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Mother-Child Joint Writing in Low SES:

Sociocultural Factors, Maternal Mediation, and Emergent Literacy

Dorit Aram and Iris Levin

School of Education, Tel Aviv University

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Correspondence concerning this manuscript should be addressed to Dr. Dorit Aram, School of Education, Tel Aviv University, Israel 69978. Fax (home) 972-3-6341318. Email: aramd@netvision.net.il

Abstract

Emergent literacy was studied as related to sociocultural factors and particularly to maternal mediation of writing. Forty-one low SES children, 5;5 – 6;0 year olds and their mothers participated. The child's emergent literacy was assessed by word writing and recognition, phonological awareness and orthographic awareness. To assess mediation of writing, children were asked to write words and names, and their mothers were asked to help them. Maternal mediation was analyzed in terms of the steps in the encoding process that the mother intervened in, her reference to Hebrew orthography and her mediation in printing letters. Child's literacy was found to be related to SES, maternal literacy, literacy tools at home, and maternal mediation. Hierarchical regressions indicated that child's literacy tools contributed to all emergent literacy skills, beyond SES and maternal literacy. The quality of mediation predicted word writing and recognition and phonological awareness after controlling for all sociocultural factors. A qualitative analysis illustrated the range of maternal mediation within or below the child's ZPD.

Mother-Child Joint Writing in Low SES:
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A current approach in developmental psychology conceives development as embedded in a sociocultural context (e.g., Bronfenbrenner, 1979; Bruner, 1990, 1996; Wertsch, 1984). Vygotsky (1978) argued that cultural and social structures, institutions, symbols and meaning systems, tools and activities are closely interwoven with the individual's mental development. The original form of higher mental activity is external and social, then appropriated by the individual in the course of interaction with experienced others.

Among the tools that function as major "cultural amplifiers," that is, tools that facilitate cognitive performance, lie reading and writing (Bruner, 1990). These competencies comprise the foundations of learning and scholastic achievement. Children who read early read well, and good readers read more and acquire more content knowledge, verbal abilities, and reasoning skills (e.g., Cunningham & Stanovich, 1998; Echols, West, Stanovich, & Zehr, 1996).

Our study examines the cultural context of emergent literacy among children of low socioeconomic status (SES), focusing on the unique role of mother-child collaborative writing. From an early age on, children vary in their understanding of the written system and in literacy-related skills (e.g., Adams, 1991; Ferreiro & Teberosky, 1982; Levin, Korat, & Amsterdamer, 1996; Share & Jaffe-Gur, 1999, Sulzby & Teale, 1991). Individual differences in early literacy predict later acquisition of reading and spelling in school (e.g., Juel, 1988; Shatil, Share, & Levin, 2000). Further, preschoolers' literacy is related to SES, as children with a low SES display lower levels of phonological awareness, letter naming, word writing, word recognition, receptive vocabulary, and grammar (e.g., Bowey, 1995; Levin & Korat, 1993; Levin, Share, & Shatil, 1996; Whitehurst, 1997).

Nevertheless, children from a low SES vary among themselves both on literate home experience and in literate competencies. Substantial variations were found within the low SES in the number of books and other literacy-related tools in the home; frequency of joint storybook reading; parental involvement in other literate activities with preschoolers; and in maternal reading-related beliefs (DeBaryshe & Binder, 1994; Harste, Woodward, & Burke, 1984; Korat & Levin, in press). Moreover, such variations were found to be linked to children's literate abilities. Low SES children who participate more in storybook reading, in environmental print recognition, and in pretend reading and writing, show higher literacy knowledge (Leseman & de Jong, 1998; Pflaum, 1986; Purcell-Gates, 1996).

Studies of mother-child interactions promoting literacy have focused particularly on joint storybook reading (e.g., Bus, van IJzendoorn, & Pellegrini, 1995; Neuman, 1996; Scarborough & Dobrich, 1994; Sénéchal, 1997). Mediation of writing has received very little attention. Gundlach, McLane, Stott, and McNamee (1985) presented three case studies of exchanges between 3-5 year olds with a parent, a teacher, or a sibling, while the children were engaged in writing. Various ways were described in which the experts intervened with children's writing, but no information was provided as to their effects.

