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The Effectiveness and Rank of Metalinguistic Corrective Feedback Strategies on Written Grammatical Performance: Monolingual Persian vis-à-vis Bilingual Turkmen EFL Learners

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Abstract

Much uncertainty still exists about the possible role of a myriad of external and internal mediating variables such as language backgrounds and ethnicities in the process of corrective feedback (CF). To address the issue, 79 monolingual Persians and 79 bilingual Turkmens aged between 13 and 18 from two language institutes in Golestan Province, Iran participated in the study comprising three experimental and a control group each. Pre-tests revealed the learners' grammatical errors based on which the experimental groups were provided with different strategies of metalinguistic CF, namely mid-focused oral metalinguistic CF (OMCF), written metalinguistic CF (WMCF), and oral/written metalinguistic CF (OWMCF) on their five most recurrent grammatical errors while the control groups received none. Following significant Kruskal-Wallis test results, Conover's pairwise comparison test was employed to exhibit differences among CF strategies. In monolingual Persians and bilingual Turkmens, all the experimental groups significantly outperformed the control groups. Mid-focused OMCF and OWMCF had significant effects on the reduction of Persians' errors, but for Turkmens, all the CF strategies exerted a significant reduction of errors. The effectiveness rank of the CF strategies investigated through Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) selected OMCF as the best strategy for monolingual Persians while for bilingual Turkmens, WMCF ranked first. This ranking was highly stable for 10000 iterations changing the weights up to 50%. The outcomes of the research might be of help to EFL learners, EFL teachers of bilingual learners, syllabus designers, and materials developers while opening doors to further pertinent studies.

***Keywords*:** Corrective feedback, metalinguistic, grammatical errors, bilingual, EFL writing

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INTRODUCTION

The pivotal role of writing is being highly acknowledged in the modern world as more and more people need to communicate via written texts. According to Richards and Renandya (2002), writing is undoubtedly one of the most convoluted language skills for EFL learners and a part of learners' communicative competence (Ferris, 2010). Teaching language learners to write free from grammatical and semantic errors (Housen & Kuiken, 2009) is a key constituent of second language (L2) writing since errors might cause misinterpretation. Several L2 writing scholars have emphasized the significance of L2 accuracy as the ultimate objective of L2 writing instruction (e.g., Bitchener, 2017; Chen & Nassaji, 2018; Ferris, 2006; Hyland & Hyland, 2006). Corrective feedback (CF) has been defined by several researchers as an answer to the learners' errors comprising implicit, or explicit (Nassaji & Kartchava, 2017), oral, or written (Karim & Nassaji, 2019). What makes the field of CF worthy of attention is the fact that errors are inseparable and unavoidable components of the language learning process, so understanding the role, complexity, and varieties of CF is a requirement.

The efficacy of CF has been a topic of interest to many researchers, teachers, and writing instructors since CF is often time-consuming and tedious for both language teachers and learners. There are still controversies on the effectiveness of different types of CF on learners' writing (Chandler, 2003; Ferris, 2004), and conflicting findings have been presented in different areas of CF such as its focus and strategy (Bitchener, 2008; Bitchener, Young, & Cameron, 2005), and research design (Ellis, Sheen, Murakami, & Takashima, 2008). Ferris (2004) cited some studies that were implemented on the "correction/no correction" comparison (Ferris & Roberts, 2001; Polio, Fleck, & Leder, 1998; Semke, 1984). Ferris and Roberts (2001) reported evidence in favor of CF while others interpreted CF

as negative, or inconclusive (Smeke, 1984; Polio et al., 1998). Despite all the research, there are still no clear answers as to the most effective strategies of CF, and the best way of implementing them (Ferris, 2004; Hyland & Hyland, 2006). With regard to student writers, their population has changed over the past decades. There are now ethnic/subgroups of EFL learners, who are willing to learn writing in English in their own country while these learners have considerable varieties in their first languages L1(s), cultures, and socioeconomic factors (Ferris, 2011).

Traditionally, it was assumed that teachers and learners were located at the two ends of the language learning continuum; teachers provided the learners with CF and supposedly, learners should have applied it, and never repeat the error. The process is not as simple as it sounds, and countless factors often contribute to the success or failure of different CF strategies. Evans, Hartshorn, McCollum, and Wolfersberger (2010) have introduced three mediating variables in the process of CF (Figure 1), namely learner variables, situational variables, and methodological variables. Learners' L1(s) is an example of learners' variable while the physical atmosphere of the learning is a part of situational variables, and the content of teaching represents methodological variables.

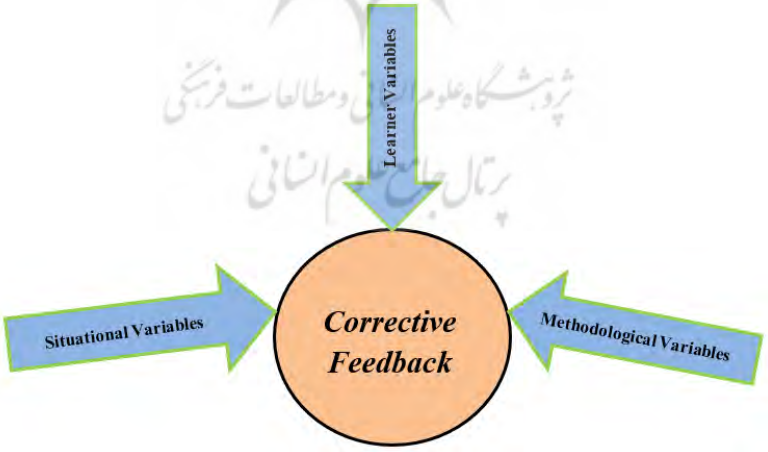


Figure 1: Mediating Variables in the Process of CF

The role of other mediating variables on the continuum of language learning between teachers and learners remains the fundamental and unanswered question (Bitchener & Ferris, 2012). Despite the importance of internal (EFL learners' age, gender, and learning styles) and external and contextual variables (L1s), there remains a notable paucity of CF studies in language learners in general (Bitchener & Storch, 2016) and bilingual EFL learners in particular, who learn English as their third language (L3), compared to monolingual EFL learners for whom English is their L2. Controversial results of studies might be due to these mediating variables; therefore, research considering these variables on the effectiveness of CF is highly recommended (Karim & Nassaji, 2019).

The unique EFL context of Iran where learners are not exposed to a great deal of English makes learners prone to difficulties in their writing ability. There are varieties of ethnic/subgroups living in different parts of Iran such as Turkmens, who mostly reside in the northeast of Iran and have their language, customs, and traditions. Turkmen families speak Turkmeni to their children, and when these children enter school at seven, they learn Persian as their L2, and English becomes their L3 when they attend language classes. Meanwhile, writing skill is often the last skill attended to in English classes. By tradition, the most common method of CF on the learners' errors is the teachers writing the correct form of faulty structures for learners (McDonough, Shaw, & Masuhara, 2013). Whether learners always understand and benefit from this form of CF is not fully known. Several studies demonstrated that students do not pay attention to written corrective feedback (WCF) (Ferris, 2011; Truscott, 1996).

While most studies reported the catalyst effect of CF in improving learners' writing (Bitchener, 2008; Bitchener & Knoch, 2015), others (Kang & Han, 2015; Liu & Brown, 2015; Truscott & Hsu, 2008) have called for consideration of additional mediating factors in CF rather than accepting its effectiveness unconditionally. To date, limited consideration has been given to the EFL learners' written performance in view of other variables such as learners' prior L1(s); however, some local studies can also be seen in the

literature (Derakhshan & Karimian Shirejini, 2020; Mohammadi, Ghanbari, & Abbasi, 2019; Rezaei & Derakhshan, 2011). As far as CF and its effectiveness are concerned, there are still questions on the possible role of individual and contextual factors (Bitchener & Storch, 2016; Kormos, 2012), different L1(s) (Bitchener & Ferris, 2012; Eslami & Derakhshan, 2020), providing CF in the form of supplemental grammar instruction focused on some error categories, and generalization capacity of CF to under-explored contexts (Mao & Lee, 2020).

