

# AUX-contraction in second language speech: a variationist analysis

Reza Ghafar Samiar  
University of Tarbiat Modares

In this paper, the patterns of variability in the use of auxiliary verbs in English as a second language from speakers with a Persian ethnic background are compared to those of Persian, and English. The findings of the comparisons between L1, L2, and English help us determine how variable L2 is and what the sources of this variation are. Our results indicate that the factors conditioning the variable contraction of auxiliaries in advanced L2 strongly parallel the effects observed in the native English speech. These results argue against transfer from L1 or independent creation by the speakers (Interlanguage). Rather, they suggest that the constraints on variable features are as much a part of acquisition as the features themselves.

*Key words:* variation, interlanguage, Persian, Second language acquisition, L2

## 1. Introduction<sup>1</sup>

The variation between full and contracted forms of auxiliary verbs in English, as in 1, is so characteristic of natural speech that its absence is considered unusual (Meechan 1996). Since Labov 1969, there has been a great deal of research on the factors conditioning auxiliary contraction and deletion in various dialects of English, reflecting the prevalence and importance of this variability in the language.

1. My mom and dad *are* healthy, thank God. (OSLA<sup>2</sup> 246. Ib. 154)<sup>3</sup>  
She's never seen me like that. (OSLA 246. Ia. 65)

An important and largely unexplored question is how second language learners acquire this highly variable feature of English. What we understand from research on acquisition of the English auxiliary system by second language learners (e.g., Krashen 1977; Lightbown 1987) is that copula/auxiliary *BE* is among the first grammatical morphemes that both child and adult L2 learners find easy to acquire.

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<sup>1</sup> A preliminary version of this paper was presented at CLA 2001. Quebec.

<sup>2</sup> Ottawa Spoken Language Archives

<sup>3</sup> Examples are identified by the corpus (L2. Per., OSLA), speaker code/number, tape and counter numbers. The English data were extracted from the *Linguistics Department Archives of Spoken Language Materials*. I gratefully acknowledge permission from Dr. S. Poplack to make use of these data housed at the Sociolinguistics Laboratory, University of Ottawa.

Despite early acquisition of *BE*, however, we know very little about if and how L2 learners of English acquire variable contraction of auxiliaries.

Although the scarcity of AUX-contraction in L2 speech has been considered one of the distinctive features of "foreigners' talk" (Meechan 1996), in fact different forms of auxiliary verbs are variably contracted by L2 learners, as in (2).

2. *I've* never got tickets for speeding. (L2. MS. Ia. 80)  
He *will* see the results of that later on. (L2. MK. IIb.139)  
Smoking's allowed in the buildings. (L2. MS. Ia. 355)

Several other features of L2 Speech have been subject to modern multivariate analyses and were found to be systematically conditioned by certain linguistic/extra-linguistic factors, however, one issue that variationists have seldom dealt with is the exploration of the patterns of L2 AUX-contraction and sources of patterns of variation in L2 in general. If variable use of this second language speech feature is indeed systematic, what are the patterns governing this variation? Do these patterns rely on the learners' native system of variation? Are they created by L2 learners, independent of and different from either native or target languages? Or are they acquired from the target language? For the last option, first we have to find out if variable rules can be acquired by language learners since some researchers, like Gregg (1989, 1990), have claimed otherwise.

This paper is an attempt to answer these questions in a quantitative manner. The theoretical approach on which this study is based falls within the framework of variationist sociolinguistics; and the method used is the comparative method. First, I perform systematic quantitative analyses on rather large corpora of spoken language from native, target and second language speakers. Then, I compare the patterns of variability in second language to those of native and target languages. In the comparisons I take into consideration *patterns* of variability not only the presence or absence of linguistic features and their frequency. My focus here is to compare and contrast the frequency of use and constraints on the variable contraction of auxiliary forms of *BE* (*am, is, are*) in English spoken by

Persian speakers with its equivalents in native Persian and target English. The results of the comparisons between L1, L2, and native English will help us determine how variable L2 is and what the sources of this variation are.

The corpora I examine consist of the speech of 12 proficient Persian learners of English (with a TOEFL score of 550 or more), 10 native speakers of English and 17 native speakers of Persian. The age range of the informants is 25-44; they are all educated (with university education), from approximately similar socio-economic backgrounds. There are two females in my L2 and English corpora, and there is only one female informant in the Persian corpus.

