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On the Role of L1 Markedness and L2 Input Robustness in Determining Potentially Fossilizable Language Forms in Iranian EFL Learners' Writing

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Abstract

Han's (2009, 2013) selective fossilization hypothesis (SFH) claims that L1 markedness and L2 input robustness determine the fossilizability (and learnability) of an L2 feature. To test the validity of the model, a pseudo-longitudinal study was designed in which the errors in the argumentative essays of 52 Iranian EFL learners were identified and categorized based on a researcher-developed error taxonomy. Next, the learners were provided with implicit and explicit corrective feedback on those errors to see if there existed any errors that would persist despite learners' motivation and the pedagogical intervention to eliminate them from their writing. ANOVA results revealed that the errors in the *pronoun, word order, passive voice* and *possessive* categories persisted in the written output of the participants. A sub-classification of errors in the pronoun and possessive categories showed that deletion and redundant addition of subject pronouns, lack of agreement between pronouns and their antecedents, vague or ambiguous pronoun references in the pronoun category, and a wrong use of the apostrophe (') or apostrophe + *s* ('*s*) with regular plurals in the possessive category proved most resistant to correction, pointing to their tendency towards becoming fossilized. That tendency, however, could not be accounted for by the SFH.

Keywords: Fossilization; errors; corrective feedback; markedness; input; writing

1. Introduction

Fossilization, introduced by Selinker (1972), is said to be a distinctive characteristic of second language (L2) learning (Han, 2004; Selinker, 1996; Tarone, 1994). Most pervasive among adult L2 learners (Han & Odlin, 2006; Kellerman, 1995; E. Lee, 2009; Schachter, 1996), fossilization has been characterized as premature cessation of learning, even though the learner possesses a strong motivation to learn, is exposed to frequent and rich input, and has numerous opportunities for practice (Selinker, 1972). Selinker introduced the concept based on his observation that it was rare for learners of an L2 to succeed in obtaining full native-speaker competence. He put the success rate at "a mere 5%" (p. 212), although later estimates put the figure higher (e.g., Birdsong, 2004; Montrul & Slabakova, 2003; White & Genesee, 1996). Ever since Selinker's introduction of the term, a considerable amount of second language acquisition (SLA) research has been devoted to fossilization of linguistic forms both within and across learners in an attempt to figure out why the outcome of L2

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learning for many is incomplete and fragmentary when compared with that of first language acquisition (see Han, 2004; E. Lee, 2009; Long, 2003 for a review).

Despite extensive literature on fossilization, spanning over four decades, researchers in the field of SLA (e.g., Acton, 1984; Birdsong, 1992, 2004, 2006; Han, 2004, 2009, 2011, 2013; Han & Odlin, 2006; Kellerman, 1995; Long, 2003; Selinker, 1972, 1996) have repeatedly raised two problems regarding the construct. First, fossilization lacks a unified definition. In the absence of a comprehensive conceptual definition of fossilization, the term has been (mis)used simply as "a protean, catch-all" term (Birdsong, 2004, p. 87) to describe "any lack of progress in L2 learning regardless of its nature" (Shin, 2009, p. 60). It has also meant that the choice of the linguistic targets in many of the studies on fossilization has been quite arbitrary, that is, they were chosen because they were thought to be fossilized or fossilizable, often without proper explanation as to how fossilization or their fossilizability was determined.

The second problem relates to the fact that fossilization has not been adequately investigated empirically. Han and Odlin (2006, p. 5) point out that "not only has there been a continuous paucity of [empirical] evidence, but the existing [empirical] evidence is also suspect, due to various conceptual and methodological shortcomings." Moreover, there has been little investigation by SLA theorists of how to prevent or counter fossilization, and little explanation as to why some adult L2 learners manage to overcome certain areas of stability in interlanguage (IL) and reach a high level of proficiency.

Against this background, Han (2009, 2013) proposed the selective fossilization hypothesis (SFH), which, she claims, has the potential to account for a wide spectrum of issues related to fossilization. Han notes that fossilization is not a global, system-wide cessation of learning but a condition that affects specific linguistic targets, an observation made earlier by Selinker (1972). The SFH conceptualizes second language learning as a process of form-meaning-function mapping where the first language (L1) functions as "the source language that provides the initial building materials to be gradually blended with materials taken from the TL [target language]" (Han, 2009, p. 137), and " this interaction subsequently results in the selective restructuring of the L2 grammar" (Chen, 2009, p.65). In other words, the SFH posits that the fossilizability (or learnability) of a particular language feature results from interactions between L1 markedness and L2 input robustness.

The SFH presents a model of fossilization with intriguing possibilities for instructed SLA theory and practice. From a theoretical perspective, the SFH offers a scientific means to move the issue of fossilization in L2 learning "beyond its hitherto primarily argumentative basis" and towards "a more tangible and precise understanding" (Han, 2009, pp. 157-158). From a pedagogical perspective, the model can help language teachers predict which features of the L2 are likely to fossilize and which features lend themselves to instruction, which in turn would enable language instructors " to set more realistic goals for instruction, to develop more focused curricula, to fine-tune input to be provided to the learner, and to respond to learner output in a more effective manner" (Finneran & Lew, 2009, para. 3). Han (2004) adds that "knowledge of factors underlying fossilization can also guide educators in search of compensatory strategies to maximize learning opportunities" (p.4).

Han (2009), however, states that the SFH has not been described empirically and calls for an inclusive research into the observed persistent non-target-like behaviors, both within and across learners, in order to develop the SFH into a comprehensive analytic model of fossilization. One possible avenue to validate and refine the SFH is to see whether it can account for the typical and residual errors in the Persian-speaking EFL learners' written output.

1.1. Literature review

The SFH (Han, 2009, 2013) is an analytic model that seeks to predict and account for both the fossilizable and acquisitional potential of linguistic features by examining the factors purportedly promoting fossilization in the L2 learning process. The model hypothesizes that the fossilizability (or learnability) of a particular L2 language feature depends largely on (a) the status of the L1 counterpart of the L2 feature, which can be marked or unmarked, and (b) the nature of the L2 input, that is to say, the potential triggering data, which can be robust or non-robust. The prediction the model makes is that L2 forms whose L1 counterparts (if existent) are unmarked and whose L2 is non-robust are at risk of becoming fossilized. On the contrary, the L2 forms whose L1 counterparts (if existent) are marked and whose L2 input is robust are more easily acquired.