LITERATURE REVIEW

CF is an inherent and vital part of teaching writing to EFL learners. "Feedback is a central aspect of L2 writing programs across the world while the literature has not been unequivocally positive about its role in writing development" (Hyland & Hyland, 2006, p. 83). It was not until 1996 that the usefulness of CF has been challenged (Bitchener, 2008) when Truscott (1996) in his groundbreaking article "The Case Against Grammar Correction in L2 Writing Classes" claimed that grammar correction in L2 classes was "both ineffective and harmful and should be abandoned" (p. 327). Ferris (1999) stated serious flaws in Truscott's previous reviews and contended that "some potentially positive research evidence on the effects of grammar correction" has been "overlooked or understated", which makes more research in the field of CF a desideratum (Ferris, 1999; Ferris 2004, p. 50). As a result of Truscott's article, there has been a renewed surge of interest in CF, especially on written grammatical errors, and how exactly it could be implemented (Ferris, 1999, 2004; Truscott, 1999).

Ellis (2009) categorized different CF strategies for written grammatical errors into the following types: (a) Direct CF in which the teacher provides learners with the correct form of the erroneous structures explicitly (Bitchener, 2018), (b) Indirect CF in which the learners' attention is drawn to their errors without correcting them (Ellis, 2009), and (c) Metalinguistic CF, which can be conducted orally, or in a written form

comprising "comments, information, or questions related to the well-formedness of the learner's utterance without explicitly providing the correct form" (Lyster & Ranta, 1997, . 47). Metalinguistic CF comprises attention to erroneous structures in the learners' scripts, explanation of the grammatical rules about the nature and type of errors, and provision of examples (Bitchener, 2018). Oral metalinguistic corrective feedback (OMCF) consists of oral explanations of errors whereas, for written metalinguistic corrective feedback (WMCF), teachers write the correct form of the grammatical points (Ellis, Loewen, & Erlam, 2006). Of the CF approaches, the mid-focused approach (Figure 2) is defined and used here. This approach is less common and lies in the middle of the continuum of the focused and unfocused CF and targets between two and six grammatical structures (Liu & Brown, 2015).

Figure 2: Comprehensive-Focused WCF Continuum (Adapted from Mao & Lee, 2020, p. 2)

Contrary to the results of Robb, Ross, and Shortreed (1986), Sheen (2007) and Ul Hassan, Babar Qureshi, and Imtiaz Qurashi (2015) reported the positive effect of direct WCF on students' writing. Guo and Barrot (2019) found direct CF more effective than metalinguistic CF whereas there are reports of the effectiveness of metalinguistic CF on learners' writing such as that of Lee (2019). Several other studies also reported the positive effect of WCF (Al-Hazzani & Altalhab, 2018; Bitchener & Knoch, 2008). The effectiveness of indirect CF on linguistic categories was shown by some studies (Bitchener & Knoch, 2008; Ellis et al., 2008; Ferris, 2006). Chandler

(2003) and Mustafa Abbas and Mohammed Tawfeeq (2018) found positive effects of direct and indirect CF in their experiments.

Bitchener (2008) compared the effectiveness of direct CF with written and oral metalinguistic explanation and indicated treatment groups outperformed the control group. Bitchener and Knoch (2008) investigated the effectiveness of four types of WCF, including (1) direct CF, written and oral metalinguistic explanation, (2) direct CF and written metalinguistic explanation, (3) direct CF, and (4) no CF. The first group outperformed the others. Bitchener and Knoch (2010) compared written metalinguistic explanation; metalinguistic CF, and oral form-focused instruction; all the treatment groups outdid the control group. Bitchener and Knoch (2009) provided ESL learners with direct CF, written and oral metalinguistic explanation, direct CF and written metalinguistic explanation, direct CF only; and no CF. All the treatment groups improved without significant differences among them. However, studies can be found not supportive of CF (Polio et al., 1998; Truscott, 1996, 1999; Truscott & Hsu; 2008).

In line with Bitchener and Basturkmen (2006) who suggested the influence of various factors on L2 writing, Khan (2011), showed that Saudi university students encountered obstacles in areas such as grammar, doubling of subjects, language interference, doubling of preposition, articles, and tenses. Bani Younes and Salamh Albalawi (2015) indicated the most common writing problems of 40 female English language students in Saudi Arabia also comprised grammatical errors (tenses, prepositions, subject/verb agreement). Al Mubarak (2017) exhibited problems of Sudanese undergraduate students were grammatical inaccuracies, use of prepositions, and irregular verbs.

In the Iranian context, the findings of some studies (Ahmadian, Mehri, & Ghaslani, 2019; Amiramini, Ghanbari, & Shamsoddini, 2015) indicated the effectiveness of CF. Some researchers (Almasi & Nemat Tabrizi, 2016; Shafiee Sarvestani & Pishkar; 2016) reported the effectiveness of direct CF, others (Jamalinesari, Rahimi, Gowhary, & Azizifar, 2015) found indirect CF to be more effective while Amin and

Saadatmanesh (2018) did not find any significant difference between direct and indirect CF provided on the learners' writing. Mohammadi et al. (2019) found the integration of direct CF and metalinguistic CF strategies effective on the learners' written samples. Rezaei and Derakhshan (2011) investigated the effect of recast and metalinguistic CF on EFL learners' writing targeting conditionals and wish statements and showed the effectiveness of both types of CF with the superiority of metalinguistic CF. However, recast was found to be more effective than direct CF in a study by Ghahari and Piruznejad (2016). Ebadi (2014) revealed considerable progress in writing as a result of focused metalinguistic CF.

Germane to writing difficulties, Akbari (2015) attempted to solve the English writing problems of 20 EFL students, who wrote 250 to 300-word scripts. Data analysis showed the students' difficulties in morphology and syntax, usage errors, and mechanics of writing. In the same line, Jafari and Ansari (2012) mentioned multiple factors for Iranian EFL learners' writing failure including L1 interference which is also the focus of the present study. According to Derakhshan and Karimian Shirejini (2020), grammar and negative transfer from Persian to English are some of the factors that make the writing task difficult.

Despite the studies in the field of CF, the literature does not reveal substantial research comparing the effectiveness of various CF strategies on written performance for monolingual and bilingual learners. Therefore, the present research was carried out with the goal of providing more empirical and comparative evidence on the effectiveness of various metalinguistic CF strategies on the written performance of monolingual Persians and bilingual Turkmens.

PURPOSE OF THE STUDY

A broad review of the literature revealed no research conducted exclusively on comparison of monolingual Persian and bilingual Turkmen EFL learners' written production, types of written grammatical errors they commit, and

their response to different metalinguistic CF strategies. Hence, this study examined the effectiveness of different strategies of metalinguistic CF, namely OMCF in the form of mini-grammar lessons, WMCF in the form of self-study materials, and integration of the two (OWMCF) on the five most recurrent written grammatical errors of monolingual Persians and bilingual Turkmens. The following research questions were formulated:

1. What are the most recurrent written grammatical errors of monolingual Persian compared to those of bilingual Turkmen intermediate EFL learners?
2. Does mid-focused OMCF exert any significant effects on the most recurrent written grammatical errors of monolingual Persian compared to those of bilingual Turkmen intermediate EFL learners?
3. Does mid-focused WMCF exert any significant effects on the most recurrent written grammatical errors of monolingual Persian compared to those of bilingual Turkmen intermediate EFL learners?
4. Does mid-focused OWMCF have any significant effects on the most recurrent written grammatical errors of monolingual Persian compared to those of bilingual Turkmen intermediate EFL learners?
5. What is the effectiveness rank of CF strategies for the most recurrent written grammatical errors of monolingual Persian compared to those of bilingual Turkmen intermediate EFL learners?

