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THE EFFECT OF EARLY AND HEAVY EXPOSURE TO A SECOND LANGUAGE ON THE RECOGNITION OF CERTAIN ARABIC PHONEMES: A CASE STUDY

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Abstract

The main concern of this study is to examine the influence of early and heavy exposure to a second language (English) on the recognition of Arabic emphatic phonemes /sˤ/, /dˤ/, /tˤ/, /ðˤ/. Data for this study were collected from 59 participants, whose ages ranged from eight to 10. They were distributed into two groups: monolinguals and bilinguals. They were asked to spell a passage in Arabic that included words with emphatic phonemes, in order to see if the lack of the emphatic phonemes /sˤ/, /dˤ/, /tˤ/, /ðˤ/ in English, but the presence of their soft pairs /s/, /d/, /t/, /ð/, affected the Arabic spelling accuracy of the participants in the study who are heavily exposed to English. The results of this research suggest that most of these children tended to replace the emphatic phonemes with their non-emphatic counterparts as a result of their heavy and early exposure to English, compared to their exposure to their mother tongue language (Arabic). In addition, the diglossic nature of Arabic also influenced the accuracy of their spelling of the emphatic phonemes.

Keywords: emphatic phonemes, second language acquisition, cross-linguistic transfer, multi-competence

Introduction

Learning a second language, especially English has become a focus of the Saudi education system due to market needs and global demands, as English is a world language for business, science and technology. Accordingly, English is a compulsory subject from grade six in public schools in Saudi Arabia; however, in private schools,

English is taught as a second language from kindergarten. Private universities also provide all major programmes in English. In an initiative to improve the quality of education, King Abdullah (may he rest in peace) started a scholarship programme in 2005 to enable students to attend the best universities worldwide, including all forms of degrees, from bachelor's to doctorates. Consequently, the number of Saudi students studying abroad during the past decade has increased dramatically and is now estimated to be more than 150,000 male and female students. Furthermore, this number does not include the scholarships offered by Saudi universities to their faculty members. Most of these students have their families living with them while studying abroad, leading to an increasing number of children who are exposed to learning English in schools prior to mastering literary Arabic. Most learn the standard form of Arabic only once a week in a Saudi school established by the Saudi Embassy in order to maintain the Arabic language. However, Arabic is considered a diglossic language, due to the linguistic distance between the written and the spoken language (Ayari, 1996; Ferguson, 1959). In fact, all variations related to the various spoken dialects are different from Modern Standard Arabic (MSA), which is characterised by specific grammatical rules with specific semantic and phonological systems differentiated from all the spoken variations (Taha, 2013).

Typically, the first time that Arabic-speaking children are exposed to the standard form of Arabic phonemes is when they join formal education, normally at the age of four. Hence, they find themselves obliged to learn to read and write in a language which is different from the one they use at home. Although literary Arabic is used in formal and media contexts, it remains a second language in the cognitive system (Ibrahim and Aharon-Peretz, 2005). Ayari (1996) comments that, unlike English readers who can rely on identification of letter strings and their correspondence with the spoken

language, Arabic readers cannot relate letter strings to spoken Arabic for the reason that literary Arabic is virtually a second language for Arabic learners. This is also true for spelling due to the fact that spelling is more complicated than reading. Students need orthographic lexical knowledge to ensure the correct spelling, whereas readers can rely on partial orthographic knowledge of words in a text because the context of the text may assist the reader to determine the exact pronunciation (Lennox and Siegel, 1993). Saiegh-Haddad (2003) considers the linguistic distance between spoken Arabic and MSA as the main reason for the phonological awareness delay in Arab children.

The main aim of this paper is to examine the effect of early and heavy exposure to English language on learning to spell certain Arabic phonemes correctly. This is to understand if early exposure to a second language may negatively influence learning the mother tongue language. The following section reviews the importance of spelling, the notion of linguistic transfer and the difference between Arabic and English in terms of emphatic phonemes, followed by a detailed discussion of the methodology, analysis and discussion.

