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The Effect of Academic Context of Learning on L3 Acquisition of Iranian Bilinguals

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Abstract

The present study aimed to investigate the effect of learning context on the acquisition of plurality agreement in English noun phrases by Iranian L3 learners of English. To this end, 64 elementary learners of English were chosen from among the students of Arabic language and literature and Persian language and literature of Ahvaz and Yazd universities via the Oxford Quick Placement test. The participants were assigned to four groups to be compared in terms of the comprehension and production of plurality agreement via a grammaticality judgment correction task and a picture description task. The first and the second groups had Persian as their first language (L1) and Arabic as their second language (L2) but differed from each other concerning their language of contact instruction, Persian and Arabic, respectively. The third and fourth groups had Arabic as the L1 and Persian as the L2 but differed from each other concerning their language of contact instruction, Persian and Arabic, respectively. The results showed that the groups which had Arabic as their language of contact instruction outperformed the other groups in both tasks, which suggests that they transferred plurality agreement facilitatively from Arabic, which was their language of contact instruction. Therefore, the results of this study suggest that the context of learning matters in the acquisition of L3 properties since the L3 learners associate their language of contact instruction with the L3 in their mind due to the similarities in the learning context.

Keywords: Academic context of learning, Cumulative enhancement model, language of contact instruction, L2 status factor, Typological primacy model

Introduction

Third language acquisition has been among the hotly debated issues in the realm of language acquisition during recent decades. Since the components available to learners at the initial state of acquisition are different, this area of study has always been differentiated from first and second language acquisition studies. Most of the studies conducted in this realm have contributed the third language acquisition issues to the effects of the first language (e.g., the L1 Factor, Håkansson et al., 2002; Hermas, 2010, 2014a, 2014b), second language (e.g., the L2 Status Factor, Bardel & Falk, 2007; Falk & Bardel, 2011) or both (e.g., the Cumulative Enhancement Model, Flynn et al., 2004; the Typological Primacy Model, Cabrelli Amaro, Amaro, & Rothman, 2015; Giancaspro, Halloran, & Iverson, 2015; Rothman, 2010, 2011, 2015) on the third language. These hypotheses are explained, and a literature review of each is provided below.

L1 Factor hypothesis

Håkansson et al. (2002) introduced the L1 factor hypothesis as one of the most prominent proposals of L3 acquisition. It claims that the learners' native language is the primary source of transfer in the initial state of L3 acquisition.

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Following Håkansson et al. (2002), several studies in L3 acquisition literature attributed the primary role to L1 in Cross-Linguistic Influence. An example is Na Ranong and Leung (2009). In their study of null object properties, they demonstrated that this specific feature is transferred from the learners' L1 at the initial state of L3 acquisition.

Hawkins and Chan (1997) and Lozano (2003) claimed a strong effect of L1 on the later learned languages. They claim that the properties that are not initiated in L1 are no longer accessible for activation by the input of the L2 or the L3.

On the other hand, Hermas (2014a) emphasized the effect of the L1 on the initial stages of L3 acquisition, while in later stages, L3 learners will be able to learn the structures even when they are not initiated in L1. Investigating the acquisition of null expletive subjects and subject-verb inversion in declarative sentences by L1 Arabic native speakers/L2 advanced French learners learning L3 English, Hermas (2014a) concluded that L1 Arabic is the primary source of transfer in L3 acquisition.

L2 Status Factor Hypothesis

While many studies have shown that L1 plays a role in learning L3, some recent studies have indicated that L2 can play a more substantial role than L1 in the initial state of L3 acquisition (e.g., Bardel & Falk 2007; Falk & Bardel 2011; Leung 2005; Rothman & Cabrelli Amaro 2010). According to Hammarberg (2001), the L2 status factor is "a desire to suppress L1 as being non-foreign and to rely rather on an orientation towards a prior L2 as a strategy to approach the L3" (Hammarberg, 2001, pp. 36–37). Even earlier, Meisel (1983) labeled this phenomenon *foreign language effect*. Since then, the L2 status factor has been considered one of the possibly interacting factors that may determine a source of transfer in many studies on L3 vocabulary (e.g., Cenoz 2001; De Angelis 2005, 2007).