## 2. Auxiliaries in Persian

Persian is an SOV language, with auxiliaries following the verb. Because of the application of certain re-ordering rules (Karimi 1989), other word order patterns such as SVO, VSO, etc. may also occur in spoken Persian. This language enjoys a rich inflectional system, thus it allows null subjects. The only auxiliary verb in the language is the different forms of the auxiliary and/or copula verb *budan* 'to be' (Vahedi 1992). Its simple present as *astan* has a double series of forms, one contracted and the other non-contracted, as in 3, with examples from my Persian corpus in 4.

3. Non-contracted // contracted		Non-contracted // contracted
<i>Man hastam // man -am</i> I am		<i>Ma: hastim // ma-im</i> we are
<i>To hasti // to-i</i>	you are	<i>Shoma: ha sti d //</i>
<i>shoma-id</i> you are		
<i>U hast // un-e</i>	it is	<i>Unha: hastand // una:-an (d)</i>
they are		

4. a. *kare man inja: ru darma:n ast; montaha ru shimi darma:ni-e* (contracted) (Per. FS. lb. 400)  
 work my here on treatment is; but on chemo treatment-is  
 My work here is on therapy; it's, however, on chemo-therapy.
- b. *xod-e man nemune ba:rezi-am* (contracted) *ke 19 sa:legi, 20 sa:legi ezdeva:j kardam*  
 (Per. FS. lb. 237)

myself example clear-'m that 19 years, 20 years old married did.

I ('m) myself am a clear example that got married at 19, 20.

### 3. Variable contexts and exclusions

The variable contexts in this study, summarized below, include all declarative sentences in which present forms of *BE* were used or could have been used in English L1, English L2 and their equivalents in Persian.

	<u>English</u>	<u>L2</u>	<u>Persian</u>
AM/IS/ARE	full/contracted		full/contracted
	full/contracted		
(declarative)			

Following other studies of English (Labov 1969; Meechan 1996; Walker 1999), environments in which contraction cannot occur were not considered, see 5.

5. *Past forms of BE*      *There was one girl. (OSLA 241. Ia. 395)*
- BE after modals*      *He should be more respectful. (OSLA 241.Ia. 85)*
- Emphatic forms*      *Washington D.C. is very very fast. (OSLA 241. Ia. 192)*
- Yes/no questions*      *Is this person, like, mentally screwed up? (OSLA 241. Ia. 333)*
- Tag questions*      *That's about the fee, isn't it? (OSLA 103. Ib. 14) (From Meechan 1996)*
- Phrase final instances*      *You just get to know how the person is. (OSLA 241. Ib.8)*

I also excluded ambiguous temporal references, as in 6, since it is impossible to tell whether the deleted form would be *IS* or *WAS*, as well as the few tokens of *AIN'T*, as in 7.

6. *The day I graduated, probably ∅ the day my dad and mother retires. (OSLA 246. Ib. 156)*
7. *I ain't gonna tell you me secrets. (OSLA107. Ia. 382)*

In Persian, verbs having existential or emphatic meanings (such as 8 & 9) were categorically non-contracted, they were then excluded from the analyses.

8. *ala:n tu tehra:n mahalleh-ha: xeyli kam hast ke dast naxordeh. (Per. RF.IIb. 145)*  
*Now in Teheran neighborhood-PL very few exist that hand hit*  
*Now, there exist very few neighborhoods in Teheran that are intact.*
9. *keta:b-e xeyli xubi ham hast. (Per. PM.Ia. 330)*  
*book very good too is It is a very good book, too.*

A few tokens of deletion (10, 11) occurred in both native English and L2 data sets. Following Labov 1969 and Meechan 1996, these tokens of

zero variants were included with contracted variants in most of the analyses<sup>4</sup>.

10. She  $\emptyset$  not skinny but she was thinner than she is now (OSLA 285.Ib. 165)

11. It's on the spot memorizing, you  $\emptyset$  constantly memorizing. (OSLA 136.Ib. 156)

#### 4. Coding

All declarative structures in which forms of auxiliary *BE* were used were extracted from the three corpora representing native English, L2, and native Persian. Tokens were coded according to the following factors. Using Goldvarb 2.0 (Rand & Sankoff 1990), I performed separate analyses on different types of auxiliaries.

