L2 Pronunciation Accuracy across Different Parts of Speech: The Case of Iranian L2 Learners

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ABSTRACT

This study investigates the effect of noun and verb categories on second language (L2) pronunciation of Iranian adult EFL learners. The participants were native speakers of Farsi and were at the intermediate level. They pronounced 20 sentences matched for the phonetic content and frequency and contained areas of pronunciation difficulty for EFL learners. Each participant's pronunciation was audiotaped and submitted to two raters so as to pinpoint mispronounced phonetic segments in the data. Results revealed that the participants had difficulty in pronouncing the phonemes non-existent in their L1. The most common errors were epenthesis, substitution errors, and vowel shortening/lengthening, and more pronunciation errors were produced in verbs than nouns. The findings may present to the EFL teachers a set of general ideas about the possible problems that L2 learners may encounter in pronunciation.

Keywords: *L2 Pronunciation, Part Of Speech, Epenthesis, Substitution, Iranian Learners*

1. Introduction

Over the past few decades, a wealth of studies has been conducted on the effect of different factors on children and adult's pronunciation. Some of them (e.g., Kweon & Kim, 2008; Ludington, 2015; Monaghan, Mattock, Davis, & Smith, 2015; Pae, 1993; Tomasello, 2002) addressed the pronunciation accuracy across different parts of speech. Amongst them, the attention has been mainly focused on the noun and verb categories. There is some evidence that supports the nature of grammatical class effects. First, neuropathological data suggest that the cerebral areas correlated to noun and verb processing are differentiated, and that different neuro-functional circuits are likely to process different classes of words (Crepaldi, et al., 2013). Second, the clinical contexts in which noun and verb deficit is observed are quite different: patients with reduced ability to process verbs are generally agrammatic while patients with reduced ability to process nouns are anomic without any problem with sentence construction (Adam, 2014).

The dissociation between grammatical categories in the context of first language (L1) acquisition has been under study with most of the literature supporting the earlier acquisition of nouns than verbs (e.g., Longobardi, Rossi-Arnaud, Spataro, Putnick, & Bornstein, 2015; Pae, 1993; Papailiou & Rescorla, 2011; Tomasello, 2002). Even in the case of verb-friendly languages like Kaluli, the same pattern was observed (Gentner, 1982). Despite the plethora of research in L1, in the context of second language (L2) acquisition, the literature is thin and the findings are inconclusive and tentative. In response to this gap in the literature, the present study aims to shed light on this issue and investigates the L2 pronunciation accuracy of Iranian adult EFL learners across noun and verb parts of speech.

2. Background

Most developmental studies on the acquisition of vocabulary have concentrated on L1. The majority of these studies (e.g., Longobardi, et al., 2015; Pae, 1993; Papailiou & Rescorla, 2011; Tomasello, 2002) have shown that, in the course of L1 acquisition, children tend to acquire nouns faster than verbs (the so-called "noun bias"). A study was carried out by Pae (1993), who made use of a checklist to assess the vocabularies of 90 monolingual children living in Seoul in the age range of 12 and 23 months. Throughout this study, she found

that nouns greatly outnumbered verbs. At 51-100 words, the children' productive vocabularies contained 50-60% nouns and about 5% verbs. A further study was conducted by Tomasello (2002) who investigated the topic of nominal predominance by teaching two-year-old chiledren six novel nouns, six novel verbs and six novel actions over a two-week period. The results showed that the children produced nouns more readily than verbs. Further, they learned the novel actions better than the other verb type. High performance was also reported when exposures were distributed over four days than when they were massed in one day.

Papailiou and Rescorla (2011) investigated the vocabulary size and vocabulary composition of Greek children through a language development survey and compared the patterns with those of the US children. Nouns were the largest category among the most frequent words in both samples. Frequencies of adjectives and verbs were comparable across languages, but Greek toddlers appeared to focus more than US toddlers on people words and closed-class words in their early vocabularies.