Bardel and Falk (2007) indicated that L2 status was also a factor in learning L3 syntax, as they realized that L2 was favored as a source of L3 syntax transfer in the initial state of a group of L3 learners. Later, Falk and Bardel(2011) tested the L2 status factor hypothesis in a greater number of intermediate L3 learners and found the same tendency.

Angelovska and Hahn (2012) focused on negative (i.e., nonfacilitative) transfer phenomena of L2 German in the L3 acquisition of English. The subjects of this study were chosen with different L1s in order to test the Cumulative Enhancement Model (CEM) by Flynn et al. (2004), ultimately showing that L2 negative transfer can be found among learners with different L1s at different L3 proficiency levels, even when the L1 would have provided a facilitative (i.e., target like) option for transfer into the L3. Angelovska and Hahn propose that the dominance of the L2 (over the L1) in L2 learners predicts negative L2 transfer.

Cumulative Enhancement Model

Among the models which consider both the first and the second language effective in third language acquisition, the Cumumulative Enhancement Model (CEM hereafter) suggests that language acquisition is cumulative and non-redundant. This model proposes that the previously acquired languages, regardless of the order of acquisition, may help subsequent language acquisition or remain neutral. So negative transfer to L3 is rejected entirely according to this model.

Flynn et al. (2004) examined adult and child L1 Kazakh/L2 Russian speakers acquiring L3 English. Investigating the acquisition of restrictive relative clauses, they provided support for the CEM. Considering Russian and English languages as head-initial and Kazakh as a head-final language, they concluded that the L3 learners in this study produce target-like restrictive relative clauses in English.

Another study investigating the acquisition of relative clauses is Berkes and Flynn (2012a). They investigated the acquisition of three types of relative clauses (lexically headed and specified, lexically headed and unspecified, and free relative clauses) via an elicited imitation task and concluded that the English L2 group performed significantly better in the production of the free relatives and lexically headed clauses. In contrast, the English L3 group did not.

Typological Primacy Model

Typological Primacy Model (Rothman, 2011) (TPM hereafter) suggests a profound effect for those previously learned languages of the learner, which are perceived as structurally similar to the third language by the internal parser in L3 development. There is a specific order for establishing the similarity between languages. It includes similarities in the lexicon, phonetics/phonology, functional morphology, and syntactic structure. The initial transfer is not considered wholesale but property by property by this model. This study examined the status of the Null Subject Parameter to test the L1 transfer hypothesis, the 'L2 status factor, and the CEM.

The knowledge of native English learners of L2 Spanish at the initial state of L3 French and L3 Italian of the status of the Null Subject Parameter was compared to the knowledge of L2 French and L2 Italian learners of English of the same phenomenon. The authors

concluded that "although French and Italian are Romance languages and are typologically much closer to Spanish in a holistic sense and thus possibly psycho-typologically more similar for the Null-Subject Parameter in both cases, only Italian shares the Spanish value of this parameter" (p, 10).

Dominant Language of Communication

There is only a small number of studies that investigated the role of dominance in cross-linguistic influence. An example is Slabakova's Scalpel Model (2017). It proposes dominance as a potential factor influencing transfer selection and explains transfer beyond the initial stages in L3 acquisition.

Fallah and Jabbari (2016) investigated the role of dominance in the L3 acquisition of English attributive adjectives by three groups of teenagers. The first two groups had Mazandarani as the first language (L1) and Persian as the second language (L2) but differed from each other concerning the language of communication, Mazandarani and Persian, respectively. The third group had Persian as the L1 and Mazandarani as the L2, with Persian as the language of communication. The analysis of the data gathered via a grammaticality judgment task and an element rearrangement task in this study indicated that dominance is the main predictor for syntactic transfer.

Language of Contact Instruction

Previous studies on language of instruction (e.g., Proctor et al., 2010; Carlisle and Beeman, 2000; Cárdenas-Hagan et al.,2007) have focused on the language through which one of the skills of the target language is taught.

Therefore, very few studies in L3 acquisition have investigated the role of the language of contact instruction as the language that the language learners have selected and learned as their major of study. The concept of language of contact instruction investigated in this study is different from "language of communication" proposed by Fallah et al. (2016) or what Puig-Mayenco et al. (2020) have referred to as the "language of instruction", which is the language in which English as the third language is taught.

