

## The Role of Persian L1 and English L2 on the Acquisition of French L3 Syllable Structure

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### Abstract

The aim of the present study is to investigate the role of two consonant coda clusters of first language Persian, second language English and third language French in the acquisition of French syllable structure when learners have achieved different levels of L2 proficiency. The following hypotheses are investigated in this study: (1) the L2 Status Factor (Rothman and Amaro, 2010) proposing that L2 impedes transfer from L1 into L3, (2) the Cumulative Enhancement Model (Flynn et al. 2004) proposing selective transfer from the previously learned languages, (3) the Full Transfer/ Full Access Hypothesis (Håkansson, Pienemann and Sayheli, 2002), suggesting that the Universal Grammar (i.e. UG) is available in acquiring the succeeding languages. (4) Typological Primacy Model (Rothman, 2010) that believe in the similarities between the L3 and the previous languages determine the transfer into L3. To carry out the study, 30 Persian L3 French candidates at Tehran University who participated at Oxford Placement Test and French Placement Test were selected. In addition, two types of tasks were prepared to measure the L3 learners. The data analysis was carried out by one-way ANOVA as well as Mixed between-within subjects ANOVA. The results of the study proved 'Full access/ Full transfer' and TPM hypotheses.

**Key words:** Syllable Structure, Acquisition, Coda Cluster, Perception Task, Production Task.

### 1. Introduction

Nowadays the use of more than two languages has become a normal part of daily life for most human beings, and there are lots of researchers and linguists interested in multilingualism to check and find some evidence to test both SLA and linguistic theories. However; research on L3 acquisition has reached its peak to the extent where, Larissa Aronin and Britta Hufeisen (2009, p.2) call it "coming of age of trilingualism".

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The aim of this study is to answer the following question: which language, L1 or L2, has the most effect on the acquisition of the third language (i.e. L3). Moreover; this study seeks to find out whether the typological similarities and the level of proficiency have any effect on learning syllable structure of L3 or not. It should also be mentioned that the participants are Iranian native Persian speakers who are quite proficient in L1. However, they are not native speakers of English and French. Therefore, their English and French proficiency were tapped. In this study, two groups of subjects, lower intermediate in English proficiency group and upper intermediate in English proficiency group participated. Both groups are lower intermediates in French.

This paper is organized in the following way. In section II and III the researcher introduces the concept of L3 acquisition and a brief background about it. Section IV presents the methodology of the study under investigation. In section V and VI the results and the conclusion are discussed respectively.

## **2. Theoretical Background Of L3 Acquisition**

Bilingual and multilingual individuals present a different type of linguistic competence as compared to that of monolinguals (Grosjean, 1989; Cook, 1995; Jessner, 1999). Much of the current research suggests that learning a third language is not the same as learning a second language (Jessner, 1999; Cook, 1995). Herdina and Jessner (2002) propose that the acquisition of more than two language systems leads to the development of new skills such as learning how to learn; it also facilitates subsequent additional language acquisition as learners use metalinguistic awareness to explore the cognitive and linguistic mechanisms underlying language.

There have been appeared four major hypotheses to account for third language acquisition: the Cumulative Enhancement Model (CEM, Flynn et al. 2004), the L2 Status Factor Hypothesis (LSFH, Bardel & Falk 2007), Typological Primacy Model (TPM, Rothman and Amaro, 2010; and Rothman, 2010), and the Full Transfer/ Full Access Hypothesis (FT/FA, Schwartz and Sprouse 1994, 1996; White 1989, 2003). The CEM (Flynn et al. 2004, Flynn 2009) suggests that all the previously learned languages can be transferred into the  $L_n$ . The L1 or the mother tongue acts as a default language; that is, it is transferred into the L3 if it is available in the L1, and in case the structure is not present in the L1, then they transfer from the other languages.

The LSFH (Falk & Bardel 2010, Falk submitted) suggests that an L2 is favored as transfer source progressively independently of the progressive typological similarity or genetic relatedness of the languages involved. The L2 status factor has its origin in Williams and Hammarberg's study on L3 acquisition of the lexicon (1998) where it was explained as a general tendency to activate a previously learned (second) language, rather than to activate the L1 in the acquisition of a third one. Bardel and Falk (2007) found in their first study that the same holds for the acquisition of L3 syntax.

