Investigating Developmental Stages of Acquisition of Phonological Structures Among EFL Students of Eastern Mediterranean University: A Case Study

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Abstract. Doing a piece of research on acquisition of second language phonetics theoretically will justify the exact stages of language transfer and further predicts the existence of systematicity and difficulty order (Eckman, 2008). The present research is an attempt to provide new evidence for the efficacy of second language acquisition to developmental stages of acquisition of phonological structures among EFL students of Eastern Mediterranean University. Accordingly, three Iranian EFL learners, including two males and a female studying at Eastern Mediterranean University are purposefully selected on the basis of their performance in the interview. In continuation, interviews were conducted three times within a range of four months with the interval of at least one month. Each interview was sound-recorded and lasted from 15 to 30 minutes. Next the pools were transcribed according to the latest conventions. Further, to ensure the ethical aspects of the research, the participants were informed about the fact that their interviews were being sound recorded. At the end, it was concluded that it is not possible...
to monitor the developmental processes in the acquisition of phonological structures in a time span of four months and that determining a time scale for the acquisition stage was not possible.

**Keywords:** Phonological structures, developmental processes, second language acquisition

1. Introduction

Concerns have been made over how to evaluate the amount of countless variables in the process of second language acquisition. At the turn of the century, no viable scope of SLA is available despite the decades of research and relevant findings (Gas & Selinker, 2001). Traditional and current trends of the study both highlight the role of first language in the acquisition of second language among which theories of contrastive analysis error analysis (Corder, 1973) and language transfer are the most prominent ones.

Considering the different types of variations among learners and those existing in psychological Gardener (2007) and social status (Giles & Smith, 1979) of the learning environment, we can imagine how complicated the process might be. Therefore, any sort of research in the field has to be narrowed to an applicable research question. The following figure depicts the complexity of studying language learning processes.

![Figure 1](image)

**Figure 1.** First and second language acquisition in adults and children

One possible way to gain more understanding on how second language is acquired is to monitor their micro and macro linguistics developmental processes, hence, learner language. Apparently, before grasping command of second language, the learner goes through more periods than predicted which are beyond target and native language (Ellis,
The study of errors made by learners described two possible stages through which learners move from first to second language called inter-language and intra-language (Gas & Selinker, 2001). Studying these two phases clarify the fact that learners transfer or “carryover of learned behavior from one situation to another their learning is facilitated by positive evidence and interfered or blocked by negative” (Brown, 2004).

Evidence from studying interlanguage could be studied under systematic and non-systematic transfer. One of the initial steps was to deal with phonological processes in second language acquisition by doing research on interlanguage produced. A relevant question is to locate the learners’ acquisition of phonetic features by scanning their oral performance. Data elicited from a study by Schmidt (1977) showed how the pronunciation of /θ/ sound distinguishes between formal and informal context in which they are used, which proves the role of pragmatic knowledge parallel with linguistic competence.

Based on linguistic evidence, the distance between English and Persian lengthens the acquisition of second language phonetic structures due to L1 role. A rather relevant inquiry is to do a longitudinal study on a group of participants to screen their development in grasping phonetic features.

2. Purpose of the Study

The present research aims at giving a report on the developmental processes of interlanguage data gathered from three Iranian EFL learners at Eastern Mediterranean University. Accordingly, the following research questions are posed to fulfill the purposes of the current study:

1) How do Iranian EFL learners develop the acquisition of beginning and ending consonant clusters in their interlanguage?
2) How do Iranian EFL learners develop the acquisition of /θ/ and /w/ sound?
3) How do interlanguage processes in the speech of three Iranian EFL learners differ from expected SLA processes?
4) How do interlanguage processes in the speech of three Iranian EFL learners differ from expected first language acquisition processes?
3. Review of the Related Literature

Although the field of second language acquisition has largely advanced over the last few decades, the area of second language phonology has not been the focus of many studies, evolving from studies that investigated first language impact as a key description for L2 phonology to research that has revolved to universal principles driven by Universal Grammar.