METHOD

Participants and Context of the Study

This quasi-experimental study was carried out at two private English language institutes in Golestan Province; located in Gorgan and Simin Shahr, the latter with Turkmen residents. Turkmens' L1 is Turkmeni, a branch of Turkic language, and Persian is their L2, which makes English their L3. Initially, a number of 116 monolingual Persian and 79 bilingual Turkmen intermediate EFL learners selected through convenience sampling strategy produced writing samples; however, to have equal participants, 79

monolingual Persians' samples were randomly selected for further analyses. As such, of the 158 participants, 42 male and 37 female monolingual Persians and 42 male and 37 female bilingual Turkmens aged between 13 and 18 took part in the present research. The participants attended English classes twice a week at each language institute, and their other exposure to English was limited to their high school English classes held once a week.

Instrument and Instructional Materials

The participants' writing samples were one of the instruments in this research. Besides, the participants sat a 30-minute Oxford Quick Placement Test to ensure their level of proficiency and homogeneity. The participants also filled out a background information form (Appendices A & B). The scoring framework of Bitchener et al. (2005) was adopted with an original 27 grammatical error categories; which was adapted such that the "indefinite articles" category was divided into the indefinite article "a" and the indefinite article "an" to be more specific about the EFL learners' errors; creating a framework with 28 grammatical categories.

The instructional materials were chosen according to the EFL learners' most recurring grammatical errors. All the instructional materials were selected from the books: "Grammar and Vocabulary for First Certificate" by Prodromou (2005), "Oxford Practice Grammar for Intermediate" by Eastwood (2003), and "Grammar in Use for Intermediate" by Murphy and Smalzer (2009). The learners also received a list of some of the frequently used regular and irregular English verbs and their past simple tense.

Data Collection Procedure

The participants were randomly assigned into groups, including three experimental groups and one control group. There were 44 males in the mid-focused OMCF group (22 Persians / 22 Turkmens), 36 females in the mid-focused WMCF group (18 Persians / 18 Turkmens), 38 females in the

mid-focused OWMCF (19 Persians / 19 Turkmens), and 40 males in the control group (20 Persians / 20 Turkmens). In the pre-test phase, all the participants wrote 150-200 word scripts on two descriptive subjects: Describe your teacher(s), and describe the last movie you watched, each task taking an hour to reveal their most recurrent grammatical errors as the focus of the metalinguistic CF strategies. A total of 316 writing samples were collected during the pre-tests and corrected by the researcher and two other raters. The most frequent errors of the monolingual Persians and bilingual Turkmens occurred in "past simple", "present simple", "preposition", "singular/plural verb", and "indefinite article (a)".

Next, the experimental groups were provided with various metalinguistic CF strategies on the five most recurrent grammatical errors. All the treatment sessions took 30-40 minutes. The procedures for CF strategies were the same for the monolingual Persian and bilingual Turkmen experimental groups, explained briefly below.

Mid-Focused OMCF Groups

The first experimental groups consisting of 44 males (22 Persians / 22 Turkmens) received mid-focused OMCF in the form of grammar mini-lessons. In the first treatment session, the "past simple tense" was explained, followed by treatment of "regular/irregular verbs", the use of "did", and its "time markers", while providing the learners with relevant examples. Then, the learners got involved in the CF process through questions and answers.

In the second session, the function of the "present simple tense", the use of "do/does", "don't/doesn't", the related "time markers", and the "adverbs of frequency" were explained. Additionally, the correct conjugation of "to be" verbs plus a randomly selected verb in "present simple tense" were reviewed, drawing the attention of the learners' to the third person singular "s". Questions and answers completed the session.

In the third session, the treatment was based on the learners' faultiest "prepositions" that were "prepositions of time", "place", "movement",

"combination of adjectives and prepositions", and some "prepositional phrases". The prepositions were categorized for the learners. For instance, the use of "in" for part of a day like "in the morning", "in the afternoon", and "in the evening", and the exceptions such as "at noon", "at night", and "at midnight" was clarified for the learners. Another example was the use of "by" in transportation; such as "by taxi", "by bus", "by plane", "by train", but "on foot".

The focus of the fourth session was "singular/plural verb" for monolingual Persians and "indefinite article (a)" for bilingual Turkmens. Correct use of "s" for the third person singular, differentiating between "was/were", "have/has", "do/does" and proper use of singular or plural verbs for certain nouns such as "jeans", "scissors", "glasses" were explained to the learners.

The emphasis of the fifth session was "indefinite article (a)" for the monolingual Persians and "singular/plural verbs" for the bilingual Turkmens. The "indefinite article (a)" was elucidated through a contrastive analysis between Persian and English as well as Turkmen and English with the assistance of bilingual Turkmens. The learners were reminded of the use of "a" for singular countable nouns in English since there were instances of erroneous words such as "a pants", "a glasses", and "a jeans" in the scripts. Overall, there were five mid-focused OMCF sessions plus a 20-minute review session.

Mid-Focused WMCF Groups

The second experimental group, including 36 females (18 Persians / Turkmens) received mid-focused WMCF in the form of self-study materials and activities on each of the five recurrent grammatical errors. The participants received handouts consisting of grammatical rules pertinent to each of the five frequent grammatical categories, based on books by Prodromou (2005), Eastwood (2003), and Murphy and Smalzer (2009). Each treatment session lasted 30-40 minutes and participants received

handouts for one grammatical category.

In the first treatment session, the "past simple tense" was covered through handouts containing rules and some activities. No explanation of the grammatical categories was provided to the learners while keeping class interactions to the minimum. The participants were asked to silently self-study the materials and undertake the selected activities. The procedures in the second, third, fourth, and fifth treatment sessions were the same for the "present simple", "preposition", "singular/plural verb", and "indefinite article (a)" among Persians and Turkmens. In the 20-minute review session, the learners were asked to take all five handouts to the classroom and do some of the remaining activities there.

Mid-Focused OWMCF Groups

The third experimental group comprised 38 females (18 Persians / 18 Turkmens), who received integrated mid-focused OMCF/WMCF (OWMCF) sessions each lasting 30-40 minutes. The first half of the time was assigned to mid-focused OMCF and the second half to mid-focused WMCF. The procedure of providing the EFL learners with the integrative approach was exactly similar to those of OMCF and WMCF when conducted separately. The control groups did not receive any treatment.

A one-week interval was allocated between the last treatment session and the post-tests. Afterward, all the participants, including six experimental and two control groups wrote 150-200 word samples on two new descriptive subjects (Describe your house/apartment, and describe your last vacation) in two consecutive sessions each taking one hour. At the post-test phase, to examine the possible effectiveness of various strategies of metalinguistic CF, 316 writing samples were corrected by the researcher and two other raters with 97% similarity in results.

Data Analysis

Descriptive analysis of the data was conducted in Excel 2016 and inferential

tests were implemented in R software. Shapiro-Wilk tests rejected data normality (Shapiro & Wilk, 1965). Hence, the Kruskal-Wallis method was used (Kruskal & Wallis, 1952) to test differences among results of CF strategies including OMCF, WMCF, and OWMCF in contrast to control in post-tests and between pre-tests and post-tests. After obtaining significant differences, Conover's post-hoc test (Conover, 1999) which has good power in controlling false discovery rate (Pohlert, 2014) was used for pairwise comparison of treatments. To rank the effectiveness of different CF strategies, the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) (Hwang & Yoon, 1981) was employed.

