformed the unmatched group on the error correction test 1 (F = 5.94, p < .05).

Table 5. Descriptive Statistics of Error Correction Test 1

Group	Mean	Std. Deviation	N
matched	7.63	1.97	36
unmatched	6.66	2.29	39

Table 6. Tests of Between-Subjects Effects for Error Correction Test 1

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	69.25	2	34.62	8.73	.00	.19
Intercept	179.79	1	179.79	45.35	.00	.38
ErrorCor1	51.56	1	51.56	13.00	.00	.15
Group	23.54	1	23.54	5.94	.01	.07
Error	285.41	72	3.96			
Total	4171.00	75				
Corrected Total	354.66	74				

The next two ANCOVA tests were run for the delayed post-tests to gauge long-term effects of the treatment. Thus, descriptive statistics and the ANCOVA test were computed for the narrative test 2. The results demonstrated that the mean scores of the matched and unmatched groups were 66.90 and 58.72, respectively (see Table 7). Furthermore, this observed mean difference was found statistically significant (F =

5.02, p < .05, see Table 8). What this suggests is that the students receiving matched WCF performed significantly better than those who were given unmatched WCF on narrative test 2.

Table 7. Descriptive Statistics of Narrative Test 2

Group	Mean	Std. Deviation	N
matched	66.90	15.21	36
unmatched	58.72	16.24	39

Test 8. Tests of Between-Subjects Effects for Narrative Test 2

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1265.16	2	632.58	2.51	.08	.06
Intercept	30396.49	1	30396.49	120.76	.00	.62
Narrative2	10.16	1	10.16	.04	.84	.00
Group	1265.14	1	1265.14	5.02	.02	.06
Error	18121.90	72	251.69			
Total	313770.02	75				
Corrected Total	19387.06	74				

The error correction test 2 also underwent the same statistical procedures. Based upon Table 9, the students in the matched group achieved a mean of 8.00, whereas their counterparts in the unmatched group had a mean of 6.71. In addition, the ANCOVA results showed that this difference was significant in statistical terms as the obtained

p value for F was less and the set alpha level of .05 (see Table 10).

Table 9. Descriptive Statistics of Error Correction Test 2

Group	Mean	Std. Deviation	N
matched	8.00	2.67	36
unmatched	6.71	2.35	39

Table 10. Tests of Between-Subjects Effects for Error Correction Test 2

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	37.58	2	18.79	2.98	.05	.07
Intercept	335.29	1	335.29	53.28	.00	.42
ErrorCor2	6.81	1	6.81	1.08	.30	.01
Group	33.23	1	33.23	5.28	.02	.06
Error	453.08	72	6.29			
Total	4524.00	75				
Corrected Total	490.66	74				

5. Discussion

This study intended to investigate the effect of matching cognitive learning style with focused WCF among Iranian EFL learners. The results pertaining to the first research question indicated FD learners tended to receive direct WCF whereas their FI counterparts preferred the indirect type of WCF. This finding is in tandem with the features attributed to FD and FI learners, according to which FD learners rely on external frames of reference and require more structuring and guidance from the instructor, while FI learners operate within an internal frame of reference, are in control of their own learning process, and define their own learning strategies (Cassidy, 2004). In the same vein, Wieseman, Portis, and Simpson (1992) argue that FD individuals, unlike their FI counterparts who are more autonomous, favor structure, direction, and feedback in the learning process. Obviously, direct WCF provides learners with more guidance, direction, and structure, which explains why it was favored by FD learners. On the other hand, since FI learners are more internally motivated and less dependent on instructors, they preferred the type of WCF that allows them to work out the rule on their own. In this regard, Witkin and Goodenough (1981) also observe that FI individuals are inclined to operate independently from external referents or information sources.

The results of the second research question suggested that learners benefited from direct and indirect WCF in a greater extent when their cognitive styles were in harmony with the type of WCF they received. This item of finding is confirmed by a number of studies indicating that different types of instruction can lead to better learning outcomes when tailored to students' cognitive styles (Biedron & Pawlak, 2016; Li, 2015; Witkin et al., 1977). It is believed that FD learners, in contrast to FI learners, are inclined to be relatively more message-oriented and attentive in the face of communicative and social frames of reference. In the same vein, Rassaei (2015) contends that FD students are more socially oriented and for this reason they attend to overall communication rather than the formal aspects of language. The FD participants in the present study were provided with direct WCF (matched) in the experimental group and indirect WCF (unmatched) in the comparison group. When presented with indirect WCF, which took the form of underling the erroneous part, the FD students might have found themselves at a loss, particularly because the definite/indefinite article system has less to do with communication. Thus, it could be that they opted to ignore such feedback.

