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The contribution of early home literacy activities to first grade reading and writing achievements in Arabic

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Abstract This longitudinal study assessed the literacy development of native Arabic-speaking children from kindergarten to the end of first grade, focusing on the role of home literacy activities (mother–child shared book reading and joint writing). The contribution of these activities in kindergarten to children's reading and writing at the end of first grade were evaluated, controlling for family SES and children's early skills (vocabulary and letter naming). Eighty-eight Arabic-speaking children and their mothers participated in the study. Results revealed that family SES, children's early skills and home literacy activities in kindergarten correlated with children's achievements at the end of first grade. Joint writing contributed significantly to children's literacy in first grade and the contribution of shared reading was almost significant. Joint writing was found to contribute to children's literacy achievements in first grade beyond book reading. The study extends our knowledge on literacy acquisition in Arabic, highlighting the significance of early parent–child literacy activities as a predictor of Arabic-speaking children's literacy achievements in school.

Keywords Arabic · Writing interactions · Shared book reading · Early literacy · SES · Longitudinal study

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Introduction

Vygotsky (1978) argued that the original form of higher mental activity is external and social, and is appropriated by the individual during the course of interaction with experienced others. Our longitudinal study examined the socio-cultural context of literacy development in Arabic, focusing on the unique role of collaborative early mother–child literacy interactions. Research has to consider the universal aspects as well as the language and culture-specific features of literacy development (Joshi & Aaron, 2006; Share, 2012; Venezky, 2006). Very few studies have investigated the relations between early parent–child home literacy activities and children's later literacy achievements in school in languages other than English, and the present research is the first to address this issue in Arabic. We assessed how home literacy activities among Arabic-speaking kindergartners in Israel predict reading and writing at the end of first grade, controlling for family socioeconomic status (SES) and children's early skills in kindergarten.

Home literacy activities and children's literacy achievements

There is substantial evidence that early parent–child home literacy activities contribute to children's early literacy skills in different languages (e.g., Lonigan, Burgess, & Anthony, 2000; Neumann, Hood, & Ford, 2011; Sénéchal, LeFevre, Thomas, & Daley, 1998 in English; Sénéchal, 2006 in French; Leseman & de Jong, 1998 in Dutch; Silinskas et al., 2010 in Finnish; Chen, Zhou, Zhao, & Davey, 2010; Lin, McBride-Chang, Aram, & Levin, 2011 in Chinese; Aram & Levin, 2002; Korat & Haglili 2007; Korat, Klein, & Segal-Drori, 2007 in Hebrew; Manolitsis, Georgiou, & Parrila, 2011 in Greek). However, it is also important to examine how specific aspects of the home literacy environment contribute to children's reading and writing in school (Roberts, Jurgens, & Burchinal, 2005). Such an understanding may elucidate the importance of early parent–child literacy interactions for children's later literacy achievements and the role of parents in promoting their young children's literacy development. Studies that explored this issue usually focused on the role of shared book reading (e.g., Cunningham & Zibulsky, 2011; de Jong & Leseman, 2001; Mol & Bus, 2011) or on teaching young children the written system (e.g., Aram & Levin, 2004) in predicting children's literacy achievements in school.

Only limited research has acknowledged the contribution of both shared reading and teaching the written system to children's literacy achievements in school. For example, Sénéchal et al. (1998) followed children from kindergarten through first grade and found that shared reading and teaching the alphabet system at home are independent factors that separately contribute to different aspects of literacy achievements in school. Book reading was associated with children's oral language skills and teaching the alphabet was associated with written language skills. These relations were mediated by the children's oral and written language skills. Several studies supported Sénéchal et al.'s results (Hood, Conlon, & Andrews, 2008; Kirby & Hogan, 2008; Sénéchal & LeFevre, 2002; Stephenson, Parrila, Georgiou, & Kirby, 2008). However, most of these studies were conducted among English-speaking families.

Two studies assessed the role of different early home literacy activities in predicting literacy achievements in school in languages other than English. Sénéchal (2006) assessed French-speaking children and found similar results to those with English-speaking children. Parents' frequency of teaching the writing system in kindergarten directly predicted reading fluency in fourth grade, whereas book reading indirectly predicted fourth grade reading comprehension. Manolitsis, Georgiou, and Parrila (2011) examined the prediction of early home literacy activities to children's later literacy achievement in Greek. They found that book reading predicted children's early vocabulary, and parents' teaching of the written system predicted early letter knowledge in kindergarten, but early home literacy activities did not predict children's literacy achievements in fourth grade. Our study is the first to assess the contribution of different early home literacy activities to children's literacy achievements in school in Arabic.

