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Contextual and non-contextual knowledge in emergent literacy development: A comparison between children from low SES and middle SES communities

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Abstract

This research had three aims: first, to examine the relationship between two components of emergent literacy: contextual (environmental print, print functions, identifying literacy activities) and non-contextual knowledge (e.g., letters' names, phonemic awareness, concept of print, etc.); second, to explore the relationship between children's knowledge of each of the two components and their socio-economic status (SES) level in the community; and third, to study if and how these two components predict children's word recognition and emergent writing. The sample included 70 kindergarteners from two communities: 34 from a low SES community and 36 from a middle SES community. Results confirmed the existence of the two proposed distinct components of emergent literacy knowledge—the contextual and non-contextual. Compared with their higher SES peers, low SES children had poorer contextual and non-contextual knowledge. Finally, word recognition and emergent writing were predicted by non-contextual components: phonemic awareness, letters' names, and concept of print knowledge, and not by contextual knowledge, age, or SES group. Implications for future research and educational practice are discussed.

Keywords: Emergent literacy; Contextual knowledge; Non-contextual knowledge; SES

Emergent literacy relates to the early steps that young children take in the written world—in reading and writing—both before and at the beginning of formal schooling. These early steps have been described as the "precursors" (Whitehurst & Lonigan, 1998) or the "buds" (Teale & Sulzby, 1986) of later literacy abilities, the development of which is one of the major goals of schools in modern,

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technologically-oriented cultures. This perspective is in contrast with earlier perceptions of the beginning of reading as a formal school activity, based on teachers' instruction alone (Ferreiro & Teberosky, 1982; Teale & Sulzby, 1986; Whitehurst & Lonigan, 1998). Today, it is widely acknowledged that young children cognitively process the written language long before they reach school age and that these developing abilities are embedded in the socio-cultural context. Based on both models of cognitive development and on socio-cultural models that focus on the integration of context and cognition, this perspective has yielded rich supporting evidence during the last thirty years (Neuman & Dickenson, 2001).

This research had three primary aims. The first aim was to examine the relationship between two components of emergent literacy: contextual knowledge (e.g., identifying literacy activities, reading environmental print, awareness of print functions, etc.) and non-contextual knowledge (e.g., letters' names knowledge, phonemic awareness, etc.). The second aim was to explore the relationship between children's knowledge of each of the two components and their SES level in the community. The final target was to explore which type of knowledge (contextual or non-contextual) best predicts the kindergarteners' word recognition and the emergent writing, two skills that are the most representative of emergent literacy development and that function as a bridge to formal reading and writing.

The abundance research on emergent literacy available in the literature in the last decades addresses many different behaviors and type of knowledge of young children, which are usually classified into different categories or components. For example, Mason and Stewart (1990) grouped them into the following four components: concept and function of literacy, writing and composing knowledge, knowledge about letters and words, and listening comprehension and word understanding. A recent study by Sénéchal, LeFervre, Smith-Chant and Colton (2002) classified them into four major components or broad areas that appear in many other studies as well: oral language knowledge (e.g., verbal ability), metalinguistic knowledge (e.g., phonological awareness), conceptual knowledge (e.g., knowledge of the function of print), and procedural knowledge (e.g., letters' names). Based on the results of their study, and noting the wide variations in terminology and inconsistencies in empirical findings regarding emergent literacy, Sénéchal et al. (2002) concluded that it may be useful to adopt a more focused view of the construct of emergent literacy. They suggest, in particular, eliminating the oral language and metalinguistic knowledge components and recommend that the emergent literacy concept should include only the following two major components: procedural knowledge and the conceptual knowledge. The procedural component relates to letter name knowledge, letter sound relations, and early word recognition; the conceptual component relates to knowledge about the functions of print, emergent reading in context, and the meaning of the acts of reading and writing.

In the current research, we adopt this general model suggested by Sénéchal et al. (2002) with some changes. For our purposes, we termed their "conceptual" component as "contextual knowledge" and their "procedural" component as "non-contextual knowledge." We added children's phonemic awareness to the non-contextual knowledge component because of its established strong and consistent relationship with letter knowledge and with early reading behavior (see, also, Lomax & McGee, 1987; Whitehurst & Lonigan, 1998). In addition we included the "print concept" task in the non-contextual rather than the contextual knowledge component. Although it includes the characteristic that print carries the message, it includes as well several technical aspects, such as letter and word identification, directional and punctuations rules, and pointed versus non-pointed script, which is relevant to Hebrew, the language we studied in the current research.

The terms we use as contextual and non-contextual knowledge are also broadly related to Whitehurst and Lonigan's (1998, 2001) suggested two-category model in which emergent and conventional literacy

are viewed as consisting of outside-in (parallel to the contextual category in our study) and inside-out (parallel to the non-contextual category in our study) sets of skills and processes. For example, the outside-in sets include contextual semantic units of meaning represented by print; the inside-out set includes sound units, such as phonemes, and print units, such as graphemes. Each of these two processes—the translation of a sequence of graphemes into sounds and understanding the concepts and the context of the written text—are mutually supporting and essential components of being literate (Whitehurst & Lonigan, 1998). Yet, a major difference between Whitehurst and Lonigan's (1998) categories and the ones presented in this study is that the contextual component in this study does not include children's abilities in oral language. Following Sénéchal et al. (2002), we included aspects of meaning and functions of print, which are more directed to reading and writing activities in context, and did not include more general language skills, such as verbal or narrative abilities. This decision goes hand-in-hand with previous evidence regarding the different process involved in the acquisition of oral language and literacy skills in the early years (Jordan, Snow & Porche, 2000; Snow, 1983).