The markedness of an L1 construction is, in turn, determined by its frequency and variability. Thus, an unmarked feature is one that is both frequent and consistent. The SFH also says that L2 input is considered robust if it is frequent and consistent. Han (2013) defines frequency and variability as follows:

The frequency variable captures the quantitative property of a given usage either in the L1 or the TL, and the variability variable the inherent relationship between the linguistic form, its semantics and pragmatics, or, simply, form-meaning-function mapping (FMF) in a given linguistic usage. (p. 145)

The SFH, therefore, stipulates that in order to acquire a linguistic feature in an L2, the learner has to overcome (a) problems of form, (b) problems of meaning, (c) problems of function, (d) problems of form-meaning mapping and (e) problems of FMF mapping. Based on this analytic framework, acquisition of form is considered the easiest, whereas acquisition of FMF would be the hardest and most vulnerable to fossilization.

Furthermore, Han (2009, 2013) argues the synergy of L1 markedness and L2 input robustness presents us with four possibilities (or zones), as shown in Figure 1. These are: Type I, where the L1 is unmarked and the L2 input robust; Type II, where the L2 input is robust and the L1 marked; Type III, where the L1 is marked and the L2 input non-robust; and Type IV, where the L2 input is non-robust and the L1 unmarked. The figure also illustrates the possibility that features that fall in the same zone may be acquired or fossilize differentially. That is indicated by circles separating one linguistic feature from another. The outer circle, therefore, connotes “greater degree of.” Thus, with respect to Zone IV, the outmost circle indicates the greatest possibility of fossilization. Han (2009) says IV and II represent zones of fossilization and acquisition respectively and I and III, known as grey areas, indicate zones where either fossilization or acquisition may occur, depending on the nature of interaction between the two major variables of L1 markedness and L2 input robustness.

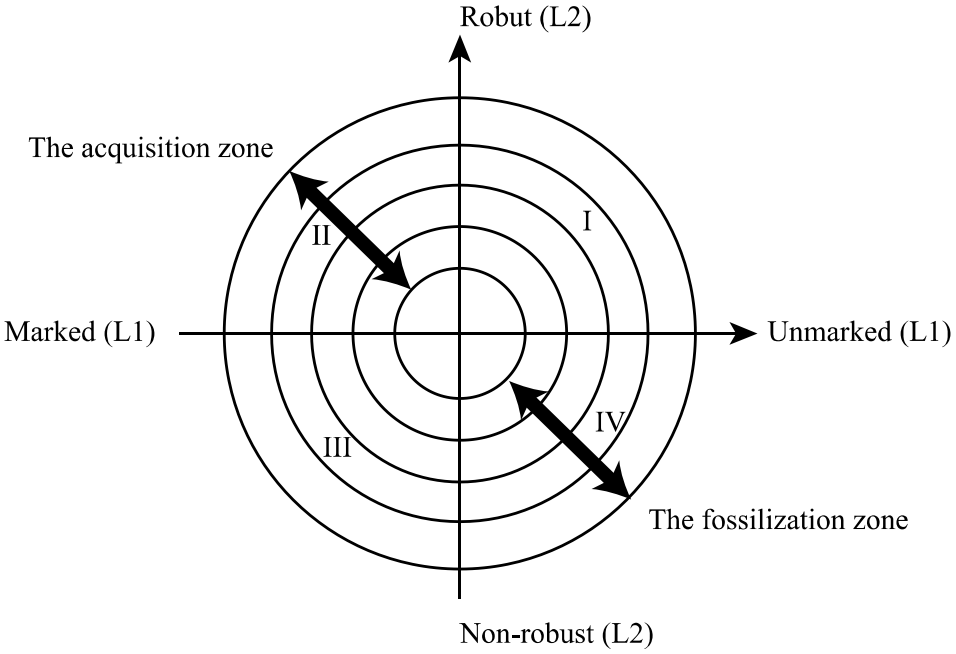

Figure 1. The selective fossilization hypothesis (adapted from Han, 2013)[†]

With the SFH, Han explores the sources of misguiding conceptual evidence to the learner en route to L2 acquisition, namely, L2 input provided to the learner and cross-linguistic influence. If proven, Han's specifications would enhance our understanding of the underlying forces pushing the (non-)acquisition of certain linguistic features, on the one hand, and open up new avenues for theoretical advances on certain conceptual issues of wider concern, on the other. These issues include how to define fossilization, how to describe it and how to explain it.

1.2. Research questions

The following research questions were addressed in the present study:

1- Are there any errors which persist in the argumentative writing of Persian-speaking EFL learners despite pedagogical intervention, that is, provision of corrective feedback (either implicit or explicit)?

2- Can L1 markedness and L2 input robustness account for the resistance of those errors?

2. Method

The main purpose of this study, which is a follow-up to an initial study was to find out whether the SFH could account for the persistent erroneous linguistic features in Iranian EFL learners' written output. To that end, it utilized corrective feedback approach (Kellerman, 1989) to the study of fossilization. The corrective feedback approach examines L2 learners' reaction to feedback and assumes that errors immune to pedagogic intervention should be made the linguistic focus of investigations of fossilization (Thep-Ackrapong, 1990, as cited in Han, 2004). The study also adopted

[†] The figure is reproduced by courtesy of Cambridge University Press and comes from an article published in their journal, *Language Teaching*.

a pseudo-longitudinal method of data collection (Kellerman, 1989). In this method, learners of different proficiency levels are used as informants to construct a diachronic view of the IL structures under scrutiny.

2.1. Sample / Participants

Fifty two male and female EFL learners, selected out of a pool of 95 through purposive sampling (Macaro & Masterman, 2006), took part in the study. The participants were all undergraduate and graduate non-English majors in several universities in Tehran and ranged from 18 to 38 in age (mean age 27.5). They were enrolled in EFL classes in five English language institutes. Their classes were held twice a week with each session lasting approximately 105 minutes. Persian was the leaners' first language and their primary contact with English was in the language classrooms. They all had started learning English after the puberty age and had been learning it for a minimum of 5 and a maximum of 15 years prior to the onset of the study.

2.2. Instrument(s)

2.2.1. English language proficiency test

A teacher-made English proficiency test was developed and then validated to determine the subjects' level of proficiency. It comprised of 100 multiple-choice items which measured the knowledge of English grammar and structures, vocabulary and reading. The reliability of the results, computed through KR-21 formula, was .93.

