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The Effects of Consonant Phonemes' Position across the Word on Pronunciation Errors: An Empirical Study of Turkish EFL Learners

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ABSTRACT

Previous research on pronunciation errors observed that the most frequently mispronounced English phonemes are word-initial consonants. The findings of the current study invalidate those observations by presenting the data analysis of 40 Turkish EFL learners' speech samples, which illustrates that segmental speech errors are position-independent for the target phonemes of the research (/θ/, /ð/, /w/, /d/, /dʒ/). The target phonemes were selected from the consonants which are caused by orthographic interference. The data were obtained through 40 sentences which contained 3 sets of each phoneme in initial, medial and final positions. The participants were asked to read the sentences aloud while being audio-recorded in a quiet environment. Analysis of the speech was performed by two native English-speaking raters. Although this was a small-scale study, its findings will pave the way for next studies. Further research is required to confirm the generalizability of the findings.

INTRODUCTION

It stands to reason that phonological and orthographic domains interact with each other; since orthography is the inscribed form of speech, speakers should begin by decoding the written information in order to reach the phonological information (Dean & Kroff, 2017). Every language has different degrees of congruity between graphemes (written symbols) and phonemes (sounds). Languages like Turkish, Russian and Spanish are known to have a shallow orthography, i.e. there is a high correspondence between the written and spoken forms of the language whereas other languages, like English and French, have a deep orthography, i.e. there is not a one to one correspondence between a sound and its orthographic presentation (Dean & Kroff, 2017; Khalilzadeh, 2014).

Research has validated that second language pronunciation errors often originate from the characteristics of the first language. Communication efficiency and effectiveness depend on segmental as well as supra-segmental factors and segmental errors can impede communication (Neri et al., 2006). Phonological transfer between first and second languages can be in either way: on the occasion of transferring the phonological knowledge of first language to second language, it is called forward transfer while on the other occasion- from second language to first language- it is called reverse transfer. This study concentrates on the forward transfer of phonological knowledge that is the impact of Turkish orthography on English pronunciation.

Several studies have dealt with the pronunciation errors of Turkish EFL learners. Khalilzadeh (2014) conducted a contrastive analysis between Turkish and English language systems. His investigation encompassed three linguistic systems, namely syllable structures, consonants and vowels, of both languages. The findings of the study revealed that the pronunciation errors made by Turkish EFL learners lied in the difference in orthography and phonology of the two languages. Demircioğlu (2013) investigated the problems that Turkish EFL learners experience when pronouncing English diphthongs and suggested some guidelines to help teachers and students improve their pronunciation. Demirzen (2005) addressed the fossilization of the two sounds /v/ and /w/ and offered some methods to distinguish between the two sounds so as to overcome the problem. Hişmanoğlu (2007) explored another fossilized error that Turkish EFL learners have in pronouncing [ɔ:] and [əy]. The author has suggested Demirzen's Audio-articulation method to overcome this problem. In a more recent study published in 2009, Hişmanoğlu suggested the same method to fix the pronunciation issues of Turkish EFL learners with interdental phonemes /θ/ and /ð/. Ercan (2018) conducted a study in Cyprus on Turkish high school students at state schools. The findings demonstrated that the students had difficulty pronouncing consonants like /θ/, /ð/, /w/, /v/, /ŋ/ as well as certain vowels and diphthongs, such as /ɪ/, /ʊ/, /ɔ:/, /əʊ/, /aʊ/. The main origin of the problem was found to be first language interference, followed by insufficient exposure to the second language and proper training. The author has also pointed out the impact of English spelling on the pronunciation of the learners. Geylanioglu & Dikilitaş (2012) maintained that Turkish EFL learners have serious problems in pronunciation of /θ/, /ð/ and /ŋ/. The authors suggested that conceptualization theory can be applied in English classrooms to facilitate learning how to pronounce these phonemes.