TOPSIS finds relative closeness to the ideal solution (here committing fewer errors) in a multi-dimensional space through a performance matrix of criteria (five most recurrent errors) in columns versus alternatives (here CF strategies) in rows. Criteria weights are assigned by the user(s), or through other avenues such as AHP. After normalization of the performance matrix, entries were multiplied by their corresponding weights creating a weighted normalized matrix. Then, positive (A^+) and negative (A^-) ideal value sets were defined as below:

$$A^+ = \{v_1^+, \dots, v_n^+\} = \left\{\left(\max_i v_{ij,}\, j \in J\right)\left(\min_i v_{ij,}\, j \in J'\right)\right\} i = 1, 2 \dots m$$

$$A^- = \{v_1^-, \dots, v_n^-\} = \left\{\left(\min_i v_{ij,}\, j \in J\right)\left(\max_i v_{ij,}\, j \in J'\right)\right\} i = 1, 2 \dots m$$

J is related to benefit criteria (the higher the better) and J' showed the cost criteria (the less the better). Then, distances from the positive ideal and negative ideal sets were calculated and the relative closeness to the ideal solution was found using the below formulae:

$$d_i^+ = \left\{ \sum_{j=1}^{n} \left(v_{ij} - v_j^+ \right)^2 \right\}^{\frac{1}{2}}, i = 1, \dots, m$$

$$d_i^- = \left\{ \sum_{j=1}^{n} \left(v_{ij} - v_j^- \right)^2 \right\}^{\frac{1}{2}}, i = 1, \dots, m$$

$$R_i = \frac{d_i^-}{d_i^+ + d_i^-}, i = 1, \dots, m$$

R_i is the relative closeness to the ideal solution ranging between 0 and 1. Here, the alternative with the highest value ranks first (Garcia-Cascales & Lamata, 2012).

For TOPSIS, error values of post-tests were subtracted from those of the pre-tests for each error category to demonstrate the amount of improvement or lack thereof under each CF strategy. Equal and changing weights were used for TOPSIS to reveal the effects of weights on the final results. Also, to assess the stability of TOPSIS ranks, the procedure was iterated 10000 times changing weights up to 50% (Yadav, Karmakar, Kalbar, & Dikshit, 2019).

RESULTS

The descriptive results of investigating 28 grammatical errors are given in Table 1. As can be seen, bilingual Turkmens committed more grammatical errors than monolingual Persians.

Table 1: Number and Percentage of Error Types of Monolingual Persians (MP) and Bilingual Turkmens (BT)

Error Categories	MP	BT	ALL	MP (%)	BT (%)	ALL (%)
Past Simple	558	786	1344	10.98	15.47	26.46
Present Simple	270	417	687	5.31	8.21	13.52
Preposition	215	374	589	4.23	7.36	11.59
Singular/Plural Verb	182	238	420	3.58	4.69	8.27
Indefinite Article (a)	158	257	415	3.11	5.06	8.17
Word Order	64	201	265	2.11	3.96	5.22
Definite Article	107	134	241	1.26	2.64	4.74
Subject/Object	59	110	169	1.16	2.17	3.33
Noun	52	58	110	1.02	1.14	2.17
Passive	49	48	97	0.96	0.94	1.91
Verb Duplication	0	93	93	0.00	1.83	1.83
Infinitive	18	66	84	0.35	1.30	1.65
Relative Pronouns	34	48	82	0.67	0.94	1.61
Possessive Pronouns	4	67	71	0.08	1.32	1.40
Modals	33	36	69	0.65	0.71	1.36
Personal Pronouns	13	51	64	0.26	1.00	1.26
Determiner	7	49	56	0.14	0.96	1.10
Gerund	15	39	54	0.30	0.77	1.06
Coordinate Conjunction	14	20	34	0.28	0.39	0.67
Indefinite Article (an)	13	19	32	0.26	0.37	0.63
Present Perfect	16	16	32	0.31	0.31	0.63
Subordinate Conjunction	4	18	22	0.08	0.35	0.43
Reflexive Pronouns	0	14	14	0.00	0.28	0.28
Demonstrative Pronouns	0	12	12	0.00	0.24	0.24
Past Progressive	10	2	12	0.20	0.04	0.24
Present Progressive	1	7	8	0.02	0.14	0.16
Future	3	0	3	0.06	0.00	0.06
Present Participle	1	0	1	0.02	0.00	0.02
SUM	**1900**	**3180**	**5080**	**37.40**	**62.60**	**100.00**

Figure 3 (top) compares monolingual Persians and bilingual Turkmens' written grammatical performance in all 28 categories. The five most

recurring grammatical errors for both groups occurred in “past simple”, “present simple”, “preposition”, “singular/plural verb”, and “indefinite article (a)” (Figure 3, bottom).

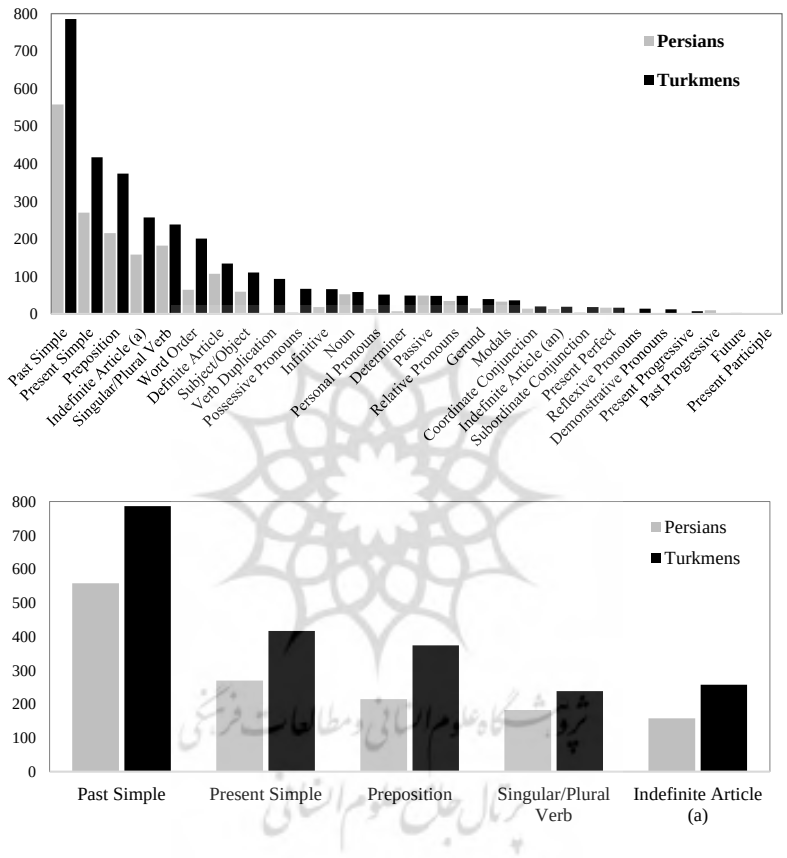


Figure 3: Grammatical Errors of Monolingual Persians and Bilingual Turkmens (top) and their Most Recurrent Errors (bottom) in Pre-tests

For monolingual Persians, Figure 4 displays the results of the treatment groups compared to the control group in the post-tests. As can be seen, all the treatment groups outperformed the control group in the post-tests.