The origins of the second language phonology studies can be traced to the contrastive analysis hypothesis posed by Lado (1957), which assumed that comparing the first language and the second language of a particular language user will enable the prediction of difficulties that will be encountered in the acquisition of the L2. In fact, all phonemes in second language will not be recognized properly if a certain phonemic difference does not exist in the first language.

What follows is an inclusive account of key theoretical frameworks entailed by major controversies regarding interlanguage phonetics, its development, and current studies.

3.1 Interlanguage transfer

The success of second language learner in producing correct sounds depends on their ability to separate their L2 utterance from their repertoire of L1 phonemes and allophones. This separation is crucial because two languages may contain sounds which seem to be the same but are produced by differing articulatory motions. They are therefore acoustically different and may be perceived to be divergent from the target by the listener.

It is a common remark that the more successful producers of near-native sounding pronunciation are rare, gifted or talented. Their success could be more reasonably attributed to their ability to disassociate phonological aspects of the L1 and L2 and thus minimize the transfer of phonological features from one language to the other.

Therefore, it can be assumed that bearing a resemblance to sounds found in the L1 seems to be a much simpler task. Additionally, fossilized errors, which are related to the negative transfer of first language to second language, may more easily be unlearnt when they are of the foreign rather than the familiar variety. For example, English/ð/ is totally foreign to Iranians often approximated by /z/.
3.2 Phonological universals

Phonological Universals are referred to as phonological forms which are common to all known languages. In English, for example, /s/ is unmarked and /θ/ is marked. Another notion, implicational universals, is that the presence of a marked segment /θ/ in a language implies the presence of an unmarked segment /s/, but the reverse is not true.

Many studies have been undertaken to determine the degree of difficulty in the acquisition of the various elements of L2 phonology based on markedness theory of universals. In all languages, there seems to be a universal preference for the open CV syllable. In a study that was conducted by Kozhevnikov and Chistovich (1965), it was revealed that in a stressful situation, speakers tended to revert to very simple CV patterns of pronunciation in their own native language. The languages involving distant contrasting sound systems might provide less successful opportunities to produce an acceptable phonetic target in second language.

Regarding syllabus patterns and the length of vowels, the influence of preceding and following constants depend meaningfully on vowel duration. English language has extremely exaggerated pre-consonantal vowel duration when proceeding voiced consonants (Carey, 2009).

3.2.1 Production and perception of non-native sequences

Ample evidence exists in SLA literature regarding the improvisations and lack of fabricated sequences and equal accuracy in L2 learners’ speech. Hansen (2004) carried out a study investigating the production of English codas by Vietnamese speakers. The results indicated that “while speakers had moderate trouble producing /s/ and /f/ in coda position, they were less accurate on /v/ and /l/, followed by /P/”.

Reviewing studies on non-native phonotactics, we discovered that researchers have relied mostly on markedness to justify their clarifications. In an insightful study, Carlisle (1998) found that Spanish speakers are more accurate when the beginning constant clusters include two consonants compared with the time when there are three (e.g., splat) concluding that “two-member sequences are less marked than three-member ones”.

3.2.2 Errors in the production of non-native sequences (repairs)

The awareness that is created by means of producing non-native sequences has proved to be effective since L2 speakers eventually tried to repair their deviant speech. As a result, several studies have shifted towards the nature of repairs (e.g. deletion, epenthesis, and segment change). Tarone (1983) reports that when non-native speakers produce a consonant cluster, they insert a vowel between the two consonants. Tarone (1983) has claimed that:

“The simple open syllable may be a universal articulatory and perceptual unit; that is, the articulators tend to operate in basic CV programs in all languages, and the various languages simply elaborate upon this program by adding various combinations of initial and final consonants.”

As such, it could be hypothesized that in interlanguage transfer, first languages with a greater tendency towards open syllables will have a greater degree of difficulty in assimilating the syllable structure of English. Persian has a greater tendency to stay away from open syllable structure than English. Consequently, the syllable structure of English is highly problematic for Iranian second language learners.

3.3 Research in interlanguage phonology

Among a host of unresolved controversies, we might only characterize interlanguage phonology by the process of transfer. Clearly, discussing transfer gets to be a little complicated when introducing the notion of markedness (Eckman, 2008) because of the similarity between SLA research and pidgin and creole studies.