2.2.2. Writing tasks

As part of their coursework, the learners were assigned three topics representing the argumentative rhetorical mode and were asked to write a 300-word essay on each topic. The argumentative nature of the topics was verified by an expert in academic writing. The argumentative rhetorical mode was chosen because it is a type of writing frequently specified and taught in English as a second language courses (Jekkins & Pico, 2006).

2.2.3. Rating scale

The learners**'** essays were evaluated using a 6-point holistic scoring rubric patented after the Test of Written English (TWE) scoring guide, the written component of TOEFL. The scores were the basis for classifying the learners into three levels of writing proficiency.

2.2.4. Motivation questionnaire

To measure the learners' motivational intensity towards language learning, Takahashi's (2005) questionnaire was used with one minor modification. The scores obtained from the questionnaire were checked for reliability. The alpha coefficient reliability index of .87 was obtained for the questionnaire.

The inclusion of the questionnaire was deemed necessary because, as pointed out by Han (2004), it is a prerequisite to establish that learners enjoyed a high level of language learning motivation before one can substantiate a fossilization claim. She notes, "any argumentation on fossilization needs to be predicated on continuous exposure, *adequate motivation* [emphasis added], and sufficient opportunity for practice" (p. 121).

2.3. Data collection procedures

The study comprised two stages. The first stage consisted of the identification and treatment of errors in the argumentative essays written by 52 Iranian EFL learners. The purpose of the first stage was to obtain a picture of common errors in the learners' argumentative writing and to provide pedagogical focus on those errors (in the form of implicit and explicit corrective feedback) in an attempt to prevent their reappearance on future writing tasks. The purpose of second stage was to see if the errors treated in the previous stage would reappear in a new argumentative writing task by the same learners and if L1 markedness and L2 input robustness could account for the resilience of those errors.

2.3.1. Stage 1: Error identification and treatment

The data for this stage were collected from 52 adult EFL learners over a period of three months. The learners were taught by the researcher himself. He started off by administering the 100-item test to categorize the learners into homogenous groups based on their English proficiency. Based on their scores, the students were divided into the pre-intermediate, intermediate and advanced proficiency levels. To see whether there were any significant differences across the levels, a one-way ANOVA was conducted. The results revealed a significant difference across the three levels ($F(2, 49) = 251.211$, $p < .05$). Post-hoc comparisons showed that each level was significantly different from the other two groups.

Next, the learners were assigned one topic in the argumentative mode and were asked to write a 300-word essay about it. Prior to writing, however, the teacher provided the students with a sample argumentative essay and taught them the key principles of writing in that mode. He also asked the students to pay close attention to the coherence, cohesion, grammar, vocabulary and organization of their essays and reminded them that the assigned written work would count towards their end-of-course grade.

After collecting the first draft of their writings, the teacher and another EFL colleague with 12 years of teaching experience independently assessed the quality of each composition using the 6-point holistic scoring rubric and grouped them into pre-intermediate, intermediate and advanced writing proficiency levels. To ensure higher consistency in the scoring, the raters had a trial rating session during which the scoring guide was discussed and sample essays rated. The interrater reliability turned out to be .78. Moreover, the correlation between the learners' general English proficiency levels and writing proficiency levels was .90.

To identify and classify the errors in the learners' essays, the researcher reviewed several error taxonomies in the literature (e.g., Chandler, 2003; N. Lee, 1990; Richards & Sampson, 1974) but could not come up with a model that accommodated all the errors. Each taxonomy seemed to have been designed for a specific purpose and population and was either too broad or too narrow in its classification of linguistic errors. Therefore, the researcher developed his own error taxonomy, which was basically a collection of selected categories from the different error taxonomies reviewed. The model divided the errors into three classes: morphosyntactic, lexical and sentential. The morphosyntactic errors were further divided into the categories of tenses, prepositions, articles (indefinite articles *a* or *an* and the definite article *the*), pronouns, word order, negation, passive voice, the verb *to be*, word form (the gerund/infinitive, verb/noun, adjective/adverb), conjunctions, bound morphemes (the plural, the third person singular, the possessive, the comparative and superlative, subject-verb agreement). Lexical errors included word choice (use of inappropriate and wrong words, phrases and collocations). Sentential errors involved faulty sentence structures such as run-on and dangling constructions.

The two raters then independently reviewed the essays in order to identify and categorize the errors in them. Of the cases that the raters felt unsure as to which category a particular error belonged, they debated the error between themselves until an agreement about its makeup was reached. If they had difficulty classifying a specific error, they asked the learner who had made the error to provide them with more information or sought help from their colleagues, who included native speakers. If they could not establish the category of the error, they would exclude it from the data (there were not too many such cases; fewer than 20, in fact). It also happened that a learner's use of linguistic features contained more than one error, so care was taken to classify them into different categories. For instance, in the sentence *He is hold in constant stress due to the test,* the raters identified two errors: an error of tense (*is* instead of *was* since the learner was talking about a past event) and a word form error (*hold* instead of *held*). Finally, following Ellis (1985), fossilization was sought not only in incorrect forms but also in apparently correct linguistic forms that were, however, used inappropriately, given the context of their use. For instance, the conditional sentence *If I could take the test again, I would study the questions more carefully* is correct grammatically but not contextually because the learner was talking about a conditional situation in the past and should have used the past perfect tense instead.

The interrater reliability of error identification, based on 20% of randomly selected essays, was .84. The interrater reliability of error classification turned out to be .79, confirming Polio's (1997) claim that high interrater reliability for error categorization tends to be more difficult to obtain than the one for error identification. A North American native speaker also marked 20% of randomly selected papers in order to calculate interrater agreement with one of the raters. The percentage of agreement between the native speaker and the rater for both error identification and categorization was .74 (the native speaker marked many more article omissions and lexical errors).

The teacher-researcher then provided the learners with implicit feedback on the erroneous forms in their essays, using slight marking devices (Carduner, 2007) such as various colors and symbols to attract their attention to the faulty language usages. The students were previously informed of what these colors and symbols signified: red for grammatical errors, yellow for lexical errors, ▼ for the wrong omission of linguistic elements, × for the linguistic elements that were redundant and had to be deleted and ____ (underlining) for a sentence that was structurally flawed and needed to be revised. After marking the errors, the writings were handed back to the students who had to revise and return them to the teacher in the next class. The purpose of providing the learners with implicit feedback first and allowing them to self-correct was twofold: first, to engage the learners in identifying the errors in their own production as a consciousness-raising activity (Ellis, 1993) and second, to help the teacher-researcher determine whether the erroneous use was indeed an error or merely a mistake (Corder, 1971; James, 1998).