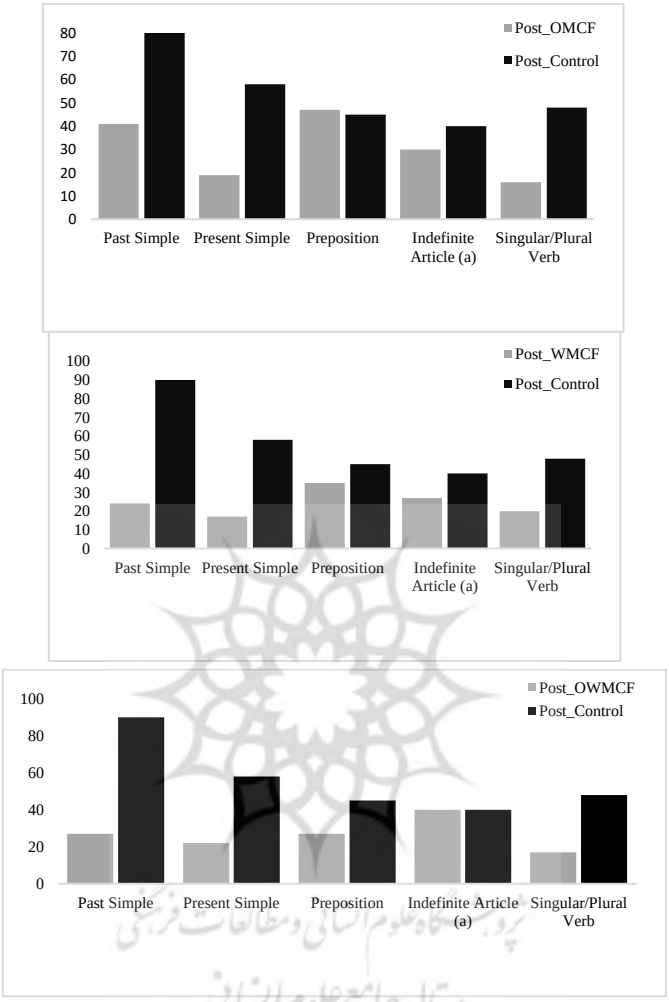


Figure 4: Comparison of OMCF, WMCF and OWMCF Experimental and Control Groups in Post-tests in Persians

Figure 5 demonstrates the results of experimental groups before and after the treatments, which shows the effectiveness of different CF strategies.

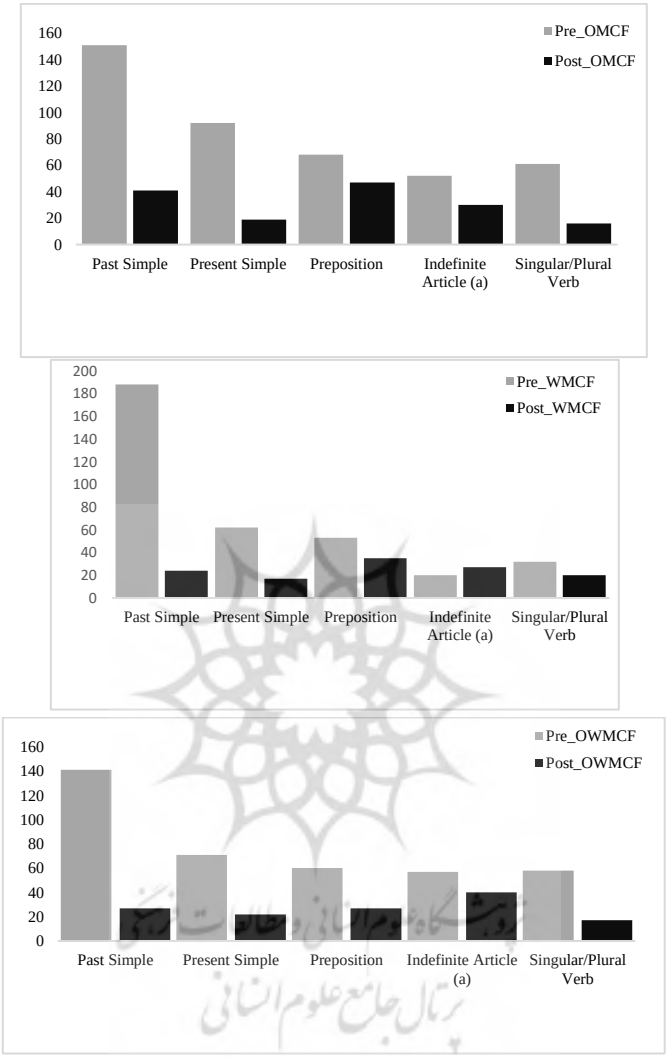


Figure 5: Comparison of OMCF, WMCF and OWMCF Experimental Groups in Pre/Post-tests in Persians

For bilingual Turkmens, Figure 6 displays the results of all the experimental groups compared to the control group in the post-tests; all the treatment groups outdid the control group in the post-tests.

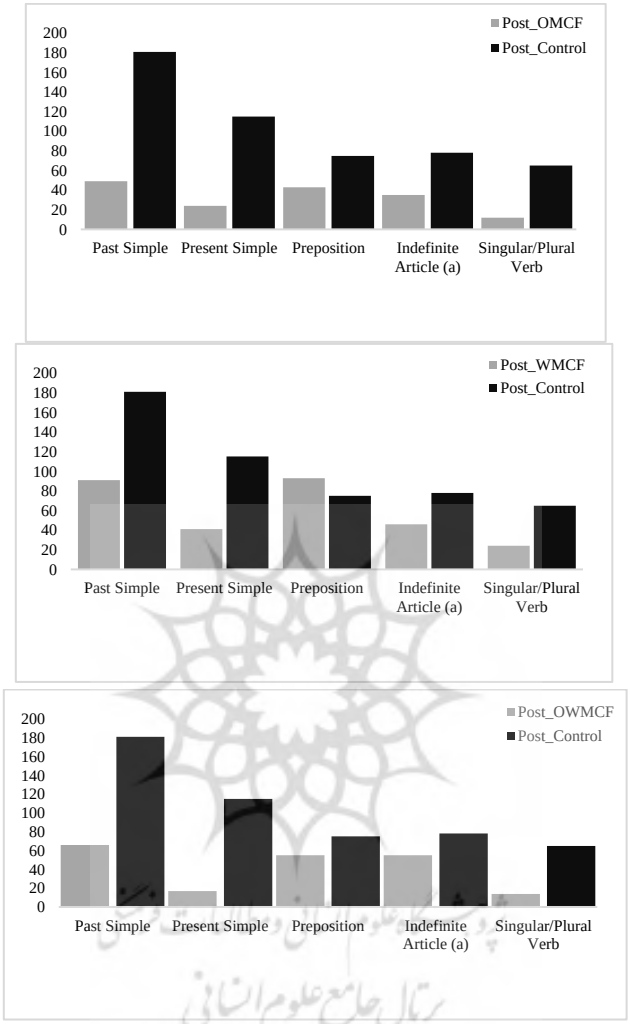


Figure 6: Comparison of OMCF, WMCF and OWMCF Groups and Control Group in Post-tests in Turkmens

Figure 7 demonstrates the results of each experimental group before and after the treatments that show the effectiveness of the treatments.

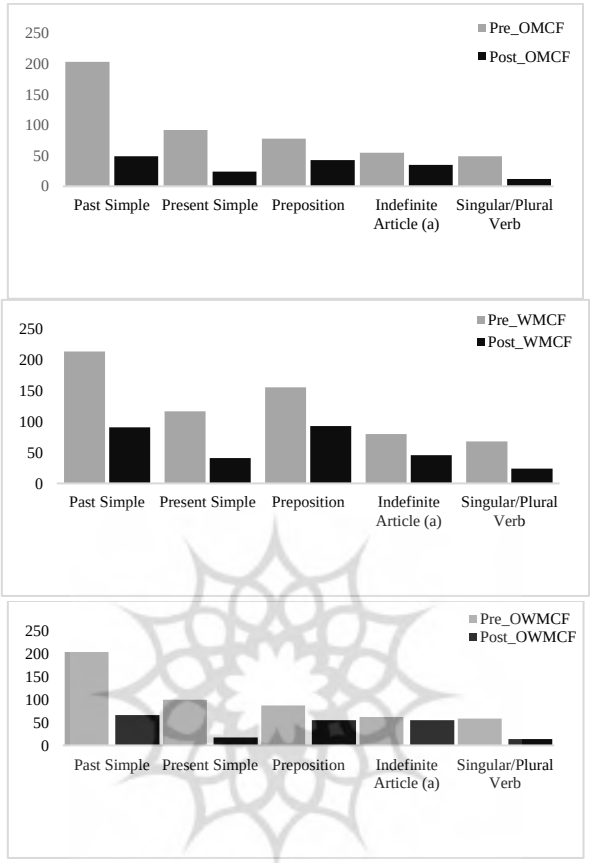


Figure 7: Comparison of OMCF, WMCF and OWMCF Experimental Groups in Pre/Post-tests in Turkmens

Data normality was checked using visual inspection of Q-Q plots (Figure 8) and through the Shapiro-Wilk method. Results indicated non-normality of data distribution (W = 0.78, p-value=2.86e-06 for Persians and W = 0.87, p-value=0.00 for Turkmens).