Burns and Casbergue (1992) examined the collaborative writing of a letter text among 3-5 year olds and their parents. Parents who demonstrated higher levels of control initiated a greater share of verbal input, focused on spelling, and the letter produced was of a more conventional nature. Parents who demonstrated lower levels of control focused on the content of the letter, and their children initiated a greater share of verbal input, producing a relatively pre-conventional letter. However, Burns and Casbergue did not take into account the relationship between children's level of independent writing and either the process or the product of collaborative writing.

DeBaryshe, Buell, and Binder (1996) analyzed letters produced by 5-6 year olds, on their own and in collaboration with mothers, and the relationship between independent level of writing and maternal mediation. They found that letters produced in dyads were more advanced, including more conventional aspects of the genre (e.g., salutation, closing), more conventional spelling and longer messages, than letters written alone. Almost all mothers, irrespective of children's independent level of writing, directed their children to use conventional spelling. Nevertheless, qualitative evidence emerged that mothers attuned their mediation to their children's independent ability. The authors admitted that they did not take into account sociocognitive factors that may be related both to the quality of maternal mediation and to children's level of writing.

Our study examined a model of four contextual layers related to kindergartners' emergent literacy: SES, maternal literacy, child's literacy tools and activities at home, and the nature of maternal mediation of writing. This model followed the guidelines of Bronfenbrenner (1979), who differentiated between various layers of context affecting development. In his model, macrosystems refer to cultural, social, or ethnic groups; mesosystems to the structure of close groups like family or peers; and microsystems to the proximal processes, that is to the actual interactions between children and significant others.

Notwithstanding that all the factors we studied were already examined in relation to children's literacy, we integrated them into a single model, to analyze their interrelationships and to disentangle their unique effects. As already mentioned, SES renders an effect on children's literacy, as it frequently does on other aspects of children's cognitive development (e.g., Nicholson, 1999; Walker, Greenwood, Hart, & Carta, 1994). Maternal literacy was often measured in the literature by level of language and communication and by frequency of and pleasure derived from reading (Snow, Burns, & Griffin, 1998). The amount of parents' own book reading and the extent to which they provided positive models of reading were found to

have concurrent effects on children's emergent literacy and long-term effects on children's independent reading (DeBaryshe & Binder, 1994; Symons, Szuszkiewicz, & Bonnell, 1996). Children who reported low levels of family literacy were less likely to read for pleasure (Heath, 1983; McCormick & Mason, 1986; Teale, 1986). Child's literacy tools and activities at home were measured in the past by access to literacy evocative materials and experiences, like pencils, books, and visits to the library. Children tended to become more proficient readers if they grew up in homes that abundantly provided such tools and activities (e.g., Griffin & Morrison, 1997; Hart & Risley, 1992; Nicholson, 1999; Stuart, Dixon, Masterson, & Quinlan, 1998).

Despite the clear relationship between family income, early literacy, and later academic achievement, very little is known about the predictors of literacy among children from low-income families (Snow, Burns, & Griffin, 1998). The current research was conducted in an Israeli "development town," where SES is low (on the basis of education, occupation, and standard of living) (The Statistical Annual, 1999).

Our study had three major aims. First, we analyzed the nature of mother-child joint writing among low SES kindergartners. Second, we attempted to tease apart the effects of the following sociocultural layers on emergent literacy: SES, maternal literacy, and child's literacy tools and activities at home. Third, we examined the unique relationship between the nature of mother-child joint writing and emergent literacy, controlling for the effects of the other sociocultural factors.

METHOD

Participants

The sample included 41 children (19 boys and 22 girls) and their mothers, recruited from an Israeli "development town" (pop. 20,000). According to the Israeli Municipalities (1997), the residents of this town are mainly of low SES. Children were recruited from seven

kindergartens in seven neighborhoods that represent the town's SES range. All kindergarten teachers used the same curriculum, were supervised by the same supervisor, and were guided by the same literacy counselor.