The present study focuses on four groups of the participants' language of instruction in addition to their first and second language to see whether any of them is the source of cross-linguistic influence of plurality agreement to their L3. The asymmetrical configuration of plurality agreement across these three languages and these two contexts provide a unique opportunity to study learnability problems in the acquisition of English as an L3 by Persian-Arabic bilinguals of different profiles and allows us to track the development of their inter-language grammar. Plurality agreement in the three languages of Persian, Arabic, and English is explained and illustrated in the following section.

Plurality agreement in count nouns in Persian, Arabic, and English

Agreement happens when a word changes in form to concord with the other words to which it relates. This usually happens through inflection and causes the value of a grammatical category (person, gender, or number) to agree between varied words or parts of a sentence. One sort of agreement is the agreement between the count nouns and the numbers used to count them, which happens in Arabic and English but not in Persian.

In Persian, the nouns are not pluralized after a number because the number itself indicates the quantity:

(1) yek da:nesha;mouz
One student
(2) do danesha:mouz
Two student
(3) se da:nesha:mouz
Three student

Regarding Arabic numbers, 1 and 2 stand for the noun and agree with it in gender and number. They can only be used with the noun for emphasis, in which case they follow it (Sterling, 1904). So the number and the counted noun are the same in gender, number, and case.

(4) telmizon wahidon
student-M one-M.
(5) telmizæton wahidæton
student-F. one-F.
(6) telmizane eθnane
student-dual.M. two-M.
(7) telmizætane eθnætane
student-dual.F. two-F.

Numbers 3 to 10 take the feminine form when the objects numbered are masculine, and the masculine form when the objects numbered are feminine (Sterling, 1904). Nevertheless, the number and the count noun agree in number and case, again:

(8) θælaθo telmizat
three-M. student-pl.F.
(9) θælaθæto tælamiz
three-F. students-pl.M.

In English, the counted nouns are pluralized when they follow numbers above one:

(10)One student
(11)Two students
(12)Three students

Therefore, quantifying entities with numbers 2-10, nouns are pluralized in Arabic and English, while they remain singular in Persian. The comparison of this type

of agreement in Persian, Arabic, and English is more clearly shown in Table 1.

Table 1.

Number and Count Nouns in Persian, Arabic, and English

Language	Singular	Dual	Plural
Persian	yek danesh amu:z a(one) student	do danesh a:mu:z two student	se danesh a:mu:z three student
Arabic	Telmi:zon wahidon student-M one-M. telmizæton wahidæton student-F. one-F.	Telmiza:ne eθnane student-pl. M. two-M. telmizæta:ne eθnæta:ne student-pl.F. two-F.	θælaθo telmiza:t three-M. student-pl.F. θælaθæto tælami:z three-F. students-pl.M.
English	one student	two students	three students

In the light of the issues mentioned above, this study is guided by the following questions:

1. Are the properties of the L1 deterministic in selecting a source of CLI in the initial stages of L3 acquisition?
2. Are the properties of the L2 deterministic in selecting a source of CLI in the initial stages of L3 acquisition?
3. Do all participants, as predicted by the CEM, transfer properties from both the L1 and the L2, regardless of the acquisition order, resulting in facilitative effects for all four groups?
4. Does transfer occur according to the TPM, which posits that the linguistic system, L1 or L2, which is typologically/structurally more similar to the L3, is the primary source of transfer?
5. Does the language of contact instruction serve as the primary (and maybe only) source of CLI in the initial stages of L3 acquisition?

Based on the questions mentioned above, the following can be hypothesized:

H1: The properties of the L1 are deterministic in selecting a source of CLI in the initial stages of L3 acquisition.

H2: The properties of the L2 are deterministic in selecting a source of CLI in the initial stages of L3 acquisition.

H3: All participants, as predicted by the CEM, transfer properties from both the L1 and the L2, regardless of the order of acquisition, resulting in facilitative effects for all four groups.

H4: Transfer occurs according to the TPM, which posits that the linguistic system, L1 or L2, which is typologically/structurally more similar to the L3, is the primary source of transfer.

H5: The language of contact instruction serves as the primary (and maybe only) source of CLI in the initial stages of L3 acquisition.

The predictions for the transfer of plurality agreement in count nouns can be seen in Table 2.

Table 2.

Predictions for the Transfer of Plurality Agreement in Count Nouns at the Initial Stages of L3 English Acquisition

Hypotheses	Persian A	Persian B	Arabic A	Arabic B
L1 Factor	Persian (D)	Persian (D)	Arabic (F)	Arabic (F)
L2 status Factor	Arabic (F)	Arabic (F)	Persian (D)	Persian (D)
CEM	Arabic (F)	Arabic (F)	Arabic (F)	Arabic (F)
TPM	Arabic(F)	Arabic (F)	Arabic (F)	Arabic (F)
Language of contact instruction	Persian (D)	Arabic (F)	Persian (D)	Arabic (F)

Note. D=Detrimental, F=Facilitative.

Method

Since the participants of the present study were non-randomly assigned, the research design is a kind of non-experimental one. An ex post facto non-experimental design was used to draw plausible conclusions from the statistical analysis of the data gathered from the performance of the four groups of L3 learners of English. Specifically, the relationship between the language of contact instruction and the L3 of the learners is taken into account. This is an appropriate design to be used for the aim of this study because it makes comparisons between

groups without the direct manipulation of any independent variables (Mackey & Gass, 2015). Since this study focuses on gathering numerical data and generalizing the results across groups of people to explain a particular phenomenon, a quantitative research method was used for data collection.

Participants

Sixty-four participants (of the age range of 20 to 30) were selected from the students studying Persian language and literature and Arabic language and literature in Yazd University and Shahid Chamran University of Ahvaz and were assigned into four groups. The first two groups were L1 Persian, L2 Arabic L3 elementary learners of English. The first group (Persian A) were students of Persian language and literature, while the second group (Persian B) were studying Arabic language and literature. The third and the fourth groups were L1 Arabic, L2 Persian, L3 elementary learners of English. The third group (Arabic A) were students of Persian language and literature and, the fourth group (Arabic B) were students of Arabic language and literature.

The L1 Arabic students were from Ahvaz because this southern city of Iran is the home of people who learn Arabic from birth and get familiar with Persian as a second language when they enter school at the age of 7. Ahvazi children start learning English when they enter junior high school at the age of 12, just like the children all over Iran.

The participants selected from Yazd University were native speakers of Persian. They learned Arabic as their second language at language learning institutes at the age of 7. They also started learning English at the age of 12 when they entered junior high school.

Instruments

The instruments used in this study are the Language and Social Background Questionnaire (LSBQ), Oxford Quick Placement test (OQPT), timed grammaticality judgment/ correction task (TGJ/CT), and a picture description task (PDT)**.**

The Language and Social Background Questionnaire (LSBQ) provided personal information about the participants, such as their age, gender, place of birth, language backgrounds, and approximate proficiency levels in the respective languages according to the participants' self-evaluation. It is reported as a reliable and valid instrument for describing bilingual experience and classifying participants by Anderson et al. (2018).

Oxford Quick Placement test is a helpful instrument for ascertaining that the participants are at their initial levels of learning their L3 English. This test is a standard test, the reliability and validity of which were reported by Oxford University and Cambridge ESOL as high to be used as a placement test (Granpayeh, 2003). The paper and pencil version of this test was used to assess the students on reading and structure, including grammar and vocabulary. It took approximately 30 minutes to administer, and the answers were recorded directly on the answer sheet. Using the answer key provided, the answer sheets were quickly marked.

The GJ/CT comprising 28 items was administered to assess the participants' comprehension of plurality agreement in English. It is a set of grammatical and ungrammatical sentences that the learners are supposed to judge their grammaticality and correct the ungrammatical ones. There is a time limit to complete the task for ascertaining that the learners' metalinguistic knowledge does not intrude on the process, and it is the implicit knowledge of the participants which is measured. The test contained the target structures and distracters (to divert the participants' attention from the structures in focus). Both target structures (14 items) and distractors (14 items) consisted of grammatical and ungrammatical items (7 for each). Cronbach's alpha for the 28 item GJ/CT was .84. Examples of the grammatical and ungrammatical items of both the target structure and the distractors are provided below. A complete list is provided in appendix A.