Literature review

The success of a child's spelling depends on phonological awareness and alphabetic knowledge (Treiman, 2006). Furthermore, the majority of the research previously undertaken has focused on either first language monolinguals' spelling or the effect of first language on learning to read, write and spell in a second language, whereas insufficient attention has been paid to the converse situation. It should be noted that spelling is essential to improve reading (Ehri, 2000) and writing skills (Ritchey, 2008). In learning to write, spelling accuracy is a significant variable in improving the quality of written expressions (Puranik and Al Otaiba, 2012) and in promoting the composition fluency of children at kindergarten (Kent et al., 2013). Writers who need

to think too hard about how to spell will use valuable cognitive resources needed for higher aspects of composition (Singer and Bashir, 2004, cited in Moats, 2005). Lennox and Siegel (1998) explain the developmental process of spelling as going through two different channels; the dual route model. First is the phonological channel, through which children learn to represent sounds of words in letters and to translate the phonemic codes to graphemic codes. The second channel is based on direct lexical access without phonological interference. 'Spelling errors can be informative about the aspects of the orthographic system that pose the greatest difficulties for developing spellers' (Proropapas et al., 2013:640).

When addressing the participants in this study and their relationship to the two languages, English will be referred to as the dominant language instead of the second language, whereas Arabic will be referred to as the mother tongue language instead of the first language due to their early exposure to English. Cook (2007) proposes the notion of multi-competence, which outlines that the mind of someone who knows more than one language is different from the mind of a monolingual. Cook (2002) argues that language proficiency and cognitive development in the mind of bilingual students is positively influenced by learning a second language if the exposure to the first language is intensive, maintained and carefully planned. However, when children are immersed in a different language for extended periods of time in pre-school or day care, their development of the family language may be hindered (Wong Fillmore, 2000). Various researchers have pointed out the notion of cross-linguistic transfer between L1 and L2. In this respect, Kecskes (2010:34) indicates that 'the bidirectional influence between languages is a developmental phenomenon.' Although the influence of the first language on learning a second language has been extensively investigated, the degree to which the acquisition of a second language influences native language function still

represents an important area for further research as it is still underdeveloped. Thus, 'knowledge regarding the interactivity of two languages within a single cognitive system remains incomplete' (Kaushanshaya et al., 2011:56). This influence can result in a positive transfer in the case of the two languages being similar to each other (Figueredo, 2006) or a negative transfer if the two languages are different, which might produce the mispronunciation or misspelling of certain phonemes (Figueredo, 2006; Abu-Rabia and Siegal, 2002). Cook (1997) noted that Greek participants confused /b/ and /p/, e.g., *cabable* for (capable) and *propably* (probably). He attributed such errors to the possibility of the absence of /p/ from Greek. Furthermore, Arab learners have a similar case, as the two novel phonemes of English /p/ and /v/ do not exist in Arabic.

One of the factors that might influence the transfer between languages is the orthography of the languages. Writing systems are usually classified according to the 'level of linguistic information that is coded in the script' (Aro, 2006:533). DeFrancis (1989) divided writing systems into syllabic, consonantal, and phonemic. Arabic is considered consonantal as the graphemes only represent consonants. Conversely, English is considered phonemic as the script represents all phonemes, whereas Japanese is considered syllabic as it is made up of graphic symbols. Holm and Dodd (1996) established that Chinese-English bilingual students had difficulty reading English due to the differences between the Chinese and English writing systems. They attributed this problem to the fact that reading Chinese depends on visual processing skills, while reading English requires more phonological processing skills.

MSA contains 28 consonants and the writing system goes from right to left. One of the characteristics of Arabic regarding letter shapes is the variation in the form of letters according to their position in the word. There are three forms for each letter: initial, medial and final. Arabic consonants vary between stops, fricatives, nasals and liquids.

One of the distinctive classes in which the Arabic consonant system is different from the English is known as emphatic phonemes.

