The impact of incidental learning on the acquisition of the sound /p/ by Arabic-speaking EFL learners

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Abstract

The effect of incidental learning on acquiring the pronunciation of the phoneme /p/ by Arabic-speaking English as foreign language learners was the focus of this study. This phoneme was chosen because it does not exist in the phonemic inventory of Arabic. Eighth graders studying at Al-Ethra'a Secondary School in Alkarak were tested on the pronunciation of words containing /p/ in context (pre-test). For three weeks, they were taught the primary stress of English words containing the target phoneme in their first or second syllable (treatment/incidental learning). The learning exercises consisted of explaining the stress rules and listening to native speakers uttering the words, followed by the participants' repetition. The students were then retested (post-test) to determine whether incidental learning had affected the participants' pronunciation of /p/. The results reveal that the treatment (incidental learning of /p/) had a positive impact on the participants' answers on the post-test.

Key words: phonology; Arabic-speaking EFL learners; incidental learning; second language acquisition.

1. Introduction

Since clear pronunciation is a requirement for all EFL (English as a foreign language) learners, pronunciation has received a great deal of attention from language acquisition researchers (see, for example, Nikbakht, 2010; Zarifi & Sayyadi 2015; Gilakjani, 2016). Such attention may be due to the impact of pronunciation on other parts of the language being learned. In this regard, Wong (1993) believes that improving pronunciation is essential because it influences other language skills, such as speaking. Competent pronunciation can effectively contribute to sophisticated speaking skills. Learners can thus

avoid pronunciation mistakes which might lead to disappointing or even humorous situations that their listeners cannot understand. In the Arab world, few pronounce English sounds correctly, particularly those not found in the Arabic system, such as /p/. Despite the importance of teaching pronunciation, unfortunately, it often seems to be neglected in favour of other aspects, such as grammar, for example, which may be viewed as more important.

Several studies have been conducted to measure the effect of incidental learning in the process of language acquisition, but its effect on pronunciation acquisition has yet to be widely examined. In particular, the impact of incidental learning on the pronunciation acquisition of Arabic-speaking EFL learners has not been investigated to the best of our knowledge. Thus, this study adds to the body of research in language acquisition incidental learning by testing its role in improving twenty Arabic-speaking EFL learners' pronunciation of /p/.

2. General background

2.1. *The importance of teaching pronunciation in the Arabic EFL context*

Teaching pronunciation of target language is an established necessity (Kissling, 2013; Khanbeiki & Abdolmanafi-Rokni, 2015). As Kelly (2002) states, this is because learners' pronunciation mistakes may cause communication issues, and thus teaching pronunciation contributes to better and more effective communication abilities (Gilakjani, 2016). Therefore, it is evident that clear pronunciation is indispensable for oral communicative competence (Morley, 1991), even if learners have an advanced vocabulary and perfect grammar (Yates & Zielinski, 2009; Gilakjani & Sabouri, 2016). Another issue was identified by Harmer (2001), who noted that a change in the uttered sounds of an English word could produce another word with a different meaning. He provided the example of the word *cat* /kæt/; if the sound /k/ is replaced with /b/, the word bat /bæt/ is produced.

In Arab society, speakers make pronunciation mistakes with similar sound substitutions, with potentially severe consequences. For instance, one can frequently hear Arabs say, '*I do not know where to bark*' /bɑː(r)k/, although they intended to say *park* /pɑː(r)k/. To achieve correct pronunciation, Harmer (2001) noted that a speaker who produces sounds accurately does so in terms of the manner and place of articulation; thus, he believes that teaching pronunciation is crucial for both learners' awareness of different sounds and the development of pronunciation.

In contrasting the pronunciation of Arabic EFL learners and English speakers, Al-Zoubi's study (2019) emphasized the importance of teaching pronunciation to the former. The study investigated the effect of Arabic speech sounds on learning English pronunciation. Moreover, the results showed that there are some similarities between the two languages' speech sounds, with each language having counterparts in the other. Such similarities can facilitate the process of English language learning. However, English language learners encounter many problems when learning pronunciation, especially with pronunciation of those speech sounds which have no counterpart in Arabic, including glottal stops. Accordingly, Al-Zoubi (2019) recommended increasing teacher awareness of the English phonetic system since it is the students' first source of input. With a strong foundation in phonetics and phonology, they can acquire correct pronunciation more easily. As the teacher's role has a significant influence on their students' pronunciation skills, some creative options can be used to help students overcome the pronunciation problems they face in EFL settings. Al-Ahdal (2020) used the audio-visual MP3 option (podcasts) for three months to examine if it can improve the students' pronunciation. The engaging activities used in the study included natural inhibition acts with the aim of examining their effectiveness. The results showed a remarkable improvement in the students' performance on pronunciation tests, supporting the effectiveness of such a method.

