Literacy and Phonological Awareness in Arabic Speaking Children

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Abstract

A large body of research to date has focused on the link between phonological awareness (PA), emergent literacy, and reading success. The bulk of research on the relationship between PA and literacy has been conducted on children who speak English and European languages. It is unclear, however, how this relationship presents itself in Arabic speaking children. The aim of the current study was to address the relationship between PA and literacy skills in Arabic-speaking Kuwaiti children who read in the Modern Standard Arabic (MSA) orthography. A longitudinal design was used. Participants were a group of children in the first grade, and data were collected twice during the school year. Children were assessed via PA tasks at the level of syllables, rhymes, and phonemes; as well as via a single word reading task, and a letter knowledge task (letter-sound recognition). Longitudinal results indicated a general improvement in PA skills once literacy training had been introduced. A need for further research into this area, as well as a need for standardized tests in the Arabic language is suggested.

Keywords: *Phonological awareness, Arabic literacy development, word reading, letter knowledge*

Introduction

Research in the English language has shown that phonological awareness is linked to literacy (Goswami & Bryant, 1990). In recent years, cross-linguistic studies have also attempted to find evidence of this link in other languages. Monolingual, as well as bilingual children have been the subjects in research studies examining the link between phonological awareness, letter knowledge, and reading acquisition. Fewer studies, however, have focused on this relationship in Arabic speakers. This study has three main objectives. The first is to investigate the development of phonological awareness skills in

typically developing school-age Kuwaiti-Arabic speaking children. In addition to investigating the phonological awareness abilities of Kuwaiti children, the study aims to explore whether the results of the Arabic data are similar to those in other languages such as English. A third objective is to examine whether or not there is a relationship between PA ability and reading by assessing letter knowledge and single word reading in a beginner reading school-age group.

Phonological awareness (PA)

Phonological awareness (PA) is a metalinguistic skill, which has been defined as the ability to reflect on the phonological properties and structure of words independent of meaning (Hatcher, Hulme, & Ellis, 1994; Stackhouse & Wells, 1997). Further, it denotes the ability to perceive and manipulate the sounds of spoken words (Goswami & Bryant, 1990). It includes the awareness of the smallest speech units (sounds), referred to as phonemes, as well as larger units such as syllables and rimes. Phonological awareness skills include, but are not limited to the ability to see similarities between words, such as identifying and generating words that rhyme or share a common onset (initial sound); the ability to manipulate words including blending and segmenting words into their components (phonemes and syllables), as well as the awareness of component parts of words such as phonemes and syllables (Alcock, Ngorosho, Deus, & Jukes, 2010).

PA, letter knowledge, and reading

A large body of research to date has focused on the link between phonological awareness, emergent literacy, and reading success (Goswami & Brayant, 1990; Stackhouse & Wells, 1997). Researchers have argued that alphabetic knowledge (letter-name and letter-sound) and phonological awareness are critical and crucial prerequisites and predictors for children's reading and writing acquisition (Gillon, 2004; Mann & Foy, 2003; Shankweiler & Fowler, 2004; Snowling & Hulme, 2005). Additionally, deficits in phonological awareness have been linked to reading disabilities. A longitudinal study by Lonigan, Burgess, and Anthony (2000) found that phonological awareness, when compared to many other predictors, was the most stable and vigorous indicator of reading in a group of children who were followed from preschool into kindergarten and first grade. Furthermore, studies have demonstrated overwhelming evidence that the progress children make in learning to read is dependent on their phonological skills (Gillon, 2004, 2005; Goswami & Bryant,1990).

An important influence on phonological awareness development is that of letter knowledge or letter-sound recognition (Kim, 2009; McBride-Chang, 1999). Researchers have argued that both letter knowledge as well as PA are critical for students' reading acquisition with alphabetic orthographies (Kim, Petscher Foorman, & Zhou, 2010). Also, letter-name knowledge has a direct relationship with word reading in that letter-names provide a link between letters and print which helps children in learning to read.