To control for possible effects of children's age on children's literacy and mother-child interaction, we restricted the age range, sampling children born between January and June. Children's average age was 5 years and 8 months (M = 69.59 months, SD = 2.14). Only children whose mother tongue was Hebrew were sampled. No child diagnosed as having special education needs was included. Thus, 46 children were found suitable by all our criteria, and the parents of 41 of them agreed to their participation in the study.

Most of the families were intact. The parents of 38 children were married, 2 were separated, and 1 mother was single. The mean for parents' age was 33.88 years for mothers (SD = 6.05) and 37.75 years for fathers (SD = 5.91). The average number of children per family was 3.32 (SD = 1.42). This average is higher than the national average, M = 2.20 (The Statistical Annual, 1996).

All parents were schooled in Israel. The level of parental education was lower than the national average of their cohort. About 27% of the mothers and 51% of the fathers did not complete high school (i.e., 12 years of schooling). For mothers and fathers, respectively, 24% and 12% completed vocational high school, 27% and 10% regular high school, 10% and 20% vocational courses above high school, and 12% and 2% teachers' colleges. No mothers and two fathers had graduated from a university. In comparison, 23% of their Israeli cohort are university graduates. Among the mothers, 39% were unskilled and 34% were housewives. Among the fathers, 10% were unskilled and 12% were unemployed. This level of vocation and employment is lower than that of their Israeli cohort. Among the working fathers, the mean number of working hours per week was 56.73 (SD = 7.95), which is higher than the national average, M = 40.10.

Measures

Socioeconomic Status (SES)

SES was assessed on the basis of parents' education, vocation and occupation, and a ranking of the family's residential area. Parental education was measured on a 10-point scale ranging from 0 (no schooling) to 9 (academic education). Vocation and occupation were assessed on a 5-point scale developed for our sample, because on a national scale (Meir, 1978), the variance of our sample was low, restricted to the low end of the scale. The 50 vocations found in our study were ranked from highest to lowest by 13 middle class adult judges. Inter-judge reliability was high, Cronbach α = .98. According to their average rank, the vocations were divided into five equal groups, and scored 1- 5. For example, unemployed, housewife, housemaid, and industrial laborer were scored 1; carpenter, locksmith, and crane driver were scored 3; schoolteacher, practical engineer, and bookkeeper were scored 5. The socioeconomic level of the residential area was ranked on 7-point scale by the head of the municipal welfare department and by the municipal educational superintendent, who agreed on the rankings.

Maternal Literacy

Exposure to Print

Maternal familiarity with adult literature was assessed by our adaptation to Hebrew of the Title Recognition Test (TRT; Stanovich & West, 1989). Mothers were presented with a list of 30 titles of books and were asked to indicate which they recognized. The list consisted of 20 titles of current best sellers and 10 foils, which were verified as nonexistent titles in library databases. To obtain a total score on exposure to print, a correct recognition contributed 1 point, and an incorrect one deleted 2 points.

Vocabulary Test

Maternal verbal ability was assessed by a vocabulary subtest of the MILTA IQ Test for Israeli adults (Ortar & Shakhor, 1980). Forty words were presented in writing, in a forced-choice design. Mothers were asked to select the correct explanation out of three given for each word. To obtain a total score, each correct choice contributed 1 point to the sum.

Child's Literacy Tools and Activities at Home

Exposure to Children's Print

Maternal familiarity with children's literature was assessed by our adaptation to Hebrew of the TRT. Mothers were presented with a list of 30 titles, including 20 which were recommended popular children's books and 10 foils which were verified as nonexistent titles in library databases. Mothers were asked to indicate the titles that they recognized. To obtain a total score on exposure to children's print, a correct recognition contributed 1 point, and an incorrect one deleted 2 points. Performance on this test was assumed to be related to mother-child joint storybook reading. This measure predicts children's language better than traditional self-report measures of storybook reading (Sénéchal, LeFevre, Thomas, & Daley, 1998; Sénéchal, LeFevre, Hudson, & Lawson, 1996).