2.2. The pronunciation difficulties of Arabic-speaking EFL learners

Arabic-speaking EFL learners have difficulty pronouncing certain English sounds, possibly due to their large number of phonemes. Forty-four sounds, twenty-four consonants, and twenty vowels (six short vowels, six long vowels, and eight diphthongs) represent the twenty-six-letter English alphabet, causing difficulty for some Arab EFL learners (Ashour, 2017). In sum, these difficulties may arise because these learners lack opportunities to speak English as much as they need to acquire correct pronunciation (Yates & Zielinski, 2009) or due to the differences between English and Arabic phonological systems. In this respect, Altamimi (2015) assumes that the absence of the phonemes /p/, /ʒ/, /v/, /tʃ/, and /ŋ/ in the Arabic phonemic system causes difficulty for Arab EFL learners. Altamimi (2015) investigated the impact of a minimal pairs strategy on improving intermediate Arabic-speaking EFL learners' pronunciation and found that the most difficult phoneme to pronounce was /ŋ/ followed by /ʒ/, /p/, /v/, and /tʃ/ respectively. In another study on the pronunciation errors of Arab EFL learners, Ababneh (2018) considered the errors of two groups of Saudi students, one of which comprised English undergraduates. Regarding their consonant errors, it was obvious that both groups had difficulty with the sounds absent

from the Arabic system, especially /p/, for which there is no phonological equivalent in Arabic and which is sometimes pronounced /b/ or /f/. These findings align with those of Hago and Khan (2015), whose Saudi EFL learners wrongly pronounced /p/, /ʒ/, /ŋ/, /r/, /tʃ/, /t/, /v/, /k/, /l/, /d/ and [ɬ]. Dirou (2016) noted the differences between pronunciation of English sounds in various Arabic-speaking countries. For instance, in Egypt, /p/ is usually pronounced as /b/, and /ð/ as /s/ or /z/. However, in the Gulf, /ð/ is pronounced the same as in English since it is used in Gulf Arabic, but /v/ and /f/ are confused and usually mispronounced. Another difficulty concerns mispronouncing silent letters, such as the /s/ in 'island', because there are no silent letters in written Arabic. Moreover, Arabic speakers will add an extra short vowel /e/ sound before two or more consonants occurring together, saying 'espeak' instead of 'speak'.

2.3. Incidental learning

In the literature, incidental learning has been defined as the unintentional process of learning a language or other skill, such as reading, with the intent of learning something else (Schmidt, 1994; Altakhaineh & Ibrahim, 2019). Being unintentional, such learning may contribute to better language acquisition due to the fact that the acquisition process is a subconscious or unintentional one (Krashen, 1988). In this regard, Altakhaineh & Zibin (2017) showed how incidental learning affected the comprehension of English affixes in fifty Arabic-speaking EFL learners. The students were equally divided into two groups and exposed to pre- and post-test measures of their knowledge of English affixes. The post-test results showed that the group involved in semester-long learning activities was significantly impacted by incidental learning of affixes, unlike the control group.

Similarly, Song and Sardegna (2014) conducted a pre- and post-test investigation of whether enhanced extensive reading contributed to Korean EFL learners' incidental acquisition of English prepositions. Their study included twenty-four secondary school students; half received regular instruction, while the other half was exposed to enhanced extensive reading lessons along with regular instruction. It was established that enhanced reading played a significant role in the incidental acquisition of English prepositions. Song and Sardegna's results (2014) are similar to Mahdavi and Bagheri's findings (2014) since enhanced extensive reading was also found to be an effective influence on learners' incidental acquisition of phrasal verbs.

One way of teaching the language incidentally is through watching cartoons. Alghonaim (2020) conducted a study to investigate the impact of watching cartoons on the acquisition of pronunciation by an Arabic-speaking child named Anmar, who watched English TV cartoons in an EFL

setting. The study adopted a longitudinal research methodology to monitor the child's performance. It was found that Anmar acquired English pronunciation by watching TV cartoons and was able to overcome the pronunciation problems that many Arabic-speaking EFL learners experience. Thus, it was concluded that incidental learning has a positive effect on the acquisition of pronunciation.

2.4. *Anxiety in learning*

Anxiety is a feeling people encounter when they are stressed or feel unsafe, leading them to be anxious, uncomfortable, worried, and restless. There is a strong correlation between anxiety and learning. As a result, anxiety has attracted a lot of attention in education studies (Zheng, 2008) since it is one of many factors potentially affecting or obstructing second language acquisition (Ellis, 1985). Chen and Chang (2004) listed the reasons why some learners experience anxiety when learning a new language. They included having a history of problems in learning English, low grades, difficulties with traditional classroom learning, and developmental problems.

Hanifa (2018) asserted that anxiety is a pivotal factor in foreign language learning, specifically in the development of speaking. In this regard, foreign language anxiety refers to the fear, frustration, and disquiet associated with using or learning a foreign language (Horwitz et al, 1986). These negative feelings can contribute to a failure to become proficient in a foreign language and affect learning outcomes (Yalçın & İnceçay, 2014). Hu & Wang (2014) believe that anxiety in classrooms decreases the effectiveness of the learning process and significantly and negatively influences learners' confidence, competence, and academic performance. In Krashen's affective filter hypothesis (1988), anxiety may play a vital role in the process of second language acquisition, whereby this filter is a barrier to language input. In other words, when learners are highly anxious, the filter barrier will be high and prevent acquisition. Sulaiman and Altakhaineh (2021) agree that anxiety is common in English classrooms and negatively affects language learning. Using the Foreign Language Classroom Anxiety Scale (FLCAS), the researchers explored possible reasons for the anxiety of Jordanian EFL students at the University of Jordan. It was found that their anxiety over speaking was mainly caused by communication apprehension, low self-assessment of language proficiency, teacher-learner interaction, lack of vocabulary and knowledge of language rules, and fear of failing or being negatively assessed. To reduce anxiety in the classroom, educators should create a positive learning environment to help students excel in their performance (Hanifa, 2018).

Based on the literature, it is evident that developing good pronunciation is an indispensable component of the target language, with many studies covering pronunciation in terms of its importance and difficulties. However, to our knowledge, no study has investigated the impact of incidental learning on the acquisition of pronunciation by Arabic-speaking EFL learners. The current study thus aims to add new knowledge using the following research questions:

1. To what extent do twenty Arabic-speaking EFL eighth-grade pupils correctly pronounce the English sound /p/?
2. Does engaging in stress teaching activities by repeating after a native speaker, enhance the pupils' pronunciation skills of the English sound /p/?

3. Methodology

3.1. *Participants*

The participants were twenty Arabic-speaking EFL eighth-grade learners at Al-Ethra'a Secondary School in Alkarak, Jordan. According to their teacher, most participants had great difficulty in producing the phoneme /p/ properly because this sound is not part of their phonemic inventory. The twenty participants' proficiency level was pre-intermediate, and they were taught by the same teacher. Their level was determined based on a placement test administered at the beginning of the academic year. Since this study focuses on pronunciation, the participants were engaged in learning activities aimed at improving their pronunciation, such as introducing them to minimal pairs, dealing with syllable stress, and using tongue twisters (see Section 3.2).

3.2. *Procedure*

The participants in the study group were taught the primary stress of English words in which the sound /p/ appears in the first or second syllable. They were provided with examples of words that contained /p/ sound in the first syllable, such as *pen, price, peace,* and *please,* or in the second syllable, as in *apple, top, cup,* and *copy.* They were also engaged in activities explaining stress rules. The participants were required to listen to native speakers uttering the target words 3–4 times and then repeat the words. Audio clips were designed using *Hearling*, a website used to turn texts into speech, producing high-quality audio clips containing the target words. Additionally, the

activities involved listening comprehension tasks in which students listened to dialogues of native speakers, which included words containing /p/ in the first or second syllable. The students were then asked to do activities in relation to the information included in the native speakers' dialogues. The activities included a multiple choice written quiz designed to check their understanding of syllable structure in English, focusing on the first and the second syllables, and an oral quiz to examine their pronunciation of /p/. Accordingly, students were not acquainted with the process of learning the pronunciation of /p/, as the major aim of this study was to measure the effectiveness of incidental learning on the acquisition of pronunciation, i.e., they learned without knowing what they were being taught. The reason for administering these exercises was to enhance the students' pronunciation of /p/ without overtly telling them so. It was assumed that if the students had been aware, they would have been anxious, and the outcomes would have been affected. After three weeks of these activities, a post-test was conducted to determine whether incidental learning had influenced the participants' pronunciation of /p/. The items on the post-test were new to the group, i.e., they had not been used in the activities of the treatment group (see Table 1). To increase the objectivity of the results, the researchers asked another EFL teacher to listen to recordings to evaluate the students' pronunciation of the /p/ sound. The teacher listened to the recordings and decided whether the tokens, i.e., the /p/ sound in the first and second syllables, were pronounced as expected (aspirated) based on their phonological knowledge. Their judgment regarding the pronunciation of the target sound was 90% in accordance with the researchers' judgment.

3.3. *Statistical analysis*

A paired sample t-test was employed to determine whether there was a statistically significant relationship between the participants' scores on the pre- and post-test of the treatment group. The students' results in the pre-test were compared to their results in the post-test to determine whether the differences between the answers of the treatment group on the pre- and post-test were statistically significant (Zibin & Altakhaineh, 2019).

4. Results and discussion

The first research question dealt with the extent to which the exercises improved the students' pronunciation of /p/. The treatment group was tested twice using the items in Table 1, and the results of both tests were recorded.

Table 1: The items on the post-test

/p/	/p-p/	/p/	/p-p/
peaceful	puppet	pancake	grumpy
pudding	people	picnic	zipper
penholder	teapot	pikestaffs	mopping
perfect	diaper	pinegrasses	dropper
painless	shampoo	purse	hippo

Tables 2 and 3 show the total number of correct answers of the treatment group on the pre- and post-tests. It can be seen that the number of correct answers varied for the words including /p/ in the first syllable and the second syllable.

The total number of correct answers provided by the study group on the pre-test shows that /p/ was correctly pronounced 75 times when it appears in the first syllable and 40 times in the second syllable. However, in the post-test, the same group pronounced correctly /p/ in the first and second syllables 146 and 127 times, respectively. Such results indicate that the improvement in the pronunciation of /p/in both the first and second syllables is noticeable. Tables 2 and 3 thus highlight the noticeable change in the group's performance before and after the experiment, suggesting that it had led to positive results.

Table 2: The correct answers of the treatment group on the pre-test

/p/ first syllable	correct answers	/p/ second syllable	correct answers
peaceful	8	puppet	4
pudding	9	people	7
penholders	5	teapot	5
perfect	11	diaper	4
painless	9	shampoo	7
pancake	10	grumpy	3
picnic	9	zipper	2
pikestaffs	4	mopping	3
pinegrass	4	dropper	2
purse	6	hippo	3
Total	**75**	**Total**	**40**

Table 3: The correct answers of the treatment group on the post-test

/p/ first syllable	correct answers	/p/ second syllable	correct answers
peaceful	15	puppet	14
pudding	16	people	15
penholders	11	teapot	14
perfect	19	diaper	11
painless	16	shampoo	17
pancake	18	grumpy	10
picnic	17	zipper	8
pikestaffs	9	mopping	12
pinegrass	10	dropper	8
purse	15	hippo	16
Total	**146**	**Total**	**127**

A paired sample *t*-test was conducted to determine whether the differences in the two tests' results were statistically significant. The results are presented in Table 4.

Table 4: Paired sample *t*-test

		Paired Differences				t	df	Sig. (2-tailed)
		Mean	Std. Error of difference	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1	/p/ first syllable pre — /p/ second syllable pre	3.50	0.833	1.61	5.39	4.200	9	0.0023
Pair 2	/p/ first syllable pre — /p/ first syllable post	-7.10	0.379	-7.96	-6.24	18.75	9	0.0001
Pair 3	/p/ second syllable pre — /p/ second syllable post	-8.50	0.687	-10.05	-6.95	12.36	9	0.0001
Pair 4	/p/ first syllable post — /p/ second syllable post	2.10	1.456	-1.19	5.39	1.441	9	0.1832

Pair 1 in Table 4 shows that the difference between /p/ in the first syllable and /p/ in the second syllable was statistically significant (0.0023<0.05), indicating that students' performance in words containing /p/ in the first syllable was better than in words containing /p/ in the second syllable. A possible explanation for such a result is that students' awareness of the first syllable could be greater than that of the second. Hearing the sound at the beginning of the word is easier and clearer than hearing it in the middle, surrounded by other sounds.

Pairs 2 and 3 in Table 4 show a statistically significant difference (0.0001<0.05). The difference reflects that incidental learning was vital in improving students' pronunciation skills regarding /p/, whether in the first or the second syllable. After acquiring the sounds incidentally, i.e., the sound /p/ in the first and the second syllables improved considerably, to the degree that there was no more statistically significant difference (0.1832>0.05) between them. The result indicates that incidental learning is effective in teaching pronunciation, possibly because it minimizes language anxiety. In other words, students' ability to learn improves when they are relaxed and confident.