##### 4.1. Phonological environment<sup>5</sup>

Contraction involves the reduction and deletion of a vowel. It is then hypothesized (Labov 1969 and others) that the preceding and following phonological environments could influence auxiliary contraction/deletion. The following phonological environment was coded as consonant, vowel, and, pause,<sup>6</sup> for Persian as Persian sentences are verb-final. The preceding environment was coded as vowel or consonant for all contexts.

##### 4.2. Type of subject

Without exception, all previous variationist studies of auxiliary contraction in English have demonstrated the significant effects of the subject type. Labov (1969), McElhinny (1993), and Meechan (1996), among others, have found that preceding pronouns favor and preceding nouns strongly disfavor *BE* contraction in standard English. Poplack & Sankoff (1987) broke down subject type into different subcategories such as here/there, that/it/what, singular/plural,

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<sup>4</sup> The percentage of zero variants is small and our preliminary analyses with or without zero tokens did not show any difference in the behavior of the variants.

<sup>5</sup> Meechan (1996) has studied the effects of preceding and following stress and heaviness of the preceding subject (number of words) on auxiliary contraction. Walker (1999) also pays special attention to the prosodic features of the preceding and following phonological environments. Walker found such a strong interaction between preceding phonological, prosodic and grammatical contexts that he had to collapse these three factors together. Because of the presence of this interaction, and the fact that phonological conditioning is not as relevant to the nature of the underlying grammar as grammatical factors, I will not go into the details of the effects of phonological environment in this study.

<sup>6</sup> A few tokens of following pause in (English and L2) data sets were coded as non-count in the analyses because of their infrequent use.

personal pronouns, etc. and found differences in their effects on copula contraction/deletion in Samana English.

We initially coded subjects as singular/plural nominal, personal pronoun (*we, you, they, etc.*), existential (*here, there*), demonstrative (*these, those, them, this*), *wh-* pronoun, zero (for Persian), and *that/it/what*. Depending on the analyses and behavior of each subject type they were collapsed (and excluded in some cases, for reasons such as interaction etc.) into fewer groups of:

personal pronoun	personal pronoun	pronoun
other pronoun	other pronoun	NP
NP	NP	
<i>that/it/what</i>	Zero	
Zero		

There is disagreement among researchers as to whether or not tokens of *IT/WHAT/THAT* (which I coded as a separate factor) should be included in variable rule analysis (of *IS*), since such forms tend to be followed by invariably contracted forms of auxiliary (Meechan 1996; Walker 1999). Blake (1997), reviewing other studies that either included or excluded tokens of *IT/WHAT/THAT* subjects in their data concludes that these forms would be considered “don’t count” because of their categorical status. On the one hand, overall distribution of the data shows that the behavior of these items in the L2 contexts is different from native dialects of English (78% and 58% contraction in EL2 & LEL2 respectively vs. 88% in native English). On the other hand, as suggested by Meechan (1996), I excluded frozen (categorical) expressions like, ‘that’s right’, ‘it’s ok’, or ‘that’s it’ from my data. Therefore, following Poplack & Sankoff (1987), I included tokens of *IT/WHAT/THAT* subjects in my analyses. This will be elaborated more when reporting the results of variable rule analyses.

### 4.3. Following grammatical category

The effect of the following grammatical category on contraction/deletion of auxiliaries (*BE*, in particular) has received a great deal of attention since Labov (1969). In light of the claims made for the effects of following grammatical category (Labov 1972;

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McElhinny 1993; Meechan 1996; Poplack & Sankoff 1987; Poplack & Tagliamonte 1991; Walker 1999), I included this factor group in the current study, with the following factors:

- |                                                                                                                    |                                   |
|--------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 12. He is <i>acting</i> younger actually. (OSLA 268. Ia. 403)                                                      | Following V-ing                   |
| 13. Oh, my mom's <i>gonna</i> kill me. (OSLA 107. Ib. 298)                                                         | Following <i>gonna</i> (going to) |
| 14. He's much <i>happier</i> now. (OSLA 268. Ia. 404)                                                              | Following adjective <sup>7</sup>  |
| 15. The street itself isn't <i>repaired</i> quite as often as some of these city streets are.<br>(OSLA 133.Ia. 38) | Following participle              |
| 16. There's also <i>stories</i> about my grandfather. (OSLA 107. Ib. 136)                                          | Following NP                      |
| 17. Most of my work is <i>at the airport</i> . (OSLA 285. Ia. 323)                                                 | Following locative                |
| 18. That's <i>how they picked it up</i> . (OSLA 285. Ib. 379)                                                      | Following wh-clause               |