Adapted HOME

Seven items were adapted from the "Stimulation through toys, games, and reading materials" sub-scale of the Home Observation for Measurement of Environment (HOME) inventory for preschoolers (Bradley & Caldwell, 1979). The interviewer, with the child and the mother, observed the child's toys, books, audiocassettes, and the like. The interviewer completed a survey form after leaving the child's home. Inter-item reliability by Cronbach was found to be $\alpha = .80$.

Maternal Mediation Tasks in Mother-Child Joint Writing

Videotapes of mothers guiding their children in two writing activities, one structured and the other unstructured, served as a basis for measuring the quality of maternal mediation.

On the structured activity, the mother mediated her child's writing of four pairs of words. The dyad was presented with four cards, each of which displayed identifying drawings of two nouns. Each word pair represented one of the four types that the children had been asked earlier to write independently at the kindergarten (see children's independent literacy measure below). The word pairs written with the mothers were not among the pairs written independently by the children. The types comprised: differently sized referents ('tsiporɛn – jad' 'fingernail – hand') similarly sized referents, ('mɛlafɛfon – gɛzɛr' 'cucumber – carrot'), rhyming words ('mapa – sapa' 'tablecloth – sofa'), and matching male-female pairs (zakɛn – zkɛna' 'old-man – old-woman'). Note that Hebrew words are spelled by International Phonetic Alphabetic symbols.

On the unstructured activity, the mother mediated her child's writing of a list of guests to be invited to the child's birthday party. The child was asked to imagine having a birthday party and to write a list of guests to be invited to the party. No instructions were given as to the number of guests to be included on the list. The number of written names ranged from 4 to 15 ($M = 9.29$, $SD = 2.79$). Our analysis pertained to the first 10 names at most.

Maternal Mediation Factors

The following two factors emerged from the videotapes' analyses:

Literate Mediation

This factor captured the literate components that the mother mediated to her child, and was composed of grapho-phonemic mediation and reference to orthographic rules.

Maternal grapho-phonemic mediation: This scale reflects how mother mediates the writing of letters to her child who attempts to represent oral word in writing. The score

reflects the level of mediation of the grapho-phonemic encoding process. This process includes segmenting the word into sounds, connecting a segmented sound with a letter, retrieving the letter's shape and printing it. The earlier the step in the grapho-phonemic process that the mother mediates to her child, the higher is the score on mediation. The score reflects the mother's original mediation level, even when the child needs further assistance at a later step in the process. A 6-point scale emerged from analyzing mother-child joint writing protocols. The score was given for mediation of each letter separately. This scale is described and illustrated below. Note that standard spelling is displayed by capital letters.

1. Mother writes down all the letters of the word for the child. Example: The boy sat on his mother's lap holding a pencil. She held his hand, murmured the word to herself, and wrote the word by leading his hand.

2. Mother writes down all the letters of the word as a model for copying. Example: The mother wrote the word silently. The child copied the word beneath the mother's model.

3. Mother dictates a letter. Example of writing N in zakɛn 'old man:'

Mother (after printing the first two letters): Now, write Nun (last letter name).

4. Mother retrieves a phonological unit (syllable, sub-syllable or phoneme) and immediately dictates the required letter name. Example of writing R in gɛzɛr 'carrot:'

Mother: gɛ-zɛ-r, /rrr/, like at the end of ʃaxar (name) (stressing the last phoneme). It's Rɛiʃ (final letter name).

5. Mother retrieves a phonological unit (syllable, sub-syllable or phoneme) and encourages/helps the child to link this unit with a letter name. Example of writing P in mɛlafɛfon 'cucumber.'

Mother: /mɛ-la-fɛ/ /fɛ/ /fɛ/. What is it?

Child: Bɛt? (letter name).

M: No. Bɛt sounds as /bɛ/ and /vɛ/ (letter that stands for /b/ or /v/).

C: Pɛi? (letter name).

M: Right. Pɛi is for /pɛ/ and /fɛ/.