Kim et al., (2010) conducted a study in which the main goal was to examine letter-sound knowledge as a function of letter-name knowledge, PA, letter characteristics, and interactions among those. They examined whether children would know letter sounds as a function of knowing letter names and PA. In this study, researchers investigated the abilities of 653 English-speaking kindergarten children at the beginning of the school year. Children were assessed on PA abilities using phoneme blending and onset-rime tasks. Letter knowledge was assessed using both letter-name and letter-sound tasks. Results indicated that letter-name knowledge did in fact have a large impact on letter-sound acquisition. Also, PA was found to have a larger effect on letter-sound knowledge when children knew the names of the letters.

Evidence from Arabic

Arabic is a language characterized by diglossia (Ferguson, 1959), which, as noted by many researchers, presents beginning readers with a challenge (Saiegh-Haddad, Levin, Hend, & Ziv, 2011). The term diglossia refers to languages which are characterized by two different styles and levels of formality. Modern Standard Arabic (MSA) is only acquired via formal education and used in formal speeches, and for various written purposes, such as newspapers, textbooks, literary novels, and children's books. The Spoken Arabic Vernacular (SAV), is used socially as the primary mode of communication in informal contexts.

The two styles of Arabic serve exclusive functions (Ferguson, 1959). For example, in situations where MSA is used, the SAV is usually not used, and vice-versa. Further, there exists a notable linguistic distance between the two (SAV and MSA), which is a classic example of diglossia (Taha, 2013) which affects the acquisition of components of language, including phonological awareness, reading, writing and vocabulary (Abu Rabia & Taha, 2006; Saiegh-Haddad, 2003, 2007). This linguistic distance between MSA and SAV is not identical across all dialects of Arabic, and depends on the specific SAV used. All speakers of Arabic, regardless of their SAV, use MSA for formal spoken and written purposes. In the current study, MSA was examined using PA tasks and a single word reading test. Further, early acquired reading and vocabulary words were used to creating the PA inventory in the MSA.

Learning to read in Arabic is very different from learning to read other languages such as English. Children who learn Arabic are first exposed to the spoken version, SAV, for the first two to three years of life, and as they enter school, they must learn to read and write in a different version of their language, MSA. This ability to learn to speak in the SAV and then to read in the MSA has been noted to be similar to learning a second language (Ayari, 1996). As children learn to read Arabic, they learn to "map" different written forms including vowelized Arabic, and non-vowelized Arabic onto the different forms of language: spoken and literary. Also, as written words typically relate to the same root in Arabic, the words tend to be similar both visually and phonologically. This similarity may

cause morphological errors while reading real words (Abu-Rabia & Taha, 2006). This indicates that children learning to read Arabic tend to rely on word recognition strategies involving phonological skills and visual-orthographic recognition (Abu-Rabia & Taha, 2004).

In Kuwait, compulsory education and literacy education begin in the first grade (age 6), but many children attend preschools and kindergartens between the ages of three and five, and may begin limited literacy acquisition during these years. The instructional approach to begin reading in Kuwait may be characterized as a whole language approach where children learn whole words initially, followed by relationships between spoken and written syllables, and finally individual phonemic components such as, consonants and vowels.

Arabic phonological awareness

Recent studies have examined phonological awareness and phoneme isolation in the Arabic language. Two studies, in particular, observed Arabic dialects that are similar in many aspects to the Kuwaiti dialect. In a study of phonological processing skills amongst Bahraini-Arabic speaking children (Al Mannai & Everatt, 2005), researchers examined the reading and spelling skills of children in grades 1-3. Children were tested on their single word reading skills, spelling ability, non-word reading, as well as measures of phonological awareness in MSA. Researchers were trying to identify the best predictors of literacy amongst early Arabic readers. Al Mannai and Everatt (2005) included measures of phonological awareness to assess rhyme awareness, as well as a measure of non-word reading to assess the influence of decoding novel letter strings on early literacy. Findings showed that word and non-word rhyming predicted both reading and spelling. Findings also revealed the potential importance of phonological processes (PA skills) as predictors of early literacy in the group of Arabic speaking Bahraini children examined.

Another study of phonological awareness was published by Tibi (2010). The purpose of this study was to examine some phonological awareness tasks in the Arabic language of children from the United Arab Emirates. The study was aimed at discovering the level of difficulty of four phonological awareness tasks in Arabic. Similar to the study on Bahraini-Arabic speaking children, the language used in these tasks was MSA rather than the spoken dialectal version. The four tasks performed by the children from the first three elementary grades were initial sound identification, rhyme oddity, syllable deletion, and phoneme segmentation. Results of this study revealed that identifying the initial sound in the word and rhyme oddity were much easier for children to execute than were syllable deletion and phoneme segmentation. Findings from this study are consistent with findings in English, in that the larger units (syllables) are acquired earlier than smaller units (Adams, 1990).