SES, children's early skills and literacy achievements

The relations between early home literacy activities and children's literacy achievements are frequently mediated by family SES and by children's early skills. There is evidence that children from low SES families experience different literacy activities at home (e.g., Aram & Levin, 2002; Bus, Leseman, & Keultjes, 2000; Cunningham & Zibulsky, 2011; Serpell, Baker, & Sonnenschein, 2005) that result in lower literacy achievements (e.g., Evans, Shaw, & Bell, 2000; Korat, 2005; Korat & Haglili, 2007; Korat & Levin, 2002; Roberts et al., 2005; Silinskas et al., 2010) compared to children from middle SES families. Two skills are considered to be vital building blocks for the preliminary steps toward literacy acquisition: vocabulary and letter knowledge. Vocabulary in kindergarten is strongly related to children's literacy (e.g., Leseman & de Jong, 1998; Sénéchal, 2010; Sénéchal & LeFevre, 2002). Vasilyeva and Waterfall (2011) discuss the reciprocal relations between oral language and reading acquisition. Specifically, the ability to read depends on language knowledge, while reading simultaneously provides a resource for language enrichment. Thus, children who have a rich vocabulary have an advantage in reading. Furthermore, letter knowledge in kindergarten has been established as a major predictor of later literacy achievements in school across languages (e.g., Blaiklock, 2004; Levin, Patel, Margalit, & Barad, 2002; McBride-Chang, 1999; Muter & Diethelm, 2001). Letter knowledge helps young children understand the alphabetic code and learn that words are made up of patterns of letters. It assists children in establishing and recalling words in memory, and in decoding unfamiliar words (Roberts, 2003; Foulin, 2005). In the present study we controlled for family SES and children's early skills (vocabulary and letter knowledge) in kindergarten, while exploring the relationship between home literacy activities at kindergarten age and literacy achievements in first grade among Arabic-speaking families.

Arabic characteristics

Arabic is the fifth most widely used language in the world (Holes, 2004). The Arabic linguistic context was described by Ferguson (1959) as a typical case of

diglossia, where there are diverse linguistic differences between the spoken and the written forms of the language. Two variants of Arabic are used for socially distinct functions: Modern Standard Arabic (MSA) is used for reading, writing, and formal speech functions (e.g., religious sermons, news broadcasts), and Spoken Arabic Vernacular (SAV) is used for everyday conversation at home, in the neighborhood and even in the classrooms (Almusa, 2003; Saiegh-Haddad, 2003).

A linguistic distance exists between MSA and SAV variants of Arabic across all language components (e.g., Saiegh-Haddad, 2003). In Palestinian Arabic (the language of the present study), there are: (1) letters in the Arabic alphabet that represent phonemes which do not exist in the spoken language, resulting in many words that have distinct lexical forms in MSA and SAV (Saiegh-Haddad, 2004); (2) letters in the Arabic alphabet that are referred to using two names: a spoken and a standard name (e.g., standard /ba:ʔ/ / and spoken /ʔeb // for the letter ب "B") (Levin, Saiegh-Haddad, Hende, & Ziv, 2008). Researchers claim that the gap between SAV and MSA leads to difficulties in acquiring MSA (Eviatar & Ibrahim, 2000; Ibrahim & Aharon-Peretz, 2005).

In diglossic Arabic children naturally acquire SAV through informal exposure in their immediate environment, whereas they learn MSA formally in the school context and as an integral part of formal instruction in reading (Ayari, 1996; Hudson, 2002). It is important to indicate that although exposure to MSA increases significantly when children go to school and learn to read, Arabic-speaking children are also informally exposed to MSA since birth (e.g., children's books, adults' prayer, siblings' reading, television, radio) (Saiegh-Haddad, Levin, Hende, & Ziv, 2011).

Learning to read and spell in Arabic confronts the child with another challenge—Arabic's orthographic complexity and its variety of letter shapes (Ibrahim, Eviatar, & Aharon-Peretz, 2002; Tahan, Cline, & Messaoud-Galusi, 2011). The Arabic alphabet includes 28 letters, where each letter has three to four different forms based on its position in the word. For example, the letter *b* appears as بـ at the beginning of a word, ـبـ in the middle of a word, and ب at the end of a word when it is unconnected, and ـب when it is connected. Arabic orthography is also characterized by letter dyads and triads that look identical and differ from each other by the number and placement of dots (e.g., ت /*t*/; ب /*b*/; ن /*n*/; ث /*θ*/). The Arabic writing system is primarily consonantal. However, all diacritics are present in the vowelized orthography that is considered a typical case of shallow orthography. Arabic texts are typically fully vowelized for beginning readers, creating a consistent relationship between the orthographic representation of the word and its phonological representation.