A study by Longobardi, et al. (2015) investigated relations between maternal and child language in some Italian mother-child dyads using samples of spontaneous production. Analysis showed that the child-directed speech of Italian mothers contained more verb than noun types. Nouns occurred more often than verbs in the utterance-final position, whereas verbs were located more frequently than nouns in utterance-initial and utterance-medial positions. Although the total frequency of verbs in the maternal speech was greater than that of nouns, the typical pattern of noun advantage was observed.

Most of the studies conducted so far on the frequency of word classes in children's early vocabularies focused on L1. Studies on how word class distinction influences language processing in adult's L2 learning are a few (e.g., Kweon & Kim, 2008; Ludington, 2015; Monaghan, et al., 2015). Kweon and Kim (2008) explored the effect of exposure and word class on the development of lexical and reading skills of Korean-speaking university students of intermediate level. After a five-week treatment during which the participants were engaged in extensive reading activities, they took the post-test and the delayed post-test. The pretest-post-test-delayed post-test comparison revealed the significant effects

of exposure and word class on retention of target words. It was found that students retained nouns easier than verbs and adjectives. The authors argued that "nouns are relatively simple entities in the mental lexicon, whereas verbs encode dependent word classes with directed connections to their noun arguments" (p. 208). Monaghan, et al. (2015) also compared learning of noun-object pairings, verb-motion pairings, and learning of both noun and verb pairings simultaneously, using an identical cross-situational learning task and the environment in each case. They found that nouns were learned faster than verbs, which is compatible with earlier observations of "noun bias".

Finally, Ludington (2015) assessed the evidence for a noun advantage in beginning L2 learners and compared the ostensive and inferential training method efficacies. Ostensive labeling is basically word-to-picture, decontextualized, paired associate learning while the inferential method requires learners to infer which of two words refers to which of two referents. It was found that the participants who received ostensible training recognized more words than those in the referential condition. However, regarding the word class effect, there was no indication that nouns or verbs were any easier than one other, even after adjusting for target meaning, utterance length, image quality, and other important stimulus features.

The line of research presented above provides evidence that verbs constitute a distinct category from nouns, and that the word's part of speech (i.e., separate categories for nouns and verbs) is one dimension along which the lexicon is organized. As a result, different processing mechanisms underlie different parts of speech.

3. Possible Explanations of Noun Predominance in Language Acquisition

There are some factors which appear to account for the predominance of nouns over verbs in the process of acquiring a language. Some of the most important factors include natural partitioning, frequency, word order, morphological transparency, and patterns of language teaching (Gentner, 1982). Detailed descriptions of each one follows.

Natural Partitioning: The idea that noun learning may generally outstrip verb learning may be interpreted as evidence that the concepts referred to by nouns are particularly accessible to infants. They are

different from, and more basic than, the concepts referred to by verbs or prepositions. This is a position with a long history called "natural partitioning" (Gentner & Boroditsky, 2001; Gentner, Clibanoff, & Angorro, 2011). It asserts that some collections of perceptual information are particularly easy to separate from the world stream, perhaps because they are more salient, or more stable, than the general stream of percepts. Then, children should learn the words for these concepts first, all else being equal, because half of the problem is already solved; it only remains to match up the concept with the appropriate part of the speech stream.

Frequency: According to the frequency argument, children learn nouns first because nouns are more frequent in the speech that they hear. This possible explanation runs into trouble immediately, because, at least in adult speech, the opposite frequency patterns occur. Adults use a large number of nouns, each fairly infrequently, and a smaller number of verbs, each much more frequently. In the class of most-frequent words spoken by adults, verbs and other predicate terms greatly outnumber nouns. A point worth noting here is that speech to young children differs rather strongly from speech among adults (MacDonald, 2012; Stole-Gammon, 2010). Perhaps, word frequency patterns in the speech to children differ from those of adult speech. For example, in the speech to children, adults might use a small number of nouns, each more frequently, than they do in the speech to other adults. Without precise descriptions of the parents' input to children, we cannot definitively rule out the possibility that these early nouns are simply the words spoken most frequently to children. According to Gentner (1982), there is a deeper problem, however. Even if we were to find that the nouns learned earliest were just those words used most frequently in motherese, we would not know the direction of causality: Do children learn certain kinds of words because their parents say them a lot, or do their parents say certain words because their children find them easy to understand? Thus, the issue of frequency is a complex one. Although exposure frequency probably plays some role, it is not an adequate explanation for the child's vocabulary acquisition.