Although, the contextual and non-contextual knowledge components of emergent literacy have been addressed in the extant literature, the relationship between them and their prediction of word recognition, and especially of emergent writing, has rarely been examined. This examination is important, first, for learning about the nature of the relationship between these different sets of behaviors (e.g., does reading environmental print support reading without the semantic context? Or does the identification of reading and writing activities and of printed material functions go together with children's word recognition and emergent writing levels?). Second, empirical knowledge about the relationship between these two components might serve as a useful basis for educational programs, especially for at-risk children.

The contextual knowledge component of emergent literacy, also termed "emergent literacy environments experience" (Whitehurst & Lonigan, 1998) usually refers to children's behavior as embedded in the supporting context. It relates to such activities as identifying reading and writing behaviors as communication activities, to reading environmental print, and to identification print materials and their use, among others. For example, young children succeed in reading the print in such signs as "Coca Cola" or "Colgate" by using contextual help, like the logo or the package of the product (Goodal, 1984; Hiebert, 1978; Kuby, Aldridge, & Snyder, 1994). Several emergent literacy advocates have suggested that this so-called environmental reading reflects children's early awareness of the written language by demonstrating their ability to derive the meaning of text within context (e.g., see Goodman, 1986; Harste, Burke, & Woodward, 1981). According to these researchers, children's responses to environmental print are influenced simultaneously by graphic cues (relating to letters in text), as well as pragmatic (the function of the product in the environment) and other semantic cues (for example, a logo or a symbol which is related to the text) (Harste et al., 1981). This assumption was supported, as well, by McGee and Head (1988). These results imply that contextual processes make their own distinct contribution to children's conventional literacy, including reading and writing.

Another aspect of contextual orientation is children's identification of the functions of reading and writing activities as a communication activity (Downing, 1970; Downing, Ayres, & Schaffer, 1984; Hiebert, 1981). The assumption is that developing the motivation to read and write requires that children understand the aims and functions of these literacy activities. There is evidence that even young children are aware of different print materials and their function. For example, when young children were asked what the function of a printed page is, they knew enough to respond that "it tells us the story" or "it explains us what to do" (Purcell-Gates, 1996; Purcell-Gates & Dahl, 1991). Observations of 5- and 6-year-old kindergarteners also revealed their awareness of the function of written text (Harste et al., 1981) in that the

children wrote their names to express ownership and showed understanding that the written message can help as a mnemonic device. Several ethnographic studies have demonstrated how young children use the written language to transfer meaning (Bissex, 1980; Taylor & Dorsey-Gaines, 1988) and others showed that they were able to distinguish among communication activities, including reading and writing, and to explain their socio-functional aims (Downing, Ollila, & Oliver, 1975). The current research, focuses on the contextual aspects of literacy, follows the children's efforts to read and understand the written world in their every day environment. This effort is believed to build the children's motivation and help them develop the ability to grasp the meaning of the different functions and genres of printed materials in our world, a knowledge which is essential and complementary to children's procedural non-contextual knowledge.

Children's non-contextual knowledge in emergent literacy has mainly been measured through individual tasks without contextual support and with kindergarteners who have received no formal reading and writing instruction. Many studies have focused on children's phonemic awareness, examining children's ability to segment units of language (e.g., phonemes, syllables, words). This ability was recognized as an important cognitive skill which requires the children to focus their attention on language and to reflect upon its nature and structure. Numerous studies have found that kindergarteners' phonemic awareness supports children's early reading (Bradley & Bryant, 1983; Lonigan, Burgess, Anthony, & Barker, 1998; Mann & Liberman, 1984; Scarborough, 1998). Evidence suggests the existence of a developmental hierarchy in children's sensitivity to linguistic units. Children seem to achieve syllabic sensitivity earlier than they do the ability to segment language into phonemic units (Goswami, 1999; McLane, Bryant, & Treiman, 1992); they also seem to attain a higher sensitivity to the beginning of words earlier than to their ending. In addition, the ability to identify letters by their names was recognized as a powerful predictor of early literacy ability (Johnston, Anderson, & Holligan, 1996; Levin, Patael, Margalit, & Barad, in press; Wanger et al., 1997) and is included in many standard preliteracy measures (Share & Gur, 1999).

Print concept is another important aspect of children's emergent knowledge of written language. It has been claimed that understanding the conventions of print (e.g., the left to right and top to bottom orientation of print, the difference between a picture and print on a page, identifying units of the written language as words and letters, etc.) (Clay, 1979; Share & Gur, 1999; Shatil, Share, & Levin, 2000) can aid the process of literacy acquisition and that this knowledge enables children to relate to the convention of the written language and to be able to discuss them, not only use them. Using Clay's (1989) concept about print (CAP) measure, children's print concept was found to be related to their emergent words in reading (Mason, 1980), to their emergent words in writing (Levin, Share, & Shatil, 1996; Purcell-Gates, 1996), and to their understanding of the print function as well. Additionally, children's CAP measures at the end of kindergarten predicted reading in first grade (Tunmer, Nesdale, & Wright, 1987), which, in turn, predicted reading at the end of second grade (Levin et al., 1996). As mentioned before, we included the CAP measure in this study in the non-contextual group.