When the learners handed in their revised drafts, the teacher-researcher reviewed them to see if they had corrected the erroneous forms and uses, and in cases where the learners had failed to correct their errors, he provided them with explicit feedback which clearly pointed out to them that their output was not correct. Meanwhile, the teacher made a list of common errors in each category that the learners were unable to correct and explicitly focused on them in the following class (to make sure the L2 input with respect to those errors was robust enough). These writings were again given back to the learners who had to make further changes based on the explicit corrective feedback. The corrections were further checked by the teacher and once he made sure they had gotten everything right, he asked them to rewrite their essay and hand in the final version. It should also be noted that the teacher-researcher recorded the students' reaction to implicit and explicit feedback.

2.3.2. Stage 2: Error assessment

The second stage of the study, which started three weeks after the completion of the first stage, and which also lasted three months, involved the same 52 EFL learners and replicated the procedures in Stage 1 in almost every detail. The learners were first assigned a topic in the argumentative mode and then the two raters classified them into three proficiency levels based on their writings (interrater reliability = .79). The raters then independently reviewed the learners' essays to identify and categorize the errors in them. The interrater reliability for error identification and classification, based on 20% of randomly selected essays, was .82 and .75 respectively. The students went through receiving implicit feedback first and then explicit feedback in the subsequent sessions and handed the final revised writings to the teacher. The purpose of repeating the first stage was to find out whether the errors corrected there would appear in the second stage, and if they did, whether the learners could correct them after receiving implicit feedback only. The assumption was that if previously corrected errors lingered on into Stage 2 and resisted corrective feedback, they could qualify as likely candidates of fossilization.

Moreover, right at the beginning of this stage, the participants were given a motivation questionnaire developed by Takahashi (2005). The inclusion of the questionnaire was deemed necessary because, as Gardner (1985) has rightly noted, motivation is the single most influential factor in the rate and success of second language learning, a sentiment shared by Cohen and Dörnyei (2002), who stated that "motivation is often seen as the key learner variable because without it, nothing much happens" (p. 172).

The analysis of the students' responses showed that the overall learner motivation was high (the mean was 260.88 out of the maximum possible score of 282) and the means of the three proficiency levels either approximated the overall mean (the mean of the pre-intermediate level learners was 255.25) or was higher than that (the mean of the intermediate level learners was 261.25 and for the advanced level learners it was 265.10), thus assuring the researcher that the participants enjoyed a respectable level of motivation and were willing to invest time and energy in their language learning, and if some typical errors persisted in their written performance, it was not because they lacked the motivation to overcome those errors.

In the final step of this stage, an attempt was made to see whether the interactions of L2 input robustness and L1 markedness, as predicted by the SFH model, could account for the fossilizability of specific L2 morphosyntactic features. The L1 markedness of a specific L2 feature was determined by observing the frequency and FMF variability of that feature in L1, if the feature existed in L1. Similarly, L2 input robustness was determined by considering the frequency with which a target L2 feature appeared in the input to which the learners were exposed and how clear the FMF variability of that feature was to the learners. The results of that analysis were then plotted on the graph shown in Figure 1 to locate the zone for the feature (error).

3. Results

To answer the first research question, that is, if there existed some errors that proved impervious to either implicit or explicit corrective feedback in both Stage 1 and 2 (a harbinger of fossilization), the researcher sought to find those errors that received corrective feedback in Stage 1 but kept reappearing in Stage 2. The assumption was that if there were some errors which, despite being treated with corrective feedback in the previous stage, continued to show up in the next stage and required explicit corrective feedback to be removed, then there could have been cases where fossilization might have been setting in.

A repeated measures ANOVA with one within group factor, corrective feedback type, with three levels (1 = no feedback, 2 = implicit feedback and 3 = explicit feedback), and one between group factor, writing proficiency, with three levels was conducted (since there were few learners making the negation, the verb *to be* and the comparative errors, ANOVA analyses could not be run for these categories and hence they were not counted as data). Table 1 revealed there was a reduction in the means of all error categories when the L2 learners were provided with either implicit or explicit feedback as opposed to when there was no feedback. The main effect of feedback was significant for all error types ($p < .05$).

Table 1: Descriptive statistics plus the repeated measures ANOVA and post-hoc Scheffe test results for the three proficiency levels in Stage 1

Error type	No. of learners making the error per level	Mean of error type prior to any feedback	Mean of error type after implicit feedback	Mean of error type after explicit feedback	Repeated measures ANOVA		Post hoc Scheffe test	
					Main effects & interaction	*p*	Feedback results	Level results
Tense	Level 1 = 14	2.07	1.78	0.71	Feedback	.00	1 = 2	1 = 2
		2.00	1.80	0.40	Level	.59	1 > 3	1 = 3
	Level 2 = 5	1.50	1.25	0.25	Feedback*level	.96	1 > 3	2 = 3
	Level 3 = 4							
Prepositions	Level 1 = 17	3.23	2.29	0.64	Feedback	.00	1 > 2	1 = 2
		3.25	2.16	0.33	Level	.06	1 > 3	1 > 3
	Level 2 = 12	2.21	1.50	0.07	Feedback*level	.78	2 > 3	2 ≥ 3
	Level 3 = 14							
Article *the*	Level 1 = 18	4.11	2.38	0.44	Feedback	.00	1 > 2	1 > 2
		3.27	1.90	0.00	Level	.05	1 > 3	1 > 3
	Level 2 = 11	3.06	1.60	0.06	Feedback*level	.81	2 > 3	2 = 3
	Level 3 = 15							
Article *a*/*an*	Level 1= 11	2.09	1.72	0.36	Feedback	.00	1 > 2	1 = 2
		1.62	1.37	0.37	Level	.59	1 > 3	1 = 3
	Level 2 = 8	1.83	1.16	0.00	Feedback*level	.74	2 > 3	2 = 3
	Level 3 = 6							