/sˤ/: A voiceless alveodental fricative, emphatic, e.g., /sˤu:rah/ (a picture)
/dˤ/: A voiced alveodental stop, emphatic, e.g., /dˤacf/ (weakness)
/tˤ/: A voiceless alveodental stop, emphatic, e.g., /tˤa:lib/ (a male student)
/ðˤ/: A voiced interdental fricative, emphatic, e.g., /ðˤill/ (a shadow)

Non-emphatic phonemes are found in both English and Arabic. They are similar to the emphatic phonemes, using the same articulation parts, but pronounced non-emphatically.

/s/: A voiceless alveodental fricative, non-emphatic, e.g., /sala:m/ (peace), English example /sins/ (sence)
/d/: A voiced alveodental stop, non-emphatic, e.g., /dars/ (a lesson), English example /do:r/ (door)
/t/: A voiceless alveodental stop, non-emphatic, e.g., /ti:n/ (fig), English example /tu:/ (two)
/ð/: A voiced interdental fricative, non-emphatic, e.g., /ðahaba/ (went), English example / ðis/ (this)

The Arabic grammarian Sibawayh (796 AD, cited in Bin-Muqbil, 2006:31) noted that emphatic phonemes are similar to their non-emphatic counterparts with one exception: with regards to the emphatics, ‘your tongue would cover (the area extending) from their main place of articulation to the portion of the palate opposite the tongue (which) you raise towards the palate’ (Kitab Sibawayh, Vol. 2, cited in Bin-Muqbil, 2006:31). This phonological similarity between emphatic and non-emphatic phonemes will be considered in case it produces challenges in spelling words that include emphatic phonemes in different positions in the word.

Based on contrastive analysis hypothesis, which suggests that errors are assumed to be the result of transfer from the learners’ first language, this paper investigates how the knowledge of a second language (English) might affect spelling accuracy in Arabic among the bilingual group in contrast to the monolingual group, bearing in mind the

diglossic nature of Arabic. The focus would be on spelling the emphatic phonemes mentioned above, as they are non-phonemic sounds in English, but a distinctive class in Arabic.

Method

The purpose of this study is to examine how early and heavy exposure to English affects young Arab learners in spelling Arabic emphatic phonemes /sˤ/, /dˤ/, /tˤ/, /ðˤ/. As mentioned previously, the English sound system does not contain these phonemes; however, it does contain their counterpart phonemes /s/, /d/, /t/, /ð/, which are considered soft. The question which this study attempts to answer is: would the lack of the emphatic phonemes /sˤ/, /dˤ/, /tˤ/, /ðˤ/ in English but the presence of the non-emphatic phonemes /s/, /d/, /t/, /ð/, affect the spelling accuracy of the participants in the study? In other words, would the presence of the non-emphatic phoneme pairs of the novel emphatic phonemes in English result in replacing the emphatic phoneme with its similar phoneme from the dominant language (English)? In order to answer this question, a questionnaire was developed, consisting of three parts: the first part included the participant's demographic information; the second part related to general information regarding the participant's exposure to English, whilst the third part consisted of a three line passage written in Arabic to be dictated to the participant. The passage included words that contained the novel emphatic phonemes in different positions of the word, i.e., initial, medial and final. The guardian who dictated the passage to the participant was given guidelines that needed to be followed when dictating. These guidelines highlight the tone and speed of reading the passage when dictating, for example, using natural tone and speed, not reading the words too slow or too fast, and trying not to stress any of the letters. It should be noted that ethical issues were considered in the formation and application of the questionnaire. For example, a

covering letter was attached to the questionnaire providing details regarding the questionnaire's purpose and the reasons for participation. It also informed the participants of confidentiality, anonymity and the voluntary nature of their participation. In addition, it gave the participant the freedom to withdraw at any point.