In several studies, 5–6-year-old-children were found to be successful in word recognition tasks with contextual support (e.g., in Spanish, see Ferreiro & Teberosky, 1982; in Hebrew, see Levin & Korat, 1993; Share & Gur, 1999; and in English, see Welsch, Sullivan, & Justice, 2003). This success was attributed to the children's use of logographic, semi-phonetic, phonetic, and alphabet strategies (Share & Gur, 1999). Young children were also identified as having rich developmental knowledge in writing. This development was identified as a cross-linguistic phenomena (in English, Freeman & Whitwell, 1985; in Spanish, Ferreiro & Teberosky, 1982; in Italian, Pontecorvo & Zuccermaglio, 1990; and in Hebrew,

Levin & Korat, 1993) and was described as moving from writing pseudo letters or pseudo text, to writing random letters, to phonetic writing, and to alphabetic writing.

Whereas there is consensus about the importance of the non-contextual knowledge component of emergent literacy for children's formal literacy ability, this is not the case concerning its contextual aspects. Although several researchers have emphasized the importance of young children's ability to read print in context and to understand the social function of print and of literacy (Goodman & Goodman, 1979; Harste et al., 1981; Smith, 1976), others argue that this ability is not an important stage in children's development and does not predict their formal reading (Ehri, 1987; Gough & Hillinger, 1980; Share & Gur, 1999). Goodman and Altwerger (1981) found no relationships between children's word recognition and writing levels and their understanding of print functions. It has also been asserted that children who are able to read print in the environment relate more to the context of the text (the logo, the package, etc.) than to the print itself. The relationship between children's reading with context and without context at kindergarten age was not strong; furthermore, reading in context in kindergarten did not predict reading without context in first grade (Share & Gur, 1999). In contrast, reading words with no supporting context in kindergarten was related to phonemic awareness (Share & Gur, 1999) and to writing unknown words in kindergarten and to children's reading and writing achievements in school (Levin et al., 1996; Scarborough, 1998). As can be seen, the relationship between children's knowledge of the function of print and other emergent literacy knowledge is not yet clear. In the present study, the focus was on comparing two types of children's emergent literacy knowledge—the contextual and the non-contextual.

One of the most established findings in studies of early literacy is the relationship between children's development and the socio-economic status (SES) of the families (Teale & Sulzby, 1986; Wells, 1985) or of the communities in which they grow up (Clement, Reynolds, & Hickey, 2004; Neuman & Celano, 2001). The evidence for substantial differences in school-age children's reading and writing abilities as a function of their parents' educational and economic levels (Dubow & Ippolito, 1994; Smith & Dixon, 1995) or of the socio-economic level of the community they live in (Neuman & Celano, 2001) also extends to preschoolers' letter naming knowledge, their phonological sensitivity (Bowey, 1995; Lonigan et al., 1998, 2000; Raz & Bryant, 1990), their letter–sound correspondence (Clement et al., 2004), their word recognition (Aram & Levin, 2002; Clement et al., 2004), and their emergent writing (Aram & Levin, 2002). Differences in the home literacy environment—including literacy tools (books, news-papers, journals, computers), literacy activities (shared reading, parental reading with child frequency, library visits), and the quality of parental literacy mediation—were found to be related to differences in young children's competencies in literacy development in Israeli society (Aram & Levin, 2001; Korat & Levin, 2001; Ninio, 1980) as well as in other countries (e.g., in the US, Neuman & Celano, 2001; Purcell-Gates, 1998; in the Netherlands, Bus, Leseman, & Keultjes, 2000). Yet, research on the relationship between SES and children's emergent literacy has focused mainly on non-contextual knowledge and less on the contextual, which was closely examined in this study. In addition, most studies on emergent literacy development, similar to other research on children's development in early childhood, focus mostly on the children's family characteristics and less on the community in which they live or the socio-economic status of their school's neighborhood. The questions posed were, first, do children from low SES communities have the same degree of difficulty with contextual knowledge as they do with non-contextual knowledge? Second, how important is this knowledge (both contextual and non-contextual) for their early conventional or school literacy development?

To summarize, this research focused on two components of children's emergent literacy development: contextual versus non-contextual knowledge, among children who live in two different communities:

low and middle SES. These two aspects (the emergent literacy components and socio-economic strata) have rarely been examined simultaneously in the same study. Additionally, since word recognition and emergent writing tasks are most similar to those that children engage in upon entering school, how children's contextual and non-contextual knowledge predict their abilities on these two tasks was also examined.

1. Methods

1.1. Sample

A total of 70 kindergarteners (32 girls and 38 boys) took part in this study. They were recruited from kindergartens located in urban neighborhoods in the greater area of Tel-Aviv. Of the 70 children, 34 (17 girls and 17 boys) were from kindergartens located in low SES (LSES) neighborhoods and 36 (15 girls and 21 boys) from middle SES (MSES) neighborhoods. The SES measure in this study reflects the degree of affluence (or poverty) at the neighborhood level. The SES levels of the neighborhoods were established according to The Israeli Municipalities' (1995) statistical report, which includes such data as number of school years completed, income level, housing density, PC ownership, etc. These criteria are used by the Ministry of Education to define schools and kindergartens serving children at risk. According to information in this report on the neighborhoods included in this study, the number of school years completed for the LSES group was $M = 10.6$ versus MSES $M = 16.7$; the percentage of workers in prestigious occupations in the LSES was $M = 3.8$ versus MSES $M = 35.6$; the average income per capita in the LSES group was $M = 1497$ Israel Shekels versus MSES $M = 3138$; the percentage of P.C.-owning households in the LSES was $M = 14.0$ versus MSES $M = 63.0$, and the housing density (average number of persons per room) in the LSES group was $M = 0.92$ versus MSES $M = 1.19$. It is important to note that neighborhoods in Israel, including the areas investigated in the current study, are usually homogenous. Thus, in only a very few cases would a child with a LSES background live in a MSES neighborhood and attend a MSES school, and vice versa. For each SES community, we collected data from six kindergartens. From each kindergarten, anywhere from four to eight children were chosen randomly from the kindergarten list in an effort to control for diversity in teachers' methods and other characteristics of the teacher or the kindergarten. Children with learning disabilities and non-Hebrew-speaking children were not included.