Target structures:

(13)Albert made some coffee for his four friends. ✓

(14)There are three student in the classroom. ×

Distractors:

(15)The girl came home after running. ✓

(16)The windows is broken. ×

The distractors in this task and the PDT (explained below) were from a variety of grammatical structures to divert the participants' attention from the structure we were testing.

The PDT was used to check the participants' production of the target structure. In this task, the participants were provided with three pictures of public places below which some sentences were provided (12 in whole) containing blanks. The participants had to fill in the blanks using the picture above the items with appropriate count nouns (see Appendix B). There were also 12 distractors in this task. The participants were provided with possibly unknown words.

To ensure the content validity of the tasks, they were sent to 4 experts in the field. The experts were Ph.D. holders in Applied Linguistics and had demonstrated significant expertise in second language research in general and contrastive analysis in particular. Both tasks were confirmed by all four experts. In terms of the reliability of the PDT instrument, Cronbach's alpha for the 12 items was.78.

Procedure

As the first step, the students completed the Language and Social Background Questionnaire to provide us with some information about their language background, specifically their L1, L2, and L3 proficiency. In order to ensure that they are at their initial levels of English proficiency, the Oxford Quick Proficiency test was also given to them. After one week interval, they did the timed grammaticality judgment/ correction test (TGJ/CT) to be checked in terms of comprehension.The next week, in order to check their production of plurality agreement in English, the participants were provided with some sentences to complete by the use of the three pictures provided.

The correct answers in both GJCT and PDT were coded as 1 and the others as 0 in SPSS. By correct answers, we mean the ones which the participants marked as incorrect and provided the correct form in the GJCT. In PDT, the responses which were structured according to the English plurality agreement rules were considered as correct and given 1 in SPSS, and those which were grammatically incorrect were coded 0. The details of data analysis and the results are reported in the next section.

Findings

To compare the four groups' scores in the GJCT and PDT tasks, Kruskal-Wallis Tests, which are the non-parametric alternative of One-way ANOVA, were run because the data violated the assumption of normality.

Some follow-up Mann-Whitney U tests between pairs of groups were done to check which groups are significantly different from one another.

The results of the descriptive statistics of the participants' performance on GJCT showed that the Persian B group got the highest mean (M=12.37) amongst the four groups, and the next highest mean was obtained by the Arabic B group (M=8.87) while the lowest mean was 4.93 which was obtained by the Arabic A group. The mean performance of the Persian A group (M=5.18) was near to Arabic A's.

Table 3.
Mean Accuracy of Four Groups on Count Nouns in GJCT

Groups	N	Count Nouns	
	n	***Mean***	***SD***
Persian A	16	5.18	2.83
Persian B	16	12.37	1.62
Arabic A	16	4.93	4.41
Arabic B	16	8.87	3.93

A Kruskal-Wallis test conducted on the data obtained from the GJCT revealed a statistically significant difference among the four groups' performances on the GJCT, $\chi 2(3, N = 64) = 32.8, p = .0003$.

The results of the Mann-Whitney U tests revealed nearly significant difference between Persian A and Persian B groups (z= -4.7, p= .000002), Persian A and Arabic B groups (z= -2.5, p=.01), Persian B and Arabic A groups (z= -4.6, p= .000004), Arabic A and B groups (-2.9, p=.004) and Persian B and Arabic B groups (z= -.2.6, p=.008) but Persian A and Arabic A groups (z=-.91, p= .36) did not perform significantly differently from each other.

Table 4.
Results of the Mann-Whitney U Tests Conducted on the Data Obtained from the GJCT

Groups	Persian A		Persian B		Arabic A	
	z	***p***	***z***	***p***	***z***	***p***
Persian A						
Persian B	-4.7	.000002*				
Arabic A	-.91	.36	-4.6	000004*		
Arabic B	-2.5	.01*	-2.6	.008*	-2.9	.004*

The results of the descriptive statistics of the participants' performance on PDT showed that Persian A and Arabic A groups obtained approximately the same means, 5.25 and 5.81, respectively, which were the lowest means amongst the four groups. On the other hand, Arabic B (M= 9.56) and Persian B (M=8.87) groups obtained the highest means (see Table 5).