Participants

In this study, there were two groups of participants with a total of 59 children whose ages ranged from eight to 10 and who were pupils in grades three to five. This age range was preferred by the researcher to allow sufficient time for the mastery of the Arabic alphabets. The first group consisted of 29 Saudi bilingual children who were exposed to English in schools in an English-speaking country. Accordingly, English is the school language, while Arabic is the language spoken only at home. They learned MSA once a week, when they attended the Arabic school established by the Saudi Embassy. The other group consisted of 30 Saudi children who attended monolingual schools where Arabic is the medium of instruction. Arabic in these schools is considered as the national and mother tongue language, bearing in mind that English is introduced from grade six in public schools. These two groups were chosen to investigate the influence of early and heavy exposure to English on acquiring Arabic phonemes, specifically the emphatic ones.

Measures

The researcher developed the spelling accuracy measure, which is a dictation spelling measure that assesses the degree of spelling accuracy in Arabic. The three line passage consists of words that contain the novel emphatic phonemes that have non-emphatic counterpart phonemes in Arabic. The words in this excerpt were collected from a reading textbook developed by the Ministry of Education in Saudi Arabia for third grade students and therefore is expected to be an age-appropriate passage. The

researcher also consulted five experts in the field of teaching Arabic in order to assure its appropriateness corresponding to the age of the participants in the study. Based on the purpose of the study, which focuses on spelling the target phonemes in relation to their counterpart phonemes, the spelling accuracy measure would only take into account the accuracy of spelling the target phonemes, rather than the accuracy of spelling each word in the passage.

Analysis

Upon the completion of the process of quantitative data collection process, the data were entered into a Statistical Procedures for Social Science (SPSS) 17.0 programme to run tests for statistical confidence. The process started with the coding of each variable of the data with a number to facilitate processing and analysis, and subsequently coding of each emphatic phoneme in different positions of the word. The spelling results of these phonemes were divided into three categories: correct phoneme, phoneme pair and others, which included all of the other errors. As the analysis focused on the difference between monolinguals and bilinguals in spelling the emphatic phonemes in Arabic, cross-tabulation was used to indicate any significant difference between these two groups, based on the result of a chi-square test. Furthermore, other variables, such as the degree of L2 exposure, preference of L2 use, and the age of the participants were only considered if the analysis showed the significance of these variables.

Results and discussion

In order to compare the performance of the Arabic participants with heavy exposure to English with the monolingual participants, a chi-square test was performed (see Table 1). The purpose of the dictation was to test the recognition of certain phonemes, which do not exist in English to ascertain if the heavy exposure to a second language before mastering the first language might affect learning the mother tongue language. Arabic participants with heavy exposure to English were those who study in English-speaking community schools and who started learning English at school at an early age prior to mastering literary Arabic. Monolingual children are those who attend public schools in Saudi Arabia, where Arabic is considered the medium of instruction and the mother tongue language, bearing in mind that English in Saudi Arabia is taught in public schools from grade six. Accordingly, their experience of English is limited to watching English television programmes only.

Target Phonemes	Children with heavy exposure to English			Monolingual Children			Chi-square
	Correct	Phoneme Pair	Other error	Correct	Phoneme Pair	Other errors	
/sˤ-/	34.5%	65%	0%	100%	0%	0%	.00
/-sˤ-/	10.3%	89.7%	0%	100%	0%	0%	.00
/-sˤ/	24.1%	75.9%	0%	93.3%	0%	6.7%	.00
/dˤ-/	20.7%	72.4%	6.9%	93.3%	0%	6.7%	.00
/-dˤ-/	13.8%	75.9%	10.3%	93.3%	6.7%	0%	.00
/-dˤ/	20.7%	75.9%	3.4%	93.3%	0%	6.7%	.00
/tˤ-/	41.4%	58.6%	0%	100%	0%	0%	.00
/-tˤ-/	24.1%	75.9%	0%	100%	0%	0%	.00
/-tˤ/	24.1%	75.9%	0%	100%	0%	0%	.00
/ðˤ-/	17.2%	72.4%	10.3%	93.3%	0%	6.7%	.00
/-ðˤ-/	13.8%	72.4%	13.8%	93.3	0%	6.7%	.00
/-ðˤ/	17.2%	82.8%	0%	93.3%	0%	6.7%	.00