### 4.4. Underlying form of the auxiliary

Some previous research has examined the behavior of forms of *BE* (*AM*, *IS*, *ARE*) together (e.g., Poplack & Sankoff 1987), and other work has already shown that morpholexical properties of each underlying form of *BE* have different effects (Meechan 1996, Walker 1999). I analyze the behavior of each form separately. Type of verb was therefore coded as *AM*, *ARE*, or *IS*.

Since, on the one hand, my preliminary results indicated that some of the factors incorporated in the English contexts influence variability in Persian as well, and, on the other hand, incorporation of similar factors makes comparison of the behavior of the elements under study more reliable, these factors were also used in the analysis of variation in Persian. Factors specific to the Persian context are shown in 19.

a. Since Persian is a *pro-drop* language, a factor of zero subjects was added to the subject type.

b. As an SOV language, Persian auxiliary verbs are mostly sentence-final. The following grammatical category for Persian includes a zero factor as well. For this reason, following phonological environment for Persian includes pause as an additional factor.

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<sup>7</sup> Following adjectives and participles were combined as a single factor in some analyses because of their similar behavior; following NPs and wh-clauses were also collapsed for the same reason.

c. A preceding grammatical factor group, with factors of preceding NP, adjective, adverb, pronoun, negative, participle, and other, is added and applies to the Persian context only.

My general assumptions are that if the L2 is behaving like English with respect to the contraction of any of the auxiliary verbs, the factors introduced above should have similar effects both in English and L2. If it is behaving like Persian, the patterns of variation should mirror those of Persian. If it is found that the system of variability in L2 is different from both English and Persian, its independent status as an interlanguage will be quantitatively shown.

**5. Data and Results**

Table 1 shows that overall distribution of auxiliary verbs is almost identical in all contexts: *IS* with the most and *AM* with the least frequency of occurrence, but the most favorable form for contraction. 91% of tokens of *AM* in the English corpus are contracted (Figure 1); therefore, variable rule analysis was not performed. There is a correspondingly high percentage of contraction in L2 (86%), as well. In Persian, on the other hand, contraction and non-contraction are almost equal. There seems to be a gradual increase of contraction from Persian to English.

**Table 1.** Overall distribution of forms of auxiliary verbs in English, L2 and Persian.

Form of auxiliary		English		L2		Persian	
		N	%	N	%	N	%
<i>AM</i>	Full	16	9	21	14	8	42
	Contracted	157	90	130	84	11	58
	Zero	1	1	3	2	Ø	Ø
	<b>Total*</b>	174/8		154/8		19/1	
<i>IS</i>	Full	237	25	447	46	261	32
	Contracted	688	73	519	53	539	66
	Zero	19	2	9	1	20	2
	<b>Total</b>	944/44		975/52		820/48	
<i>ARE</i>	Full	132	34	266	79	35	47
	Contracted	234	60	51	15	39	53
	Zero	25	6	18	5	Ø	Ø
	<b>Total</b>	391/18		335/18		74/5	

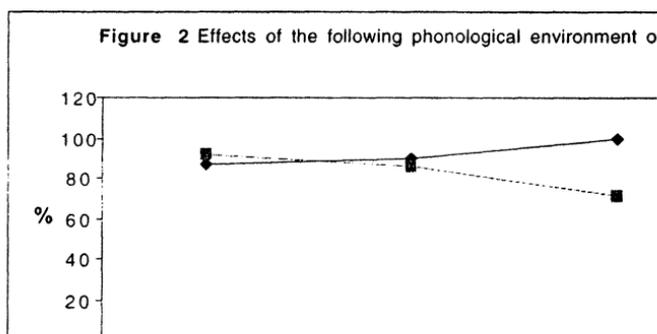
\*Total of each auxiliary. Percentages calculated out of the total number of auxiliaries

Since *AM* is always preceded by a personal pronoun which is a diphthong in English and L2 contexts, I report the effects of the

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following grammatical and phonological environments on the data. Persian is different in this regard since the subject may be either a personal pronoun or zero.