Moreover, indirect WCF is less structured than direct WCF, so FI students are better able to use their structuring abilities to make better use of indirect WCF compared to FD students. By the same token, FD learners might find themselves at a loss in less structured, ambiguous contexts created by indirect WCF (Witkin et al., 1977). It has been demonstrated in several studies that FD persons' performance may be negatively affected when learning materials which contain less salient cues (e.g., Rassaei, 2015; Richardson & Turner, 2000; Liew, Tan, & Seydali, 2014; Wang, 2007). The article system is believed to be a non-salient feature of language for the reason that,

according to the Primacy of Meaning principle put forth by VanPatten, function words, unlike content words, are more likely to escape the attention of the learner (VanPatten, 2004; Rassaei, 2015). As such, it can be contended that direct WCF can provide more salient cues compared with indirect WCF and thus is more appropriate for FD students.

As regards metalinguistic knowledge, FI learners are equipped with the ability to organize, analyze, and structure linguistic items more effectively. In the same vein, Li (2015) suggests that "since the initial stages of SLA impose heavy processing demands on learners' ability to extrapolate linguistic rules, it is perhaps a better idea for instructors to adopt more explicit approaches coupled with metalinguistic explanation to alleviate learners' processing burden, especially those with limited language analytic ability [i.e., FD learners]" (p. 156). Similarly, in the light of the output-prompting nature of the indirect type of WCF, FI students, characterized by intrinsic motivation and autonomy, are pushed to direct their attention from semantic toward syntactic processing, and thereby are enabled to zero in on the accuracy of their linguistic output (Guo & Yang, 2018).

Finally, the ambiguity of the task or activity also mediates the performance of FD and FI students in terms of needing assistance from others (i.e., the instructor or peers) (Witkin & Goodenough, 1977). To extend this to the context of the present study, indirect WCF presents a situation in which the information available is partially clear and thereby may pose a challenge to FD students, as opposed to their FI peers who can rely on themselves under similar

circumstances. In addition, FD students do not go beyond the information that is given to them (Witkin & Goodenough, 1977). Thus, when provided with indirect WCF, they do not go further to work out the correct form of their mistakes on their own. As a result, they should be presented with direct WCF, which is in keeping with Powers and Lis's (1977) observation that FD people leave ambiguous material "as is" and follow the organization of the field as presented.

6. Conclusion

This study probed into the effect of matching cognitive learning style with focused WCF among Iranian EFL learners. According to the results, the experimental group, which received matched WCF on their writings, outperformed the comparison group on both the narrative tasks and error correction tests. Accordingly, it is suggested that students be given the type of WCF matching their cognitive learning styles. More importantly, both teachers and students need to be cognizant of cognitive learning styles and the way their information processing is affected by their FD/FI orientations. Such an understanding can enable them to employ suitable activities in harmony with their cognitive style, which can ultimately optimize their learning. There were a number of limitations in the present study, which also indicate direction for further research. First and foremost, the present study targeted a formal aspect of the English language. The intersection of cognitive styles and language instruction can be investigated by future studies using socially oriented tests involving communication and interaction. Furthermore, the proficiency level of learners is believed to mediate the extent to which FD/FI cognitive styles differentially affect

learning. As such, future research can test this hypothesis and thus provide new insights into the role of language proficiency in this regard by comparing the performance of advanced FD and FI students.

References

Asgari, F. (2020). Different abilities in a language class: problems and solutions. *Foreign Language Research Journal (Pazhuhesh-E Zabanha-Ye Khareji), 9*(4), 1131-1165. DOI: 10.22059/jflr.2019.283334.643

Ashwell, T. (2000). Patterns of teacher response to student writing in a multiple-draft composition classroom: Is content feedback followed by form feedback the best method? *Journal of Second Language Writing, 9*(3), 227-257.

Biedron, A., & Pawlak, M. (2016). The interface between research on individual difference variables and teaching practice: The case of cognitive factors and personality. *Studies in Second Language Learning and Teaching, 6*(3), 395-422.

Bitchener, J. (2008). Evidence in support of written corrective feedback. *Journal of Second Language Writing, 17*(2), 102-118.

Bitchener, J., & Ferris D. R. (2012).*Written corrective feedback in second language acquisition and writing*. New York: Routledge.

Bitchener, J., & Knoch, U. (2010a). Raising the linguistic accuracy level of advanced L2 writers with written corrective feedback. *Journal of Second Language Writing, 19*(4), 207-217.

Bitchener, J., & Knoch, U. (2010b). The contribution of written corrective feedback to language development: A ten-month investigation. *Applied Linguistics, 31*(2), 193-214.

Carter, E. F. (1988). The relationship of field dependent/independent cognitive style to Spanish language achievement and proficiency: A preliminary report. *Modern Language Journal*, 21-30.

Cassidy, S. (2004). Learning styles: An overview of theories, models, and measures. *Educational Psychology, 24*, 419–444.

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*(3), 267-296.

Chapelle, C., & Roberts, C. (1986). Ambiguity tolerance and field independence as predictors of proficiency in English as a second language. *Language Learning, 36*, 27–45.

Dancey, C. P., & Reidy, J. (2007). *Statistics without maths for psychology*. Pearson Education.

Ellis, R. (2008). *The study of second language acquisition* (2th ed.). Oxford: Oxford University Press.