Pronouns	Level 1 = 15	2.73	2.33	0.53	Feedback	.00	1 ≥ 2	1 = 2
	Level 2 = 8	2.00	1.87	0.12	Level	.18	1 > 3	1 ≥ 3
	Level 3 = 9	1.77	1.55	0.33	Feedback*level	.49	2 > 3	2 = 3
Word order	Level 1 = 11	1.81	1.63	0.18	Feedback	.00	1 = 2	1 = 2
	Level 2 = 7	1.57	1.57	0.00	Level	.18	1 > 3	1 = 3
	Level 3 = 5	1.20	1.20	0.20	Feedback*level	.49	2 > 3	2 = 3
Passives	Level 1 = 10	1.20	1.10	0.30	Feedback	.00	1 = 2	1 = 2
	Level 2 = 4	1.20	1.00	0.00	Level	.64	1 > 3	1 = 3
	Level 3 = 4	1.00	0.75	0.00	Feedback*level	.71	2 > 3	2 = 3
Word form	Level 1 = 17	4.47	3.05	0.88	Feedback	.00	1 > 2	1 > 2
	Level 2 = 14	2.85	2.14	0.07	Level	.01	1 > 3	1 > 3
	Level 3 = 15	2.40	1.93	0.00	Feedback*level	.37	2 > 3	2 = 3
Conjunctions	Level 1 = 18	3.88	3.27	1.66	Feedback	.00	1 > 2	1 > 2
	Level 2 = 12	2.50	2.16	0.58	Level	.00	1 > 3	1 > 3
	Level 3 = 14	1.14	1.07	0.07	Feedback*level	.00	2 > 3	2 > 3
Plurals	Level 1 = 18	5.72	3.05	0.50	Feedback	.00	1 > 2	1 > 2
	Level 2 = 11	3.45	2.36	0.09	Level	.00	1 > 3	1 > 3
	Level 3 = 10	1.90	1.30	0.00	Feedback*level	.00	2 > 3	2 > 3
Possessives	Level 1 = 5	2.00	1.20	0.00	Feedback	.00	1 = 2	1 = 2
	Level 2 = 5	1.60	1.00	0.00	Level	.69	1 > 3	1 = 3
	Level 3 = 3	1.66	1.33	0.00	Feedback*level	.90	2 > 3	2 = 3
Subject-verb agreement	Level 1 = 12	2.00	1.08	0.00	Feedback	.00	1 > 2	1 = 2
	Level 2 = 5	1.60	1.00	0.00	Level	.50	1 > 3	1 = 3
	Level 3 = 6	2.33	1.16	0.00	Feedback*level	.72	2 > 3	2 = 3
Word choice	Level 1 = 19	7.26	6.00	2.36	Feedback	.00	1 > 2	1 = 2
	Level 2 = 14	4.21	3.07	0.50	Level	.00	1 > 3	1 = 3
	Level 3 = 14	3.21	2.28	0.14	Feedback*level	.01	2 > 3	2 > 3
Sentence structure	Level 1 = 19	3.26	3.05	2.05	Feedback	.00	1 > 2	1 = 2
	Level 2 = 10	2.60	2.20	1.30	Level	.00	1 > 3	1 > 3
	Level 3 = 13	1.38	1.23	0.07	Feedback*level	.79	2 > 3	2 > 3

Post-hoc comparisons suggested that implicit feedback was successful in reducing all error types except for the tense, pronoun, word order, passive voice, and possessive errors. In all of these cases (implicit feedback) 1 = 2 (explicit feedback), possibly because the learners did not have the linguistic proficiency to remedy those errors even after the errors had been pointed out to them. It was also revealed that explicit feedback brought about a significant decrease in all types of errors in comparison with both implicit and no feedback.

The repeated measures ANOVA was also employed to analyze the data obtained in Stage 2 and its results are offered in Table 2. Again, the corrective feedback variable had a significant effect in all error types. Post-hoc comparisons showed both implicit and explicit feedback were effective in reducing all the error types except for the pronoun, word order, passive voice and possessive errors, where implicit feedback had played no role.

Table 2: Descriptive statistics plus the repeated measures ANOVA and post-hoc Scheffe test results for the three proficiency levels in Stage 2

Error type	No. of learners making the error per level	Mean of error type prior to any feedback	Mean of error type after implicit feedback	Mean of error type after explicit feedback	Repeated measures ANOVA Main effects & interaction	*p*	Post-hoc Scheffe test Feedback results	Level results
Tense	Level 1 = 12	2.08	1.75	0.50	Feedback	.00	1 > 2	1 = 2
		1.75	1.62	0.37	Level	.33	1 > 3	1 = 3
	Level 2 = 8	1.33	1.00	0.00	Feedback*level	.97	2 > 3	2 = 3
	Level 3 = 3							
Prepositions	Level 1 = 15	4.40	2.66	0.46	Feedback	.00	1 > 2	1 = 2
		3.40	2.33	0.23	Level	.12	1 > 3	1 ≥ 3
	Level 2 = 15	2.88	1.88	0.10	Feedback*level	.37	2 > 3	2 = 3
	Level 3 = 9							
Article *the*	Level 1 = 15	4.00	2.60	0.40	Feedback	.00	1 > 2	1 = 2
		4.23	2.15	0.00	Level	.17	1 > 3	1 > 3
	Level 2 = 13	2.83	1.33	0.00	Feedback*level	.34	2 > 3	2 = 3
	Level 3 = 12							
Article *a*/*an*	Level 1 = 10	2.00	1.5	0.20	Feedback	.00	1 > 2	1 = 2
		2.11	1.66	0.22	Level	.94	1 > 3	1 = 3
	Level 2 = 9	1.75	1.75	0.25	Feedback*level	.76	2 > 3	2 = 3
	Level 3 = 4							
Pronouns	Level 1 = 13	3.23	2.69	0.69	Feedback	.00	1 = 2	1 = 2
		1.88	1.88	0.44	Level	.10	1 > 3	1 > 3
	Level 2 = 9	1.00	1.00	0.00	Feedback*level	.00	2 > 3	2 = 3
	Level 3 = 7							
Word order	Level 1 = 7	1.42	1.28	0.28	Feedback	.00	1 = 2	1 = 2
		1.00	1.00	0.00	Level	.21	1 > 3	1 = 3
	Level 2 = 5	1.66	1.66	0.66	Feedback*level	.20	2 > 3	2 = 3
	Level 3 = 6							