Similar studies were carried out on speakers of other languages. For example, Alqunayeer (2016) attempted to identify Saudi Arabian university students' problematic areas in pronouncing the letter /g/ and the reasons behind it. The results of the data analysis demonstrated that the students were commonly weak in articulating soft "g" when it was trailed by the vowel "e" and "y"; almost half of the students articulated "g" before "e" wrongly, and furthermore half misspoke "g" when it was trailed by "y". In addition, the vast majority of the students misspoke hard "g" before the vowel "a". The findings demonstrated that the students confronted troubles in articulating the letter combination "gh". They neglected to articulate it accurately. Moreover, the two-fold "gg" in the word *suggest* were observed to be exceedingly misspoken by the students. The outcomes additionally showed that most students experienced issues in articulating "g" when it preceded syllable-final nasals. Hayes-Harb et al. (2017) scrutinized the effect of orthographic

input on English native speakers' acquisition of German final devoicing. To address the research purpose, an artificial lexicon was applied. The results of the study confirmed the strong impact of orthographic input on the development of second language lexicon and phonology. In a study on Spanish second language learners of English, Dean & Kroff (2017) administered eye tracking and visual world paradigm to investigate how speaking comprehension is influenced by orthographic and phonological mappings. The results of eye-tracking experiment indicated that for English-dominant speakers, competition had no effects in any of the trials whereas for Spanish-dominant speakers, presence of an orthographic-phonological distractor lowered target fixations.

In addition to the phonemes that cause problems for L2 learners' pronunciation improvement, it is also important to take language phonotactics into consideration. In other words, the position of the phoneme in the word can pose certain pronunciation problems, as well. Research has confirmed that consonants in onset position are more frequently prone to be mispronounced and hamper perception than consonants in other positions in the word (e.g. Bent et al., 2017; Cheng & Zhang, 2015; Nooteboom & Quené, 2015). An area of pronunciation research that has not received much attention in Turkish context. The current study is an effort to identify which phonemic position can raise more problem in pronouncing the target phonemes of the study. The following research questions address the aims of the study:

1. Is there any significant difference in pronunciation errors of consonant phonemes in relation to their position in a word? (segmental analysis for individual phonemes)

2. Which position-in-word category is the most problematic one for Turkish EFL learners to pronounce? (frequency analysis for three target positions)

METHODOLOGY

Participants

The participants of the study were 40 English language learners (23 Males and 17 Females) at a language school in Turkey. All the students were at Intermediate proficiency level (B1 and B2). Cambridge proficiency test was used to affirm their level. The age range of students was between 16-24 (mean 21.5 yr). None of the participants had hearing or speech impairment. The participation was voluntary and non-paid.

Data collection procedure

To determine if there was any variance between the percentage of errors made in pronouncing phonemes based on their position in the word, 40 sentences (drawn from Cambridge

Advanced Online Dictionary) were given to the students to read aloud. There were three sets of each phoneme in every word-position, which makes nine words containing each phoneme. The target sounds were chosen from the consonants that are commonly mispronounced by Turkish EFL learners due to orthographic interference. They were extracted from Khalilzadeh (2014) and included the following consonants: /θ/, /ð/, /w/, /d/, and /dz/. It must be noted here that the letter C in Turkish corresponds to /dz/ sound. Therefore, the words containing C phoneme are chosen to be tested. There were other sounds as well but the reason for choosing these sounds was that they can occur in all the three word-initial, within-word, and word-final positions without any change in their sounds. As an example, /r/ was not chosen because in within-word and word-final positions, it can be pronounced differently, either along American and British or due to the effect of adjacent sounds.

Speech Rating

Two native speakers of English language were employed to rate the recorded data. Both of the raters were experienced and certified English language teachers residing in Turkey. Brian was 55 from Canada and Jennifer was 30 years old from the USA. The aims of the study were thoroughly explained to the raters and rating sheets along with the audio files were given to them. The target phonemes contained in the 40 sentences were highlighted so that the raters only focus on the accuracy of them and ignore any other mispronunciations. The rating was done in a binary mode, in which the mispronounced phonemes were given the value '1' and the correct pronunciations were given the value '0'. To ensure the agreement between the raters' judgements, inter-rater reliability was computed. The Cronbach Alpha was reportedly .99, which is the highest possible consistency degree.