6. Mother encourages/helps the child to retrieve a phonological unit (syllable, sub-syllable or phoneme) and to link it with a letter name. Example of writing Z in gɛzɛr:

M: What do you hear next? Listen carefully to the sound.

C: Ze.

M: How do we write it?

C: Zayin? (letter name)

M: Great!

To support the construct validity of mediation level underlying this scale, three independent judges read the introduction to the scale and the description of the levels with their examples. They were asked to order the levels, randomly presented, from the lowest to the highest. These judges were chosen because they are leading professionals in research and practice of emergent literacy in Israel. All three independently ordered the levels according to the order presented above.

Note that 10 children wrote a few familiar names (e.g., sibling's name) independently, mostly at the beginning of the guest list. The mean number of names written independently by these children was 1.80. The writing of these names involved no mediation and was not scored. Inter-judge reliability of two independent judges was computed on the scoring of letters' mediation in eight protocols (in four structured and four unstructured activities) produced by 20% of the sample – four boys and four girls randomly selected – resulting in a highly significant Kappa of .91.

The mediation of each letter was scored and averaged across letters for each activity. The correlation between the scores obtained on the two activities was $r = 0.88$, $p < 0.001$. The average across the two activities yielded the grapho-phonemic mediation score.

Reference to orthographic rules. Maternal references to two aspects of Hebrew orthography were coded: morpho-phonology and medial/final letters.

1. Morpho-phonology. Hebrew is rich in morphological structures, many of which are reflected in the orthography (Levin, Ravid, & Rapaport, in press). The number-gender structure, acquired early in the oral mode (Berman, 1986), already emerges in invented spellings by advanced kindergartners (Levin & Korat, 1993). A prominent instance is that of singular female nouns suffixed with the bound morpheme /a/ spelled with the letter H. for example, In the structured activity, the pair of words 'old-man – old woman,' which differ by this morpheme (zakɛn - zkɛna, spelled ZKN - ZKNH) allowed the mother to refer to this morpho-phonological rule of spelling. This morpheme was quite frequent on female names in the list of guests in the unstructured activity.

Maternal mediation of morpho-phonology was scored on a 3-point scale for each word that allowed reference to the suffix H: No reference (0); Reference to H without explanation (1) (e.g., "Pay attention. Dana [proper name] is written with Hɛi at the end"); or Reference to H, accompanied by explanation of morphological meaning (2) (e.g., "You spell zkɛna like zakɛn with H at the end, and this shows you that she is a girl").

2. Medial/final letters. Five Hebrew letters – M (mɛm), N (nun), Ts (tsadik), P (pɛi), and K (kaf) – have two written forms, medial and final. Final letters are written at the end of words, whereas medial letters are written in all other positions. Kindergartners learn to name and print medial before final letters (Levin, Patel, Margalit, & Barad, submitted) and sometimes use medial letters when finals are required (Levin, Korat, & Amsterdamer, 1996).

In the structured activity, final letters appeared three times and their medial counterparts eight times. Final letters and their medial counterparts appeared also on names of guests.

For each word that deserved a final letter, maternal mediation was scored on a 3-point scale: No reference (0); Naming a final letter without explanation (1); or Naming a final letter and explaining its requirement by virtue of its final position in the word (2).

The score on reference to orthographic rules was calculated from the average score on maternal mediation of the suffix H (hɛi) and of the final letters, averaged across the structured and unstructured activities.

Printing Mediation

This factor captured the maternal mediation and child's autonomy in retrieving letter shapes and in printing the letters. This factor was dependent on the autonomy allowed or encouraged by the mother and accepted or assumed by the child. A 4-point scale was used to score the printing of each letter: Mother wrote the letter on her own (0); Mother wrote and child copied the letter (1); Mother scaffolded the child in writing the letter (2); Child wrote the letter on his/her own, usually encouraged by mother (3). The production of each letter was scored according to this scale. Inter-judge reliability of two independent judges was computed on the scoring of letters' mediation in eight protocols (in four structured and four unstructured activities) produced by 20% of the sample – four boys and four girls randomly selected – resulting in a highly significant Kappa of .91. The correlation between the scores obtained on the two activities was $r = 0.85$, $p < 0.001$. The average score across the two activities yielded the Printing Mediation score.