Passives	Level 1 = 7	1.42	1.42	0.42	Feedback	.00	1 = 2	1 = 2
	Level 2 = 3	1.00	1.00	0.00	Level	.25	1 > 3	1 = 3
	Level 3 = 5	1.20	1.00	0.00	Feedback*level	.95	2 > 3	2 = 3
Word form	Level 1 = 16	6.12	5.06	1.25	Feedback	.00	1 > 2	1 > 2
	Level 2 = 15	3.26	2.40	0.26	Level	.00	1 > 3	1 > 3
	Level 3 = 14	2.57	1.35	0.07	Feedback*level	.00	2 > 3	2 = 3
Conjunctions	Level 1 = 15	3.80	3.53	1.66	Feedback	.00	1 > 2	1 > 2
	Level 2 = 12	2.66	2.50	0.83	Level	.00	1 > 3	1 > 3
	Level 3 = 16	1.87	1.56	0.12	Feedback*level	.60	2 > 3	2 > 3
Plurals	Level 1 = 16	4.43	2.68	0.18	Feedback	.00	1 > 2	1 > 2
	Level 2 = 7	2.71	1.71	0.00	Level	.00	1 > 3	1 > 3
	Level 3 = 8	2.12	1.12	0.00	Feedback*level	.01	2 > 3	2 = 3
Possessives	Level 1 = 7	1.14	1.14	0.00	Feedback	.00	1 = 2	1 > 2
	Level 2 = 3	1.66	1.66	0.33	Level	.01	1 > 3	1 = 3
	Level 3 = 3	1.00	1.03	0.00	Feedback*level	.91	2 > 3	2 > 3
Subject-verb agreement	Level 1 = 11	3.27	1.90	0.00	Feedback	.00	1 > 2	1 = 2
	Level 2 = 6	2.16	1.50	0.00	Level	.80	1 > 3	1 = 3
	Level 3 = 3	1.33	1.01	0.00	Feedback*level	.28	2 > 3	2 = 3
Word choice	Level 1 = 16	6.75	5.93	2.43	Feedback	.00	1 > 2	1 > 2
	Level 2 = 16	4.87	4.31	1.06	Level	.00	1 > 3	1 > 3
	Level 3 = 16	3.18	2.12	0.18	Feedback*level	.02	2 > 3	2 > 3
Sentence structure	Level 1 = 16	5.37	4.87	3.56	Feedback	.00	1 > 2	1 > 2
	Level 2 = 15	2.53	2.46	1.00	Level	.00	1 > 3	1 > 3
	Level 3 = 10	1.48	1.20	0.10	Feedback*level	.48	2 > 3	2 = 3

A survey of the results in Tables 1 and 2 also showed that the pronoun, word order, passive voice and possessive errors were likely candidates for fossilization. The conclusion was made on the ground that only explicit feedback could lead to a reduction of errors in those categories, suggesting the toughness or resistance of the errors. Furthermore, except for the pronoun errors in Stage 1 and the possessive errors in Stage 2, the proficiency level did not play a determining role in how the learners benefited from corrective feedback in the two stages and learners across the three language proficiency levels equally needed explicit feedback to eliminate those errors from their essays. Thus, the first hypothesis of the study (i.e., that there are not any persistent errors in the argumentative writings of Persian-speaking EFL learners which resist being eliminated by corrective feedback) was rejected.

To address the second question, that is, whether the resistant error categories fall in the fossilization zone of the SFH, it first had to be established which particular errors in the four error categories most resisted corrective feedback because the SFH is a model that makes predictions about the fossilizability of specific L2 morphosyntactic features (Lew, 2009). To that end, a sub-classification of the errors in the four categories of pronouns, word order, the passive voice and the possessives was needed. A review of the literature did not present the researcher with suitable taxonomies of the word order and passive voice errors, so the analysis was narrowed down to errors in pronoun and possessive categories.

The pronoun category was sub-classified into subjective pronouns: I, you, we, they, he, she and it; objective pronouns: me, you, us, them, him, her and it; intensive pronouns: myself, yourself/yourselves, ourselves, themselves, himself, herself and itself; reflexive pronouns: myself, yourself/yourselves, ourselves, themselves, himself, herself and itself (note that reflexive pronouns are the same as intensive pronouns but they do not intensify; they point back to the subject of the sentence); reciprocal pronouns: each other and one another; indefinite pronouns: all, another, any,

anybody, anyone, anything, each, everybody, everyone, everything, few, many, nobody, no one, none, one, several, some, somebody, someone, etc.; demonstrative pronouns: this, that, these and those; relative pronouns: who, whom, that and which; interrogative pronouns: who, whom, what, which and whose; and possessive pronouns: mine, yours, ours, theirs, his, hers and its. Errors in the possessive category were divided into the wrong use of the apostrophe (‘) and apostrophe + s (‘s) with nouns as well as the wrong use of noun-of-noun structures.

The persistent and resistant errors in the pronoun category were the deletion of subject pronouns, regarded as a common problem for L2 learners whose first language allows null subjects and whose L2 does not (Hilles, 1991; Jalilifar & Shooshtari, 2009; Vainikka & Young-Shoulten, 1994), addition of subject pronouns (where they should not be added), lack of agreement between pronouns and their antecedents (especially in terms of number) and vague or ambiguous pronoun references. In the possessive category, the most frequently occurring error (and one which most resisted corrective feedback) was what is informally known as the greengrocers’ apostrophe (Sinclair, 2007), which occurs whenever a writer attempts to pluralize a noun by using an apostrophe (‘) or an apostrophe + *s* (‘*s*) instead of the proper plural ending *s*. In the following section, each specific error will be dealt with separately.