Analysis of Ratings

The next step was to receive all the rating sheets from the two raters in order to calculate the number of mispronunciations. To make sense out of the calculations, research questions guided the analysis procedure. The first research question (Is there any difference in pronunciation errors of consonant phonemes in relation to their position in a word?) addressed the segmental analysis of individual phonemes. In response to the first research question, the given values (0-1) were added separately for each phoneme based on its position in the word. The results are presented in three charts for each position.

Figure 1. demonstrates the frequency of the pronunciation errors for each target phoneme located at the beginning of the words. As mentioned before, there were three sets of each phoneme per position; therefore, each phoneme has been pronounced 120 times (the number of participants multiplied by 3). The most mispronounced phonemes in initial position are /ð/, /θ/ and /w/,

respectively. The errors made in pronouncing /d/ were insignificant and /dʒ/ was articulated correctly by all participants.

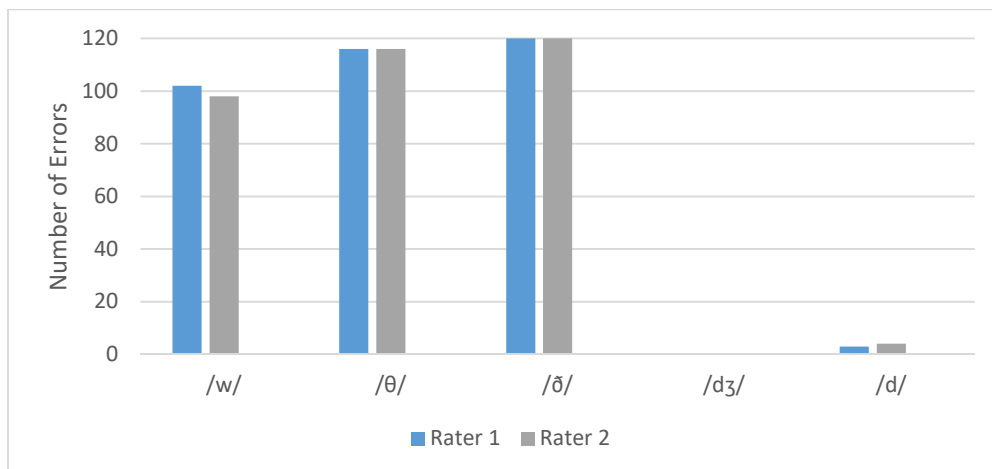


Figure 1. Error Frequency for Initial Phonemes

Analysis of the phonemes in medial position revealed that /θ/ and /ð/ are mispronounced approximately by all participants. Similar to initial phonemes, /w/ ranked next to be mispronounced. The visual representation of this can be viewed in Figure 2. below.

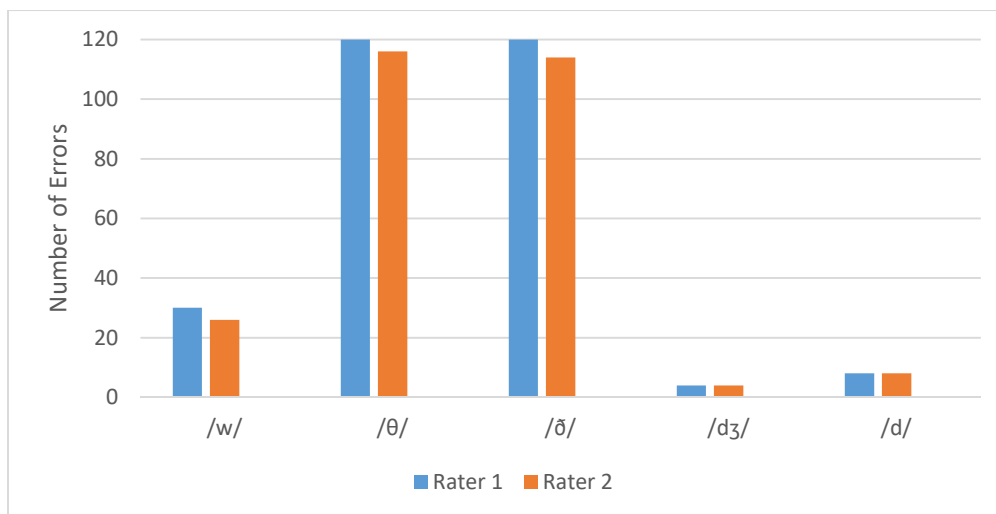


Figure 2. Error Frequency for Medial Phonemes

The analysis of the errors made in final phonemes yielded quite similar results for /θ/ and /ð/. However, the phoneme /d/ stood next in the number of mispronunciations with almost half of the words being pronounced incorrectly. See Figure 3. for more details.