Table 5.
Mean Accuracy of Four Groups on Count Nouns in PDT

Groups	N	Count Nouns	
	n	***Mean***	***SD***
Persian A	16	5.25	2.48
Persian B	16	8.87	3.42

Arabic A	16	5.81	2.58
Arabic B	16	9.56	3.40

A Kruskal-Wallis test revealed a statistically significant difference among the four groups' scores on the PDT, $\chi 2(3, N = 64) = 19.29, p = .0002$. The results of the Mann-Whitney U tests conducted on the data obtained from the PDT revealed a significant difference in the performance of Persian A and Persian B groups (z=-3.13, p=.002), Persian A and Arabic B groups (z=-3.25, p=.003), Persian B and Arabic A (z= -2. 89, p=.004) and Arabic A and Arabic B groups (z= -2.93, p=.003). However, neither Persian and Arabic A groups (z=-.67, p=.5) nor Persian and Arabic B groups (z=-.90, p=.36) performed significantly differently.

Table 6.
Results of the Mann-Whitney U Tests Conducted on the Data Obtained from the PDT

Groups	**Persian A**		**Persian B**		**Arabic A**	
	z	***p***	***z***	***p***	***z***	***p***
Persian A						
Persian B	-3.13	.002*				
Arabic A	-.67	.5	-2.89	.004*		
Arabic B	-3.25	.001*	-.90	.36	-2.93	.003*

A comparison of the participants' production and comprehension of the count nouns' agreement with numbers two to ten is presented in Table 7.

Table 7.
Mean Accuracy of Four Groups on Count Nouns in GJCT and PDT

Groups	**N**	**GJCT**		**PDT**	
	n	***Mean***	***SD***	***Mean***	***SD***
Persian A	16	5.18	2.83	4.25	2.48
Persian B	16	12.37	1.62	8.87	3.42
Arabic A	16	4.93	4.41	5.81	2.58
Arabic B	16	8.87	3.93	9.56	3.40

According to this table, the Persian B group obtained the highest mean in GJCT (M= 12.37), and the second-highest mean was obtained by the Arabic B group (M= 8.87). In PDT, the highest mean performances were obtained by these two groups, too. In this task, The highest mean is 9.56 which, was obtained by the Arabic B group and the second highest mean was obtained by the Persian B group (M= 8.87).

The next highest means in both tasks were obtained by Persian and Arabic B groups. In GJCT, the third highest mean was obtained by Persian A (M= 5.18) and the lowest by Arabic A (M= 4.93), while in PDT, the third highest mean was obtained by Arabic A (M= 5.81) and the lowest by Persian A (M= 4.25).

The results also showed that the Persian groups were better in comprehension, while Arabic groups were better in production regarding these two tasks.

In sum, it was evident that all groups comprehended and produced the plurality agreement rule in English based on the rules in their language of contact instruction, which was Arabic. The results are discussed in detail in the next section.

Discussion

In this section, the results reported in the previous section are interpreted in the light of our hypotheses. As mentioned earlier, the L1 factor hypothesis (Hermas, 2010, 2014a, 2014b) predicts that the participants' L1 is the deterministic factor in their acquisition of L3 English in this study. According to this hypothesis, Arabic A and B groups are predicted to transfer their L1 Arabic, bringing about a facilitative effect, while the Persian A and B groups are predicted to transfer L1 Persian, resulting in a detrimental effect. However, the results of this study reject the L1 factor hypothesis because both Persian and Arabic B groups performed significantly better than the other groups in both tasks of this study. So the results of this study are not in line with the studies considering a prominent role for L1 in L3

acquisition (Håkansson et al., 2002; Na Ranong & Leung, 2009; Hermas, 2010, 2014a, 2014b).

The second hypothesis (L2 status factor) is not supported either in this study. According to this hypothesis, Persian A and Persian B groups would outperform the other groups transferring the plurality agreement rule from their second language Arabic to their third language, English, while it did not happen according to the present study results. Persian B group got the highest mean in GJCT, and the second-highest mean in PDT, while Persian A was the third in GJCT and the last in PDT. Therefore, the results of the present study are not in line with the studies which consider a more substantial role for L2 in the initial state of L3 acquisition (e.g., Bardel & Falk 2007; Falk & Bardel 2011; Leung 2005; Rothman & Cabrelli Amaro 2010).