Other evidence of the importance of PA in learning to read in MSA comes from a study by Saeigh-Haddad (2003), which examined the phonological awareness abilities of 65 North Palestinian-Arabic-speaking children (23 kindergarteners, 42 first graders) from a

local public school. Two phonemic awareness tasks were developed which examined the ability of children to isolate initial and final phoneme in both the spoken dialect, as well as in MSA. Findings revealed three important results: (i) first grade children performed better than those in kindergarten; (ii) children found it more difficult to isolate phonemes in MSA than in the spoken dialect; and (iii) final phoneme isolation was easier that initial phoneme isolation. It was concluded that manipulation of phonemes in Arabic may be different than what has typically been shown for English.

The present study

Previous studies presented evidence to support the major role phonological awareness plays in early reading acquisition. Phoneme awareness in particular, as well as letter knowledge have been shown to be significant predictors of reading, and that the two skills are closely related. Also, studies reviewed on phonological awareness skills and reading in Arabic have revealed results and developmental patterns similar to those in other languages. The three questions below were examined in this study:

1. Is there a correlation between phonological awareness abilities, letter knowledge, and reading tasks in children?
2. Do phonological awareness skills improve once formal literacy education is introduced?

Methodology

The design of the current study was a longitudinal one with two time points: T1 (November 2011) and T2 (May 2012). This within-subject longitudinal design can provide evidence for the change of the variables over time.

Participants

A group of first grade Kuwaiti-Arabic speaking children participated in the study. All children were recruited through public schools in Kuwait. All parents of potential participants were given an Information Sheet which briefly described the study design. If parents agreed for their child to participate in the study, they were also asked to sign a Consent Form, as well as fill in a mini questionnaire. Schools in different areas of Kuwait from which the children would be recruited were randomly chosen.

The group included 30 participants enrolled in the first grade (At T1 (October 2011); (N=30, mean age: 6;7, SD: 3.9 months) who attended single-gender public primary schools.

Participants came from various socioeconomic backgrounds and regions in Kuwait and met the following inclusion criteria:

- They studied in Arabic medium schools with minimal second language input on a daily basis;
- They had no suspected or confirmed hearing, speech-language, and/or learning difficulties;
- The primary language spoken at home and in the school environment was Arabic.

Measures

To examine the relationship between oral language and reading, the following experimental measures in Arabic were used:

- a battery of phonological awareness tasks to be referred to as PA tasks (syllable awareness, rhyme awareness, sound matching in the initial position, sound matching in final position, phonemic isolation, elision);
- a letter knowledge task;
- a single word reading task.

Participants were evaluated two times during their first grade year; at T1 (October 2011) near the beginning of the school year and at T2 (April 2012), approximately six months later.

2PA battery

A total of six Arabic measures in (MSA) were used to assess the participants' abilities. The measures included syllable awareness, rhyme awareness, phonemic isolation, sound matching-initial phoneme, sound matching-final phoneme, and elision. Because of the lack of norm-referenced tests in Arabic, experimental measures were developed for the purposes of this study based on English assessments. Pictures and clip-art images downloaded from the internet were used in creating the Arabic measures. Some words and pictures were used more than once across the phonological awareness test battery.

The vocabulary words used in developing the Arabic measures came from a variety of sources. The criteria applied in the selection of words for the PA battery were that the words should support picture representation and that they were easily recognizable words for young children. For the list of words used for the PA tasks in MSA, three main sources were used:

- A published study on a sight word list in Arabic (Oweini & Hazoury, 2010), which included a list of 500 words gathered from a reading series in Lebanon.
- A list of frequently used words which was produced by the Center for Child Evaluation and Teaching in Kuwait.
- Early learning children's story books.

All tasks in Arabic were parallels of subtests from English phonological awareness and reading tests. Arabic versions used included the same number of practice items and test items, as well as the instructions for each task which were translated and presented orally by the examiner in the Kuwaiti dialect. The rationale for the presentation of instructions in the Kuwaiti dialect was that as it was considered to be the L1 for all participants, it was considered to be the best way to guarantee the participants' understanding of the task. Further, for each task examined, participants were given practice items prior to the scoring of the actual test items.