Evans, N., Hartshorn, J., McCollum, R., & Wolfersberger, M. (2010). Contextualizing corrective feedback in second language writing pedagogy. *Language Teaching Research, 14*, 445–464.

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: Cambridge University Press.

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.

Goo, J. & Mackey, A. (2013). The case against the case against recasts. *Studies in Second Language Acquisition, 35*(1), 127-165.

Goodenough, D.R. (1976). The role of individual differences in field dependence as a factor in learning and memory. *Psychological Bulletin, 83*, 675–694.

Guo, X., & Yang, Y. (2018). Effects of corrective feedback on EFL learners' acquisition of third-person singular form and the mediating role of cognitive style. *Journal of Psycholinguistic Research, 47*(4), 841-858.

Hansen, J. (1984). Field dependence-independence and language testing: Evidence from six Pacific Island cultures. *TESOL Quarterly, 18*(2), 311-324.

Hansen, J., & Stanfield, C. (1981). The relationship of field dependent-independent cognitive styles to foreign language achievement. *Language Learning, 31*, 349-367.

Hill, L. A. (1980). *Intermediate anecdotes in American English*. Oxford University.

Hinkel, E. (Ed.). (2011). *Handbook of research in second language teaching and learning* (Vol. 2). Routledge.

Hoffman, S.Q. (1997). Field dependence/Independence in second language acquisition and implications for educators and instructional designers. *Foreign Language Annals, 30*, 222-234.

Johnson, J., Prior, S., & Artuso, M. (2000). Field dependence as a factor in second language communicative production. *Language Learning, 50*(3), 529-567.

Johnson, J., & Rosano, T. (1993). Relation of cognitive style to metaphor interpretation and second language proficiency. *Applied Psycholinguistics, 14*, 159-159.

Kurzer, K. (2018). Dynamic written corrective feedback in developmental multilingual writing classes. *TESOL Quarterly, 52*(1), 5-33.

Lalande, J. F. (1982). Reducing composition errors: An experiment. *The Modern Language Journal, 66*(2), 140–149.

Li, S. (2015). Working memory, language analytical ability and L2 recasts. In Wen, Z., Mota, M. B., & McNeill, A. (Eds.), *Working memory in second language acquisition and*

processing (pp. 139-159). Multilingual Matters.

Liew, T. W., Tan, S. M., & Seydali, R. (2014). Learners' field dependence and the effects of personalized narration on learners' computer perceptions and task-related attitudes in multimedia learning. *Journal of Educational Technology Systems, 42*(3), 255-272.

Long, M. H. (1991). Focus on form: a design feature in language teaching methodology. In K. de Bot, R. Ginsberg, & C. Kramsch (Eds.), *Foreign language research in cross-cultural perspective* (pp. 39-52). Amsterdam: John Benjamin.

Lyster, R. & Ranta, L. (1997). Corrective feedback and learner uptake: Negotiation of form in communicative classrooms. *Studies in Second Language Acquisition, 19*(1), 37-66.

Oltman, P.K., Raskin, E., & Witkin, H.A. (1971). *Group embedded figures test*. Palo Alto, CA: Consulting Psychologists Press.

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.

Powers, J. E., & Lis, D. J. (1977). Field dependence—independence and performance with the passive transformation. *Perceptual and Motor Skills, 45*(3), 759-765.

Rassaei, E. (2015). Recasts, field dependence/independence cognitive style, and

L2 development. *Language Teaching Research, 19*(4), 499-518.

Richardson, J. A., & Turner, T. E. (2000). Field dependence revisited I: Intelligence. *Educational Psychology, 20*(3), 255-270.

Rummel, S., & Bitchener, J. (2015). The effectiveness of written corrective feedback and the impact of Lao learners' beliefs have on uptake. *Australian Review of Applied Linguistics, 38*(1), 64-82.

Van Beuningen, C. G., De Jong, N. H., & Kuiken, F. (2008). The effect of direct and indirect corrective feedback on L2 learners' written accuracy. *ITL-Review of Applied Linguistics, 156*(1), 279-296. Doi: 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), 1–41.

VanPatten, B. (Ed.). (2004). *Processing instruction: Theory, research, and commentary*. Lawrence Erlbaum: Mahwah, NJ.

Wang, A. (2007). *The effects of varied instructional aids and field dependence independence on learners' structural knowledge in a hypermedia environment*. Unpublished doctoral dissertation, Ohio University.

Wieseman, R. A., Portis, S. C., & Simpson, F. M. (1992). An analysis of the relationship between

cognitive styles and grades: new perspectives on success or failure of preservice education majors. *College Student Journal, 26*(4), 512–517.

Witkin, H. A., & Goodenough, D. R. (1977). *Field dependence revisited*. Princeton, NJ: Educational Testing Service.

Witkin, H. A., & Goodenough, D. R. (1981). Cognitive styles: essence and origins. Field dependence and field independence. *Psychological Issues*, (51), 1-141.

Witkin, H. A., Moore, C.A., Goodenough, D.R., & Cox, P.W. (1977). Field-dependent and field-independent cognitive styles and their educational implications. *Review of Educational Research, 47*, 1–64.