Research indicates that children's systematic exposure to MSA and to the Arabic orthography in preschool and kindergarten is linked to improved reading comprehension outcomes in first and second grades (Abu-Rabia, 2000). Such early exposure of children to MSA and to the Arabic orthography is carried out through exposure to children's books, which are written in MSA. Thus, parents who read more to their children expose them more to MSA and to the Arabic orthography. However, only very few studies referred to home literacy activities in Arabic and their relations to children's early literacy achievements. One such study was carried

out by Hassunah-Arafat (2010). She found relations between the frequency of shared book reading and kindergartners' early literacy. Analyzing the nature of mother–child shared reading interactions, she found that the most frequent behavior of mothers was paraphrasing written MSA texts into SAV. Mothers usually read a sentence or two in MSA and paraphrased them into SAV.

The present study

This study assessed the literacy development of Israeli native Arabic-speaking children from kindergarten until the end of first grade. Three major questions were addressed, based on the above literature review: (1) Do associations exist between family SES, children's early skills (vocabulary and letter naming) and home literacy activities (book reading and joint writing) in kindergarten and children's literacy achievements (reading and writing) in first grade? (2) Does each of the home literacy activities predict literacy achievements in first grade, controlling for family SES and children's early skills in kindergarten? (3) Does mother–child book-reading in kindergarten predict children's literacy achievements in first grade, controlling for SES, children's early skills and joint writing in kindergarten and does mother–child joint writing in kindergarten predict children's literacy achievements in first grade, controlling for SES, children's early skills and shared book reading in kindergarten?

In line with the reviewed literature and the complexity of the Arabic language, our first hypothesis was that SES, children's early skills and home literacy activities in kindergarten would correlate with children's literacy achievements in first grade. The second prediction concerns the special nature of book reading in Arabic (translating the story or paraphrasing it from MSA to SAV) and the nature of writing interactions. Our second hypothesis was that each of the home literacy activities would contribute uniquely to literacy achievements in first grade, controlling for family SES and children's early skills. The third hypothesis was that mother–child joint writing in kindergarten would contribute to children's literacy in first grade, controlling for shared book reading, but that shared book reading in kindergarten would not contribute to children's literacy in first grade, controlling for joint writing.

Method

Participants

The sample included 88 Israeli Arabic-speaking children (38 boys and 50 girls) and their mothers. Eighty-nine children were assessed in kindergarten and one child dropped out of the study in first grade. Children's average age in kindergarten was 5 years and 8 months (60–80 months, $M = 68.36$, $SD = 4.82$). Children diagnosed as having special needs were excluded from the study. All children came from intact two-parent families. The mothers' mean age was 30.95 years ($SD = 3.52$) and the fathers' mean age was 32.42 years ($SD = 4.26$). The average number of children per

Table 1 Descriptive statistics: ranges, means and standard deviations ($N = 88$)

	Range		*M*	*SD*
	Min	Max		
Kindergarten				
SES				
Mothers' education	1	4	2.58	1.11
Fathers' education	1	4	2.39	1.12
Mothers' profession	1	5	2.48	1.59
Fathers' profession	1	5	3.14	1.59
Mothers' occupation	1	5	2.39	1.59
Fathers' occupation	1	5	3.07	1.34
Family income	1	5	2.58	1.28
Early skills				
Vocabulary[a]	7.69	95.00	59.51	15.04
Letter naming	0.00	2.00	0.73	0.55
Home literacy activities				
Book reading	1	4	3.11	0.81
Joint writing	1.00	7.00	2.84	1.21
First Grade				
Reading				
Reading accuracy[a]	1.41	100.00	60.69	40.04
Reading fluency[b]	0.70	47.33	14.05	11.13
Reading comprehension[a]	0.00	100.00	44.89	27.33
Writing				
Writing level[a]	17.14	100.00	80.15	20.04
Letter presentation[a]	0.00	100.00	69.22	29.28

[a] In percentages

[b] Number of correct words read per minute

family was 3.74 ($SD = 1.53$). More information on the families' SES is presented in the "Results" section (see Table 1).

Procedure

In order to obtain a representative sample of Arabic-speaking families in Israel, children were recruited from: (a) a Muslim village; (b) a mixed Christian and Muslim Arab city; (c) a Muslim Arab neighborhood in a mixed Jewish–Arab city; and (d) a Muslim Arab city. Arab kindergartens in Israel are under the supervision of the Ministry of Education and follow the same literacy curriculum as Jewish kindergartens. Kindergarten teachers are required to enrich children's language and train them in various alphabetic skills, including letter knowledge, on a daily basis (Israeli Ministry of Education, 2009). We randomly selected two kindergartens in each of the above communities and talked with the kindergarten teachers.

The teachers contacted the parents through a letter that described the general aim of the study and explained the study's procedure. Both mothers and fathers were invited, but only mothers participated in the study. We therefore refer to the parent participants as mothers.