Selinker (1980) considers three major weaknesses for SLA research on typological accounts of interlanguage phonology. One concerns the inadequacy in terms of nature of the L2 learners’ grammatical knowledge on the grounds of the assuming interlanguage as actual linguistic systems. She also refers to the linear structure conception of syllable structure as the second weak point of typological account of interlanguage phonology. It is further argued that hierarchical phonological representation of word-final consonants should be studied as a complimentary
contributing to the linear syllable structure. Furthermore, the lack of explanatory power is the theme of the third argument against typological categorization of interlanguage phonology research.

Another challenge that interlanguage phonology faces is the phonetic representation non-native speakers. The fact that the learners pose a single phonological representation of their first language and use new information to build on their L1 is still open to debate.

Apart from theoretical disputes, an urgent need is felt in the field for an incoming intervention at pedagogical level. To this end, Jenkins (1996) delineates pronunciation modification priorities that could help repair the errors which hinder communication.

3.3.1 Significant errors: current views
Apart from theoretical disputes, an urgent need is felt in the field for an incoming intervention at pedagogical level to assist learners to overcome the issue of intelligibility. To this end, Jenkins (1996) delineates pronunciation modification priorities adapted from Jenner’s (1989) list of priorities that could help learners repair the errors which hinder communication. Certainly, such modifications are based on native model that could be of great benefit to those learners who return home after studying abroad. Nine aspects were listed as follows:

a) Vowel quantity
Contrary to the common belief that the length of extra-long vowels vary from one NS to another, Jenkins (1996) maintains that the length contrast of vowels is the source of negative transfer leading to intelligibility problems.

b) Diphthongs
Research in the systems reveals the fact that NSs change the length of diphthongs without damaging the intelligibility while further investigations might shed more light on the issue.

c) Consonant conflations
Bearing in mind the fact that consonant variation can be more problematic than vowels (Gimson & Cruttenden, 1994), Jenkins (1996) comes up with an exception, substituting /θ/and/ð/. She believes that the above mentioned consonants do not significantly impede intelligibility.
d) Phonetic realizations
The majority of researchers on interlanguage phonology have a consensus on the fact that most NNSs transfer their phonetic realizations into L2 with no interference with intelligibility. They are mostly attributed to the characteristics of foreign accents.

e) Consonant cluster simplification
One of the most crucial negatively transferable phonetic features in L2 learning situations is the particular prevalence of open (CV) syllables. Learners’ strategy in production then is simply adding a vowel in between (epenthesis) or omission (consonant deletion). Jenkins (1996) believes that “where learners use the strategy of epenthesis, intelligibility is rarely effected, since listeners are able to recover the original form”.

f) Word stress
Being the reason for a majority of intelligibility issues between NS and NNS speakers, word stress seems to be more problematic for NS than NNS. As long as no pedagogical intervention is not in progress, we might be expecting such hindrance in communication most often.

g) Prominence and weak forms
Since NNS are not capable of recognizing reduced syllables, they might try to use reduction techniques based on their own experience leading to miscommunication on both sides. Thus, any modifications to assist learners to “attune their ears” to the weak forms can be of benefit (Carey, 2009).

h) Tone groups
Due to the marked contrast between English and other languages in terms of division in the stream of speech, the NNS listeners lag behind resulting in miscommunications and outing pauses in the wrong places.

i) Nuclear/contrastive stress but not tone
There is danger of shifting the prominence from content words to function words because of the difference in acquiring nucleus stress. Persian speakers tend to highlight the function words erroneously especially when they attempt to observe the syntactic and intonation factors.
3.4 Current perspectives and controversies
Making generalizations on the acquisition of the phonological processes is a source of many problematic issues. Osborne (2010) conducted a study to discover the acquisition process of rhetoric sounds among Brazilian students using Markedness Differential Hypothesis and the Structural Conformity Hypothesis. He found out that the MDH cannot encompass all the complexities found in the participants’ interlanguage phonological processes. The SCH also appears to fail to provide an explanation of the participants’ interlanguage processes, since generalizations found in children’s acquisition of the retroflex diverge from the processes identified in the participants’ interlanguage.