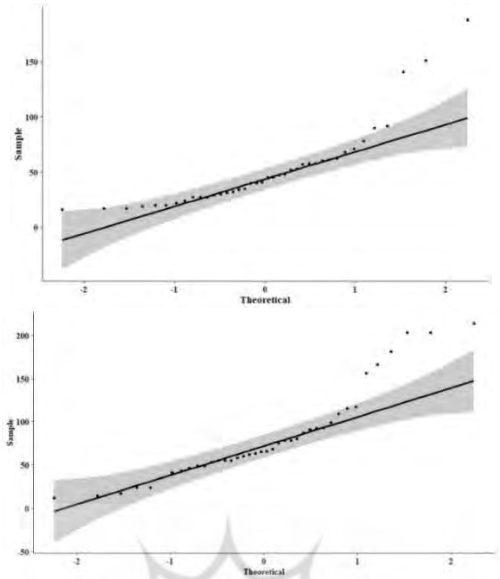


Figure 8: Q-Q Plot for Monolingual Persians (left) and Bilingual Turkmens (right) Showing Deviation from Normality

Table 2 compares the five most frequent grammatical errors of monolingual Persians (MP) and bilingual Turkmens (BT) in the pre and post-tests. Also, the raw data of the control group, which did not receive any treatment, are displayed.

Table 2: Raw Data for MP and BT in Pre-/Post-tests

Error_Categories	Pre_OMCF		Pre_WMCF		Pre_OWMCF		Pre_Control	
	MP	**BT**	**MP**	**BT**	**MP**	**BT**	**MP**	**BT**
Past Simple	151	203	188	214	141	203	106	166
Present Simple	92	92	62	117	71	99	67	109
Preposition	68	78	53	156	60	87	41	53
Indefinite Article (a)	52	55	20	80	57	62	37	60
Singular/Plural Verb	61	49	32	68	58	58	23	63
	Post_OMCF		Post_WMCF		Post_OWMCF		Post_Control	
	MP	**BT**	**MP**	**BT**	**MP**	**BT**	**MP**	**BT**
Past Simple	41	49	24	91	27	66	113	181
Present Simple	19	24	17	41	22	17	73	115
Preposition	47	43	35	93	27	55	51	75
Indefinite Article (a)	30	35	27	46	40	55	40	78
Singular/Plural Verb	16	12	20	24	17	14	26	65

Inspecting line plots in Figure 9 reveals the change in the five most frequent grammatical errors of monolingual Persians and bilingual Turkmens before and after the treatments. A downward trend in errors in the post-test stage can be inferred which required further statistical analyses.

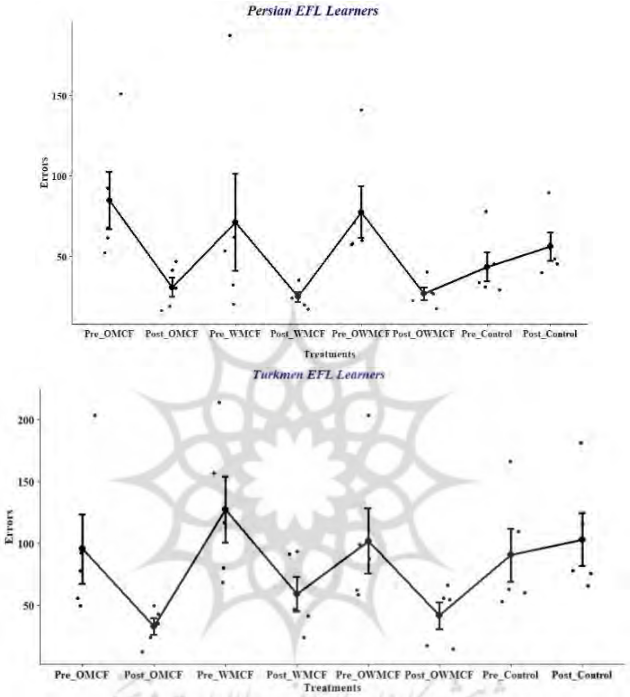


Figure 9: Line Plot of Treatments for Monolingual Persians (left) and Bilingual Turkmens (right) in Pre/Post-tests

Finding significant differences among the treatments for the five most recurrent errors through the application of Kruskal-Wallis test (Chi-Square = 20.28, p-value = 0.00 for Persians & Chi-Square = 19.83, p-value = 0.00 for Turkmens), Conover's pairwise multiple comparisons test was applied (Tables 3 and 4) to the raw data in Table 2. As shown, the four groups were not significantly different from each other at the beginning of the research (Pre_Control column in Tables 3 & 4).

However, after the treatments, all the experimental groups outperformed the control group.

In monolingual Persians, the differences were significant comparing pre- and post-tests for the mid-focused OMCF (0.00) and OWMCF (0.00) experimental groups; however, for the mid-focused WMCF group, the difference was insignificant (0.05), though very close to becoming so. The control group did not show a significant difference comparing the pre and post-tests (0.83).

Table 3: Pairwise Comparisons Using Conover's-test for Monolingual Persians in Pre/Post-tests

	Post_ Control	**Post_ OMCF**	**Post_ OWMCF**	**Post_ WMCF**	**Pre_ Control**	**Pre_ OMCF**	**Pre_ OWMCF**
Post_OMCF	0.0862	-	-	-	-	-	-
Post_OWMCF	0.0559	0.8358	-	-	-	-	-
Post_WMCF	0.0396	0.7171	0.8358	-	-	-	-
Pre_Control	0.8358	0.1504	0.0862	0.0644	-	-	-
Pre_OMCF	0.2881	0.0089	0.0059	0.0059	0.192	-	-
Pre_OWMCF	0.4059	0.0144	0.0088	0.0059	0.2673	0.8358	-
Pre_WMCF	0.8358	0.1301	0.0807	0.0559	0.9161	0.2201	0.2881

As can be seen from Table 4, for bilingual Turkmens, there were significant differences comparing the pre-tests and post-tests for the mid-focused OMCF (0.02), WMCF (0.03), and OWMCF (0.03) experimental groups. The control group did not show a significant difference comparing the pre and post-tests (0.56).

Table 4: Pairwise Comparisons Using Conover's-Test for Bilingual Turkmens in Pre/Post-tests

	Post_ Control	Post_ OMCF	Post_ OWMCF	Post_ WMCF	Pre_ Control	Pre_ OMCF	Pre_ OWMCF
Post_OMCF	0.0094	-	-	-	-	-	-
Post_OWMCF	0.0255	0.5435	-	-	-	-	-
Post_WMCF	0.1104	0.1993	0.5435	-	-	-	-
Pre_Control	0.5699	0.0238	0.096	0.3098	-	-	-
Pre_OMCF	0.5699	0.0238	0.096	0.3098	0.9862	-	-
Pre_OWMCF	0.8381	0.0094	0.0363	0.1689	0.6761	0.6761	-
Pre_WMCF	0.5836	0.0028	0.0094	0.0345	0.2912	0.2912	0.5321

Raw Data for TOPSIS in Monolingual Persians are presented in Table 5.

Table 5: Raw Data for TOPSIS in Monolingual Persians

Categories	Past Simple	Present Simple	Preposition	Singular/Plural Verb	Indefinite Article (a)
OMCF	110	73	21	45	22
WMCF	164	45	18	12	-7
OWMCF	114	49	33	41	17

Table 6 displays raw data for bilingual Turkmens in their five most recurrent grammatical errors.