Word Order: Another linguistic factor that might determine the ease of acquisition is the position of the word in the sentence. Based on cross-linguistic comparisons,

Slobin (2014) has postulated a number of operating principles that appear to govern children's language-learning strategies. One of these is that children pay attention to the ends of words. Items in the final position are more likely to be acquired early than items in an initial position. Suffixes are acquired earlier than prefixes, and postpositions earlier than prepositions. Extending this principle to sentences, this suggests that whichever form class tends to occur at the ends of sentences in a given language should have a linguistic advantage in the acquisition. In English, the normal word order is subject-verb-object, which leaves nouns at the end of the sentences. The noun-final order may be even more pronounced in some kinds of speech to children. The cross-linguistic patterns, however, tend to argue against the final position as a general explanation of the early acquisition of nominals. Some languages like Turkish, Japanese, Kaluli and German have verb-final word orders. If the final position was the determinant of the acquisition priority, verbs would be acquired first in these languages. Yet, evidence shows that nouns predominate over verbs in these languages (Gentner, 1982).

Morphological Transparency: Another possible non-conceptual explanation for the early acquisition of nouns relates to the differences in morphological transparency: the ease with which the root can be heard in the various uses of the word. For example, in English, noun inflections are restricted to the singular-plural distinction and the possessive; verb inflections, on the other hand, include tense, person, number, and some aspect inflections, such as the progressive. Thus, the child hears only the variants "dog" and "dogs" for a typical concrete noun, but may hear for a verb such variations as "kick", "kicked," "kicking", and "kicks". Perhaps, these variations in morphology make it more difficult for the child to isolate the root of the verb and thus make the match between the use of this root and the regular occurrence of some real-world event more difficult. There is no clear, agreed-on way to define morphological transparency. However, it seems reasonable that transparency is greater the lower the number and variety of inflections attached to root and the greater the regularity of expression of the root. Because verbs are more highly inflected than nouns in most languages, in a morphologically complex language, the verbs will be more complex morphologically than the nouns. If the later

acquisition of verbs in English and other analytic languages is due to their greater morphological complexity, then this acquisition difference should disappear in languages like Mandarin, which has so few inflections that verbs and nouns are nearly equivalent in morphological complexity. Yet studies done on Mandarin still show that nouns are predominant early forms (Gentner, 1982).

Patterns of Language Teaching: The other nonc-onceptual factor that could affect the acquisition is the cultural patterns of language teaching. Kaluli provides an interesting contrast here. According to Ochs and Schieffelin (2016), the Kaluli people have little interest in teaching children the names of objects or beings, other than relatives. Instead, mothers give their children extensive and explicit training in conversational interaction, like requesting, asserting rights, teasing, often by modeling appropriate remarks for the child. This situation contrasts strongly with that of the English samples, in which object naming–including volunteering, repeating, and asking for object names–is a standard way for adults to interact with children. Despite the pronounced lack of interest in teaching the object reference, this effect persists in Kaluli, and there is evidence that the nominal bias in early vocabularies does not result simply from parents' teaching strategies.

The line of research reviewed in the previous sections concentrated on the effect of word class in the context of L1 acquisition. The question that may arise here is whether the same patterns observed in L1 acquisition are consistent in the context of L2 learning. This study aims to answer the following questions:

(1) What are the frequent patterns of errors in Iranian EFL students' L2 pronunciation?
(2) What is the effect of noun and verb categories on Iranian EFL adult students' L2 pronunciation?