Table 1 Emphatic phonemes' spelling results

A general examination of the chi-square results demonstrate that it is statistically significant at p=0.00. This confirms that there is a discrepancy between the performance

of children with heavy exposure to English and the monolingual children. Thus, the overwhelming majority of monolingual participants spelled the target phonemes correctly, whereas most of the participants who were exposed to English prior to mastering Arabic confused the target phonemes with their soft counterpart ones. These phonetic errors, which occurred as a result of the inability of the speller to translate specific phonemes into the correct graphemes, were predominant in the group of children who were exposed to English before mastering literary Arabic. Substituting the emphatic phonemes with their non-emphatic soft counterparts reveals the influence of the second language on the mother tongue language. Conversely, the result confirms that the passage used for dictation to the children is age appropriate as it did not create a problem for most of the Arabic monolinguals.

When considering the position of the phonemes in the word (initial, medial or final), it appears that a slightly larger number of the participants committed more errors in the medial position, specifically with the phonemes /-sˤ-/, /-dˤ-/, /-ðˤ-/, than in the initial or final position (see Table 1). This ties neatly with the findings of Treiman, Berch and Weatherston (1993), which suggest that children find it easier to spell consonants in the initial position than in the medial position.

When relating the fieldwork data to the literature, among the factors that might result in replacing the emphatic phonemes with their non-emphatic counterparts is the heavy exposure to the second language for extensive periods, which resulted in thwarting the progress of developing the first language.

Skills	Children with heavy exposure to English				Monolingual Children			
	All the time	Most of the time	sometimes	Not at all	All the time	Most of the time	sometimes	Not at all
Expressing him/herself better in English	79.3%	10.3%	10.3%	0%	0%	6.7%	16.7%	76.7%
Expressing him/herself better in Arabic	0%	3.4%	96.6%	0%	53.3%	36.7%	10%	0%
Watching English programmes	86.2%	13.8%	0%	0%	0%	20%	40%	40%
Watching Arabic programmes	0%	0%	55.2%	44.8%	66.7%	10%	23.3%	0%
Reading English stories	82.8%	17.2%	0%	0%	0%	0%	16.7%	83.3%
Reading Arabic stories	0%	0%	34.5%	65.5%	50%	20%	23.3%	6.7%
Writing in English	96.6%	3.4%	0%	0%	6.7%	13.3%	30%	50%
Writing in Arabic	0%	0%	17.2%	82.8%	70%	10%	20%	0%

Table 2 Participants' exposure to English

Fieldwork data illustrates that the majority of the participants who attend schools in an English-speaking country prefer to communicate and express themselves in English although they receive Arabic instruction at a Saudi school once a week and it is also the language used at home. This might be because their exposure to both languages is not equal (Table 2) and consequently, they find it straightforward to read and write in English. Cook (2002) declares that learning a second language can positively influence the learning of the first language due to the multi-competence of bilinguals. This can be achieved if an intensive exposure to the first language has been maintained and planned. However, in the case of the participants in this study, the children spend lengthy periods everyday learning English in an English-speaking community and they also watch television programmes which are in English (Table 2). Their exposure and use of their mother tongue language is still limited, compared to the school language. In addition, as these children have mastered English, it has also become the language of communication with their friends, even with other Arab children as they are able to express themselves to a much greater extent in English than in their first language as a result of their immersion in a different language. This conclusion agrees with Major's study (1990) which suggested that English speakers living in Brazil cannot preserve

native-like pronunciation in both their L1 and L2. They can either preserve their L1 without achieving native-like L2 pronunciation; or lose their L1 and achieve native – like L2 pronunciation; or fall short of native–like pronunciation in both L1 and L2. Of course, there is an interrelationship between pronunciation and spelling as both demonstrate how the language user perceives different phonemes. In addition, Lambert and Tucker (1972) reported that in Montreal early immersion in French affected the performance of grade 1 students in English literacy skills, such as reading comprehension, spelling, and written vocabulary.

As mentioned previously, the emphatic phonemes in Arabic do not exist in English but non-emphatic phonemes exist in both English and Arabic. Both emphatic and non-emphatic phonemes are similar in that they use the same articulation parts, but are pronounced differently. It appears that this phonological similarity between emphatic and non-emphatic phonemes has produced challenges in spelling words that include emphatic phonemes in different positions of the word. In addition, it is apparent that these children have stopped making distinctions between the emphatic and non-emphatic phonemes due to the fact that emphatic phonemes are not phonemic in English, which is considered the dominant language to these children. Arabic phonological knowledge has not developed to the extent that they can differentiate between the novel emphatic phonemes and their phoneme pairs. As a result, the participants confused the emphatic and the non-emphatic phonemes in Arabic. Another factor that might result in replacing the emphatic phonemes with their non-emphatic soft ones in Arabic is the distance between spoken and standard (literary) Arabic. The Arabic that children use in their homes is almost completely different from standard (literary) Arabic. Literary Arabic, which is used by educated Arab people for reading, writing and speaking on official occasions, is different in vocabulary,

phonology, grammar, and syntax from daily spoken language. This diglossic situation negatively influences the phonological awareness that contributes to reading and spelling acquisition (Saigh-Haddad, 2003, 2004). In addition, the emphatic phonemes discussed in this study are considered diglossic phonemes as they are pronounced in many dialects in a similar way to that of their non-emphatic counterparts and are pronounced in other dialects in different phonemes. Within some vernaculars, several of these emphatic phonemes do not exist within the specific phonological system of such a vernacular. For example, Table 1 reveals that Arabic monolinguals and children with heavy exposure to English committed errors other than replacing emphatic phonemes with their non-emphatic counterparts, specifically in the case of phonemes /dˤ/ and /ðˤ/. When investigating the type of error they made, it became very clear that they confused these two phonemes with each other due to the fact that the emphatic /dˤ/ is pronounced /ðˤ/ within some spoken vernaculars, which might result in confusing these two phonemes with each other when attempting to spell them.

It should be noted that numerous scholars have explained the development process in relation to spelling: first, spellers depend on the phonological knowledge they require to translate the phonemic codes to graphemic codes. After passing this stage, skilled spellers depend on direct lexical access without phonological invention. Therefore, spelling words that contain emphatics requires a specific familiarity with the word's orthographic pattern and demands intensive cognitive resources. This means that these children have not passed the phonetic stage and progressed to a more advanced level, the orthographic stage, due to a shortage in their direct lexical access, which as Taha (2013) suggested is required to familiarise spellers with the orthographic patterns of words. Consequently, words that have emphatic phonemes can be spelled by bilinguals who are heavily exposed to English into two orthographic patterns or more, due to the

confusion caused by the influence of the dominant language and the diglossic nature of Arabic. Of course, only one of these patterns could be correct according to the Arabic orthographic conventions. As a result, the spelling of words that have emphatic phonemes in Arabic demands a strong establishment of the mental orthographic lexicon. This may explain the result simply because there are always new words that contain emphatic phonemes to which the spellers have not yet been exposed, as they do not yet have any stored orthographic patterns in relation to those words. The findings of this study cannot be overgeneralised to include older Arab students without further investigation, for the reason that all the participants in this study were of a similar age. Further research is required to determine if phonologically based spelling errors in Arabic by Arab students, who have been extensively exposed to English in an English-speaking community prior to developing their basic Arabic language knowledge, decrease significantly over time with more exposure to literary Arabic.

In conclusion, the hypothesis of this study was based on a contrastive analysis hypothesis, which suggests that errors are assumed to be the result of transfer from learners' first language when the first language is the dominant language within the cognitive system of bilinguals. The results of the fieldwork data confirm that among bilinguals, the knowledge of a second language (English) is one of the factors that might affect spelling accuracy in Arabic, especially if exposure to the two languages is unequal. In the case of the participants in this study, they are exposed to the second language to a point that it becomes the dominant language in their cognitive system, while their exposure to Arabic is very limited.