The proponents of the TPM (Rothman and Amaro, 2010; and Rothman, 2010) believe that the typological closeness is the extent to which two or more languages share the similar features, determines the source of transfer in L3 acquisition. To put it in other word, transfer may take place from the languages which are typologically closer to the L3. Unlike the CEM model, the TPM considers both the positive and negative transfer from the language which is typologically closer to the target language.

Finally, according to the FT/FA Hypothesis (Schwartz and Sprouse 1994, 1996; White 1989, 2003), L1 determines what will be transferred into L3 acquisition. The proponents of

this hypothesis believe that the UG is there in acquiring any new languages to help the learners with the syntax of that language. This behavior might lead to either target-like structures or non target-like structures; this is what distinguishes this model from the CEM (see also the results from Rothman & Cabrelli–Amaro 2010, where both the L2 status factor and the CEM are supported). Contrary to the findings of Bardel and Falk, in this paper, we will prove that there is no impeding role for the L2 in the L3 acquisition, and the L1 plays a significant role in acquiring the L3, which is in line with the FT/FA Model.

### 3. Persian, English And French Syllable Structures

#### 3.1 Persian Syllable Structure

Persian is regarded as a syllable-timed language and the syllables occur at regular intervals of time, therefore; the amount of time it takes to say a sentence depends on the number of syllables in the sentence, not on the number of stressed syllables as in stress-timed languages like English and German. However, Persian syllables always take one of these patterns (i.e., CV, CVC, or CVCC) presented in Table 1 below:

**Table 1 Persian Syllable Structure**

Persian syllables	Examples	Meaning
CV	/ba/	with
CVC	/baq/	garden
CVCC	/zæng/	bell

#### 3.2 English Syllable Structure

English is considered as a stressed-timed language and the amount of time it takes to say a sentence depends on the number of syllables that receive stress. In English, possible syllable structures can be represented as (C) (C) (C) V (C) (C) (C) (C). This means that English permits up to four consonant clusters finally and three initially. For example, in a word like scrambles /skræmbɪz/ three consonant clusters together at the beginning and four at the end to produce a CCCVCCCC syllable. consonant clusters can occur in both syllable-initial (onset) and syllable-final (coda) positions in English; moreover, unlike many languages like Turkish and Persian, consonant clusters in English are not limited to two consonants, but they permit up to three consonant clusters initially and four finally.

#### 3.3 French Syllable Structure

French like Persian is classified as a syllable-timed language in which the syllable is used as a basic timing unit. That means that each syllable gets equal time, whether it is stressed or not. Vowels are never reduced. French permits up to three consonant clusters initially and three finally. It can be presented as (C) (C) (C) V (C) (C) (C). Moreover, the

consonant-vowel pattern of French syllables contrasts with English syllables which tend to end with a consonant (CVC).

Learning French supra segmental syllable structure may pose some potential problems for Persian French L3 learners. The challenges are due to the differences between English and Persian on the one hand and English and French on the other hand and particularly in the way that they are different from each other in terms of syllable structure. Herein, the contexts under study are highlighted in Table 2

Table 2 Persian, English, and French contexts

Context		L1 Persian	L2 English	L3 French
L1=L2=L3(TPM)	'-bl'	/tæbl/	/'lɪvəbl/	/pezibl/
L1=L2#L3(CEM)	'-ft'	nəvəft//	/wa: ft/	∅
L1#L2=L3(L2status)	'-kt'	∅	/'fekt/	/ækt/
L1=L3#L2(FA/FT)	'-sm'	/tələsm/	∅	/mə'tlɛriəllsm/

According to the first context, the coda cluster of '-bl' is existent in Persian, English, and French. And it is assumed that this similarity is an indispensable part of learning second or third language and can facilitate learning L3. This context can play an important role to determine the role of Typological hypothesis.

Another difference among these languages is with regard to the coda cluster of '-ft' which is possible in Persian and English while it is not permitted in French. This context is an insightful hint to guide the researcher to come upon Cumulative Enhancement Model hypothesis.

Moreover, the status of coda cluster of '-kt' is another factor which differs in the languages under study. Both French and English allow '-kt' in coda position while the use of this context in Persian is not permitted. This context is an insightful hint to guide the researcher to come upon L2 Status Factor Hypothesis.