Child's Independent Literacy

Word Writing and Recognition

The child was asked to write, recognize and explain the recognition of 16 pairs of words, composed of four groups. In the first group, the longer sounding word in each pair

denoted a bigger referent, for instance, pil - nɛmala ‘elephant – ant.’ In the second group, the two words in each pair differed in their phonological length but did not differ clearly in the size of their referents, for instance, ɛt - iparon ‘pen – pencil.’ Preschoolers, prior to becoming aware of the alphabetic principle, tend to use a referential strategy where more letters are written, often randomly, for bigger referents. Upon acquiring the alphabetic principle, they tend to shift to a phonological strategy, writing the longer sounding words with more letters, often partly correct or homophonic (Levin & Korat, 1993). We assumed that in the second group children would be less biased by the referential dimension than in the first group, and hence would be more sensitive to phonological length. In the third group, the two words rhymed, for instance tsinor – kinor ‘pipe – violin,’ such that they differed only in their initial letter. In the fourth group, the two words differed in gender, such that male and female nouns were spelled the same, but the latter were suffixed with H (hɛi), for instance, xatul - xatula ‘cat (M) – cat (Fm).’

Recognition of each pair was examined by asking the child to match two oral words illustrated by drawings to two printed words. In each of four testing sessions, the child was asked to write four pairs of words (one drawn from each group) and later to recognize the same four pairs, printed on cards and to explain his/her recognition (“why do you think that this word is X and this word is Y?”).

Writing scores. Each written word was scored on a 9-point scale, adapted from Levin, Share, and Shatil (1996). The scale’s range consisted of: pseudo letters, random letters insensitive to phonological length, random letters sensitive to phonological length, and partial to advanced consonantal spelling, without and with vowels. The score on word writing was equal to the sum of the 32 words**,** with a possible range of 32 – 288, where higher scores indicated more accurate spelling. Inter-judge reliability computed on the scores of of 20% of the sample, by two independent judges, resulted in a highly significant Kappa of .83.

Recognition and explanation scores. The number of pairs matched correctly determined the score on word recognition. Level of explanation of each pair was scored on the following 4-point scale:

1. Pre-alphabetic explanation: egocentric, contextual, and 'I don't know.' The explanation does not refer to the system of writing (e.g., "Because I know," "I guessed").

2. Rudimentary incorrect alphabetic explanation. The explanation refers to characteristics relevant to writing, by noting letter names or phonological length, but applying them erroneously.

3. Partial alphabetic, mixed correct and incorrect explanation. The explanation refers to characteristics relevant to writing, but applies them both correctly and incorrectly (e.g., providing a correct name to a letter, but deriving the conclusion that it should be a word that actually is not spelled with that letter).

4. Correct alphabetic explanation. The explanation correctly refers to the written system: mapping the longer sounding word onto the longer written word and explaining it by reference to phonology; naming a letter correctly and deriving the correct conclusion as to the written word; a morphological explanation or decoding.

The explanation score was determined by averaging the 16 pairs. Inter-judge reliability, based on 20% of the sample, resulted in a highly significant Kappa of .86.

Phonological Awareness

Awareness was measured by two tests developed for the present study, each including 20 monosyllabic word pairs. One test referred to the initial and the other to the final phonemes. Sensitivity to rhyme and alliteration is relatively an early development (Goswami & Bryant, 1990). On the initial phoneme test children were asked if the initial sounds were similar or different. On the final phoneme test they were asked the same question with reference to the final phonemes. Prior to testing, four different items were presented, and

corrective feedback with explanation was provided. The score on phonological awareness was determined by the percentage of correct responses, averaged across the two tests.

Orthographic Awareness

We adapted to Hebrew a test developed by Olson, Kliegl, Davidson, and Foltz (1985). The test included 19 pairs of graphic items comprising one printed word and one nonword that included a mixture of Latin and Hebrew letters, numerals, or illegal repetition of letters. