Reading Arabic Shallow and Deep Genres: Indispensible Variables to Science of Reading

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Abstract

Most principles and propositions in the science of reading are derived from research on Latin orthographies, usually, in English while much less is known about Semitic orthographies, namely, Arabic. This study investigated the effect of vowels and type of genre on oral accuracy, oral rate, and oral comprehension in reading Arabic orthography. A convenience sample of 85 children (34 fifth male graders and 51 tenth male graders) was selected from two public schools in Saudi Arabia. The researcher developed two reading measures; the Fifth Grade Reading Measure and Tenth Grade Reading Measure. Each measure has two genres (informational and poetic) and two versions (shallow/vowelized and deep/unvowelized). Each child individually completed the two versions of the measure in his grade. The results revealed that the students read the shallow genres (informational and poetic) more accurately and with more comprehension but less rapidly than reading the deep genres. In addition, the students read the informational genre (shallow and deep) more accurately, rapidly, and with more comprehension than the poetic genre (shallow and deep). The discussion concludes that a) the nature of Arabic orthography, mainly vowels, is an indispensible variable to the literature of science of reading, b) oral reading accuracy, oral reading rate and oral reading comprehension are affected by the unique characteristics of the genre, and c) vowels in Arabic are important to improve oral reading accuracy, and oral reading comprehension for the first grades in primary school and later grades in secondary school as well.

Keywords: genres, vowels, Arabic orthography, oral reading accuracy, oral reading rate, oral reading comprehension

1. Introduction

It is unequivocal in the literature that reading accurately, rapidly and with comprehension requires processing of many variables, chief among them, the knowledge of language conventions and context (e.g., Abu Rabia & Siegel, 1995; Stanovich, 1980, 1986, 1991; Stanovich & Freeman, 1981).

1.1 Orthographical Variables

The nature of orthography is an important factor to be considered in the context of reading theory. Orthography consistency, letters and sounds conformities, seems to affect reading acquisition (Abu-Hajaj, 2006; Furnes & Samuelsson, 2009; Georgiou, Parrila, & Papadopoulos, 2008; Goswami, Ziegler, & Richardson, 2005; Taibah & Haynes, 2011). In contrast to some Latin orthographies e.g., English, Arabic is a consistent orthography with predictable correspondences in both sound-letter and letter-sound relations (Abu-Hajaj, 2006; Abu-Rabia, 1997, 2001; Abu-Rabia & Siegel, 1995; Lervåg & Hulme, 2010; Mahfoudhi, Everatt, & Elbeheri, 2011; Seymour, Aro, & Erskine, 2003; Taibah & Haynes, 2011). Arabic orthography has 28 consonants with three long vowels and three short vowels. These short vowels are diacritics that are written according to and explain word pronunciation, meaning, and function in a sentence (Abu Rabia, 1998, pp. 105-106). Arabic script is presented, in most printed media, without visible short vowels and skilled readers are expected to deduce these vowels depending on context, but vowelized scripts should be presented to beginning readers (Abu-Rabia & Taha, 2006; Hussien, 2014; Mahfoudhi et al., 2011; Taibah & Haynes, 2011). The important issue here is that Arabic is a shallow orthography, if presented vowelized, and is a deep orthography, if introduced unvowelized (Abu-Rabia, 2000; Abu-Rabia & Siegel, 2003; Abu-Rabia & Taha, 2006; Mahfoudhi et al., 2011; Mohamed, Elbert, & Landerl, 2011). The current study examined the effect of both vowelized and unvowelized genres, informational and poetic, on oral reading accuracy, oral reading rate, and oral reading comprehension.

In addition, Arabic is a very homographic script in its words (Abu-Rabia & Siegel, 1995, 2003). Words with identical forms, isolated or in connected text, can have different meanings and pronunciations. Thus, visible short vowels are used to show the accurate meaning and pronunciation of a word (Abu-Rabia, 1998, p. 107) e.g., كُتُبٌ/books, كَتَبَ/wrote, كُتَب/misfortunes. Although vowels facilitate accurate word recognition and comprehension (Abu Rabia, 1997, 1998, 1999, 2001) much less attention has been given to investigate the effect of vowels on oral reading accuracy, oral reading rate, and oral reading comprehension in Arabic. This may support the notion that the uniqueness of Arabic orthography adds some variables to be considered in the literature of science of reading as was stated by Abu Rabia (1997). Furthermore, Arabic is a diglossic language, with differences between standard and colloquial Arabic. Literary or standard Arabic is the medium of instruction and the language of most printed media whereas spoken Arabic is an everyday language (Abu-Rabia, 2000; Maamouri, 1998; Tahan, Cline, & Messaoud-Galusi, 2011; Versteegh, 2001). The scripts used in the current study are literary Arabic sampled from the students' textbooks.

The genres used in the current study are sampled from the fifth and tenth grades textbooks in Saudi Arabia. In fact, there are many types of genres e.g., information, narration, persuasion, instructions, explanation, recount, reviews, reports, arguments, playscripts, and poetry and every genre type has its own characteristics i.e., purpose, structure, and language (Green, 2006; Hussien, 2009, 2011). The argument has been made that the structure of genre seems to affect reading comprehension as well as the condition of the genre, vowelized or unvowelized, doing this as stated above. It has been found that teaching text structure aids reading comprehension for both native and non-native readers (Carrell, 1984, 1987; Chang, 2002; Dymock, 1998, 1999, 2005; Meyer, 1987; Meyer, Brandt, & Bluth, 1980; Meyer & Rice, 1984; Pennsylvania State Department of Education [PSDE], 1997; Taylor, 1992; Troyer, 1994; Williams, 2005). In addition, students' prior schema of the structure of genre contributes to more effective comprehension of texts being read (Malmkjaer & Anderson, 1991, p. 180; Swales, 1990, p. 84). The informational and poetic genres, sampled in the current study, are the dominant and distinctive types of texts in the participants' textbooks. The current study investigates the effect of the type of genre on oral reading accuracy, oral reading rate and oral reading comprehension in the fifth and tenth grades. The argument has been made that skilled readers in the tenth grade are expected to read accurately, rapidly and with comprehension depending on context, or without visible short vowels, whereas the fifth grade students need these visible short vowels (Abu-Rabia, 1997, 1999, 2001; Abu-Rabia & Taha, 2006; Mahfoudhi et al., 2011; Taibah & Haynes, 2011). In practice, scripts in the textbooks for students in the upper grades are unvowelized and texts in the textbooks for the first grades are vowelized. The current study investigated the validity and practicality of this issue which has scarcely been investigated.

1.2 Reading Factors

It is well-established in the literature that reading is a developmental process and hence, reading skills needs to be taught and improved simultaneously, gradually, and continuously throughout school grades. The current study investigated and examined the effect of vowels and type of genre on oral reading accuracy, oral reading rate, and oral reading comprehension in the fifth and tenth grades.

Firstly, oral reading accuracy is a significant indicating factor of reading fluency and it refers to the extent to which students read aloud according to the letter-sound conventions in Arabic (Hussien, 2014, p. 76). On the one hand, this requires students to read words with or without visible vowels and other diacritics and on the other hand, to recognize changes of the ends of a word as a result of its function and inflection in a sentence (Abu Rabia, 1998, p. 107) e.g., وقف عصفورٌ فوق الشجرة/a sparrow stood on the tree، رأيت عصفوراً فوق الشجرة/I saw a sparrow on the tree، أمسكت بعصفور فوق الشجرة/I caught a sparrow on the tree. In addition, identical forms of a word, the phenomenon of homograph, are vowelized and pronounced differently according to meaning, as stated above. Vowels are a very important variable to be considered in reading Arabic script and therefore, reading words accurately in Arabic is not simply an autonomous process but a holistic cognitively demanding process that involves many variables, chief among them, vowels, syntax, vocabulary, and context as was stated by Abu Rabia (1998).

As mentioned earlier, accurate recognition of vowels in reading of Arabic script is a cognitively demanding process. The issue here is to what extent this process affects oral reading rate when scripts presented with or without visible vowels. This issue has not been addressed yet. Simply, oral reading rate refers to the number of words students read aloud per minute (Abu-Hajaj, 2006; Daane et al., 2005; Harris & Sipay, 1980; White, 1995). The point here is that how many words children can read aloud per minute? This requires considering many variables, chief among them, the uniqueness of orthography (Abu-Hajaj, 2006; Hussien, 2014), and genre being

read, as explained above. Arabic orthography, for example, is transparent, if presented vowelized, and is a homographic, if introduced unvowelized. It is also a consistent orthography, as stated earlier.