Data were collected by four graduate students in two steps: (1) When the children were in kindergarten; (2) One year later when the children were in first grade. In kindergarten we assessed family SES, children's vocabulary, letter naming, frequency of book reading, and the nature of maternal mediation of writing in two sessions in the middle of the school year. The first session took place within the children's kindergarten setting and lasted about 15 min. In this session the students individually assessed the children's vocabulary and letter naming in a quiet corner of the classroom. The second session took place in the children's home and lasted about 45 min. The mothers completed a questionnaire on the family's SES and frequency of book reading. Afterwards, the mother and child were videotaped during a writing interaction. Children's assessment in first grade (between May and July) included two one-on-one 15-min sessions that were held in a quiet room in the school. In the first session the graduate students assessed children's reading of a story (reading accuracy and fluency). In the second session they assessed the children's writing and reading comprehension.

Measures

Assessments in kindergarten

Socioeconomic status (SES) SES was assessed based on the parents' education, profession, occupation, and the family's income level. Parental education was measured on a 4-point scale, as follows: (1) did not finish high school; (2) vocational high school diploma; (3) academic high school diploma; (4) post-high school academic education. Profession and occupation were assessed on a 5-point scale (Meir, 1978), ranging from (1) unemployed and non-skilled professions (housewife, housemaid, and industrial laborer) through (3) skilled professions (e.g., carpenter, locksmith, crane driver), to (5) occupations that require academic certification (e.g., teacher, engineer, bookkeeper). The family's income level was assessed by a questionnaire that informed the mothers of the average income for a family in Israel and asked them to rank their income on a 5-point scale, as follows: (1) much below average; (2) below average; (3) average; (4) above average; (5) much above average.

Children's early skills Vocabulary An Arabic adaptation of the Peabody Picture Vocabulary Test (PPVT) (Dunn & Dunn, 1981) was used to examine children's vocabulary (SAV). The adaptation was performed by a group of Arabic-speaking researchers in Israel, including an Arabic linguist. Based on a preliminary pilot, we used the first 40 items. For each word, the researcher asked the child to choose the appropriate illustration out of four options presented on a page. We used percent correct scores because norms for this test are not yet available for Arabic. Cronbach's α was .79.

Letter naming The researcher presented each of 14 randomly selected letter cards to the child and asked him/her to name each letter. She used the first letter from the child's name as a practice trial. Children's responses were scored on a 3-point scale: (0) no answer or wrong answer; (1) naming the letter in SAV (e.g., for the letter ل /l/ the child said */ʔel/*) or (2) correct letter naming in MSA (e.g., for the letter ل /l/ the child said */la:m/)*. Cronbach's α across letters was .91.

Home literacy activities Book reading Mothers were asked to report the frequency of reading to their children. The scale ranged from 1 to 4, where 1 = not at all; 2 = once a month; 3 = once a week; 4 = every day.

Joint writing Videotapes of mothers guiding their children in a writing activity served as the basis for investigating joint writing. The mother and the child were randomly presented with six cards, each of which displayed a drawing of an object that was familiar to the child (cat, bag, glass, shoes, telephone and bed). These words represent a large number of letters from the Arabic alphabet. Six blank cards were given to the child, who was asked to write the name of each object on a separate card. The researcher asked the mother to help her child write these words. If a mother asked for the researcher's instructions or clarifications, the reply was: "You can do whatever you think is right." The videotapes were transcribed and the mothers' grapho-phonemic mediation was analyzed (Aram & Levin, 2001). The degree to which the mother guided her child through the process of segmenting each word into its phonological units and retrieving the required letter for each unit was assessed. The writing of each letter was assessed on a 7-point scale that will be demonstrated using the writing of the letter S in the word سرير */sari:r/* 'bed' as an example: (1) Mother refers to the word as a whole. She says: "write */sari:r/*"; (2) Mother utters a sequence of sounds. She says: "write */sa/-/ri:r/*"; (3) Mother dictates a letter name. She says: "write */si:n/*"; (4) Mother retrieves the target phonological unit and immediately dictates the required letter name. She says: "*/sa/ – /si:n/*"; (5) Mother retrieves the phonological unit and encourages the child to link it with a letter name. She says: "*/sa/* which letter is it?"; (6) Mother encourages the child to retrieve the phonological unit and links it with a letter name. She says: "*/sa-ri:-r/* what do you hear in the beginning, which letter is it?"; and (7) Mother encourages the child to go through the whole process independently while supporting the child along the way when help is needed. Scoring was repeated for each letter in the word and the averaged scores across the letters yielded the writing mediation score. Cronbach's α reliability across the letters was $\alpha = .96$.

Assessments in first grade

Literacy achievements The children's reading accuracy and fluency, reading comprehension, level of word writing and letter presentation were assessed.