The last property of coda cluster which differs among these languages is the status of '-sm'. This context is acceptable in Persian, English, and French but with different pronunciation; in English it is pronounced /-zm/ while in Persian and French pronounced /-sm/. This context is an insightful hint to guide the researcher to come upon Full access/ Full transfer Hypothesis.

It should be born in mind that Persian speakers are second language learners of English and learning French as a third one. This study investigates the role of transfer in learning syllable structures by two groups of learners, if there is any, and determine which one is more affective, L1, L2 or both.

## 4. Methodology

### 4.1 Participants

This study was undertaken among BA French language learners in Tehran University. The participants of this study consisted of 30 Persian native speakers who were in initial states of French acquisition. The age of the subjects ranged between 18 and 27. All of the participants were picked up among 70 learners who took part in French Oxford Placement Test and English Quick Oxford Placement Test. Furthermore, there are two types of experiments: an Oral Judgment Task (OJT) and a Production Task (PT).

#### Experiment 1: Oral Judgment Task:

This type of test is used to gather some information about learners' competency and underlying system. The test was constructed by considering the coda cluster under study mentioned in section 3.3 of this study. It consisted of 24 items out of which (a) 6 items were allocated to two consonant coda clusters possible in all three languages i.e. TPM, (b) 6 items were included for the permitted coda cluster of L1 and L2 /ft/.i.e. CEM. (c) 6 items consisted of coda cluster of /kt/ which is allowed in L2 and L3 contexts. i.e. L2 status factor and finally (d) 6 items were considered L1 and L3 i.e. FA/FT. At this stage, the subjects were asked to judge and determine the existent and non-existent of sounds in French by choosing the right choice if the item was correct, incorrect choice if the item was incorrect, and if they were in doubt they would choose the option 'I don't know'. Table 3 shows the distribution of the test items in the OJT.

Table 3 Distribution of Test Items in OJT

Items	Number of Items	Items' Number
Coda cluster in all three languages	6	1, 4, 7, 10, 14, 18
Coda cluster in L1 and L2	6	3, 6, 12, 17, 21, 24
Coda cluster in L2 and L3	6	2, 8, 11, 15, 19, 22
Coda cluster in L1 and L3	6	5, 9, 13, 16, 20, 23
Total	24	

Example:

1. The coda cluster of / kt/ which is possible in English and French pronounced /kæt/ which is existent in Persian → "Directe"----- /diRɛkæt/ and they were asked to judge whether the pronunciation of the word hear is acceptable or not in French as follows:

a. correct

b. incorrect

c. I don't know

#### Experiment 2: Production Task

In order to compensate for the possible deficiencies of the OJT and also to tap the learners' performance, the fourth test which was a Production Test (PT) was administered. The test was in the written form and the subjects were asked to read aloud a 24-item list containing the words selected and the subjects were recorded and transcribed by two judges in order to achieve reliable judgment. In this test, four coda cluster under study namely, /ft /, /kt /, /sm/

and /bl/ were included. The following table illustrates the distribution of the above-mentioned clusters in the PT:

Table 4 Distribution of Test Items in PT

Items	Number of Items	Items' Number
Coda cluster in all three languages	6	1,5,10, 14, 17,21
Coda cluster in L1 and L2	6	4,7, 12,16, 20,24
Coda cluster in L2 and L3	6	2,6, 11, 13, 18 ,23
Coda cluster in L1 and L3	6	3, 8, 9, 15,19, 22
Total	24	

Example:

1. "despotisme" pronounced by some of the subjects /dɛspɔtizm/ which is not permitted in French and it is only existent in English. However, some of the participants pronounced it correctly as /dɛspɔtizm/.

## 5. Results And Discussions

For analyzing the data, the performance of the two groups in each test was compared on property of French syllable structure by using descriptive and inferential statistics. The groups' mean percentages for each variable were calculated and between groups comparisons were carried out by using mixed between-within subject ANOVA. Furthermore, in order to identify where the differences lie, one-way ANOVA was conducted. In addition, the general performance of the two groups in the perception and production of French syllable structure was compared by conducting a paired samples t-tests.

### 5.1 Kappa Measure Of Agreement

Having collected the data, the researcher used Kappa Measure of Agreement to find out the extent of agreement between the two judges who rated the production test.

Table 5 Kappa Measure of Agreement

Symmetric Measures

		Value	Asymp. Error <sup>a</sup>	Std. T <sup>b</sup>	Approx. Sig.
Measure of Agreement	Kappa	.661	.136	3.696	.000
N of Valid Cases		30			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

As it is shown in Table 5 the Kappa Measure of Agreement Value is .661 with a significance of  $p < .0005$ . Therefore, the above value according to Peat (2001, p.228), represents a moderate agreement. This can be used as an indication of inter-rater reliability.

To address the research hypotheses, an attempt was made to merge the results obtained in the production and oral judgment tasks to arrive at unified results. To this end, the merged data were subjected to data analysis. Table 6 displays the descriptive results.

Table 6 Results of the Proficiency Groups in the Merged Tasks

<b>Descriptive Statistics</b>				
	Level	Mean	Std. Deviation	N
TPM	Upper Intermediate	76.2821	13.54269	13
	Lower Intermediate	72.5490	16.86463	17
	Total	74.1667	15.37370	30
CEM	Upper Intermediate	53.2051	12.04662	13
	Lower Intermediate	47.0588	18.85185	17
	Total	49.7222	16.30107	30
L2status	Upper Intermediate	69.8718	12.51779	13
	Lower Intermediate	32.8431	16.78877	17
	Total	48.8889	23.84630	30
FTFA	Upper Intermediate	31.4103	14.09042	13
	Lower Intermediate	70.5882	13.21485	17
	Total	53.6111	23.84128	30

The above table indicates that the participants had the highest level of accuracy in TPM context (M=74). The lowest mean performance belonged to the FT/FA context where the lower intermediates outperformed the upper intermediates with a mean difference of 39.17. Such a result verifies the role of L1 in the acquisition of syllable structures for the lower intermediates not the upper ones. The subjects did not differ to a high extent in CEM and L2 Status contexts (See Figure 1 ). The mean performance for the CEM and L2 status contexts was 49.72 and 48.88 respectively.

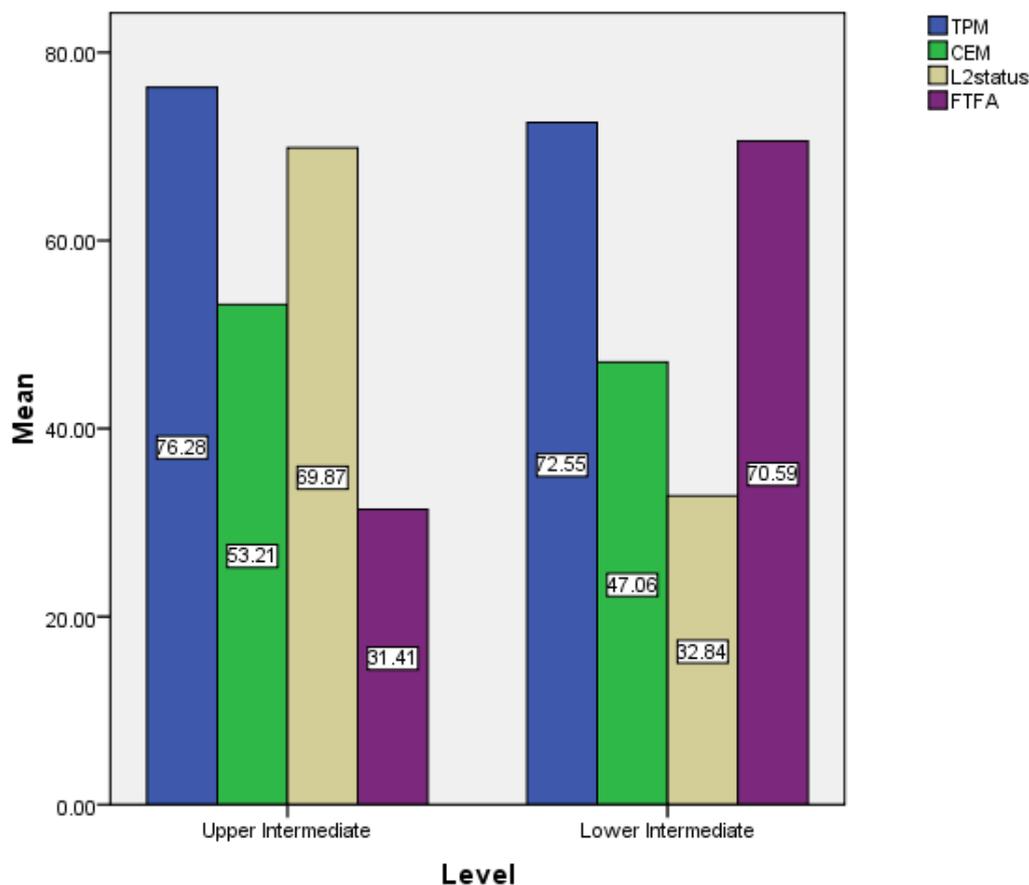


Figure 1 Participants' Performance in All the Contexts Across Both Tasks

The multivariate test results, as displayed in Table 7, shows that there was a significant interaction effect for context and level [Wilks' Lambda=.131,  $F_{(3, 26)} = 57.384$ ,  $p = .000$ ]. There was also a significant effect for context [Wilks' Lambda=.263,  $F_{(3, 26)} = 24.242$ ,  $p = .000$ ]. The test of between subjects effect further showed that proficiency level does not play a significant role in the acquisition of syllable structure in L3 ( $F = 0.496$ ,  $p = 0.487$ ).

Table 7 Results of Multivariate Test for Both Tasks

**Multivariate Tests<sup>b</sup>**

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Context	Pillai's Trace	.737	24.242 <sup>a</sup>	3.000	26.000	.000	.737
	Wilks' Lambda	.263	24.242 <sup>a</sup>	3.000	26.000	.000	.737
	Hotelling's Trace	2.797	24.242 <sup>a</sup>	3.000	26.000	.000	.737
	Roy's Largest Root	2.797	24.242 <sup>a</sup>	3.000	26.000	.000	.737
Context * Level	Pillai's Trace	.869	57.384 <sup>a</sup>	3.000	26.000	.000	.869
	Wilks' Lambda	.131	57.384 <sup>a</sup>	3.000	26.000	.000	.869
	Hotelling's Trace	6.621	57.384 <sup>a</sup>	3.000	26.000	.000	.869
	Roy's Largest Root	6.621	57.384 <sup>a</sup>	3.000	26.000	.000	.869

a. Exact statistic

b. Design: Intercept + Level

Within Subjects Design: Context

The mere indication of a significance effect for the context variable does not tell us which contexts were significantly different from each other. Therefore, a post-hoc analysis using Bonferroni adjustment was conducted to find out which contexts were significantly different from each other. The results are displayed in Table 8 below. The numbers 1 through 4 in the following table stand for TPM, CEM, L2 Status and FT/FA respectively. The highest mean difference across the context was for context 1 (TPM) and 2 (CEM) which reached 24.28.

The lowest mean difference; however, belonged to contexts 3 (L2 status) and 4 (FT/FA) which was less than 1 (0.36).

**Table 8 Pair-wise Comparison of Results for All Contexts Across Both Tasks**

**Pairwise Comparisons**

Measure:MEASURE\_1

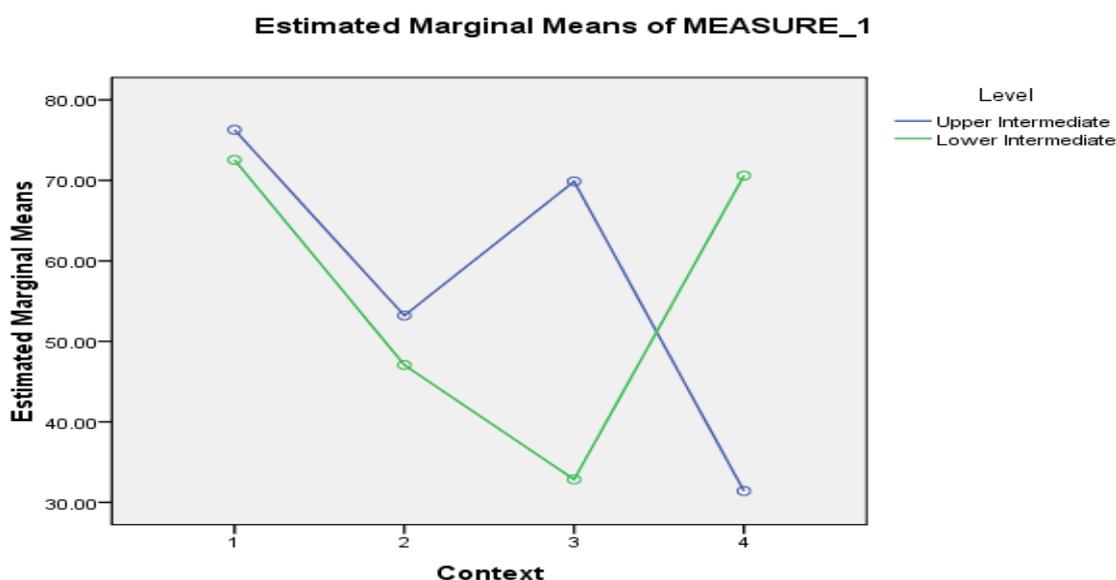
(I) Conte xt	(J) Conte xt	Mean Difference (I- J)	Std. Error	Sig. <sup>a</sup>	95% Confidence Interval for Difference <sup>a</sup>	
					Lower Bound	Upper Bound
1	2	24.284*	3.774	.000	13.569	34.999
	3	23.058*	3.662	.000	12.661	33.456
	4	23.416*	4.063	.000	11.882	34.951
2	1	-24.284*	3.774	.000	-34.999	-13.569
	3	-1.225	5.021	1.000	-15.480	13.029
	4	-.867	2.652	1.000	-8.396	6.661
3	1	-23.058*	3.662	.000	-33.456	-12.661
	2	1.225	5.021	1.000	-13.029	15.480
	4	.358	4.277	1.000	-11.783	12.500
4	1	-23.416*	4.063	.000	-34.951	-11.882
	2	.867	2.652	1.000	-6.661	8.396
	3	-.358	4.277	1.000	-12.500	11.783

Based on estimated marginal means

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

a. Adjustment for multiple comparisons: Bonferroni.

The data displayed in the above table indicate that context 1 (TPM) was significantly different from the rest of the contexts ( $p=0.000$ ). Indeed, contexts 2 (CEM), 3 (L2 status) and 4 (FT/FA) were not significantly different from each other ( $p>0.05$ ). The participants had the highest level of accuracy in the TPM context ( $M=0.74$ ) whereas their mean performance in CEM and L2 status contexts was roughly 0.50 which indicates that their interlanguage status exhibited variability and lack of consistency. However, as revealed in the means plot in Figure 2 below, the FT/FA account can be verified as the lower intermediate subjects performed significantly better than their upper intermediate counterparts with a mean difference of 39.17.



**Figure 2 Means Plot for All the Contexts Across Proficiency Level**

## 6. CONCLUSION

The results of the study proved that L3 group used their knowledge of L1 in L3 acquisition. In another word, in case of similarities between L2 and L3 (i.e. L2 Status Factor hypothesis), the upper intermediate proficiency group was found to perform higher than the lower intermediate proficiency group. This implied that the significant better performance of the upper intermediate proficiency group was correlated with their higher L2 proficiency level which caused them to take their L2 as a source of transfer. On the other hand, in case that there were similarities between the properties of L1 and L3 (i.e. Full access/ Full transfer), the lower intermediate proficiency group outperformed the upper intermediate proficiency group, since it appeared that due to their insufficient knowledge in L2 English, they took full advantage of their native language and transferred the properties of L1 into L3. Although proficiency groups acted differently on contexts of this study; however, the overall results of the two groups' performance on French syllable structure showed no significant difference between the performance of the two groups which in turn reflected the fact that L2 proficiency had no effect on the acquisition of French syllable structure.

Furthermore, the findings of this study did not prove the CEM hypothesis proposed by Flynn et al., (2004). Since the participants didn't use their knowledge of L1 and L2 cumulatively in learning L3 French syllable structure. In addition, in this study the L2 status factor proposed by Bardel & Falk (2007) was rejected.

On the whole, the results of this study confirmed "Typological Primacy Model" proposed by Rothman and Cabrelli Amaro (2010) and the "Full access/ Full Transfer hypothesis" proposed by Håkansson et al. (2002). Moreover, this study rejected "L2 status Factor hypothesis" proposed by Bardel & Falk (2007) and the CEM proposed by Flynn et al., (2004) and disconfirmed the effect of L2 proficiency on learning L3 French syllable structure.

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