The results of this study provide practical implications for Arabic language literacy classes where students with low exposure to Arabic literacy are present. It would be

beneficial for Arabic students to receive instruction in phonological awareness related to emphatic phonemes in Arabic and their phonemes pairs, simultaneously with orthographic instruction in relation to how these phonemes are spelled. This will assist those children to pass the phonetic stage and progress to a more advanced level, the orthographic stage, where they have direct lexical access instead of relying on phoneme-to-grapheme correspondence. Therefore, educators should establish a spelling scoring rubric to provide helpful explanations to their students regarding spelling errors and hence, plan instruction accordingly.

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Appendix: Reading Conventions for Transcribed Arabic Forms[1]

I- Consonants:

/b/	A voiced bilabial plosive, e.g., /bayt/ (a house)
/t/	A voiceless alveo-dental stop, non-emphatic, e.g., /ti:n/ (fig)
/tˤ/	A voiceless alveo-dental stop, emphatic, e.g., /Ta:lib/ (a male student)
/d/	A voiced alveo-dental stop, non-emphatic, e.g., /dars/ (a lesson)
/dˤ/	A voiced alveo-dental stop, emphatic, e.g., /Dacf/ (weakness)
/k/	A voiceless velar plosive, e.g., /kalimah/ (a word)
/q/	A voiced uvular plosive, e.g., /qali:l/ (a little)
/?/	A voiceless laryngeal plosive, e.g., /?alam/ (pain)
/f/	A voiceless labio-dental fricative, e.g., /faqr/ (poverty)
/Ɵ/	A voiceless dental fricative, e.g., / Ɵawb/ (a dress)
/ð/	A voiced Inter-dental fricative, non-emphatic, e.g., /ðahaba/ (went)
/ðˤ/	A voiced Inter-dental fricative, emphatic, e.g., /ðill/ (a shadow)
/s/	A voiceless alveo-dental fricative, non-emphatic, e.g., /sala:m/ (peace)
/sˤ/	A voiceless alveo-dental fricative, emphatic, e.g., /Su:rah/ (a picture)
/z/	A voiced alveolar fricative, e.g., /zayt/ (oil)
/š/	A voiceless palatal fricative, e.g., /?a- š š ams/ (the sun)
/j/	A voiced palatal fricative, e.g., /jabal/ (a mountain)
/J/	A voiced alveopalatal affricate, as in the Qur'an /?alJannah/ (the Garden)
/x/	A voiceless uvular fricative, e.g., /xalf/ (behind)
/G/	A voiced uvular fricative, e.g., /Ga:Dib/
/H/	A voiceless pharyngeal fricative , e.g., /Hall/ (a solution)
/c/	A voiced pharyngeal fricative, e.g., /cayn/ (an eye)
/h/	A voiceless glottal fricative, e.g., /ha: ða:/ (this)
/r/	A voiced alveolar apical thrill, e.g., /rajul/ (a man)
/l/	A voiced alveolar lateral, e.g., /laylah/ (a night)
/m/	A voiced bilabial nasal, e.g., /miqcad/ (a seat)
/n/	A voiced alveolar nasal, e.g., /naSr/ (victory)
/w/	A voiced labial semi-vowel, e.g., /wa:lid/ (a parent)
/y/	A voiced palatal semi-vowel, e.g., /yawm/ (a day)

II- Vowels:

/i/	Half-closed front spread vowel, close when long or final, e.g., /kita:b/ (a book)
/a/	Front open vowel, short and long, e.g., /katabab/ (he wrote/
/u/	Half-closed back to central rounded vowel, closed rounded when long or final, e.g., /rubc/ (a quarter)

III- Diphthongs:

/ay/	A short front open vowel followed by a palatal semi-vowel, e.g., /?ayna/ (where)
/aw/	A short front open vowel followed by a labial semi-vowel, e.g., /nawc/ (a kind)

[1] Asad, M., 2003. The message of the Qur'an: Translated and explained. England: The Book Foundation, page i and ii.

Notes:

1. Geminated consonants are indicated by doubling the consonant letter.
2. /:/ indicates a long vowel.

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