1.1.1. Kindergarten literacy programs in Israel

Since the research was conducted in Israeli kindergartens, a brief description of the local literacy program and environment, which applies to all the kindergartens visited, is relevant. In Israeli kindergartens, children are frequently read to from storybooks and voluntarily browse through books. They usually recognize their written names and write them on their art works. Displayed around the room in the kindergarten are magnetic or some other similar types of Hebrew letters, printed texts for functional use (e.g., a list of the names of children are on duty), as well as other texts. Children participate in games aimed to promote phonemic awareness, such as segmenting words into syllables, counting syllables, and rhyming. Invented spelling and grapho-phonemic awareness are encouraged in some kindergartens, but not in all. Little time is devoted to the recitation of the alphabet or to letter naming. Work sheets for training visual discrimination (including letter discrimination) and letter copying are available, as well

(Shatil et al., 2000). Formal instruction in reading and writing begins on entry to school at the age of 6–7 years.

1.2. Measures

1.2.1. Contextual measures

1.2.1.1. Identification of reading and writing behavior. Children's ability to distinguish literacy activities from other communication activities was examined using a test developed by the researcher that was similar to a task used by Downing et al. (1984). Four cards were presented to the children, depicting (1) a woman singing (2) a young boy drawing, (3) a man writing a letter, and (4) a young girl reading a book. Although the two first cards represent activities that do not involve written text, we chose these activities because they represent a type of communication action. It is important to note that the singing woman depicted on the card was holding a microphone, and that no text was presented in front of her. Children were presented the pictures in this order, one at a time, and were asked "What is the person in the picture doing?" The two non-literacy activities (singing and drawing) were included to determine if children could distinguish them from the two literacy activities: reading and writing. Children's answers were categorized in terms of description. Thus, they were categorized in terms of identification (wrong or right); the range of scores for this task was 0–4. For example, for the picture of a young child drawing, correct answers were "He is drawing," or "He is decorating," and wrong answers were "He is writing," or "I don't know." For the card of a man writing a letter, right answers were, "He is writing," or "He is printing his name," and wrong answers were "He is drawing," "He is reading," or "I don't know." The inter-rater reliability across two coders for this measure, using Cohen's κ, was .80.

1.2.1.2. Reading environmental print. Children's ability to read environmental print was examined by presenting them with three known objects: a milk container, a can of pickles, and a "no smoking" sign. This test was developed by the researcher based on similar tasks presented to preschoolers by Downing et al. (1984). The milk container had the Hebrew word "milk" written on it as well as a drawing of a cow; the can of pickles had on it the two written words for pickles in Hebrew ("melafefoneem hamuzeem") and also a picture displaying pickles; and the "no smoking" sign had on it the two written words in Hebrew for "Smoking is forbidden" ("Haieshun Asur") and the known symbol of a cigarette with a cancellation line through it. We presented each object one at a time, pointed to the written text, and asked "What is written here?"

Children's answers were coded as right (=2), partial (=1), or wrong (=0). The highest score was assigned to answers that referred to either the whole or only a part of the written text (e.g., "Here it is written 'halav' (milk)" or when the child read the first letter of the word and said, for example, "ha" for the first letter and its vowel). The middle or partial score was assigned to responses referring either to the drawing or to the symbol on the object (e.g., "This says that people should not smoke," pointing to the sign with the cigarette and not to the text, or "This is milk. I can see the box," pointing to the container and not the text.). The lowest level was assigned to responses that included "I don't know" or non-relevant or inappropriate comments. For example, pointing to the word "milk" saying "here is written a child" when no child appears either in the text or in the picture on the container. The overall range of scores for this task which included three items (each ranged from 0 to 2) was 0–6.

1.2.1.3. Identification of print materials. The children's identification of print materials was measured using a test developed by the researcher along the lines of similar tasks used by Downing et al. (1984). Children were asked to identify the following objects: a newspaper, a road map, and a diary (a date book), presented to them in this order, one at a time. These objects were chosen as common literacy tools that young children in literate society are usually exposed to in their every day life. Children's answers were coded as right (=2), partial (=1), and wrong (=0). The highest score was assigned to answers that gave the name of the print object (e.g., "This is a road map"). The middle or partial score was assigned to responses that referred to the identity or purpose of the object, but without giving its exact name (e.g., "This is a book for days" (for the diary), or "This is a picture of the roads" (for the map). The lowest score was assigned to responses that included incorrect comments (e.g., for a dairy "This is a story book" or "I don't know"). The overall range of scores for this task, which included three items (each ranged from 0 to 2), was 0–6.

1.2.2. Non-contextual measures

1.2.2.1. Phonemic awareness. Phonemic awareness was measured using two tests developed by Aram and Levin (2001), each of which includes 20 monosyllabic word pairs. One test refers to the initial phonemes (e.g., bat–bul); children were asked if the initial sounds of the two words were similar or different. On the second test of final phonemes, children were asked the same question with reference to two words' final sounds (e.g., xum–yam). The correlation between the children's scores on the two tests was $r = .66$, $p < .001$. The final score of children's phonemic awareness was determined by the percentage of correct responses, averaged across the two tests. This task is a relatively easy test of phonemic awareness and, thus, appropriate for kindergartners of low SES (Adams, 1991, p. 80).

1.2.2.2. Letter naming. The Hebrew script includes 22 regular letters and four final letters. The final letters are a representation of four sounds, which are presented in the regular letters as well but, when they appear at the end of words, they are represented by a different grapheme. Children were presented with the 22 regular (not final) letters of the Hebrew alphabet, each written on a separate card, one at a time, and asked for the name or the sound of it. The letters were presented in random order. Correct names or correct sounds received full credit (maximum score = 22).

1.2.2.3. Concepts about print. A Hebrew adaptation by Shatil (2001) of Clay's (1985) test of the convention of print was used. The text is a story entitled *A New Friend*, printed in pointed script as usual with Hebrew books for young children. The test requires children to answer questions dealing with such concepts as page, line, writing, drawing, knowledge of books, text handling (for example, where one begins and ends reading a book, a page, a line), the direction in which reading proceeds (from right to left in Hebrew), as well as pointing to a word and letter in the text. Two additional questions were developed for the Hebrew version, which related to the children's awareness of the presence, shape, and location of Hebrew diacritical marks. The test included 16 questions. Each correct answer scored 1 point, thus the range of scores was from 0 to 16.

1.2.2.4. Emergent writing. Adopting the methodology previously employed by Levin and her colleagues (Levin & Korat, 1993; Levin et al., 1996; Levin & Tolchinsky-Landsman, 1989; Tolchinsky-Landsman & Levin, 1987), we encouraged children to write two pairs of dictated words as best as they could,

with no demonstration or training provided. These pairs were selected to evaluate the ability to represent various aspects of writing. The first pair, "tree-trees" (in Hebrew, *aitz-aitzeem*), and the second pair, "sea-drop" (*yam-tipa*), were contrasted by size or quantity of referents and phonological length (Ferreiro & Teberosky, 1982; Levin & Korat, 1993; Levin & Tolchinsky-Landsman, 1989). The two words in each pair were first presented to the children together and then individually. The children were told, for example, "Please write here, on this paper, the two words, 'sea' and 'drop.' First, write the word 'sea' and than the word 'drop'. Let's start with the word 'sea'." When the children finished writing the first word, the experimenter said: "Now please write the second word, 'drop'." Each written word was scored on a 4-point scale, adapted from Levin et al. (1996), ranging from (0) pseudo letters only, (1) random letters only, (2) random and phonetic writing, (3) phonetic writing only, and (4) conventional writing. The overall range of scores for this task, which included four words (each ranged from 0 to 4), was 0–16). Across two raters, the inter-rater reliability for this measure, using Cohen's κ, was .78.

1.2.2.5. Word recognition. The same two pairs of words used for the emergent writing task were used for word recognition. Writing preceded word recognition in all sessions. A card with the two words, one below the other, was displayed to individual children. The children were told that two words were written on the card, and they were asked to identify which word was written where. For example: "Here are two written words: 'sea' and 'drop.' Show me where the word 'sea' is written and where the word 'drop' is written?" The number of pairs correctly recognized determined the total word recognition score, which ranged from 0 to 2.

Additionally, following each pair's identification, the children were asked to explain their judgments. Their explanations revealed the kinds of explicit considerations of which the children were aware, and which they used in constructing their judgments. Their explanations for each pair of words were classified into four levels, from low to high as follows: (0) non-relevant explanations or no explanation; (1) relating to semantic length; (2) relating to phonological length (3) reading and naming letters. These explanation scores ranged from 0 = low to 3 = high for each pair of words. The total explanation scores across the two pairs of words ranged from 0 to 6. Inter-judge reliability for the explanation scores, based on 10% of the sample, was significant ($\kappa = .88$).

Children's performance on the word recognition task was related to their explanation level ($r = .55$, $p < .001$). To arrive at an overall word recognition score for each child, which include recognition and explanations, children's explanation scores were converted to a 0–2 scale, similar to the word recognition scale.

2. Results

The results indicate that all measures show adequate variability except for the phonemic awareness task. For this task, once we removed one child's scores because they were far lower than those of the other children, adequate variability was obtained. Overall mean scores (across SES), standard deviations, and the range for each of the study's nine measures (both contextual and non-contextual) are presented in Table 1.

As can be seen from the data in Table 1, children achieved successful levels of performance on most measures. The easiest task for this group of kindergarteners was naming letters and the hardest were word recognition.

Table 1
Overall means and standard deviations for kindergartener's scores on contextual and non-contextual emergent literacy tasks ($N = 70$)

Tasks	Obtained range of scores	*M*	S.D.
Contextual			
Literacy behavior (0–4)[a]	.00–4.00	3.07	.90
Environmental print (0–6)	.00–6.00	4.30	1.16
Print functions (0–6)	.00–6.00	4.52	1.40
Noncontextual			
CAP (0–16)	4.00–16.00	12.44	3.10
Phonemic awareness (0–40)	20.00–40.00	31.00	5.85
Letters' names (0–10)	3.00–10.00	8.70	1.94
Emergent writing (0–16)	.00–16	11.50	5.70
Word recognition (0–2)	.00–2.00	1.40	.57

[a] Possible range of scores.