In spite of the fact that rapid (LaBerge & Samuels, 1974; Mckenna, 2002; Nicholson & Tan, 1999; Samuels, 1976, 2004; Samuels, Schermer, & Reinking, 1992), and accurate reading (e.g., Denton et al., 2011; Schwanenflugel et al., 2006; Spooner, Baddeley, & Gathercole, 2004) positively influence reading comprehension, comprehension of Arabic genres is also a cognitively demanding process. Readers devote more cognitive resources and effort to decode Arabic scripts which requires processing letters and vowels, visible or deduced, clarification of homographs, if presented without visible vowels, as explained above. According to automaticity theory, more focus on decoding, which is the case in the reading of Arabic text, negatively affects reading comprehension (Huey, 1908; LaBerge & Samuels, 1974; Mckenna, 2002; Nicholson & Tan, 1999; Samuels, 1976, 2004; Samuels, Schermer, & Reinking, 1992). The current study investigated the impact of vowels on oral reading comprehension since, no attention is dedicated to this issue in reading Arabic orthography.

1.3 The Context of the Study

This study was carried out on the fifth and tenth grade Arabic-speaking students in Saudi Arabia public schools. The participants in this study were boys: 34 fifth graders and 51 tenth graders. In most Arab countries, scripts in textbooks are introduced vowelized to children in primary school and gradually texts are introduced unvowelized or partially vowelized throughout elementary and secondary school. The decision of whether to vowelize scripts in textbooks or not and at what educational stage, needs to be a research-based decision. In fact, there is some evidence derived from Abu Rabia's research on this issue, as stated above, but two points were noticed here: Abu Rabia's research was conducted in a non-Arab country and his participants were learning Hebrew (a Semitic language like Arabic) as a second language, and the decision needs a more robust baseline depending on different research and samples. The current study may or may not support Abu Rabia's results and implications. The researcher also noticed that scripts in textbooks other than the Arabic subject matter are introduced unvowelized which may affect reading accuracy, rate, or comprehension of these texts. A critical point to be made here is that textbooks not only involve textbooks in Arabic as a subject but, all types of textbooks in different subject matters e.g., science, mathematics, or social studies. This needs further research to examine different genres in different subject matters.

2. Questions of the Study

The current study addressed the following questions:

- What is the effect of the degree of transparency of Arabic orthography (shallow and deep) on oral reading rate, oral reading accuracy and oral reading comprehension of the fifth and tenth grade students?
- What is the effect of the genre (informational and poetic) on oral reading rate, oral reading accuracy and oral reading comprehension of the fifth and tenth grade students?

3. Methods

3.1 Participants

A purposeful sample of 85 Arabic-speaking students (34 fifth graders and 51 tenth graders) was selected from one educational district (Jazan district) in Saudi Arabia. Students were selected from two public schools: primary and secondary school. All participants are males as there are male and female schools in Saudi Arabia. This convenience sample serves the purposes of the current study as the researcher compared the data derived from the two versions of each reading measure, shallow and deep versions, completed by the same participants in the fifth grade or the tenth grade. An informed consent form was collected in writing from parents, the Jazan educational district and the schools where the sample was selected. In addition, oral consent was obtained from children.

3.2 Measures

The researcher developed two reading measures: the Fifth Grade Reading Measure (FGRM) and Tenth Grade Reading Measure (TGRM). Each measure consists of two versions, shallow/vowelized and deep/unvowelized, and involves two genres, informational and poetic. In addition, the two measures gauge the same three reading factors: oral reading rate, oral reading accuracy, and oral reading comprehension. The four excerpts (two in each measure) used in FGRM and TGRM were taken from the textbooks of Arabic in the fifth and tenth grades. These textbooks were developed by the Ministry of Education (2012) in Saudi Arabia and children had not studied

these excerpts yet. In fact, informational and poetic genres are the dominant and represent different two genres in these textbooks.

The researcher made sure that FGRM and TGRM are valid and reliable measures by distributing them to ten teachers (five fifth grade teachers and five tenth grade teachers) of Arabic and requesting them to judge the measures in terms of the extent these measures operationalize the three factors of reading in question (Cohen, Manion, & Morrison, 2007) and checking the clarity of them. In addition, the researcher applied the FGRM and TGRM to a pilot sample (20 fifth graders and 21 tenth graders) and calculated reliability using Split-Half technique, FGRM = .89 and TGRM = .87 which indicates that these measures are reliable.

3.3 Procedures

Repeated measures design was conducted. Each measure was administered in two sessions by the researcher with a week interval. A student completed one version of the measure in the first session and completed the other version after a week. To avoid the order effects of being shallow/vowelized or deep/unvowelized, the two versions of the measure were used alternately i.e., some students completed the shallow version firstly and then the deep version in the second session and some completed the unvowelized version in the first session and then the vowelized version in the second session. A student was requested to read aloud and answer six written multiple choices questions at the end of the reading of each excerpt. The administrator of the instrument calculated time, marked words that are read incorrectly.