3.1. Pronouns

Regarding the first specific error in the pronoun category (i.e., omission of subject pronouns), it should be mentioned that Persian allows omission of subject pronouns, or, strictly speaking, it allows the presence of the empty category PRO. This linguistic property is quite unmarked in Persian, that is to say, frequent yet variable to a considerable extent since non-omission of subject pronouns is also sanctioned in Persian. As for the strength of L2 input regarding this feature, Han (2009) believes that the L2 input (English) is quite robust–frequent yet variable–since in informal English one may occasionally encounter sentences containing ellipsis such as *Wish you all the best* or *Cannot afford that.* The researcher (of this study) agrees with her contention that this feature is quite robust in English, but not on the ground that it is frequent and variable. On the contrary, his investigation revealed that although subjects are frequently dropped in informal spoken English and in certain registers of written English such as diaries (see Haegeman, 2007), it is not so often the case in formal written English (hence infrequent). Second, Thrasher (1974) argues that native speakers of English tend to drop the subject in conversational exchanges mainly if it is the first person pronoun in statements (*See you next Tuesday*) and the second person pronoun in questions (*Ever been to France?*); therefore, this feature is not as variable as Han (2009) might believe. No matter which argument the reader finds more convincing, the L2 input with respect to the deletion of subject pronouns is quite robust, based on the definition of L2 input robustness offered by the SFH. Plotting the two variables (L1 markedness and L2 input robustness) for subject pronoun deletion on Figure 1, we see this feature falls in Zone I, which Han (2009) describes as the grey zone, where either fossilization or acquisition may occur. This finding is not consistent with the predictions the model makes.

The other persistent and resistant error in the pronoun category was addition of subject pronouns in sentences such as *I think that this method is a very good one for the children who they are under 12.* The overproduction of redundant overt subject pronouns in maintain-reference contexts has been well attested in speakers of PRO-drop languages (such as Persian) learning a non-PRO-drop language (such as English) (e.g., Meijer & Fox Tree, 2003; Loebell & Bock, 2003; Schoonbaert, Hartsuiker, & Pickering, 2007). This feature does not have a counterpart in Persian; thus, it would fall in the marked end of the L1 axis, and, if anywhere, off the non-robust end of the L2 input axis because addition of a subject to a sentence that already has a subject is non-existent in English too. Charting the two

variables of L1 markedness and L2 input robustness obtained for this erroneous feature on Figure 1 indicates that this error falls in Zone III, another grey zone in the SFH model, where either fossilization or acquisition may occur. Once again the finding is not consistent with the predictions of the model.

The third error in the pronoun category was lack of agreement between pronouns and their antecedents (a pronoun's antecedent may be either a noun or another pronoun). In the sentence *To make tests more reliable, we should consider some other factors beside(s) it,* the object pronoun *it* does not agree with its antecedent *tests.* The need for pronoun-antecedent agreement is quite unmarked in Persian as it is both frequent and variable. The L2 input provided for this feature is also quite robust because this is a frequently occurring requirement in English (every pronoun must agree with its antecedent in number, gender, and person) and variable to a great extent because one can say *I was waiting for the bus, but he just drove by without stopping,* where *he* does not agree with *bus* but with the implied antecedent *bus driver*. This property also falls in Zone I, where no prediction is made regarding its acquirability or fossilizability.

The last persistent error in the pronoun category was using pronouns without making their antecedents clear. For instance, in the sentence *In the high school, they decided to conduct an experiment and put the boys and girls in separate classes,* where there is no noun (in the previous sentence or sentences) to which the pronoun *they* refers. Vague or ambiguous use of pronouns, however, is a linguistic feature at the interface between the syntax and discourse domains (Murphy, 1984; Walker, 1998), which is out of the scope of this study (i.e., morphosyntactic errors) and, therefore, it will not be discussed here to validate or disprove the SFH.

3.2. Possessive constructions

The most prevalent error in the possessive category was the incorrect use of the apostrophe (') or apostrophe + *s* ('*s*) in regular plural nouns, probably because of the identical sound of the plural and possessive forms of most English nouns. In *Education is one of the basics' of life,* the learner has pluralized *basic* by adding the apostrophe to the plural ending *s.* It should be pointed out that there are very few circumstances where apostrophes can be used in plurals to avoid causing confusion. Most commonly, this occurs when pluralizing single letters. Take, for instance, *How many I's are there in this sentence?* Without the apostrophe this would read, *How many is are there in this sentence?*, which would be pretty much guaranteed to perplex most readers. However, nouns in English do not require an apostrophe to denote a plural, a usage often criticized as a form of hypercorrection (James, 1998), which stems from a widespread ignorance of the proper use of the apostrophe or of punctuation in general.

The counterpart of the apostrophe and apostrophe + *s* in Persian is Ezafe enclitic, which is quite unmarked as it is frequent and variable (not exactly in form but in terms of the meanings and functions it conveys). Besides indicating possession, Ezafe can show qualification, titles and names. It also assumes such roles as the definite article and the verb *to be,* and can stand for certain English prepositions (see Samiian, 1994 for a comprehensive review of the Persian Ezafe construction).

The L2 input with respect to the apostrophe and apostrophe + *s* was also quite robust; it appeared frequently in the leaners' L2 input and its FMF was to some extent variable (in addition to denoting possession, *'s* is also the contraction of subject + *is*: *He's leaving*; and subject + *has*: *He's left*). Even when showing possession, this marker can be exchangeable with the noun-*of*-noun structure). Mapping the two variables of L1 markedness and L2 input robustness for this feature on Figure 1 indicates that the application of it falls in Zone I and, consequently, the results obtained for this lingering error are not different from the ones obtained for the specific pronoun errors. Therefore, the

second hypothesis of the study is also rejected because none of the specific errors in the two categories of pronouns and possessives, which have shown a tendency towards fossilization, supports the SFH model. The errors all fell in zones different from those predicted by the model.

4. Discussion

There is now ample research showing that the L1 preprograms L2 learners and that L1 knowledge interacts with the available L2 input to influence adult L2 learning (e.g., Gass & Selinker, 1992; Kellerman, 1984; Kellerman & Sharwood-Smith, 1986; Sorace, 1993). However, attributing the selectivity of the (non-)learning of L2 features solely to L1 markedness and L2 input robustness seems a little too simplistic. First, such a contention overlooks the complexity surrounding the concept of markedness (see Battistella, 1990; Eckman, 1977; Hume, 2008; Hyltenstam, 1987 for a discussion). Han (2009) conceptualizes markedness as a property of languages determined by the frequency of a linguistic feature in the learners' L1 and its FMF variability. However, as Hume (2008) has rightly observed, the markedness value of a given form is dependent upon the *expectations* that a language user has about the linguistic form in question and those expectations are guided by the experiences of the learner with that form. It means that the markedness value of a structure for a lawyer is different from the one for a musician; thus, it would be misleading to consider the markedness of a form in a language as a quantitative static attribute, the way Han (2009) does.