2.1. Correlation between tasks' scores

To assess the relationship between all measures, correlations were performed (see Table 2). The data show two generally different groups of correlated tasks. The first group includes the tasks CAP, phonemic awareness, letters' names, emergent writing, and word recognition tasks, all identified as non-contextual knowledge in this study. Children's scores showed a moderate to moderately high correlation among these five measures. The second group included tasks identified as contextual knowledge: literacy behavior, environmental print, and print function. Children's scores showed a low to moderate correlation to each other on these measures. Low to moderate correlations were also found between two non-contextual measures, CAP and phonological awareness, and all three contextual measures. The α score for CAP, phonemic awareness, and letters' names was .70; for reading environmental print, identification of print functions, and identification of reading and writing activities, it was .58. Given this medium-low α level of .58, we omitted the print function task from the contextual measure; this yielded an α of .60, which is regarded as an acceptable level (see DeVellis, 1991). Children's mean scores on each task measured in this study by SES are presented in Table 3.

Table 2
Correlations among the emergent literacy tasks

Tasks	1	2	3	4	5	6	7
Literacy behavior	–						
Environmental print	.42**	–					
Print function	.24*	.27*	–				
CAP	.36**	.37*	.28*	–			
Phonemic awareness	.30*	.33**	.24*	.65**	–		
Letters' names	.02	.16	.30*	.50**	.56**	–	
Emergent writing	.22	.26*	.17	.62**	.63**	.56**	–
Word recognition	.06	.21	.13	.41**	.44**	.38**	.54**

* $p < .01$.
** $p < .001$.

Table 3
Means (and S.D.s) of children's scores on contextual and non-contextual tasks by SES

Tasks	SES				*p*
	LSES		MSES		
	M	S.D.	*M*	S.D.	
Contextual					
Literacy behavior (0–4)	3.10	.86	3.05	1.00	ns.
Environmental print (0–6)	4.05	1.04	4.50	1.00	ns.
Non-contextual					
CAP (0–16)	11.30	.50	13.53	.50	.001
Phonological awareness (0–40)	28.70	1.00	33.10	.90	.001
Letters' names (0–10)	7.90	2.17	9.44	1.40	.001
Emergent writing (0–16)	8.90	.87	14.00	.85	.001
Word recognition (0–2)	1.20	.56	1.60	.57	.001

A one-way ANOVA (SES: high versus low), using age as a covariant continuous variable, was performed. The results show a significant effect for SES for all the non-contextual measures: for CAP ($F(1, 67) = 9.50$, $\eta^2 = .12$, $p < .001$); phonemic awareness ($F(1, 67) = 10.25$, $\eta^2 = .13$, $p < .001$); letter names ($F(1, 67 = 9.11$, $\eta^2 = .12$, $p < .001$); emergent writing ($F(1, 67 = 16.70$, $\eta^2 = .19$, $p < .001$); and word recognition ($F(1, 67 = 7.70$, $\eta^2 = .10$, $p < .001$). No effect for SES was found for any of the contextual tasks, and no effect for age was found for all measures.

Scores on the tasks were transformed to percentages for purpose of comparison between measures. A 2-way ANOVA of 2 (task type: contextual versus non-contextual) × 2 (SES: high versus low) with repeated measures for type of task was performed. The contextual category included, identifying literacy behavior, environmental print, and the non-contextual category included CAP, phonemic awareness, and knowledge of letters' names. Overall mean scores of contextual and non-contextual tasks by SES groups are presented in percentages in Table 4.

The results show a significant main effect for SES ($F(1, 68) = 6.84$, $\eta_p^2 = .09$, $p < .05$); overall, LSES children achieved lower scores ($M = 72.28$) than MSES children ($M = 81.45$). The results also revealed a main effect for type of task ($F(1, 68) = 9.00$, $\eta_p^2 = .12$, $p < .01$); overall, children's scores on the non-contextual tasks ($M = 80.66$) were higher than on the contextual tasks ($M = 74.06$). Additionally, an interaction appeared between type of task and SES ($F(1, 68) = 4.96$, $\eta_p^2 = .07$, $p < .05$). A post hoc analysis, using the Bonferroni test, revealed that, on the non-contextual tasks, the MSES children had higher scores

Table 4
Means (and standard deviations) of children's scores on contextual and non-contextual tasks by SES

Tasks	SES			
	LSES		MSES	
	M	S.D.	*M*	S.D.
Contextual	72.40	14.07	75.09	21.09
Non-contextual	74.12	15.15	87.20	11.10

Table 5
Summary of hierarchical regression analysis for predicting children's emergent writing as a function of contextual and non-contextual measures by age and SES ($N = 70$)

	B	S.E.	β	*t*
Age	0.76	1.02	.07	0.74
SES	2.35	1.12	.20	2.10*
Contextual	0.00	0.72	−.00	−0.04
Non-contextual	4.42	0.73	.63	6.04***

$R = .73$; Adj. $R^2 = .501$.
* $p < .05$.
*** $p < .001$.

than the LSES children ($\eta_p^2 = .19$, MSES $M = 87.20$; LSES $M = 74.13$), whereas on the contextual tasks, there were no differences between the scores of the two SES groups. In addition, within the MSES group, children's non-contextual scores ($M = 87.20$) were higher than their contextual scores ($M = 75.70$) ($\eta_p^2 = .32$).

2.2. Regression analyses

Since word recognition (with no contextual support) and emergent writing are the most complicated and advanced measures compared to the other measures we used in this study, and since they are most similar to the types of tasks children are engaged in when they enter school, we computed a regression analysis to determine which of the study's measures—SES, age, contextual and non-contextual tasks—predict children's performance on these two tasks the best. Table 5 presents the prediction data for emergent writing and Table 6 for word recognition. Table 5 shows that all variables together explain 50.1% of the variance of the children's emergent writing skills ($F(4, 65) = 18.33$, $p < .001$). In addition, the non-contextual measure makes a unique contribution to this variance ($\beta = .63$, $p < .001$); namely, the children's performance on the non-contextual tasks are related to their emergent writing skills. The data also show that SES makes a unique contribution to the variance in children's emergent writing skills ($\beta = .20$, $p < .05$); LSES children have higher scores on this task than do the MSES children. The contextual measures did not make any meaningful contribution toward explaining children's emergent writing skills.