4. Methodology
4.1. Participants

The participants of this study were 65 students at a University in East Azarbaijan, Iran. They were both men and women (29 men and 36 women) ranging in age from 18 to 25 with the mean age of 22.6. Their L1 was Farsi. The mean length of time they have been studying English was eight years. Based on their institutional TOEFL scores and teacher ratings of oral skills, they were at an intermediate level of English proficiency. Their participation was voluntary. No participant had the experience of residence in English-speaking countries.

4.2. Procedure

The participants were tested in a laboratory provided with headphones so that no participant could hear the others. They were given the instructions necessary and required to look at the 20 sentences shown on the projector's screen for seven seconds and then to pronounce the sentences as clearly as possible. The amount of time given was enough for participants to see the word and to offer their pronunciations. Each participant's pronunciation was audiotaped and at the end of the experiment was submitted to the raters to pinpoint the mispronounced phonetic segments in the data. Two raters were employed. They were provided with some sheets that listed the 21 sentences and were instructed to mark on each sentence the phonetic segments that they perceived were produced differently from the correct pronunciation. They worked independently at their own pace and were allowed to replay the tape to ensure their assessment.

In order to simplify matters, the focus was on the articulation of vowels and consonants and the errors of stress and intonation were not accounted for. The list of sentences the participants were required to pronounce was chosen from earlier studies (e.g., Francis & Kucera, 1982; Mirhassani, 2003). The list included an equal number of verbs and nouns. The nouns and verbs contained specific consonants and vowels which have caused difficulties for Farsi speakers, according to previous literature (Mirhassani, 2003). An attempt was made to eliminate the effect of confounding variables and match the group of verbs and nouns for the phonetic content and frequency. The effect of the location of the selected words was also counterbalanced. It was not the case that the verbs were consistently in the middle of the sentences and the nouns were at the beginning and the end of the sentences; rather both verbs and nouns appeared equally often in a variety of positions.

5. Results and Discussion

The aim of this study was to locate the patterns of pronunciation errors of Iranian adult EFL learners and to explore whether these patterns had different frequencies for different word classes. It is a fact that many of EFL learners master the elements of language such as syntax, morphology, or even semantics to the level of almost "native-like" competence but often

fail to master phonology. Pronunciation is a major area of difficulty for most of the EFL learners. This difficulty is compounded when the learners' first and second languages vary to a great extent. The language of Iranian people is Farsi. Farsi and English, though belonging to the same language family (Indo-European), are very different in the alphabet, sound system, and syllable structure. Farsi alphabet is based on Arabic, which is a consonantal system and contains 32 letters, 23 consonants, and six vowels as well as two diphthongs and a total of 29 phonemes (Samareh, 2000). Whereas, the English alphabet is based on Latin which contains 26 letters, 24 consonants, 12 vowels, eight diphthongs, and a total of 44 phonemes (Sousa, 2005). To draw a comparison between the two languages, a notable point is that English has 15 more phonemes than Farsi.

In the present study, an analysis of errors in producing a list of consonants and vowel segments of selected sentences including nouns and verbs was carried out. The patterns of errors most noticeable in the analysis of data were the errors due to different syllable structures of Farsi and English, and the substitution errors. An explanation of each one is presented below.

5.1. Errors due to different syllable structures of Farsi and English

According to Windfuhr (1979), Farsi is characterized as a syllable-timed language. In other words, the syllables are said to occur at approximately regular intervals of time, and 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. Table 1 shows the syllable structures of two languages.