Reading accuracy and fluency Children's reading accuracy and fluency were measured by reading the story The Wolf and the Lamb (Author unknown). The 71-word text is written in vowelized Arabic and includes most letters and vowels of the Arabic language. The researcher asked the child to read the text aloud and

recorded the reading. The percent of words that the child read correctly served as the reading accuracy score and the number of correct words that the child read per minute served as the reading fluency score.

Reading comprehension An Arabic linguist assisted in translating Shatil and Nevos' (2007) test of reading comprehension into Arabic. The researcher asked the child to read 10 vowelized sentences ($M = 7.5$ words per sentence) and indicate, for each of them, which of four drawings best matches the sentence that he/she read. The sentence length ranged from 4 to 12 words (e.g., "All of a sudden a cute dog came and sat next to me"). Each sentence was presented to the child on a separate page that included four pictures. The percent of correct answers served as the reading comprehension score. Cronbach's α across items was $\alpha = .74$.

Word writing The researcher asked the child to write 14 words (nouns). These words included 56 letters and represent the entire Arabic alphabet. Words with different lengths (2–6 letters) were chosen. The words included special features of the Arabic orthography such as the ta marbuta connected (فراشة */fara:ʃa/* butterfly) or the ta marbuta not connected (سُلْحُفاة */sulħufa:/* turtle). We chose words in which letters were not connected at all (e.g., دب /dub/ bear), connected in one or two letters (e.g., ثور */θawr/* ox, or سرير */sari:r/* bed) or were fully connected (e.g., حقيبة */ħaqi:ba/* bag). The researcher showed the child a picture, said the word, and asked the child to write it on a card. For example: 'Write the word turtle'. Each written word was scored on a 10-point scale adapted from Levin, Share, and Shatil (1996) and Levin and Bus (2003): (1) scribbles; (2) pseudo letters; (3) random letters; (4) basic consonantal spellings; (5) basic consonantal and basic vowel spelling; (6) partial consonantal spellings; (7) partial consonantal and vowels spelling; (8) full consonantal spelling; (9) full consonantal and partial vowel spelling; (10) formal writing. The mean score across the 14 words served as the word writing score. Reliability across words was $\alpha = .96$.

Letter presentation The ways in which the children wrote the 56 letters of the above 14 words and connected them to each other when necessary were assessed in order to evaluate their knowledge on the correct presentation of Arabic letters. In these words, 24 of the letters had to be connected to the letter before, the letter after, or both before and after. The percent of letters that were presented correctly was calculated and this score served as the letter presentation score in word writing.

Results

The results are presented in three parts. The statistics for all the variables and for the intercorrelations between them within each age group are described in the first part. The correlations between the predictor variables assessed in kindergarten and the predicted variables in first grade are presented in the second part. The unique

contribution of home literacy activities in kindergarten to predicting children's literacy achievements in first grade is evaluated in the third part.

Descriptive statistics

Kindergarten variables

Table 1 presents the descriptive statistics of children's measures in kindergarten: SES, children's early skills (vocabulary, letter naming), and home literacy activities (book reading and joint writing).

Children's socioeconomic backgrounds varied considerably. On average, parents had a high school education. Generally, mothers worked in semi-skilled professions (e.g., hairdresser) and fathers worked in professional jobs (e.g., carpenter). The participants' income was below the country's average income. Because of the different scale ranges, we standardized the scores and used the mean Z score across the mothers' and fathers' education, profession, occupation, and income level as the SES variable (Cronbach's $\alpha = .93$).

Regarding children's early skills, the mean vocabulary score indicated that the children recognized about 60 % of the PPVT items presented. Children's mean score in letter naming reflected more frequent use of SAV than MSA letter names.

With respect to home literacy activities, results indicated that on average, mothers reported reading to their children more than once a week. The mean score in writing mediation indicated that on average, mothers tended to say the word as a sequence of sounds (level 2) or to dictate the letter name (level 3). For example, for writing the letter S س */si:n/* in the word سرير */sari:r/* 'bed', the mother either said: "*/sa-ri:-r*". (level 2) or dictated the letter names "now write *si:n*" (level 3).

Table 2 presents the correlations among the kindergarten children's variables. Children's vocabulary and letter naming correlated significantly. Children from higher SES had larger vocabularies. Mothers who reported reading more to their children showed higher writing mediation. Both frequency of book reading and writing mediation correlated significantly with children's letter naming but not with their vocabulary. Neither book reading nor joint writing correlated significantly with family SES.