In another effort to correspond SLA processes with the stages of phonological development in Creole languages, Plag (2008) proved that there are traceable phases in interlanguage development in case of the encounter between native speakers and the users of Creole language. Moreover, the results indicated that interlanguage is a phenomenon which does not lend itself to much SLA research explanation.

It is also worth mentioning that performing qualitative experiments has been recently the subject of focus of many studies since frequency measurements of progressively gathered data are narrowed to numerical judgments (Eckman, 2011).

4. Methodology

4.1 Participants
Three Iranian EFL learners including two males and a female studying at Eastern Mediterranean University were purposefully selected. They were from fairly similar ages ranging from 21-25 and had almost the same English proficiency level background in terms of scoring. They attended preparatory school English courses while being interviewed for three pools of interlanguage studies. During this period of time, they did not receive any extracurricular English training.

4.2 Data collection procedures
Qualitative method of data sampling was administered to explain the limited number of participants. In order to access the sets of interlan-
guage, quantitative trend of the study was used. However, the procedures were only limited to describing and monitoring the phonological acquisition process.

Participants were interviewed three times within a range of four months with the interval of at least one month. Fifteen to 30 minute interviews were sound-recorded. Next, the pools were transcribed according to the latest conventions. To ensure the ethical aspects of the research, participants were informed about the fact that their interviews were being sound recorded. Finally, following the meticulous analysis of the interlanguage data, attempts were made to locate developmental phonological stages of the subjects’ progress each presented in separate tables.

5. Results and Discussions

Participant A

Participant A took part in research with a lot of enthusiasm. In three intervals of time, we managed to extract the interlanguage data. The developmental stages of his progress are shown in Table 1.

<table>
<thead>
<tr>
<th>Table 1: Phonological development in participant A interlanguage data</th>
</tr>
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<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>1. Beginning CC</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>2. Beginning CCC</td>
</tr>
<tr>
<td>3. Ending CCC</td>
</tr>
<tr>
<td>4. /w/ sound</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>5. /θ/ sound</td>
</tr>
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</table>

* * *
As it can be seen, in Table 1, five phonological variables were monitored including 1) beginning consonant clusters of CC, 2) beginning consonant clusters of CCC, 3) ending consonant clusters of CCC, 4)/w/sound, and 5)/θ/sound. The frequency statistics indicate that participants A did not show any sign of progress among the phonological processes involved. Even after receiving four months of English language training, he displayed a form of a plateau.

In some cases, he never tried any phonological structures. Yet, the very acceptable percentage of 57 might be a little misleading. However, it can be inferred that he had already acquired beginning consonant clusters of CC.

A close look at the data gathered from of participant A, who was at the point of very early stages of second language learning, produced /w/ sound for the first time immediately after the interviewer pronounced it correctly. It could be a sign of self-correction. If this is the case, we cannot claim that he has pidginized English.

**Participant B**

The second participant was a 21-year-old male student. After three shots of interviews, it was clear that he was getting actively involved in the process of second language learning. Moreover, it has to be noted that he had received four years of English training in Institute of Iran. His performance is displayed in Table 2.

**Table 2:** Phonological developments in participant B interlanguage data

<table>
<thead>
<tr>
<th>Incident</th>
<th>Correct</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Beginning CC</td>
<td>91%</td>
<td>92.66%</td>
</tr>
<tr>
<td>2. Beginning CCC</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>3. Ending CCC</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>4. /w/ sound</td>
<td>85.1%</td>
<td>93.36%</td>
</tr>
<tr>
<td>5. /θ/ sound</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>
The descriptive statistics indicate that participant B was aware of using beginning consonant clusters of CC and is totally aware of that (92.66%). The same was true about his application of /w/ sound with the high correct percentage (93.36%). A very specific point in participant B’s behavior was the fact that all errors related to the production of /w/ sound occurred while using it as the second consonant in the beginning clusters such as the word ”twenty” which he systematically produced them wrong. One hypothesis about the high percentage of correct /w/ sound by participant B was that his L1 was Kurdish, a language in which /w/ sound is used by the native speakers. Furthermore, none of the /θ/ sound cases produced by participant B were correct. It seems that exposure to four month instruction was not adequate for the acquisition of the /θ/ sound.