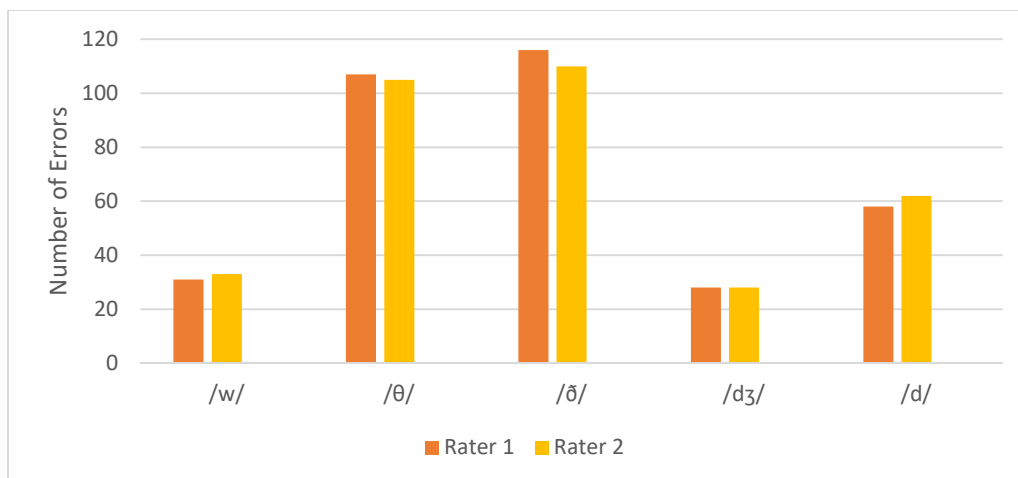


Figure 3. Error Frequency for Final Phonemes

The second research question (Which position-in-word category is the most problematic one for Turkish EFL learners to pronounce?) addressed the frequency analysis for three target positions. To answer this question, the average of the errors obtained from the two raters were calculated by summing the errors made in all the words based on their positions. Then, the total number was divided by 5 (the number of target phonemes) to achieve the average (see Figure 4.).