First grade variables

Table 1 presents children's literacy achievements in first grade (in percentages): Reading (reading accuracy, fluency, and comprehension) and writing (writing level and letter presentation). On average, children accurately read about 61 % of the words in the short story and correctly read about 14 words per minute. Reading comprehension scores were relatively low. On average, children correctly recognized 45 % of the sentences they read. Children's mean writing level (7–8) reflected a tendency to correctly represent the consonants in the words more than the vowels. The children succeeded in correctly presenting, on average, 60–70 % of the letters and connecting/disconnecting them properly to other letters in the words. Table 2

Table 2 Correlations among the study's variables ($N = 88$)

	Kindergarten					First grade				
	SES	Vocabulary	Letter naming	Book reading	Joint writing	Reading accuracy	Reading fluency	Reading comprehension	Writing level	Letter presentation
SES	–									
Vocabulary	.33**	–								
Letter naming	.20	.22*	–							
Book reading	.08	.03	.26*	–						
Joint writing	.02	.08	.41***	.23*	–					
Reading accuracy	.39***	.26*	.46***	.27*	.32**	–				
Reading fluency	.41***	.31**	.42***	.22*	.27*	.68***	–			
Reading comprehension	.42***	.44***	.40***	.19*	.26*	.61***	.67***	–		
Writing level	.38**	.49***	.47***	.26*	.26*	.68***	.56***	.58***	–	
Letter presentation	.20*	.42***	.42***	.21*	.30**	.56***	.52***	.44***	.72***	–

* $p < .05$; ** $p < .01$; *** $p < .001$

displays significant correlations between all first graders' reading and writing variables.

Correlations between variables in kindergarten and in first grade

Table 2 shows significant positive correlations between all variables assessed in kindergarten and those assessed at the end of first grade. Family SES correlated significantly with all of the children's literacy achievements in first grade. The findings also showed continuity in the children's achievements. Thus, children's vocabulary and letter naming in kindergarten correlated with the reading and writing variables in first grade. Finally, both home literacy activities in kindergarten (book reading and joint writing) correlated significantly with children's level of reading and writing in first grade.

The contribution of home literacy activities to children's literacy achievements in first grade

Our next aim was to examine the separate contributions of home literacy activities assessed in kindergarten to the children's literacy achievements in first grade, controlling for family SES and children's early skills in kindergarten. We conducted six separate fixed-order two-step hierarchical regression analyses. We entered SES, vocabulary and letter naming in the first step, and alternatively book reading, joint writing or both in the second step. The criterion variables were reading and writing in first grade. In order to condense the model, the mean Z score across the reading measures (reading accuracy, fluency, and comprehension) served as the *reading* score (Cronbach's $\alpha = .85$) and the mean Z score of the writing measures (writing level and presentation of letters) served as the *writing* score (Cronbach's $\alpha = .80$).

The first step in Table 3 shows the contribution of SES, vocabulary and letter naming to reading and writing in first grade. The second step revealed the additional contribution of each home literacy activity and the contribution of the two activities together to explaining children's literacy achievements in first grade. In the first step, SES, vocabulary and letter naming in kindergarten explained 41 and 40 % of the variance in children's reading and writing in first grade, respectively. Each of the predicting variables contributed significantly to children's reading and writing in first grade (except for SES, which did not contribute significantly to writing).

In the second step (step 2a), joint writing contributed significantly to children's writing (3 %) and reading (4 %) in first grade, beyond SES, vocabulary and letter naming in kindergarten. Step 2a revealed that except for SES that did not contribute significantly to writing, each of the predicting variables made a significant contribution to children's reading and writing in first grade. In the second step (step 2b), book reading contributed marginally significantly to children's writing (3 %) and reading (2 %) in first grade, beyond SES, vocabulary and letter naming in kindergarten. Step 2b showed that SES contributed significantly to reading. Vocabulary and letter naming contributed significantly to reading and writing and the contributions of book reading to reading and writing were marginally significant.

Table 3 Hierarchical regression analyses predicting literacy achievements in first grade from SES, children's early skills, and home literacy activities in kindergarten ($N = 88$)

Predictors	Writing in first grade			Reading in first grade		
	β	ΔR^2	R^2	β	ΔR^2	R^2
Step 1		40***	.40		.41***	.41
SES	.12			.33***		
Vocabulary	.38***			.19*		
Letter naming	.37***			.38***		
Step 2a		.03*	.43		.04*	.45
SES	.12			.33***		
Vocabulary	.42***			.23*		
Letter naming	.28**			.28**		
Joint writing	.20*			.23*		
Step 2b		.03^	.43		.02+	.43
SES	.11			.32**		
Vocabulary	.40***			.21*		
Letter naming	.32**			.34***		
Book reading	.17^			.15+		
Step 2c		.05*	.45		.06*	.46
SES	.11			.32***		
Vocabulary	.42***			.24*		
Letter naming	.24*			.25*		
Joint writing	.19*			.21*		
Book reading	.14			.13		

+ $p = .08$; ^ $p = .055$; * $p < .05$; ** $p < .01$; *** $p < .001$

Once the two home literacy activities were entered simultaneously in the second step (step 2c), they contributed significantly to children's writing (5 %) and reading (6 %) in first grade, beyond SES, vocabulary and letter naming in kindergarten. In the second step of these regression analyses, book reading made no unique contribution to either reading or writing in first grade. Joint writing contributed significantly to both reading and writing in first grade, when controlling for family SES, children's vocabulary, letter naming and book reading in kindergarten.