The following tasks were created using MSA words:

Syllable Awareness task

This subtest in Arabic was adapted from the Preschool and Primary Inventory of Phonological Awareness (PIPA; Dodd, Crosbie, McIntosh, Teizel, & Ozanne, 2000). The syllable task assessed each participant's ability to process words and to segment the words into syllables. Participants were presented with four practice items and 12 test items which were spoken by the examiner. Participants were shown a picture of five drums and were asked to tap out the segments of the words as drumbeats or to clap the syllables while also orally segmenting the words into syllables. Test items were chosen so that they would be unlikely to be part of the child's repertoire, and thus, the test item would not be segmented on the basis of a phonological representation from the lexicon. The task consisted of three 2-syllable words, three 3-syllable words, three 4-syllable words, and three 5-syllable words. Participants were given a score of 1 for correct oral responses and 0 for incorrect oral responses or non-responses. Participants were trained to segment the words while tapping prior to the scoring of test items.

Rhyme awareness task

Rhyme awareness was assessed using an adapted Arabic version of the rhyme awareness subtest of the PIPA (2000). This task assessed the participants' ability to evaluate the phonological similarity of spoken words. Participants were shown pictures of sets of four words and were asked to choose the word that does not sound the same as the other words (i.e., does not rhyme). The items were spoken by the examiner and the task included 2 practice items and 12 tests items. The items were all simple one syllable words and the position of the non-rhyming word was changed for each test item. Participants received a score of 1 for correct responses and a 0 for incorrect or non-responses.

Phonemic isolation task

Phonemic isolation was assessed using an adapted Arabic version of the phoneme isolation subtest of the PIPA (2000). This task examined the participants' ability to recognize onsets and to produce them as isolated sounds when presented with a spoken word. The stimuli were presented orally by the examiner while participants were shown picture stimuli of the orally presented words. Participants were asked to produce the first sound of each word. The task included one demonstration item, two practice items, and 12 test items. Test items began with either a consonant sound or a vowel. Participants were given a score of 1 for correct responses and 0 for incorrect productions of the initial phoneme, as well as for non-responses.

Sound matching-initial position

The sound matching task that was used to assess the participants' ability to make judgements regarding similarities between initial or onset sounds was an adapted Arabic version of the subtest of The Comprehensive Test of Phonological Processing (CTOPP; Wagner, Torgesen, & Rashotte, 1999). This task consisted of three practice items and 10 test items. The examiner would initially produce a word followed by three words and the participants were asked to say which of the three words begins with the same sound as the initially spoken word. Participants were shown picture stimuli along with the verbally presented word. Participants received a score of 1 for correct responses and 0 for incorrect or non-responses responses.

Sound matching-final position

The sound matching task that was used to assess participants' ability to make judgements regarding similarities between final sounds of words was also an adapted version of the subtest of the CTOPP (Wagner, Torgesen, & Rashotte, 1999). This task consisted of three practice items and 10 test items. The examiner would initially produce a word followed by three words and the participants were asked to say which of the three words ends with the same sound as the initially spoken word. Participants were shown picture stimuli along with the verbally presented word and they were given a score of 1 for correct responses and 0 for incorrect or non-responses.

Elision

The words used for this task were from the Test of Phonological Processing (TOPP) (Taibah, Elbeheri, Abu-Diar, Mahfoudhi, Everatt, & Haynes, 2010), developed by the Center for Child Evaluation and Teaching in Kuwait and was used as a phoneme deletion subtest in Arabic. This test was used with permission from the center. As the Arabic version of this task is not norm-referenced, percentage accuracy scores were used for data analysis. This

test parallels the elision subtest of the CTOPP by Wagner et al., (1999). Participants were given a given a score of 1 for correct responses and 0 for incorrect or non-responses. Further, the test was discontinued for any participant who was not able to complete any of the practice items correctly. For this reason, only the participants in the Grade1 groups were administered the elision subtest as it was too difficult for the kindergarten groups.