Table 6: Raw Data for TOPSIS in Bilingual Turkmens

Categories	**Past Simple**	**Present Simple**	**Preposition**	**Indefinite Article (a)**	**Singular/Plural Verb**
OMCF	154	68	35	20	37
WMCF	123	76	63	34	44
OWMCF	137	82	32	7	44

Results of TOPSIS applications to Table 5 for Persians and Table 6 for Turkmens showed mid-focused OMCF was the most effective strategy in Persians (Table 7), but for Turkmens, the mid-focused WMCF strategy was the most effective (Table 7).

Table 7: TOPSIS Ranks for Monolingual Persians (MP) and Bilingual Turkmens (BT)

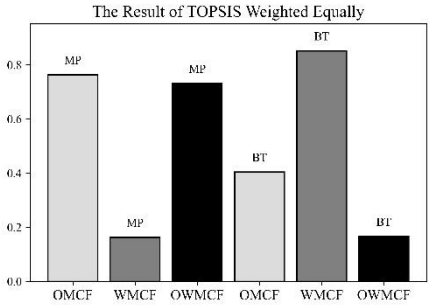
Treatments	TOPSIS Score		Rank	
	MP	**BT**	**MP**	**BT**
OMCF	0.841	0.757	1	2
WMCF	0.519	0.933	3	1
OWMCF	0.831	0. 662	2	3

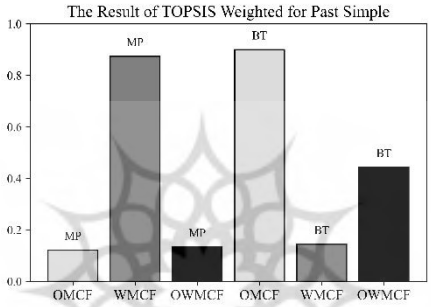
To investigate the effect of different weights on the final results of TOPSIS,

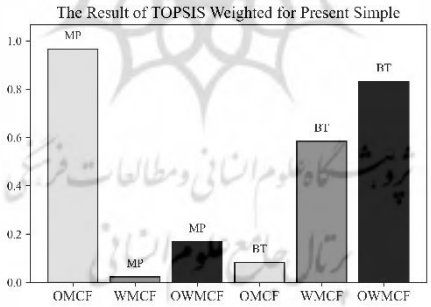
the method was run several times changing the weights of the input criteria (five error categories). For each run, a weight of 0.9 was given to the selected error category and the remaining four errors received a weight of 0.025 making total weights 1. The results are displayed in Figure 10.

For monolingual Persians, mid-focused OMCF was the most effective strategy when equal weights were given and also when more weights were given to the "present simple", "singular/plural verb", and "indefinite article". However, when more weights were given to the "past simple" and "preposition", mid-focused WMCF and OWMCF were the most effective strategies respectively. Conversely, for bilingual Turkmens, mid-focused WMCF was the most effective strategy when equal weights were given and also when more weights were given to the "preposition", "singular/plural verb", and "indefinite article". In contrast, when more weights were given to the "past simple" and "present simple", mid-focused OMCF and OWMCF were the most effective strategies consecutively.

Iterating TOPSIS for 10000 times with equal weights each changing ±50% indicated 25% chance for OMCF and OWMCF reshuffling in Persians, with mean score 0.76, 0.16, 0.73 and standard deviation 0.06, 0.05 and 0.04, for OMCF, WMCF and OWMCF, respectively (Figure 11). Chance of rank reversal for Turkmens was almost nil with mean 0.40, 0.85, 0.17 and standard deviation being 0.044, 0.044 and 0.041 for OMCF, WMCF and OWMCF, respectively (Figure 11).


The Result of TOPSIS Weighted Equally
MP
MP
MP
BT
BT
BT
0.0
0.2
0.4
0.6
0.8
OMCF
WMCF
OWMCF
OMCF
WMCF
OWMCF


The Result of TOPSIS Weighted for Past Simple
MP
MP
MP
BT
BT
BT
0.0
0.2
0.4
0.6
0.8
1.0
OMCF
WMCF
OWMCF
OMCF
WMCF
OWMCF


The Result of TOPSIS Weighted for Present Simple
MP
MP
MP
BT
BT
BT
0.0
0.2
0.4
0.6
0.8
1.0
OMCF
WMCF
OWMCF
OMCF
WMCF
OWMCF

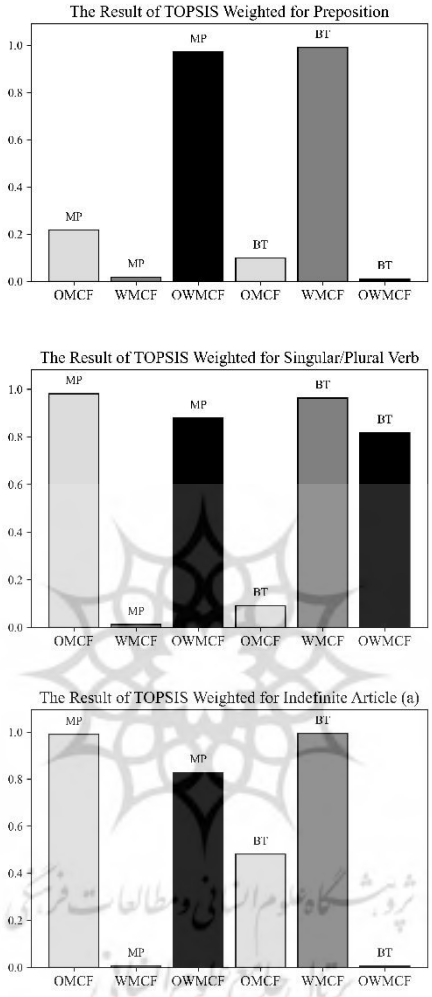


Figure 10: TOPSIS Rankings of Treatments with Equal and Different Weights for the First Five Errors in Monolingual Persians (MP) and Bilingual Turkmens (BT)

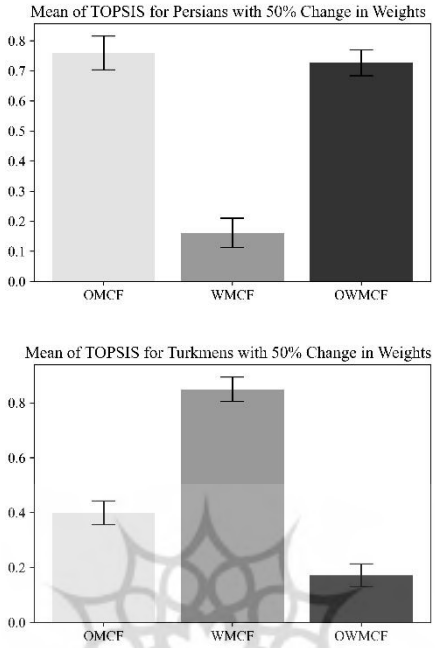


Figure 11: TOPSIS Mean Rankings of Treatments with 50% Change in Weights for the First Five Errors in Monolingual Persians (left) and Bilingual Turkmens (right)

DISCUSSION

Scholars have been in quest of the best way to treat L2 learners' errors for many years (Cohen, 1975). In 1996 Truscott claimed that grammar correction in L2 classes is "both ineffective and harmful and should be abandoned" (p.327). In the meantime, scholars such as Ferris (1999) called for more research in the field of CF due to flaws in Truscott's argument. Many studies have since been conducted in the field of CF; however, the controversy still continues as CF is a multi-faceted practice and needs to be investigated from different perspectives. A plethora of mediating variables exists between EFL/ESL teachers and learners impacting the effectiveness of different CF strategies.