Discussion

The present study examined the association between home literacy activities in kindergarten and literacy achievements in first grade in a sample of Arabic-speaking children in Israel. In line with Vygotsky's (1978) ideas of adults as mediators between the child and the environment, we aimed to assess the unique contribution of early mother–child home literacy activities (book reading and joint writing) to children's literacy achievements (reading and writing) in first grade, controlling for family SES and children's early skills (vocabulary and letter naming) in kindergarten. We found

associations between SES, children's early skills and home literacy activities in kindergarten and children's literacy achievements in first grade. Both home literacy activities in kindergarten predicted children's literacy achievement in first grade, beyond the contribution of family SES and children's early skills in kindergarten. Assessing the unique contribution of each home literacy activity revealed that joint writing in kindergarten contributed to children's literacy achievements in first grade beyond book reading. However, book reading in kindergarten did not contribute to children's literacy achievements in first grade beyond joint writing.

SES and early skills in kindergarten and literacy achievements in first grade

The present results, similarly to previous research, revealed that family SES is positively and significantly correlated with children's vocabulary and letter naming in kindergarten (for a review see Vasilyeva & Waterfall, 2011). SES is also correlated with both reading and writing achievements in first grade, thus corroborating previous findings in other languages (e.g., Duncan & Seymour, 2000 in English; Durgunoğlu, 2006 in Turkish; Korat & Levin, 2002 in Hebrew).

We found longitudinal trends in children's development, and children's vocabulary as well as letter naming in kindergarten correlated significantly with children's reading and writing in first grade. The positive correlations between vocabulary and literacy achievements in first grade highlight the importance of children's language in general, and vocabulary in particular, to children' literacy acquisition (for a review see Vasilyeva & Waterfall, 2011). These high correlations are especially interesting because of the diglossia in Arabic. Researchers repeatedly emphasize the differences between MSA and SAV (e.g., Ibrahim & Aharon-Peretz, 2005). Nonetheless, we found that having a rich lexicon in SAV in kindergarten relates to literacy achievements in first grade. Previous studies on Arabic acquisition have already documented relations between the spoken vocabulary and reading achievements (Ibrahim et al., 2002; Hende, 2006). For example, Hende (2006) explained that children's vocabulary helps them to better acquire the syntax and understand the context. Moreover, morphology is important for literacy acquisition in Arabic (Elbeheri & Everatt, 2007, Farran, Bingham, & Matthews, 2011; Saiegh-Haddad & Geva, 2008) and is tied together with vocabulary (Ravid, 2003). Consequently, children with a larger SAV vocabulary have a better understanding of the Arabic morphology and achieve higher literacy achievements in first grade compared to children with a smaller vocabulary.

The associations between letter naming in kindergarten and reading and writing in first grade among Arabic-speaking children in our sample are in line with previous research that underscores the importance of letter name knowledge in reading and writing acquisition in other languages (e.g., Treiman, 2006 in English; Cardoso-Martins, Mesquita, & Ehri, 2011 in Portuguese; Levin, Carmon, & Asif-Rave, 2006 in Hebrew). Foulin (2005) summarized studies on letter knowledge and concluded that letter naming is essential for children's reading and writing acquisition, since it is related to letter-sound knowledge and phonemic sensitivity that underlie the acquisition of the alphabetic principle.

Home literacy activities in kindergarten and literacy achievements in first grade

Significant correlations emerged between the frequency of book reading and the quality of maternal mediation of writing. It seems that in Arabic, unlike in other languages such as English or French (e.g., Evans et al., 2000; Hood et al., 2008; Sénéchal et al., 1998; Sénéchal, 2006), these two home literacy activities are not distinct. Mothers who reported reading more to their children helped them go through a fuller process of segmenting a word into its phonological units and retrieving the required letter when writing with them. Because of the Arabic diglossia, mothers need to refer to MSA in both activities. We assume that both book reading and joint writing reflect the children's exposure to MSA. We suggest that mothers who read more to their young children are more aware of the importance of exposing their children to the written language in general. They probably use opportunities to write with their children, expose them to the Arabic alphabet and help their children understand it while mediating writing.

Unlike previous research where family SES related to the frequency of book reading (e.g., Korat & Haglili, 2007; Korat et al., 2007; Pellegrini & Galda, 2003; Powell, 2004) and to the nature of writing interactions with young children (Aram & Levin, 2011), neither joint book reading nor joint writing correlated with SES in our study. We think that this is related to the nature of the Arabic language and the culture of early home literacy in Arab families in Israel. It seems that irrespective of their SES, Arab parents are uncertain of when and how to expose their children to MSA. Yunes-Atamnam (2009) found that mothers of kindergartners from different SES background were ambivalent towards referring to MSA at home.