Tasks of emergent literacy in Arabic (MSA)

Two tasks were used as measures of reading abilities. The first was a letter knowledge task in which participants were shown all 28 letters of the Arabic language (MSA). Participants were asked to produce the name of the letter or "the sound that the letter makes." Either of those two answers would be scored as correct. As the Kuwaiti dialect is only a spoken version of Arabic, all reading related tasks were administered in the MSA version of Arabic.

The second task which measured single word reading was a test that paralleled the Basic Reading subtest of the Wechsler Objective Reading Dimensions Test (WORD). All words used in this task were vowelized with diacritical markers to make it easier for young children to read. As mentioned previously, most words were taken from curriculum text books and children's story books. Some words were taken from a list of reading words used in Farran (2010), which examined the relationship between language and reading in bilingual English-Arabic speaking children. This reading task consisted of a set of pictures and printed words to assess decoding skills and single word reading ability. The final version was a parallel version of the English WORD test. For items 1-4, participants were required to look at a picture and select (by pointing) to the word that begins or ends with the same sound as the word in the picture. Participants were required to select from a list of four possible words. For items 5-7, participants were required to select a word from a list of four words that names the picture. The remaining items (8-75) assessed single word reading without any picture stimuli. The test was discontinued after six consecutive errors and participants were given a score of 1 for correct responses and 0 for partial or incorrect or non-responses.

Procedure

The experimental tasks were administered individually and all participants were tested at their school or in their home. Participants were assessed on all tasks during one 45-minute session. Responses were scored manually.

- Participants were tested two times at T1 and T2. Each session was held individually with each participant and lasted approximately 45 minutes. A comparison of scores at T1 and T2 was the longitudinal component of the study. The order in which the PA batteries in MSA were administered was as follows: Syllable awareness, Rhyme awareness, Sound matching-initial position awareness, Sound matching-final position awareness, Phonemic isolation and Elision.

Results

Results related to the participant performance are below. This section is structured according to the task administered at (T1) and time two (T2). It was predicted that participant scores would significantly improve from T1 to T2.

PA performance

Analysis of performance and the relationship between PA tasks refers to the longitudinal data collected and evaluated at T1 and T2. Results presented are those which compare performance at T1 to their performance at T2. The following sections aim to answer the research question on whether phonological awareness skills improve once formal literacy education is introduced. Table 1 shows descriptive statistics for performances at T1 and T2.

Table 1

Descriptive statistics on first grade group performance on PA tasks at T1 and T2

	T1	**T2**	**Sig.**
Syllable Awareness			
Mean	50.00	60.28	
SD	22.53	20.26	NS
Range	17-100	17-100	
Rhyme Awareness			
Mean	38.33	55.28	
SD	16.46	25.85	***
Range	8-83	17-100	
Sound Matching-Initial			
Mean	60.33	75.33	
SD	20.08	15.25	***
Range	30-100	40-100	
Sound Matching-Final			
Mean	52.33	64.67	
SD	19.42	18.33	**
Range	10-100	20-100	
Phonemic Isolation			
Mean	82.78	92.78	
SD	16.37	16.04	**
Range	42-100	25-100	
Elision Awareness			
Mean	30.67	52	

		26.25	30.22	***
SD		26.25	30.22	***
Range		90-100	0-100	

*p<.05, **p<.01, ***p<.001   Numbers represent percentage correct

It is clear from the table that performance scores were higher on every task from T1 to T2. In order to examine whether these longitudinal differences in score were significant, paired samples t-tests were carried out to test the differences on tasks where data were normally distributed for test times. This test was used to examine the change in group scores over time on the following tests: rhyme awareness, sound matching–initial position (MSA), sound matching–final position (MSA). The paired samples t-test showed significant results for all tasks: rhyme awareness, t(29)=-3.771, *p*=.001; sound matching-initial position (MSA) , t(29)=-4.527, *p*<.001; sound matching-final position (MSA), t(29)=-3.017, *p*=.005.

Non-parametric related samples tests were carried out to examine the remaining tasks in which data were shown to not be normally distributed. A Wilcoxon Signed-Rank test was run to determine if there were differences in T1 and T2 on the remaining tasks. Statistically significant results were found when the Wilcoxon Signed-Rank test was run for the following tasks: phonemic isolation, T1 (Mdn=87.50) compared to T2 (Mdn=100), z=3.083, *p*=.002; elision awareness, T1 (Mdn=25.00) compared to T2 (Mdn=55.00), z=3.952, *p*<.001.

Data from the following task yielded non-significant results in improvement: syllable awareness from T1 (Mdn=41.67) compared T2 (Mdn=58.33), z=1.712, *p*=.087.

Performance on letter knowledge and reading

Non-parametric related samples tests were carried out to examine the change in letter knowledge and reading performance over time from T1 to T2. Table 2 shows descriptive statistics for T1 and T2 with regard to letter knowledge and reading. The purpose of this analysis was to investigate improvement in reading performance just as performance over time was evaluated for the PA tasks.

Table 2
Descriptive statistics on literacy task at T1 and T2

	T1	**T2**	**Sig.**
Reading			
Mean	3.87	19.07	
SD	16.31	24.69	***
Range	0-87	0-88	
Letter Knowledge			
Mean	34.88	73.45	
SD	26.82	27.72	***
Range	4-96	11-100	

Numbers represent percentage correct

A Wilcoxon Signed-Rank test was run to determine if there were significant differences between performance scores at T1 and at T2 in order to examine the longitudinal data pertaining to reading and letter knowledge. The analysis showed significant results on both measures in that the performance scores at T2 were higher for both the reading task, as well as the letter knowledge task. For the letter knowledge task: T1 (Mdn=30.36) compared to T2 (Mdn=85.71), z=4.705, $p<.001$; and for the reading task: T1 (Mdn=0.00) compared to T2 (Mdn=11.35), z=4.111, $p<.001$. Results seem to suggest that participants showed significant improvement over time in letter knowledge and reading. This is not surprising, however, because at T2, participants would have received approximately six months of literacy training at school. Further, significant improvement was shown for this group on both PA tasks and reading tasks in Arabic.

Relationship between PA, letter knowledge, and reading

Correlations were carried out to investigate the relationship between phonological awareness, letter knowledge (LK), and reading and to investigate if children with better phonological awareness skills had better letter knowledge and reading skills. Because the data from both the letter knowledge task and reading task were not normally distributed, non-parametric Spearman tests were used. The results appear in Table 3. The following analysis examined the relationship between letter knowledge, single word reading, and PA tasks.

Table 3.
Spearman correlations between PA tasks, reading, and letter knowledge at T1 and T2

	T1		T2	
	LK	Reading	LK	Reading
Syllable Awareness	.153	-.236	.002	-.051
Rhyme Awareness	.006	.122	.445*	.434*
Sound Matching-Initial	-.007	.255	.191	.243
Sound Matching-Final	.202	.341	.215	.290
Phonemic Isolation	.531**	.229	.462*	.449*
Elision Awareness	.477**	.250	.729**	.656**
Reading (MSA)	.238	--	.914**	--

*p<.05, **p<.01

It can be seen that there were more significant associations between phonological awareness tasks and reading/ letter knowledge at T2. Participant results at T2 show significant positive correlations between the following PA tasks and letter knowledge:

rhyme awareness, phonemic isolation, and elision awareness. The two PA tasks which show positive correlations with letter knowledge at both T1 and T2 were phonemic isolation and elision awareness. Also, a highly significant correlation was found between letter knowledge and reading at T2 which was not evident at T1. This result indicates that children tend to improve in their reading scores as they acquire letter knowledge.

With regards to reading at T2, there were strong positive correlations found between reading and the following tasks: rhyme awareness, phonemic isolation, and elision. Interestingly, these same PA tasks were also highly correlated with letter knowledge at T2. It would appear then, that participants perform better on PA tasks at the phonemic level with increased letter knowledge and improved reading.

Development of letter knowledge and reading over time

The relation between letter knowledge and reading measures at T1 and T2 was investigated using Spearman correlation tests. As previously mentioned, results from T2 showed significant correlations between reading and letter knowledge, while at T1, no significant correlations were found. From the following table (4), it can be seen that the measure for letter knowledge at T1 was highly significantly correlated with both reading and letter knowledge at T2, while reading at T1 did not show any significant correlations with reading or letter knowledge at T2.