Table 6 shows that 21.6% of the variance in children's word recognition skills is explained by all the predictor variables together ($F(4, 65) = 5.75$, $p < .01$). Yet, the only variable which contributed significantly

Table 6
Summary of hierarchical regression analysis for predicting children's word recognition as a function of contextual and non-contextual measures by age and SES ($N = 70$)

	B	S.E.	β	*t*
Age	.06	.13	.06	0.51
SES	.19	.14	.17	1.41
Contextual	.00	.00	.01	0.08
Non-contextual	.02	.01	.40	3.10***

$R = .51$; Adj. $R^2 = .216$.
*** $p < .001$.

to the variance in children's word recognition skills is the non-contextual measure ($\beta = .40$, $p < .01$), indicating that the children's non-contextual skills are related to their word recognition skills. As with emergent writing, the contextual measure made no significant contribution towards explaining children's word recognition skills.

3. Discussion

This research focused on two components of emergent literacy development, contextual versus non-contextual, among Israeli kindergarteners from low-income and middle-income communities. These variables have not previously been examined simultaneously in the same study. Our results indicate several important findings. First, the analysis confirmed the existence of two distinct groups of emergent literacy knowledge—contextual and non-contextual. Second, LSES children lagged behind MSES children in the non-contextual knowledge component of emergent literacy—CAP, phonological awareness, and letters' names, but not in the contextual knowledge component—literacy behavior, reading environmental print. Third, emergent word recognition and emergent writing were predicted by children's knowledge in the non-contextual tasks but not by the contextual measures. Child's age was not related in our study to the child's emergent word recognition and writing yet, SES group was related to the child's emergent writing.

In terms of tasks groupings into contextual and non-contextual components, our findings shows that the CAP and the phonemic awareness tasks had higher correlations to the non-contextual measures than to the contextual; yet, they also had medium to low correlations with the contextual measures as well. These results show that although there are clearly two groups of emergent literacy skills, that these two components show some relationship to each other, and that, together, they build a more complete general construct. These results confirm previous reports that CAP measures are related to children's naming of letters and grapho-phonemic knowledge (Lomax & McGee, 1987), to word recognition (Levin et al., 1996; Mason, 1980; Purcell-Gates, 1996), and to early writing (Levin et al., 1996; Purcell-Gates, 1996).

One of the important findings in this study is that children from LSES communities lag behind MSES children in the non-contextual knowledge tasks of emergent literacy, such as CAP, phonological awareness, and letters' names, but not in the contextual knowledge tasks, such as identifying reading and writing behavior or reading environmental print. Not surprisingly, these results support the vast literature claiming that LSES children are at risk for reading difficulties (e.g., Dubow & Ippolito, 1994; Smith & Dixon, 1995; Snow, Burns, & Griffin, 1998). SES differences have been reported especially in the areas of children's letter knowledge and phonological sensitivity prior to school entry (Bowey, 1995; Raz & Bryant, 1990) and in their emergent reading and writing abilities (Aram & Levin, 2001).

The gap between the middle and low SES groups in this study might be explained by previous reports of the relatively more limited range of literacy activities available to LSES children and the lower frequency with which they engage in them, unlike their more advantaged MSES peers, including the lower levels of exposure to print materials found in low SES groups in several countries (in Israel, Aram & Levin, 2001; Feitelson & Goldstein, 1986; Korat & Levin, 2001; Ninio, 1980; in the US, Adams, 1991; De Baryshe, 1995; and in The Netherlands, Bus et al., 2000).

The results of this study expand the knowledge base regarding children's emergent literacy by showing that there is a gap between the children in the two SES groups in the non-contextual skills but not in the contextual ones. There is some evidence that by living in a literate society LSES children are inevitably exposed to reading and writing activities, both functional and playful, on a daily basis (Bissex, 1980;

Clay, 1975; Heath, 1983; Taylor & Dorsey-Gaines, 1988), including book reading (Aram & Levin, 2002; De Baryshe, 1993; Korat & Levin, 2001). Thus, it would appear that this type of general exposure has a positive impact and may help to explain the lack of difference between LSES and MSES children on contextual measures.

However, the results also show that children gained higher scores on the non-contextual tasks ($M = 80.66$) than on the contextual tasks ($M = 74.06$). These results do not support previous findings that contextual tasks (e.g., recognizing literacy behavior and reading print in a supportive context) are early skills of emergent literacy compared to non-contextual tasks (e.g., phonological awareness or print concepts), which develop later (Goodal, 1984; Hiebert, 1978; Kuby et al., 1994). A possible explanation for this could be that the tasks defined as non-contextual in this study are more familiar to the children via their kindergartens or homes than those defined as contextual.

Another explanation might relate to the difficulty of measuring the contextual knowledge aspect of emergent literacy. The low to medium reliability of the measures of this construct in the present study and the need to remove the "print function" task in order to arrive at a more reliable measure raises some methodological concerns about the best way to measure children's contextual emergent literacy knowledge. It seems that while clear advances were made in the last two decades in measuring children non-contextual knowledge (for example, phonological awareness, print concept, or letters' names knowledge), children's contextual awareness has been much less elaborated on and researched. In this study, the methodology adopted to learn about children's contextual awareness (identification of reading and writing behavior as well as the ability to read print in the environment and to identify different print materials) involved children's verbal responses to the researcher's questions, which might be problematic, especially for young children who may have difficult expressing their thoughts. The results of this study suggest that the best way to measure young children's contextual literacy knowledge is in need of further systematic investigation.