As shown in Figure 2, English and L2 do not differ concerning the effect of following phonological segments, while Persian behaves differently. The effects of the following grammatical items on AM-contraction are reported in Table 2.



**Table 2.** Effects of the following grammatical item on contraction : AM

	English		L2		Persian	
	N	%	N	%	N	%
Gonna	9	100	5	100	-----	-----
Locative	15	100	7	78	-----	-----
V+ing	49	92	61	87	-----	-----
Adjective	51	91	52	88	-----	-----
nominal	34	83	8	73	-----	-----
Zero	-----	-----	-----	-----	5	45
Other	-----	-----	-----	-----	6	75
<b>Total</b>	<b>158</b>	<b>91</b>	<b>133</b>	<b>86</b>	<b>11</b>	<b>58</b>

As seen, except for locatives, the percentages for the effect of the following grammatical category are rather similar in English contexts. Persian is totally different, since as an SOV language with auxiliary in sentence-final location, only some verbs are followed by re-ordered grammatical items or subordinate clauses. In these cases contraction is encouraged in Persian (75%). It is noteworthy that L2 learners did not have any null-subject sentences in their L2 speech.

As shown in figure 3, Persian and English have the same rates in contracting *IS*, while second language learners show an in-between behavior. Second language learners seem to have started from a second language specific rate of *IS*-contraction moving toward the target or their native language systems. If I stop at this level of analysis (rates of contraction) I can argue for both native language transfer effects on second language or ‘approximation’ of learners towards the target language norms. Only discovering the *patterns* of variation can help us choose among different options. Table 3 presents the results of the variable rule analysis. As seen in the table, *patterns* of contraction in second language speech are not very different from those of the native English. In both contexts subject type and preceding phonological environment are

**Table 3.** Contribution of factors selected as significant to the probability of contraction in English, L2, and Persian (THAT/IT/WHAT included): *IS*

	English 930	L2 968	Persian 683
<b>Total N</b>			
<b>Subject type</b>	<b>Prob.</b>	<b>Prob.</b>	<b>Prob.</b>
Pronoun	.61	.70	[.55]*
Noun	.11	.04	[.46]
Range	.50	.66	
<b>Preceding phonological environment</b>			
Consonant	.58	.59	.63
Vowel	.35	.27	.09
Range	.23	.32	.54
<b>Following phonological environment</b>			
Consonant	[.50]	[.50]	.52
Vowel	[.50]	[.49]	.32
Range			.20
<b>Following grammatical category</b>			
Gonna	.70	[.42]	[NA]
V-ing	.65	[.62]	[NA]
Locative	.61	[.39]	[NA]
Adjective	.54	[.51]	[NA]
Nominal	.46	[.50]	[.56]
Participle	.25	[.32]	[NA]
Range	.45		
<b>Preceding grammatical category**</b>			
Adjective			.65
Nominal			.50
Pronoun			.44
Other			.20
Range			.44

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\*In variable rule results, probabilities in square brackets, reported from the first stepping down run, were not selected as significant.

\*\* Not relevant to English contexts similar and/or selected factors

selected as significant, with similar constraint hierarchies. While in Persian, subject type was not selected, and probabilities for preceding phonology are significantly different. Non selection of the following phonological environment and similar constraint hierarchies for the following grammatical category in English and L2 contexts demonstrate their parallel behavior in this respect. Although I excluded frozen expressions, like *it's ok, that's alright*, etc., from the data, there still remained enough tokens of *THAT/WHAT/IT* to possibly affect the findings. I excluded tokens of *THAT/WHAT/IT* subjects because of the interaction between preceding phonological and grammatical environments.

Table 4 shows that second language learners parallel native English patterns of *IS*-contraction in both selection and hierarchy of constraints. The only difference in the two contexts is the difference in the ranges in the two phonological factors, (which might be due to the effects of the Persian phonological system or other articulatory factors), while for the following grammatical category even the ranges are so similar. In sum, although overall rate of *IS*-contraction indicated differences between L2 learners' and native/target language speakers' behavior, the results of variable rule analyses of the conditioning of variability proved otherwise. Factors that contribute significantly to the contraction of *IS* in L2 are similar to those that constrain *IS*-contraction in English, different from Persian. This implies that the operating system of the second language speech is not different from the one that works in the target language.