3.4 Analyses

A Paired-Samples T Test was performed to explain the differences between shallow/vowelized and deep/unvowelized scripts on the reading factors and to clarify the difference between the two genres, informational and poetic, on the same reading factors.

4. Results

Addressing the first core question of the current study "What is the effect of the degree of transparency of Arabic orthography (shallow and deep) on oral reading rate, oral reading accuracy and oral reading comprehension of the fifth and tenth grade students?" A Paired-Samples T Test was performed as depicted in Table 1.

Table 1. The paired─samples t test results of the reading factors and reading conditions (N = 85)

Reading factors	Reading conditions											
	Shallow informational genre		Deep informational genre		T	Sig.	Shallow poetic genre		Deep poetic genre		T	Sig.
	M	SD	M	SD			M	SD	M	SD		
Oral reading accuracy	3.2	1.3	3.8	1.5	3.98	.000	3.9	1.8	4.8	1.3	5.76	.000
Oral reading rate	86	31	93	27	3.64	.000	76	28	81	26	2.34	.022
Oral reading comprehension	3.8	1.2	3	1.3	4.55	.000	3.3	1	2.7	1.4	3.85	.000

Note: *** P < .05

Table 1 shows that there is a significant difference in the scores of oral reading accuracy for the shallow and deep genres. These results suggest that vowels have a positive effect in decreasing errors in reading both informational and poetic genres. Table 1 also indicates that there is a significant difference in the scores of oral reading comprehension for the shallow and deep genres. Vowels also have a positive effect in improving oral reading comprehension. Furthermore, Table 1 shows that there is a significant difference in the scores of oral reading rate for the shallow and deep genres. In contrast to results of oral reading accuracy and oral comprehension, vowels increase the time students spend in reading. Taken together, the results show that vowels seem to improve oral reading accuracy and oral reading comprehension but, they decelerate oral reading rate of the both genres in question.

Answering the last key question of the current study "What is the effect of the genre (informational and poetic) on oral reading rate, oral reading accuracy and oral reading comprehension of the fifth and tenth grade students?" A Paired-Samples T Test was used as explained in Table 2.

Table 2. The paired─samples t test results of the reading factors and genres (N = 85)

Reading factors	Genre				T	Sig.
	Informational		Poetic			
	M	SD	M	SD		
Oral reading accuracy	7	2.5	8.7	2.8	6.682	.000
Oral reading rate	89	28	78	25	8.450	.000
Oral reading comprehension	6.9	2	6	2	4.381	.000

Note: *** P < .05

Table 2 shows that there is a significant difference in the scores of oral reading accuracy for the informational (M = 7, SD = 2.5) and poetic (M = 8.7, SD = 2.8) genres, t (84) = 6.682, p < .000. This result suggests that students made more errors in reading the poetic genre than informational genre. In the same direction, Table 2 indicates that there is a significant difference in the scores of oral reading comprehension for the informational (M = 6.9, SD = 2) and poetic (M = 6, SD = 2) genres, t (84) = 4.381, p < .000. This result implies that students gain more comprehension of the informational genre than poetic genre. Furthermore, Table 2 shows that there is a significant difference in the scores of oral reading rate for the informational (M = 89, SD = 28) and poetic (M = 78, SD = 25) genres, t (84) = 8.450, p < .000. This result indicates that students are more rapid in reading the informational genre than poetic genre. To conclude, Table 2 indicates that there are significant differences in the scores of oral reading accuracy, oral reading rate, and oral reading comprehension for the informational and poetic genres.

5. Discussion

The first core findings of the current study are that vowels have a positive effect in improving oral reading accuracy and oral reading comprehension but, they decelerate oral reading rate by increasing the time students spend in oral reading. The positive effect of vowels on oral reading accuracy and oral reading comprehension, in the current study, is partially consistent with Abu Rabia's research who explains the importance of vowels in oral reading accuracy (1997; 1998) and in silent reading comprehension (1999). A plausible explanation is that visible vowels moves the Arabic orthography from being deep to shallow orthography by which students can identify the unequivocal pronunciation and meaning of a word, as stated above. In other words, without these visible vowels students need to deduce them and eventually guess the correct meaning and pronunciation depending on context for reading. The current results are congruent with previous research not only in Arabic but also in Hebrew (a Semitic orthography like Arabic). In Arabic, children read vowelized genres more accurately than unvowelized texts (Abu-Rabia, 1998, 2001). In Hebrew, skilled adults read pointed texts more accurately than unpointed scripts (Abu-Rabia, 2001). In addition, vowelized scripts are more comprehensible than unvowelized texts in Arabic (Abu-Rabia, 1999, 2001), and pointed texts are more comprehensible than unpointed scripts in Hebrew (Abu-Rabia, 1999, 2001; Shimron, 1993; Shimron & Sivan, 1994).