**Participant C**

In every term, participants C was a specific one, in her ability to communicate, in her desire to take part in the research, and finally in her not participating in the last shot of interview. Although two pools of interlanguage data were left, Case C was remarkable.

**Table 3: Phonological development in participant C interlanguage data**

<table>
<thead>
<tr>
<th></th>
<th>First pool</th>
<th>Second pool</th>
<th>Third pool</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>incident</td>
<td>correct</td>
<td>incident</td>
<td>correct</td>
</tr>
<tr>
<td>1. Beginning CC</td>
<td>48</td>
<td>26</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>54.16%</td>
<td>58.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Beginning CCC</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3. Ending CCC</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4. /w/ sound</td>
<td>44</td>
<td>1</td>
<td>27</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2.27%</td>
<td>0%</td>
<td>------------</td>
<td>---------</td>
</tr>
<tr>
<td>5. /θ/ sound</td>
<td>7</td>
<td>0</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0%</td>
<td>16.6%</td>
<td>------------</td>
<td>---------</td>
</tr>
</tbody>
</table>
Participants C was a very curious case of those learners who had achieved acceptable levels of proficiency but had not acquired differential for phonetic variations between two languages. A close look at her performance reveals some interesting points. First, as a very prominent feature, she could self-correct herself during a conversation. In other words, she could be grammatically and phonologically upgraded by listening to herself meaning that she had achieved post-systematic stage of second language acquisition in which the learner and judges the grammaticality of a structure by a discriminating it.

Another interesting point about participant C was her fluctuations in pronouncing and mispronouncing beginning consonant clusters which half of the time she was right and half of the time she was not. It remained a question whether this is a sign of her progress towards achieving newer stages or not.

6. Summary, Conclusion and Suggestions for Further Studies

The purpose of the study was to create a report on the developmental processes in the acquisition of phonological structures by three Iranian EFL learners at EMU. Four research questions were generated to explain developmental stages in SLA phonological acquisition and comparison with first language acquisition processes and describe the phases in acquiring /θ/ and /w/ sound.

Participants displayed various performances mainly because of their difference in proficiency levels which could be describe best in terms of Corder (1976) U-shaped learning. Participant A was and remained in pre-systematic stage where he didn’t use a lot of chunks and pre-fabricated structures. For him this meant a lot of adventures and new troubles.

Participant B proved to be higher in terms of proficiency, but systematic in making errors. He potentially achieved the emergent stage. No self-correction, which was a sign of his uncertainty about the phonology, was noticed. In numerous occasions, the role of L1 was noticed but the volume was not clear.

Participant C seems to be gaining more knowledge about the fact that language is rule governed. In fact, she proved to be in post-systematic
stage of second language acquisition where she self-corrected herself more frequently. There were even cases of re-structuring in which she learned how to pronounce a word she used to mispronounce and abandoned using the old form.

The result of the study showed that it is not possible to monitor the developmental processes in the acquisition of phonological structures in a time span of four month and determining a time scale for the acquisition stage was not possible.

It was made clear that there is a big difference between using acquired structures or learned ones. During the research, participants showed a higher degree of phonological accuracy while they were producing the learned structures. It seems that spontaneous production of new structures lowers their accuracy.

It was also proved that acquiring phonological structures strictly follow models of Difficulty Hierarchy Access where no item from the bottom of the list were used while the participants were not aware of the items on top. Nonetheless, the limited time span of the study (three recorded extraction within four month) might not be enough to observe such shifts in language behavior.

Regarding the research questions, it has to be noted that no prominent shift in the acquisition of phonological structures was observed. As for the constant clusters including more than two consonants, participants apparently used avoidance strategies in such a way that no case of their use was reported.

The results of the study could be applied in conducting further investigations to clarify more on the issues of the phonological structure acquisition. Insightful evidence could be provided if the speech of participants were analyzed in terms of syllabus reduction. Also, higher diversity in data elicitation processes could lead into new perspectives.

A very valuable piece of study could be performed on comparing and synchronizing the findings of this research with developmental stages in grammatical acquisition which was performed parallel into this study.
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