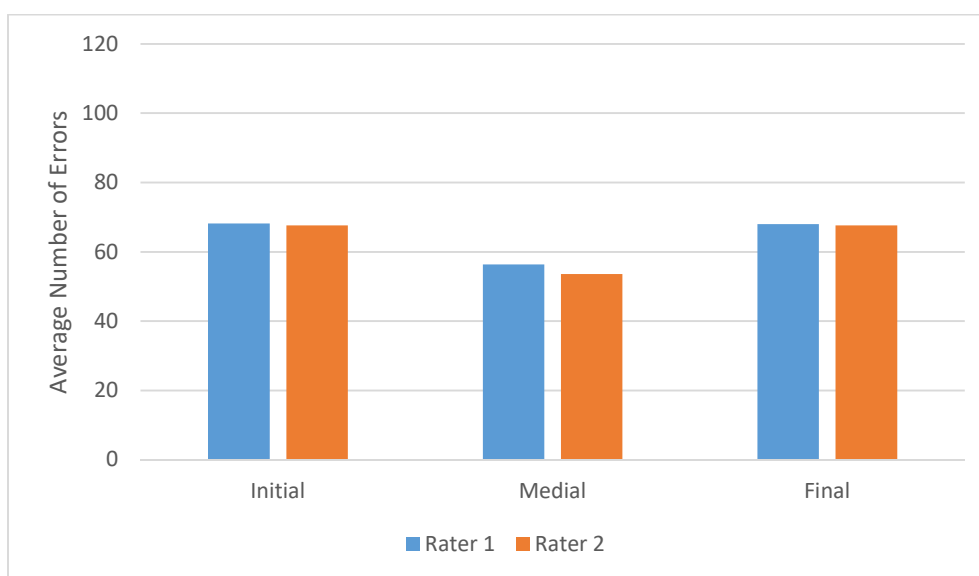


Figure 4. Frequency of errors in three target positions

As can be seen from the chart above, the average number of errors made in articulating initial phonemes is almost equal to those of final phonemes. Nonetheless, the number of mispronounced medial phonemes are relatively lower than the other two.

DISCUSSION AND CONCLUSIONS

The current study was an attempt to investigate if and how position of the phoneme across the word affects its pronunciation. The segmental analysis of the phonemes revealed that in all three positions, the two phonemes /θ/ and /ð/ had the highest number of mispronunciation. Experiencing difficulty in articulating interdental phonemes by Turkish EFL learners was dealt with before by Hişmanoğlu (2009). The author had suggested using audio-articulation method to fix this problem. Moreover, Ercan (2018) and Geylanioglu & Dikilitaş (2012) had also found these two phonemes as the major problematic areas of pronunciation for Turkish EFL learners. As far as this research is concerned, majority of the participants had difficulty pronouncing these two sounds and only a few demonstrated some degree of awareness when articulating the two sounds. This highlights the priority of teaching these phonemes by EFL teachers. After the two interdental sounds, /w/ was the next most mispronounced phoneme. This finding is in line with Ercan (2018) that has ranked /w/ as the third problematic sound for learners. Demirzen's (2015) study is the most comprehensive research on the distinction between /v/ and /w/ sound. The author refers to this issue as a fossilized problem, which means it demands more attention from behalf of practitioners in ELT.

The main problem that Turkish EFL learners have when pronouncing /d/ is that in certain situations, primarily in final consonants, they tend to pronounce it as /t/. This can hamper intelligibility in many contexts. For example, the minimal pairs 'bad'/ 'bat' and 'bed'/ 'bet' will be completely misunderstood if the final /d/ is articulated like /t/. According to Khalilzadeh (2014), the two sounds /t/ and /d/ are alveolar in English but dental in Turkish language so the difference in the place of articulation is the origin of mispronunciation. To the best of my knowledge, no study had investigated this phoneme in Turkish context before. Thus, this finding is of paramount importance, especially for EFL teachers who share the same mother tongue with the students. The reason lies in the fact that their ears are less sensitive to such slight nuances between the two sounds /t/ and /d/, particularly in the final position that is not stressed.

A further novel finding of the research relates to the results presented in Figure 5. As mentioned in Introduction, several studies have confirmed that consonants in onset position are more frequently prone to be mispronounced and hamper perception than consonants in other positions in the word (e.g. Cheng & Zhang, 2015; Nooteboom & Quené, 2015; Bent et al., 2017). Nonetheless, the results of the current study are not in full agreement with those studies. As can be seen in Figure 5., no significant difference is shown in the pronunciation of errors made in

initial and final positions. A more detailed look at the segmental error frequencies of each phoneme reveals that pronunciation errors of two interdental sounds /θ/ and /ð/ do not depend on the phonemic positions. For the sounds /d/ and /dʒ/, the situation is completely reversed: as the phonemes approach the end of the word, their pronunciation will be more problematic. The only sound that was in line with Cheng & Zhang (2015), Nootboom & Quené (2015) and Bent et al. (2017) appeared to be /w/ since there is a striking difference in the number of mispronounced words in initial phonemes and the other two positions.

Given the novel findings of the present research- that frequency of the target phonemes' pronunciation errors among the Turkish participants of the study was position-independent-, the results are contrary to Cheng & Zhang (2015), Nootboom & Quené (2015) and Bent et al. (2017) who declared that majority of pronunciation errors occur at initial phonemes. The author suggests that the applicability of the results be tested on other phonemes, as well. To confirm the findings, a diverse range of English language learners can be investigated by future researchers.

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