Quite surprisingly, MSES children found it easier to perform the non-contextual tasks than the contextual, while in the LSES group, children's performance was at the same low level on both types of tasks. These results might be explained by a more intensive care and directed interventions in the MSES group by educators (especially parents) in the non-contextual activities (e.g., teaching letter names, print concept and phonological skills) than the contextual activities which exist in the general literacy environment but less as directed activity. Of course these results, and this speculation needs a more careful examination in future studies.

One of the more substantial findings in this research is that word recognition and emergent writing, are predicted by the non-contextual components and not by contextual. These results do not support previous claims about the importance of young children's ability to read print in context and to understand the social functions of print for the development of their word recognition (Goodman & Goodman, 1979; Harste et al., 1981; Johnson, 1997; Smith, 1976). Rather, the findings in this study suggest that these abilities may not be as important as a stage in children's word recognition development and that they do not predict children's early writing or word recognition. One possible explanation for this finding could be that reading print in the environment relates more to the context of the text (the logo, the package, etc.) than to the print itself (Ehri, 1987; Gough & Hillinger, 1980; Share & Gur, 1999). Children's knowledge about different literacy activities and print materials and about why we read and write might play an important role in their literacy acquisition at the more advanced levels when they start learning reading and writing formally in school. This speculation is based on Purcell-Gates's (1996) findings, which showed that children entering first grade with low levels of procedural knowledge made faster gains in

acquiring this knowledge when they had more advanced level of conceptual knowledge at their starting point compared to children who started first grade with a low level of conceptual knowledge. A similar explanation for the same phenomenon can be found in Sénéchal et al. (2002). We believe that young children's efforts to draw meaning from print in the environment, and to be able to differentiate between communications activities, including reading and writing, might constitute an important basis for their success with the motivational and meaning-making processes which are involved in the written world. This knowledge might be essential and complementary to children's procedural non-contextual knowledge, especially when dealing with deeper reading and writing processes, such as reading comprehension or text composition. These speculations need to be systematically studied by future researchers.

The findings in this study are consistent with those of previous research that reading words with no supporting context in kindergarten was related to phonemic awareness (Share & Gur, 1999), to emergent writing of unknown words in kindergarten, and to children's reading and writing achievements in school (Levin et al., 1996; Scarborough, 1998). These results corroborate the well-established evidence of the importance of phonemic awareness (Goswami, 1999; McLane, Bryant, & Bradley, 1987; Nicholson, 1999; Treiman, 1992), and letter naming (Johnston et al., 1996; Levin et al., in press; Wanger et al., 1997) in early children's literacy development.

Three limitations of the present study must be taken into consideration in future research. First, it would be important to include different age level groups in order to learn more about developmental trends in all of the measures researched in this study. The inclusion of younger children (3–4-year olds), in addition to the 5–6-year-olds included in this study, could present a fuller developmental picture. Second, research that focuses on emergent literacy skills and tries to relate the importance of these skills to those of formal reading and writing requires a longitudinal design which follows children's reading and writing from preschool into grade school. Such longitudinal data might contribute more to our understanding of the importance of the two different components–contextual versus non-contextual knowledge—to children's literacy development. This is especially important for expanding our understanding of the contextual component, which might be related to children's reading comprehension and motivation for reading and writing activities, which could be systematically followed in their early schooling years. We are aware that the literacy activities that were predicted in this study are very preliminary in nature in terms of literacy achievements, especially the word recognition task, which does not examine reading and making meaning of text but is more simply just a word recognition task. This might be addressed by a longitudinal study as suggested above.

A third limitation of the present study is the relatively limited number of items in the measures used, which would suggest caution in generalizing the results obtained with the tasks used. Finally, an examination of a larger sample could enable us in future studies to use a separate regression analysis for each of the non-contextual skills in order to study more specifically their importance for young children's early word reading and writing abilities and to clarify which of them has the greater impact on these skills.

As noted earlier, the results of this study imply that non-contextual knowledge of emergent literacy is the most important component of children's emergent word recognition and writing. However, this should not be taken to mean that parents and educators should not promote children's knowledge of environmental print, print functions, and literacy activities, all of which are an important part of building bridges to literacy development. Yet, when educators ask what they should focus on, especially with low SES children, it becomes clear that non-contextual knowledge should get high priority. Thus, programs for LSES kindergarteners, designated for homes and school, should emphasize not only activities

which promote children's understanding of reading and writing activities and print function, but should especially focus on promoting children's phonemic awareness, letter naming skills, and print concept as well as word recognition and early writing skills. This educational implication goes hand in hand with results of research published in the last decade suggesting that acquiring conscious access to phonemes and alphabetic knowledge is crucial for learning to read and write (Adams, 2001). Educators must keep in mind that literacy development depends critically on the children's motivation and understanding, but that, simultaneously, "children should be led to learn the letters and to appreciate their phonemic significance" (Adams, 2001, p. 314). Word recognition, phonics, rhyming, letters' names, and print conventions (reading and writing directionality, words and letter identification, etc.) and the letter-sound relationship is what is learned in many kindergartens and homes. Schools usually base the first-grade curriculum on the assumption that children already have developed these skills and do not usually include them in their programs (Purcell-Gates, 1998). Educators in kindergarten and schools should be aware that LSES kindergarteners, who get less support in their family for their early literacy skills are prone to failure in reading and writing in school, and this should be taken under consideration in the curriculum.

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