**Table 4.** Contribution of factors selected as significant to the probability of contraction in English and L2: (THAT/IT/WHAT excluded): IS

	English		L2	
Total N	456		448	
<b>Subject type</b>	<b>Prob.</b>		<b>Prob.</b>	
Pronoun	.58		.68	
Noun	.36		.28	
Range	.22		.40	
<b>Preceding phonological environment</b>				
Vowel	.59		.78	
Consonant		.30		.16
Range	.29		.62	
<b>Following grammatical category</b>				
V-ing	.73		.71	
Gonna	.68		.49	
Locative	.64		.62	
Adjective		.49		.51
Nominal	.44		.41	
Range	.29		.30	

Overall distribution of *ARE*, shown in figure 4, indicates that contraction is prevalent in English, and to some extent in Persian. According to the traditional contrastive analysis claims (e.g. Odlin 1989), L2 acquisition is eased when native and target languages share a similar property. But, as shown in the figure, despite similarity between Persian and English in the rate of *ARE*-contraction, the majority of L2 learners do not contract their *ARE* tokens. Have they created their own pattern of contraction in this context, different from Persian or native English? Or do they differ only in the rate of contraction and not in its patterns?

The results of variable rule analyses are presented in Table 5. L2 shows similarities to native English in the preceding phonological environment (same hierarchy) and some parallels in the following grammatical category, although it does not totally parallel the constraint hierarchy. In the two contexts of the following *gonna* and nominals where L2 constraint hierarchy is not parallel to English, higher probabilities in L2 indicate application of the contraction rule, although differently. Moreover its behavior in these contexts is quite different from Persian where following grammatical category was not selected (not relevant) and the hierarchy of factors in preceding phonological environment contrasts English hierarchy. According to

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the selection of the factor groups, the operative effect on contraction of *ARE* in L2 is following grammatical category, which is also selected in English. Grammatically speaking, L2 learners have acquired English patterns of variation. The similarity in the contribution of the phonological factors in English and L2 emphasizes the acquisition of these patterns.

Table 5. Contribution of factors selected as significant to the probability of contraction in English, L2, and Persian: *ARE*

Total N	English 390	L2 333	Persian 74
<b>Subject type</b>	<b>Prob.</b>	<b>Prob.</b>	<b>Prob.</b>
Pronoun	.55	[.50]	[.46]
Noun	.30	[.51]	[.57]
Range	.25		
<b>Preceding phonological environment</b>			
Vowel	.64	[.53]	.30
Consonant	.13	[.38]	.59
Range	.51		.19
<b>Following grammatical category*</b>			
V-ing	.69	.59	
Gonna	.61	.92	
Locative	.50	.52	
Adjective		.48	.41
Nominal	.28	.42	
Range	.41	.51	
<b>Following phonological environment</b>			
Consonant	.54	[.49]	[.64]
Vowel	.38	[.59]	[.28]
Pause		[.45]	
Range	.16		

\*As a SOV language only some re-ordered items follow Persian verbs. This factor group is therefore not relevant to Persian context.

Summarizing, if I consider frequency rates only, the sole conclusion I could draw is that L2 learners of this study have not acquired target language norms of contraction (no native-like acquisition), although they know how to use non-contracted *ARE* in grammatical sentences. The study of conditioning of contraction, however, clearly indicated that our proficient learners have acquired English patterns of contraction, although their rate of contraction is much lower than that of their English counterparts.

An issue that requires elaboration is the lower rate of *ARE*-contraction in L2 and the different behavior of L2 learners in following phonological vowel and preceding nominal subject contexts. This difference may be attributed to the difference in the articulation of [r] in Persian and English. English [r] involves both raising and retroflexion of the tongue tip (Lindau (1985), in Meechan (1996)). In Persian, on the other hand, [r] is a trilled phoneme articulated by the tip of the tongue in a flapped articulation against the alveolar ridge (Samareh 1985). This difference in the quality of the [r] in English and Persian has some effects (perhaps a preventive effect) on contraction of *ARE* before and after some phonological environments, the effects of which need further exploration.

## 6. Discussion

Concluding, whatever the frequency of contraction, results found for our advanced second language learners indicate that these learners have acquired the system of variability that operates in their target language. Of course, as advanced L2 speakers, they were expected to have acquired *syntactic* knowledge of auxiliaries in well-formed sentences. But, regarding the acquisition of patterns of variability, surface frequency rates observed in their speech suggested otherwise. However, studying patterns of variation revealed that L2 learners had acquired the variable rules of the target language.