Even though English is being taught as a foreign language for many

years in Iran, it appears to be a great challenge for many EFL learners (Amirbakzadeh & Vakil Alroaia, 2020; Iranmehr & Davari, 2018). The findings of the present research with regard to monolingual Persians and bilingual Turkmens' writing difficulties were congruent with some studies (Bani Younes & Salamh Albalawi, 2015; Khan, 2011). These writing problems could be traced back to the English language curriculum, incongruous teaching methods, and language environments (Khan, 2011). Another reason might be that some school teachers do not pay enough attention to the teaching of English downplaying writing skills in the classroom, besides, EFL learners do not get a chance to practice what they have been taught in real life.

This comparative study sought to expand the base by investigating the effect of three different strategies of metalinguistic CF on the accuracy performance of the five most recurrent grammatical errors of monolingual Persian and bilingual Turkmen intermediate EFL learners in new pieces of writing.

Overall, the findings of the study were in favor of CF (Ferris, 1999; 2004) and showed the effectiveness of metalinguistic CF on learners' writing, in line with the results of some studies (Amiramini, Ghanbari, & Shamsoddini, 2015; Guo & Barrot, 2019; Lee, 2019) and incongruent with studies by (Truscott, 1996, 1999; Truscott & Hsu, 2008). OMCF as a direct CF strategy was the most effective strategy in monolingual Persians, in line with some other studies (Almasi & Nemat Tabrizi, 2016; Shafiee Sarvestani & Pishkar; 2016). WMCF as an indirect CF strategy was the most effective CF strategy in Turkmens, similar to the results of several studies (Al-Hazzani & Altalhab, 2018; Bitchener & Knoch, 2008; Jamalinesari et al., 2015; Sheen, 2007; Ul Hassan et al., 2015).

Based on the findings of the present research and the framework of the study, the types and frequency of written grammatical errors committed by bilingual Turkmens were different from those of monolingual Persians. Their first five most recurrent errors were the same; however, the fourth and fifth errors occurred in the opposite sequence. Negative transfer from L1 to

L2 (Derakhshan & Karimian Shirejini, 2020) and here L3 might be the reasons behind it. When the effectiveness of a particular CF strategy was examined on monolingual Persians, mid-focused OMCF and OWMCF had a significant effect on the reduction of the learners' most frequent errors whereas this was not the case for mid-focused WMCF. For bilingual Turkmens though, all three treatment strategies showed a significant effect on the reduction of the learners' most recurrent errors in new pieces of writing.

Comparing the results once again reveals the enigmatic nature of CF as there are many aspects of CF yet to be known (Ellis, 2010). The effectiveness rank of different strategies of CF indicated EFL learners with different L1(s) may not benefit from CF equally. For monolingual Persians, mid-focused OMCF was the most effective strategy with equal weights plus higher weights for "present simple", "singular/plural verb", and "indefinite article". However, when more weights were given to the "past simple" and "preposition", mid-focused WMCF and OWMCF were the most effective strategies respectively. Simply put, OMCF was the most effective strategy for treating errors in "present simple", "singular/plural verb", and "indefinite article, but WMCF was specifically effective for treating errors in "past simple", and OWMCF worked best for prepositional errors.

As for the bilingual Turkmens, mid-focused WMCF was the most effective strategy when equal weights were given and also when more weights were given to the "preposition", "singular/plural verb", and "indefinite article". In contrast, when more weights were given to the "past simple" and "present simple", mid-focused OMCF and OWMCF were the most effective strategies consecutively. Overall, monolingual Persians benefited more from OMCF, which was a more interactive kind of CF strategy while bilingual Turkmens benefited more from WMCF, which was a more conservative CF strategy. Eventually, language backgrounds and ethnicities might play role in the effectiveness of different CF strategies. In their choice of CF, language teachers should be aware of mediating variables in the process of CF in general and with regard to bilingual language learners in particular.

The results of the present research showed that there is no single panacea that works in every context and for all language learners. Therefore, EFL teachers and writing instructors must be aware of the complexity of CF and the learners' L1 in the Iranian context and adjust their CF strategies accordingly.

CONCLUSION AND IMPLICATION

The present study was an attempt to fill the gap in the body of literature pertinent to the effectiveness of various metalinguistic CF strategies namely, mid-focused OMCF, WMCF, and OWMCF on the five most recurrent grammatical errors of monolingual Persians compared to bilingual Turkmens. The results showed types and frequency of written grammatical errors were different for monolingual Persians and bilingual Turkmens. All the treatment groups outperformed the control groups. For the most frequent grammatical errors, all the metalinguistic CF strategies significantly reduced the bilingual Turkmens' errors while OMCF and OWMCF had significant effects on the reduction of the monolingual Persians' errors. The outcomes revealed OMCF was the most effective CF strategy among monolingual Persians while WMCF was the most effective strategy for bilingual Turkmens. Additionally, some error categories responded better to a specific CF strategy.

The findings of the present study might serve some pedagogical implications. Errors committed by monolingual Persians and bilingual Turkmens might be a valuable source for EFL teachers as well as learners. EFL learners' errors might inform EFL teachers, writing instructors, language scholars, syllabus designers, and materials developers about the fact that "one size does not fit all" (Bitchener & Ferris, 2012), and that each group of learners might require syllabi and materials developed for their requirements (Cohen, 2018). In line with Kumaravadivelu's (2006) parameter of particularity, localization of language teaching seems to be very beneficial. Although attempts have been made to localize and

contextualize English teaching in Iran (Aghagolzadeh & Davari, 2017; Atai & Mazlum, 2103), and given the evolution of this process (Hayati & Mashhadi, 2010), there is still a lack of solid ground for their application. With this knowledge and equipped with varieties of CF strategies for learners with dissimilar L1(s) and in diverse contexts, teachers can organize their instructional materials beforehand, be more efficient and save a substantial amount of the class time.

Generalization of the results ought to be done with caution since the study was conducted at two language institutes and among a limited number of Persian and Turkmen EFL learners. This study focused on intermediate EFL learners; further research is encouraged on other proficiency levels. This research compared various CF strategies among monolingual Persians and bilingual Turkmens. In the Iranian context, where varieties of ethnic groups live, an avenue for research refers to the effects of CF among bilinguals and perhaps multilinguals. Studies of this kind should be conducted investigating other language skills and components between monolinguals and bilinguals. As the study adopted a mid-focused approach, in future studies, comprehensive CF could be also employed.

Disclosure statement

No potential conflict of interest was reported by the authors.

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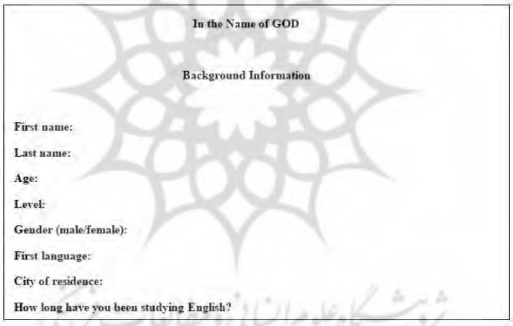
Appendix A

Monolingual Persians' Background Information Form



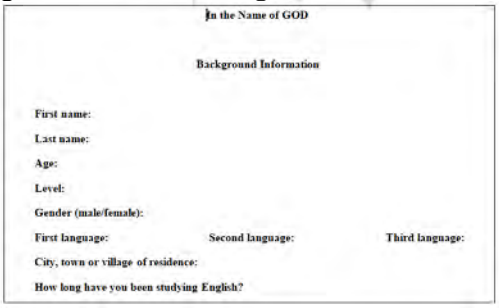
In the Name of GOD

Background Information

First name:
Last name:
Age:
Level:
Gender (male/female):
First language:
City of residence:
How long have you been studying English?

Appendix B

Bilingual Turkmens' Background Information Form



In the Name of GOD

Background Information

First name:
Last name:
Age:
Level:
Gender (male/female):
First language: Second language: Third language:
City, town or village of residence:
How long have you been studying English?