Table 4
Spearman correlations between letter knowledge and reading for the first grade group at T1 and T2

	Reading (T2)	Letter Knowledge (T2)
Reading (T1)	.307	.216
Letter knowledge(T1)	**.745****	**.799****

*p<.05, **p<.01

This result should not be surprising due to the fact that letter knowledge and reading are related skills. Because reading scores were extremely low at T1, one would expect there to be no correlation between the scores at T1 and T2 for reading. Furthermore, because the reading measure was administered before literacy instruction, it could be that children have letter knowledge at T1, but are not yet able to read, while as mentioned previously, at T2, letter knowledge and reading were highly correlated with one another. Also, letter knowledge at T1 was significantly correlated with both letter knowledge and reading at T2. Thus, higher performance scores on letter knowledge task at T1 meant higher performance scores for both reading and letter knowledge at T2.

Discussion and Conclusions

The current study investigated phonological awareness (PA) skills and emergent literacy skills (single word reading and letter knowledge) in Kuwaiti children who speak an oral variety of Arabic, and read in the Modern Standard Arabic (MSA) orthography. The main question of the study concerned the relationship between PA and reading acquisition in Arabic. To address this question, 30 first grade children were tested at two time points in order to examine improvement in PA skills and reading abilities.

One way of examining the effect of literacy training on phonological awareness was to longitudinally compare the PA skills of children before formal literacy instruction begins and after. In the current study, this was achieved by comparing the first grader performance scores at the beginning of the year to their performance scores towards the end of the school year. The results from the phonological awareness battery provide information as to how children progress in terms of PA skills over time. In concurrence with previous studies that found a reciprocal relationship between PA and reading ability, it was predicted that participants would improve their PA scores at T2 following formal literacy training (Hogan, Catts, & Little, 2005; Perfetti, Beck, Bell, & Hughes, 1987).

Analyses revealed that participants significantly improved their PA task scores from T1 to T2 on five of the six PA tasks administered. This information is important as it allows us to make conclusions regarding PA skills and how they improve over time with an increased level of literacy training as evidenced by the improvement longitudinally from T1 to T2. In fact, PA skills had improved once literacy training had been formally introduced to participants in their first year of school.

In addition to examining the performance of PA skills, a secondary aim was to investigate the relationship between PA skills and indicators of emergent literacy. Comparisons of the results obtained at T1 and T2 yielded the following main findings. More significant correlations were found at T2 than at T1 between PA tasks and letter knowledge, as well as between PA tasks and reading. Findings also showed a significant improvement in reading and letter knowledge scores from T1 to T2. Moreover, letter knowledge at T1 was found to be highly correlated with reading at T2. This again may indicate the importance of letter knowledge in early reading acquisition (Wagner, Torgesen, & Rashotte, 1994; Caravolas, Hulme, & Snowling, 2001).

Thus, the findings from the data suggest that in Kuwaiti children, literacy training may play a role in improved phonological awareness and reading skills. They also indicate that in post literacy training, children showed significant improvement in phoneme awareness in terms of identification and deletion of phonemes. This is not surprising, as research has shown that segmentation tasks (isolation or deletion) tend to place higher demands on children than identification tasks (similarity judgements or recognition) (Yopp, 1988). Additionally, findings have shown that results of group analyses do converge with previous evidence in showing that PA is concurrently and longitudinally related to orthographic skills (Burgess & Lonigan, 1998). For example, although letter knowledge and

PA skills seem to develop concurrently and not as a prerequisite to PA skills, letter knowledge was found to be highly correlated with PA and may foster its development, specifically at the phonemic level. Moreover, these results provide crucial information as to the nature of PA in Kuwaiti children learning to read in MSA.

The results of the current study have both practical and clinical implications. Firstly, as a child's PA skills can emerge as early as the age of two in the preschool years and continues to develop if the child is placed in a literacy rich environment (Troia, 2004), early focus on PA tasks and abilities may serve to benefit early reading acquisition. Secondly, the phonologically transparent nature of the Arabic language with a large number of consistent grapheme to phoneme correspondences is likely to play a facilitative role in early word recognition. Thus, intervention aiming to help children with language delays may begin with techniques focusing on PA tasks such as rhyming songs and blending games to develop this awareness, and possibly enhance word recognition abilities. Further, the process of reading in Arabic involves much reliance on the diacritics for early readers, as well as reliance on the context for unvowelized text which can contain many homophones (Abu-Rabia, 2007). These factors with the additional feature of diglossia, may offer insights into the development and acquisition of reading in Arabic for both typical and delayed populations of early readers.

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