Similarly, Han's operational definitions of the frequency and variability of a language feature are vague and hard to objectify as these variables seem highly dependent on the individual experiences of language learners. In addition, she does not make it clear how much frequency or variability makes a feature frequent or variable. In other words, Han does not posit an initial level of a measurable quantity that can be used for comparison with current or past values. It is not clear either if these two variables carry equal weight in pushing a linguistic structure towards fossilization. Moreover, SLA researchers (e.g., Doughty & Williams, 1998; DeKeyser, 2000; Ellis, 2005; Gass & Selinker, 2004; Kellerman, 1984; Pica, 1983; Robinson, 1997a, 1997b, 2002; Schachter, 1996; Sharwood-Smith, 1994), have demonstrated that the same L2 may present differential challenges to individual learners from different L1 backgrounds, and that features in the same TL may present differential challenges to an individual learner. As Hulstijn (2002) notes, not all language phenomena are equal in terms of how they are processed and acquired. Given this, the quality and amount of L2 input needed to acquire the same TL may vary from individual to individual and, by the same token, the quality and amount of L2 input required by an individual may vary for his or her acquisition of different features of the TL.

5. Conclusions

The SFH ignores ample individual differences such as the learners' reasons for learning (or motivation) and satisfaction of communication needs. These factors, along with a host of others, many of which may not yet be known, can interact to codetermine the tendency of a given linguistic feature to become fossilized. Motivation in language learning is so important that Gardner (1985), one of the most prominent researchers in the area of motivation in L2 learning, identified it as the single most influential factor in learning a new language. Motivated L2 learners generally seek out more exposure to and practice opportunities in the TL to further their language learning career (Cheng & Dörnyei, 2007; Scarcella & Oxford, 1992). Besser (2002, as cited in Han, 2009) has also said that learners' satisfaction of communication needs can affect the fossilization process. Skehan (1998, p. 61) stated that "if communicative effectiveness is achieved, the erroneous exemplar may survive and stabilize,

and becomes a syntactic fossil." Similarly, Ellis (2002) believes that "successful use of communication strategies will prevent acquisition" (p. 212).

The model does not make it clear either how certain underlying individual differences, such as cognitive resources and abilities, affective and personality-related differences (Dörnyei, 2005) can affect the fossilization process. De Graaff (1997), for instance, showed that L2 learners' grammatical sensitivity and ability to infer the meanings of words from a text were positively related to their ultimate attainment. Finally, Han's model fails to address the issue of modality of performance (Skehan, 1996, 2002, 2009) and how and why some language learners use a linguistic form in an almost native-like fashion in one mode (e.g., written) but not in another (e.g., spoken).

Equally, it might be said that this study was flawed and that is the reason for the contradictory findings. It may be argued, for example, that the input these learners were provided with was not robust enough, which, if true, could turn the whole equation around and the model would correctly have predicted the fossilization tendency of at least some of the specific errors that persisted in the learners' written performance. However, the feedback provided to the learners was indeed robust, based on Han's (2009) definition of L2 input robustness, because for 6 consecutive months the teacher-researcher provided the learners with individualized corrective feedback which specifically pointed out to them the erroneous use of a linguistic feature in terms of its form, meaning or function. In addition, he created a wide variety of oral and written comprehension and production activities in the classroom that specifically focused on the commonly occurring deviant forms in their writings. Moreover, the linguistic scope of learners' errors was limited, so it was possible for the teacher to focus on these common errors several times during the course of the instructional treatment.

It could also be argued that these errors have not fossilized yet and the stoppage was just a learning plateau. This criticism cannot be justified in view of the pseudo-longitudinal nature of this research, as the errors repeated themselves not only among learners of a particular proficiency group but also across learners of different proficiency levels and instructional stages.

There are points that call for caution, however, and the model should not be written off immediately. First, only two error categories (pronouns and possessives) out of the four resistant and persistent error categories were looked into for validation purposes. Second, the SFH is as much about learnability as it is about fossilizability, so another way of testing the validity of the model is to see if it can account for the errors that disappeared from the performance

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Anadilde belirtiselliğin ve yabancı dilde girdi kuvvetinin İranlı "Yabancı Dil olarak İngilizce" öğrencilerinin yazılarındaki dil yapılarının olası fosilleşmelerini belirlemedeki rolü

Öz

Han'ın (2009, 2013) Ayırıcı Kemikleşme Hipotezi/ Seçici Fosilleşme Kuramı (Selective Fossilization Hypothesis) ana dildeki belirtililiğin ve ikinci dil girdilerinin etkinliğinin ikinci dildeki bir özelliğin kemikleşmesini (ve öğrenilebilir olması) belirlediğini iddia etmektedir. Modelin geçerliliğini tespit etmek için, İngilizceyi yabancı dil olarak öğrenen 52 İranlı öğrencinin yazdığı kompozisyonlardaki hataların belirlendiği ve araştırmacı tarafından geliştirilmiş olan hata sınıflama sistemine göre katagorilere ayrıldığı sözde uzun sureli bir çalışma tasarlanmıştır. Öğrencilerin motivasyonlarına ve öğrencilerin yazmalarını önleyecek pedagojik müdehalelere rağmen hataların sürekli olarak yapılıp yapılmadığını görmek amacıyla öğrencilere hataları hakkında açık ve örtülü düzeltme geri bildirimleri verilmiştir. ANOVA sonuçları, zamir, söz dizimi, edilgen yapı ve iyelik bildiren sözcüklerle ilgili hataların öğrencilerin yazılarındaki sürekli hatalar olduğunu göstermiştir. Zamirler ve iyelik bildiren sözcüklerle ilgili hataların incelenmesi, özne zamirlerinin eksikliği ya da gereğinden fazla kullanılması, zamirler ile öncüller arasındaki uyumsuzluk, zamir kullanımındaki belirsizlik ve kesme iminin yanlış kullanımı veya kesme iminin iyelik kategorisindeki çoğul kullanımla ilgili yanlış kullanımının düzeltilmesinin zor olduğunu ve bu hataların kemikleşmeye daha eğilimli olduğunu ortaya çıkarmıştır. Fakat bu eğilim Ayırıcı Kemikleşme Hipotezi tarafından açıklanamamaktadır.

Anahtar sözcükler: Fosilleşme; düzeltici geri bildirim; berlirginlik; girdi; yazı

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