In Horwitz et al.'s (1986) theory of foreign language anxiety (FLA), anxiety may be responsible for students' negative attitudes towards language learning. Moreover, they also offered a measuring instrument, the Foreign Language Classroom Anxiety Scale (FLCAS). Horwitz et al. (1986) used the FLCAS and found a significant moderate negative correlation between foreign language anxiety and students' final grades, indicating that students with high levels of foreign language anxiety received low grades. Accordingly, when students did not feel self-conscious about their pronunciation, i.e., that it is being tested and observed, they would speak normally, leading to authentic results. However, MacIntyre et al. (1997) found a negative relationship between students' self-ratings of their language proficiency and their level of language anxiety, whereby the lower the language proficiency, the higher the level of language anxiety.

This result aligns with that of Sulaiman and Altakhaineh (2021), who recommended that teachers create a friendly and less stressful learning environment where learners can participate confidently. Horwitz et al. (1986) suggested that students should not feel pressured to produce the best they can. Moreover, teachers need to create a positive environment (optimal motivation) in the classroom by using methods such as engaging in work projects, creating a collaborative atmosphere, establishing an excellent teacher-student relation, providing them with indirect correction, and using humour, eye contact and praising (Tsiplakides & Keramida, 2019) to help students overcome their speaking anxiety. The teacher's role in controlling language anxiety (speaking anxiety) is key, as teachers can not only help stu-

dents apply strategies of anxiety-coping and create motivational environments, they can use their role to understand why students become anxious (Ansari, 2015).

By referring to Tables 2 and 3, it is worth pointing out that /p/ in particular words improved more than in others. For example, *peaceful* and *picnic* developed much more than *penholders* and *pikestaffs*. The reason behind such diversity is that some words like *pen* and *pike* are part of a minimal pair, a set of words that differ by one phoneme, leading to a change in meaning (Gierut, 2001). The test words that included a /p/ sound but had no minimal pair, such as *peaceful* and *picnic*, improved more than those with minimal pairs, such as *pen* and *ben*, and *pike* and *bike*. It can be suggested that acquiring a single word with no minimal pair is easier than acquiring a word that can be used to form a minimal pair. The students might confuse *pen* with *ben* or *pike* with *bike* because all these words exist in English. However, this will not happen in the case of *peace* and *picnic* because *beace* and *bicnic* are not part of the English language lexical inventory. To conclude, when a word is part of a minimal pair, it can be easily confused with the other word, which can negatively affect the acquisition of pronunciation.

Acquiring aspiration is indispensable in initial positions ({p t k} → [+aspirated] / σ[_) (Vaux, 2002), and it provides evidence for the proper acquisition of such sounds. Therefore, it can be surmised that the study sample participants probably acquired the initial /p/ sound because it was aspirated. Acquiring the /p/ sound by listening to native speakers (incidentally) can be regarded as an effective way to acquire target pronunciation.

The results showed that incidental learning has a positive effect on the acquisition of the /p/ sound for various reasons. These results are in line with those of Alghonaim (2020) since both confirmed the effectiveness of incidental learning. Moreover, the results are also in agreement with those reported by Altakhaineh and Zibin (2017) on the effect of incidental learning as regards comprehending English affixes by Arabic-speaking EFL learners. However, note that teaching any skill incidentally cannot be applied easily because it needs a well-prepared teacher who is well-acquainted with the concept of incidental learning and how it can be applied.

5. Conclusion

The study examined pronunciation of the phoneme /p/ by twenty Arabic-speaking EFL learners to determine the effect of incidental learning on the acquisition of this phoneme. A paired sample *t*-test was used to compare pronunciation of /p/ in the first or the second syllable before and after the procedure. All the participants were engaged in activities that contained an

explanation of stress rules, were exposed to native speakers uttering a set of words containing /p/ sounds, and were asked to repeat the words afterwards. Participants were tested twice. First, they participated in a pre-test which contained words with the /p/ phoneme. Then they were taught the primary stress of words containing the target phoneme in the first and/or second syllables for three weeks. Afterwards, they were re-tested to determine whether incidental learning had a positive effect on the participants' pronunciation of this phoneme. The results show that the performance of the study group noticeably improved on the post-test for both /p/ in the first syllable and /p/ in the second syllable, indicating that incidental learning played a major role in achieving a remarkable improvement in the students' pronunciation of the /p/ sound.

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