For *AM* and *IS*, factor weights (percentages and probabilities) and constraint hierarchies showed a rather complete match between English and L2, both phonologically and grammatically. In the case of *ARE*, too, the constraint hierarchies were very similar.

The most revealing of all contexts are those where both native and target languages demonstrate variation but with different patterns of variability. We witnessed such contrasting patterns for the effect of phonological environment before *IS* and *ARE*, subject type on *ARE*-contraction, and the following grammatical category in all contexts. L2 learners were following the native English patterns of variation in all these contrasting sites. In sum, patterns of variation found in L2, in most cases, are parallel to the patterns that operate in native English.

There is no evidence that they are created by L2 learners or transferred from their native language.

What light do these findings shed on the questions I asked at the beginning of this paper? One question was whether Second Language Acquisition is exclusively seen as acquisition of categorical rules. The results of this study indicate that advanced second language learners have acquired not only the syntactic features of the target language, but also the patterns of their variable use, contrary to Gregg (1989) who asserts that variable patterns cannot be acquired at all. It was also shown that frequency of occurrence of a target language item in L2 is not evidence that an L2 learner has acquired socio/linguistic knowledge with respect to that certain item. Native-like second language acquisition involves acquisition of both target language syntactic and variable patterns; otherwise an L2 learner would sound like a foreigner regardless of his frequent grammatical production of the target language structures.

How is it possible to determine if the constraints on variability have been acquired? The comparative method used in this study and the results obtained from it demonstrate that variationist means and methods are not only applicable to the SLA situation (as in all other language contact situations (Poplack & Meechan 1998)) but can also quantitatively describe patterns of variability that operate in L2 speech. We saw that variable items and their conditioning factors are acquired by the advanced L2 learners; and that we may call native-like acquisition.

Finally, what are the sources of variation in second language speech? A simple answer is either the native or the target languages. Findings of this study evidenced that variation in advanced second language speech is, in most contexts, conditioned by similar factors, factor weights, and constraint hierarchies as those of the target language. This means that the target language is the source of variation in L2. Although my results revealed systematicity in all aspects of L2 speech studied here, we did not witness any L2-specific patterns of variation in any context. These results argue against transfer from L1 or independent creation of a system by the L2 speakers (Interlanguage).

Rather, they suggest that the constraints on variable features are as much a part of acquisition as the features themselves.

Moreover, several SLA scholars consider a major role for the frequency of items in L1 or the target language in their accounts of language transfer (e.g., Andersen 1983; Zobl 1980, 1983; or what Adamson & Regan (1991) call "frequency of input hypothesis"). If frequency of L1 items had an influence on language transfer, *IS* as the most frequent auxiliary of Persian (even more frequent than English) should affect patterns of variation in second language speech. This prediction is not born out. According to the findings of Tables 3 & 4, L2 learners follow the same patterns of variation used by native English speakers.

Another finding of this study was the relation between the overall distribution (frequency counts) of data and patterns of variability found through variable rule analysis. One of the main problems of the traditional contrastive analysis was that researchers following that tradition used surface language structures or, at most, their frequency of occurrences as the basis for their comparisons among languages. This did not lead to a thorough understanding of the phenomenon of cross-linguistic influence (Odlin 1989). Findings of the present study indicate that surface frequency counts are not revealing of the effects of native or target language features on second language acquisition. A clear example is the case of variable use of *ARE* (full/contracted). In Samar (2000) an identical behavior was found for both advanced and less proficient learners of English concerning their use of *ARE*, different from both Persian and native English. The variable rule results, on the contrary, demonstrated that patterns of variation for advanced learners are completely different from those of less proficient learners. Advanced L2 learners followed the same patterns of variation as those of native English (as seen in this paper), while less proficient L2 learners relied more on their native language patterns (less contraction), at the same time there were only a few ungrammatical uses of *ARE* in their speech. This shows that it is mostly the sociolinguistic knowledge of the language learners that is subject to change as their exposure to the target language is increased (see also Regan (1998)).

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**Reza Ghafar Samar**, University of Tarbiat Modarres  
e-mail: [rgsamar@hotmail.com](mailto:rgsamar@hotmail.com)