The results of this study are not even in line with Angelovska and Hahn (2012). As mentioned before, they proved the negative (i.e., nonfacilitative) transfer phenomena of L2 German in the L3 acquisition of English. To support such a claim in our study, both Arabic A and B groups having Persian as their L2 should transfer the agreement rule detrimentally from their L2 Persian and have the worst performance among the groups, while this is not the case according to the results of the study.

Cumulative Enhancement Model anticipates no differences across the four groups' performance on the tasks. So it anticipates that the four groups transfer Arabic, regardless of the order of acquisition, to their L3 English, resulting in facilitative effects for all of them. This hypothesis is also rejected because our A groups transferred the number agreement rule detrimentally from Persian, not Arabic. So the results of the present study are in contrast with Flynn et al. (2004) and Berkes and Flynn (2012a), who considered both L1 and L2 to be deterministic in L3 acquisition according to CEM.

According to Typological Proximity Model (Rothman, 2010, 2011, 2013, 2015), Arabic would be the deterministic source of CLI at the initial stages of L3 English acquisition, resulting in facilitative effects for all four groups. Therefore, the predictions of CEM and TPM are confounded in this study, but TPM's explanation for such prediction is different from CEM's. It posits that any linguistic system which is typologically/structurally more similar to the L3 is the primary source of transfer. To determine such underlying similarity, the linguistic parser processes a hierarchical continuum of four linguistic cues subconsciously, including the lexicon, phonological cues, functional morphology, and syntactic structure. Concerning the background languages involved in this study, both Arabic and English have some in common concerning morphological and syntactic cues (they are among the strongly suffixing languages according to the World Atlas of Language Structures). However, TPM is not supported by the present study because only Persian B and Arabic B groups transferred the plurality agreement rule from Arabic to English but not the other two groups.

Notably, the language pairings in studies supporting TPM are such that typological proximity is unambiguously clear by any measure (e.g. Spanish and Portuguese). In contrast, neither of the two previously learned languages recruited in the present study is so obviously structurally/ typologically similar to the L3. Considering the background languages in this study (Arabic is a Semitic language; Persian is an Indo-Iranian language, and English is a Germanic Language), the typological/ structural similarity between the languages is not clear. Persian and Arabic are probably considered as more similar (in orthography at least) because they share the cursive alphabet while English has the Romance alphabet. The question posed here is whether TPM applies in such cases that the typological/ structural similarity between the languages is not apparent.

According to what was mentioned about the results of the grammaticality judgment correction task in the previous section, regarding the plurality agreement of count nouns with numbers two to ten, Persian and Arabic B groups performed significantly better than the other groups in GJCT. It shows that they transferred this agreement rule of numbers and count nouns from Arabic, which is their language of contact instruction, to English. On the other hand, the A groups transferred this feature detrimentally from their language of contact instruction which is Persian.

In addition, Persian and Arabic B groups, which had Arabic as their language of contact instruction, transferred the agreement rule of numbers and count nouns from this language to English as their third language and performed significantly better than the other groups in PDT, too.

Finally, by conducting a comparison of the participants' comprehension and production of the agreement rules, we can conclude that Persian groups are better in comprehension. In comparison Arabic groups are better in production regarding the plurality agreement of count nouns and numbers in English.

Conclusion

The results of this study suggest that the context of learning matters in the acquisition of L3 properties. It means that if the learners associate instructed learning with a specific language (Persian or Arabic, depending on which program they attend), it might be that this language is more prominently activated (by some kind

of episodic or contextual association) in any instructed context, including the L3 classroom. In the case of this study, both students of Arabic language and literature and Persian language and literature associated the academic context of their L3(English) learning with their language of contact instruction and transferred the plurality agreement rule from their language of contact instruction to their L3.

Some pedagogical implications can be suggested for teaching and learning number agreement based on the findings of this study. For example, curriculum designers and developers may realize the similarities and differences between the students' language of contact instruction and their L3 based on the results of some contrastive analyses to use the results in the language courses they provide.

The findings of this investigation must be interpreted in the context of the existing limitations of the study. The role of the proficiency level and gender of language of contact instruction is not taken into consideration in this study. Considering these factors into account, future researchers may use various tasks, especially oral ones, to see the effect of language of contact instruction on the learners' acquisition of the L3.