Table 1: Comparison of the Syllable Structures of English and Farsi

English		Farsi	
VC	am /æm/	CV	ma/ma/ meaning 'we'
VCC	ant /ænt/	CVC	toop/tup/ meaning 'ball'
VCCC	asks /æsks/	CVCC	mard/mærd/ meaning 'man'
CV	key /ki/		
CVC	seek /sik/		
CVCCC	pants /pænts/		
CVCC	lawns /lonz/		
CCV	tree /tri/		
CCVC	speak /spik/		
CCVCC	stamp /stæmp/		
CCVCCC	trends /trendz/		
CCCV	spree /spri/		
CCCVC	scram /skræm/		
CCCVCCC	strands /strændz/		
CCCVCCCC	Scrambles /skræmblz/		

A close look at the syllable structures presented in Table 1 reveals that unlike English, Farsi syllables cannot be initiated with vowels. Another interesting observation is that syllable-initial consonant clusters are impossible in Farsi; however, some consonant clusters can occur in both syllable-initial (onset) and syllable-final (coda) positions in English. In addition, syllable-final consonant clusters in Farsi normally take no more than two consonants in their structure, but in English, consonant clusters are not limited to two consonants. Thus, syllable structure of Farsi can only be presented as CV (C) (C), whereas the syllable structure of English can be presented as (C) (C) (C) V (C) (C) (C) (C) which shows that English permits up to three consonant clusters initially and four finally (Mirhassani, 2003). In contrast, the syllable structure of English includes at least 15 different types of syllables whereas there are only three syllable patterns in Farsi.

Given the difference in the number of syllable patterns between the two languages, problems may arise for Farsi speakers of English in pronunciation. These speakers often have difficulty producing English words with consonant clusters, which is caused by the fact that Farsi does not allow a word to begin with two consonants. Thus, initial consonant clusters in English words are broken up by vowel epenthesis (Akbari, 2013). Some of the errors made by the students in this study incurred due to this very fact. It is consistently observed that the epenthetic vowel is located before the /s/. Examples of errors are:

    spelt→ [espelt]
    speak→ [espeak]
    snake→ [esnake]

Other forms of epenthesis such as copy epenthesis and inserting "e" were also prevalent in the participants' productions. Examples of these errors include:

    drink→ [dirink]
    group→ [gurup]
    class→ [celas]

In Farsi, each consonant in the initial position is either preceded or followed by a vowel. Thus, it is not at all surprising that Farsi speakers of English have difficulties pronouncing English words with consonant clusters. The percentage of vowel and consonant errors in producing the words in each class category was obtained. Overall, data shows that the participants made more epenthesis in the case of verbs (22%) compared with nouns (16%).

5.2 Substitution Errors

In addition to epenthetic errors, the pattern of pronunciation errors frequently observed was substitution errors. The most common substitutions included /s/ for /θ/ and /d/ and /z/ for /ð/. The typical substitutions for /w/ was /v/. Shortening and

lengthening the vowels namely, /u/ for /u:/, /i/ for /i:/ and /a/ for /a:/ and vice versa were also categorized as substitution errors. These types of errors were present in comparable proportions in both nouns and verbs. Due to the fact that the two fricatives /θ/ and /ð/ do not exist in Farsi, Farsi speakers of English have difficulties in articulating these voiceless/voiced pair of fricatives. Therefore, they choose to substitute the nearest phonemes to them, /t/ and /d/ respectively. According to Mirhassani (2003), in some cases, it is seen that some Farsi speakers of English studying overseas or in Iran adopt /s/ for /θ/ and sometimes /z/ for /ð/, which causes problems and misunderstanding to native speakers of English. In this study, a number of students made this type of error in both verb and noun productions. Examples include:

thought → [sought]
teething → [teezing]
theme →[seme]
soothe →[sooz]
writhe→[reez]

Again, it was observed that from among the equal number of nouns and verbs having "th" phoneme, more errors in this area were produced in verbs (53%) than nouns (35%). The proportion of errors in verbs and noun was shown in Table 2.

The other pronunciation error was replacing "w" with "v", which comes from the lack of consonant "w" in Farsi. Thus, Farsi speakers of English usually replace the English vowel /w/ with /v/, which results in the production of an inaccurate word. For example, "west" and "vest" may be pronounced /vest/ in both cases by some Farsi speakers of English. Examples of this type of error made by participants include:

wine→ [vine]
wail → [vail]
wander→ [vander]

The effect of word class was not statistically significant for this type of error. From among the equal number of nouns and verbs having "w" phoneme, 32% and 30% replacements were observed in noun and verb pronunciations, respectively (see Table 2).