Interestingly and in contrast to improving oral reading accuracy and oral reading comprehension, using visible vowels decelerated oral reading rate and increased the time students spent in oral reading. This result is congruent with the fact that reading in Arabic orthography is a cognitively demanding process that involves processing letters and vowels, visible or deduced, as mentioned earlier. Although students deduce invisible vowels in reading deep scripts, this result seems to suggest that reading shallow/vowelized Arabic scripts is more cognitively demanding than reading deep/unvowelized texts. A sensible explanation is that students are visually-focused on visible vowels to recognize the proper meaning and pronunciation of a word. This explanation is sustained by the current results that students are more accurate and comprehensible in reading vowelized genres than unvowelized genres.

Two critical points to be made in this context: a theoretical and a practical point. Firstly, the current findings support Abu Rabia' research (1997; 1998; 1999) with respect to vowels as a crucial variable to be added to the literature in science of reading. In fact, the science of reading is mainly informed and developed by studying

Latin orthographies, usually English, which makes the science of reading at most the science of reading English (Perfetti & Cao, 2013, p. 5). As consequences, reading research has limited relevance and implications for a universal science of reading (Share, 2008, p. 584). Therefore, the study of other alphabetic orthographies e.g., Arabic or Hebrew, and non- alphabetic orthographies e.g., Chinese or Japanese, widens understanding and horizons of science of reading. In recent years, there is a rising interest in studying of Arabic orthography, as explained above, and Chinese orthography (e.g., Anderson & Chen, 2013; Anderson et al., 2013; Perfetti, Cao, & Booth, 2013). For example, characters are more significant visual units than words in reading Chinese and meaning of these characters depends on context for reading (Chen, 1987; Luo, Chen, Deacon, Zhang, & Yin, 2013). In a nutshell, the study of other orthographies, e.g., Arabic or Chinese, contributes to and has indispensible variables e.g., vowels in Arabic and characters in Chinese, to science of reading. Secondly, reading Arabic vowelized genres more accurately and with more comprehension but less rapidly has a very important and a wide-range implication in schools. It suggests that vowelization of scripts introduced in textbooks seems to improve reading accuracy and comprehension in primary and secondary schools.

The last key findings of the current study are that the characteristics of a genre, informational or poetic, has an effect on oral reading accuracy, oral reading rate and oral reading comprehension. Students, in the current study, read the informational genres more accurately, rapidly and with more comprehension than reading the poetic genres. The design, language and purpose of a genre seem to affect students' reading, as stated above. The informational and poetic genres are different in their structure that authors follow, and language that writers employ to convey their message. Therefore, a plausible explanation of the current results are that informational genres follow structures (e.g., description, cause and effect, or contrast) familiar to students and use direct and informative language whereas Arabic poetic genres pursue less familiar designs (16 different metres), utilize more literary, and metaphoric language (Wright, 1996), and involve many less frequent vocabularies (Abu Rabia, 1998, p. 115). In addition to these unique features of Arabic poetic genres, students are more exposed to informational genres than poetic genres not only in Arabic but also in other subject matters e.g., social studies, and science. In the literature, it is argued that a text structure has an effect on silent reading comprehension (Dymock, 1998, 1999; PSDE, 1997), and thus, these results add to the literature in science of reading with respect to the genre as a critical variable in oral reading rate, oral reading accuracy, and oral reading comprehension for primary and secondary school students. These findings also raise the issue of the importance of teaching students different genres and making students more familiar with the unique characteristics of each genre.

6. Conclusion

The current study adds to the literature in science of reading with respect to vowels as an important variable to be considered not only in oral reading accuracy and in silent reading comprehension but also, in oral reading rate, and oral reading comprehension for primary and secondary school students. It also proposes another variable to be taken into account in science of reading that is the genre which affects oral reading accuracy, oral reading rate, and oral reading comprehension. Furthermore, it is an important step in establishing research-based evidence for using vowels in Arabic orthography. In addition to these substantial theoretical propositions, the current study shows the importance of vowelizing Arabic scripts in students' textbooks in schools to improve oral reading accuracy and oral reading comprehension. To conclude, the uniqueness of Arabic orthography is an indispensible variable to science of reading. Further research is needed to examine different genres in different subject matters.

Acknowledgement

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