The effect of the dominant language of communication could not also be estimated in this study because of the few number of participants available to test this hypothesis simultaneously with the other 5, since this would have required a few extra groups. Designing a scenario in which the role of L1, L2, dominant language of communication, and language of contact instruction can be observed will be a complicated yet exciting task for future studies.

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Appendix A. Grammaticality Judgment Correction Task

Grammatical count nouns

1. Albert made some coffee for his four friends.
2. The two girls seem to be so stressed.
3. She visited nine doctors in the meeting.
4. There are three baker in the bakery.
5. Four dentists saw my teeth.
6. There are nine workers in the company.
7. Ten actors were on the stage.

Ungrammatical count nouns

1. There are three student in the classroom.
2. Mr. Johnson has eight brother.
3. The five teacher were talking about their experiences.
4. She was looking at her seven grandchild in the photo.
5. Six doctor visited him.
6. There are seven teacher in this school.
7. She works with three nurse in the hospital.

Grammatical distracters

1. The girl came home after running.
2. She was making dinner.
3. The baby was crying.
4. They were listening to music.
5. She made lunch yesterday.
6. They're busy all day long.
7. She said that her last trip was really scenic.

Ungrammatical distracters

1. The windows is broken.
2. I've been in England for 1989.
3. Neil Armstrong were an astronaut.
4. John were a police man in 2015.
5. She opening the door.
6. He's smoking yesterday.
7. The coffee are hot.

Appendix B. Picture Description Task

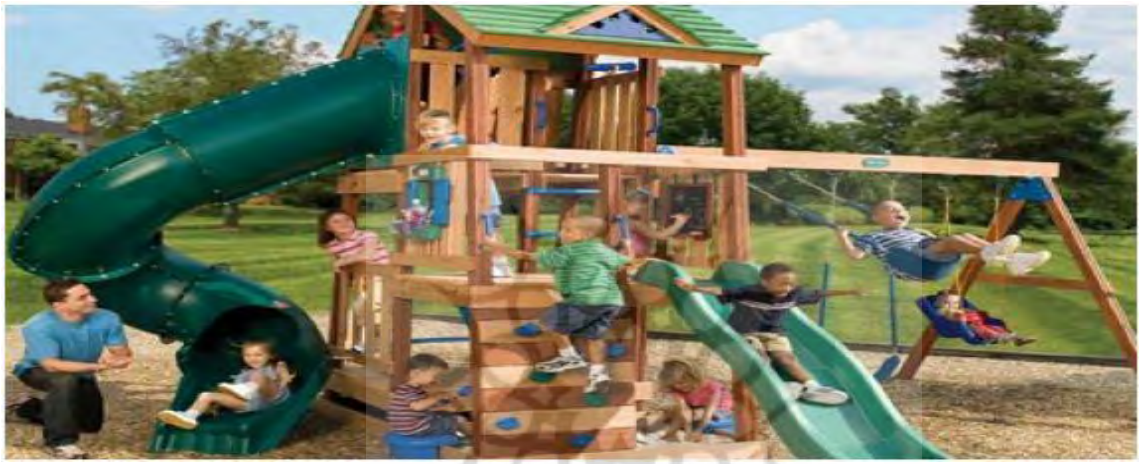
Count nouns:

1. I see seven_____ in the picture.
2. six _____ are on the desk.
3. two _____ are studying their books.
4. I can see three _____ behind the students.

جذاب= Attractive
قفسه کتاب=Book case

Distracters:

5. The library is ____
6. There are many books on the ____ .
7. Another ____ is sitting next to the shelves.
8. A(an) ____ ____is their teacher.
9. The studious boy is _____ at the book.



Plural:

Count nouns:

1. Ten _____ are playing on the playground.
2. There are four _____ in the picture.
3. There are two _____ in the picture.

آفتابی = Sunny

Distracters:

4. All the children are ____ a good ____ .
5. This picture ____ a playground in spring.
6. The weather is ____ and nice.
7. The trees are ____and beautiful.
8. The man loves to ____ children playing.

Patient=بیمار
Call=صدا کردن

Count nouns

1. There are eight _____ in this clinic.

1. There are seven _____ waiting in this clinic.
2. there are six _____ on the wall.
3. three _____ are sitting on the left.
4. four _____ are sitting on the right.

Distracters

1. The walls of the room are _____ .
2. The doctor is _____ the patients one by one.

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