The fact that the Farsi vowel inventory is characterized as a typical six-vowel system suggests that Farsi speakers of English would have difficulties producing English vowels that do not exist in the Farsi vowel system. In addition, when we look at the vowel length differentials between the English and Farsi vowel system, we discover that as opposed to English, Farsi does not have any variation in vowel length in formal speech; however, in informal speech, when vowel length changes due to compensatory lengthening, the meaning of the word will not be affected. But in the case of English words like "live" and "leave", changing the length of the vowel leads to variations in meaning. In pronouncing the vowels non-existent in Farsi, shortening and lengthening the Farsi vowels on the part of EFL students are unavoidable. In this study, replacing /u/ for /u:/, /i/ for /i:/ and /a/ for /a:/ and vice versa was prevalent. Examples of shortening/lengthening vowels in this study include:

live→ [li:ve]
need→ [nid]
took→ [tu:k]
son → [sa:n]

The analysis revealed a significant interaction between vowel shortening / lengthening and word class. All in all, verb productions included 33% vowel shortening/lengthening, while, in noun productions, it was 19% (see Table 2).

Table 2: Distribution of Pronunciation Errors across Nouns and Verbs

Pronunciation errors	Verbs	Nouns
Epenthesis	22%	16%
Substitution of /s/ for /θ/ and /d/ and /z/ for /ð/	53%	35%
Substitution of /w/ for /v/	30%	32%
vowel shortening/lengthening	33%	19%

A cursory glance at substitution errors provides evidence that participants had a tendency to make errors with the vowels not existing in their sound inventory. They performed better with similar sounds, but in the case of dissimilar sounds, substituted the phonemes with another phoneme which was the nearest phoneme in the consonantal system of their L1. This is in accordance with the findings of some studies (Major & Kim, 1999; Singh, 2018) which found that L2 learners performed better with similar sounds to their L1. Nevertheless, this finding contradicts the findings of Hayes-Harb and Masuda (2008) and Pajak, Creel, and Levy (2016), as they provided evidence that similar sounds will result in misunderstanding more than dissimilar sounds.

6. Conclusion

This study investigated the effect of noun and verb parts of speech on L2 pronunciation of Iranian EFL learners. Analyses revealed that the most remarkable patterns of errors were (a) errors due to different syllable structures of English and Farsi leading to difficulty in articulating

words initiating or ending with consonant clusters and resulting in vowel epenthesis, and (b) substitution errors including replacing/s/ with /θ/, /z/ and /d/ with /ð/, /w/ with /v/ and vowel shortening/lengthening. Overall, it was found that participants produced a higher range of errors in producing verbs than nouns and performed better with L2 sounds existing in their L1.

It can be concluded that the phonological accuracy is influenced by the categorical organization of the lexicon. That is, the accuracy of production of phonetic segments is not constant across all word types; rather, speech production accuracy is influenced by word class categories in the lexicon. These findings corroborate the results of some of the previous studies Kweon & Kim, 2008; Ludington, 2015; Monaghan, et al., 2015; Platek, Keenan, & Shackelford, 2009). Ample evidence exists that different grammatical categories are represented in different parts of the brain, thus leading to differential access to and retrieval of these pieces of knowledge.

It is hoped that the findings of this research present to the EFL teachers, specifically Iranian EFL teachers, a set of general ideas about the possible problems that Farsi speakers of English may encounter in pronunciation. By teachers being aware of the likely problems to be incurred by the students' lack of familiarity with certain phonemes, they can, at least in part, overcome these problems by allowing more time to focus on phonemes that are likely to cause problems.

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Cite this article as: Fakher Ajabshir, Z. (2018). L2 Pronunciation Accuracy across Different Parts of Speech: The Case of Iranian L2 Learners. *International Journal of English Language & Translation Studies. 6(4). 141-148.*

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