Book reading

In the present study, a significant association was found between shared book reading in kindergarten and children's literacy achievements in first grade. This finding is contrary to findings in previous studies (Sénéchal et al., 1998 in English; Sénéchal, 2006 in French; Manolitsis et al., 2011 in Greek), where no relation was found between book reading in kindergarten and literacy achievements in school. This discrepancy can be explained by the nature of reading interactions in Arabic, which draws children's attention to MSA (Hassunah-Arafat, 2010) and is associated with positive reading and writing outcomes in school (Abu-Rabia, 2000). Beyond the auditory exposure to the language, shared book reading exposes children visually to the Arabic orthography. Repeated experiences with books may contribute to children's perception of the orthography, and there is evidence that visual-orthographic skills are important for reading acquisition in Arabic (e.g., Abu-Rabia, Share, & Mansour, 2003; Eviatar, Ibrahim, & Ganayim, 2004; Ibrahim et al., 2002; Mohamed, Elbert, & Landerl, 2011).

Joint writing

The significant contribution of joint writing to children's literacy achievements in first grade, beyond family SES and children's early skills, is in line with the results

of Aram and Levin (2004) who found that the level of maternal mediation of writing in kindergarten predicted children's reading and writing in second grade among Hebrew-speaking children, beyond family SES and children's early literacy skills. Understanding the nature of the mediation of writing can help explain these results. When mothers help their children go through a fuller process of segmenting words into their sounds and relating each sound to its appropriate letter, they expand their children's understanding of the letter to sound correspondence. According to Ehri, Nunes, Willows, Schuster, and Yaghoub-Zadeh Shanahan (2001), this knowledge offers the most effective combination for reading acquisition. Moreover, when mothers mediate writing on a higher level, as described in the current study, they focus the children's attention to the phonological patterns (CV units) and to the morphological patterns (roots) in the words, processes that are important in reading in Arabic (Farran et al., 2011; Ravid & Farah, 2009; Saiegh-Haddad, Levin, Hende, & Ziv, 2011).

The unique contribution of joint writing beyond book reading to literacy achievements in first grade

Joint writing contributed to children's literacy achievements in first grade, controlling for family SES, children's vocabulary, letter naming and frequency of book reading. Book reading did not contribute to children's literacy achievements in first grade beyond SES, children's early skills and joint writing. Our results in Arabic are in line with studies in different languages that stressed the importance of code-focused activities in kindergarten in predicting children's reading and writing in school (for a review see Sénéchal, 2011).

Arabic, when vowelized, is a transparent orthography. Reading and writing in transparent orthographies are based more on intra-lexical process such as phonological segmentation and mapping letters than on higher-order extra-lexical factors (Share, 2008). Indeed, book reading that exposed children to vocabulary and to the visual aspect of the language contributed to children's literacy achievements in first grade. However, writing interactions involve specific mediation of intra-lexical processes and as such, contributed to children's reading and writing beyond book reading. This result is in line with Hende (2006), who found that both intra- and extra-lexical factors in kindergarten contributed significantly to the reading level of Arabic-speaking children in second grade, but that the intra-lexical factors contributed more than the extra-lexical ones.

Limitations

The results of this study must be interpreted in light of several limitations. First, the sample included only 88 children, the study was correlational and we followed the children only until the end of first grade. Future studies should include more children and follow them longitudinally. Moreover, intervention studies that would manipulate the home literacy activities (e.g., direct parents to tell their children the book in SAV or read it in MSA without paraphrasing it) will yield insights on the contribution of these activities to children's later literacy skills. Second, our

assessment of book reading is limited and future studies should contain a more detailed analysis of the frequency and nature of book reading in Arabic. Lastly, when referring to children's early skills, we controlled for children's vocabulary and letter naming. Children's early morphology and phonology are also important for the acquisition of reading and writing in Arabic. Future studies should take these aspects of early literacy into account when studying the role of home literacy activities in children's literacy development.

In conclusion, this study's outcomes emphasize the importance of home literacy interactions with young Arabic-speaking children. Shared reading is a good context in which to expose children to the standard language and familiarize them with the syntax and morphology of MSA. Writing interactions comprise excellent opportunities for parents to teach their children about the Arabic alphabet and help them understand the writing system. The nature of Arabic orthography and the hesitation of parents and educators of young children to teach MSA to young children must inspire future studies to study the importance of children's early exposure to MSA. We encourage educators of young Arabic-speaking children to motivate parents to expose their children to MSA, read books to their children, and write with them frequently.

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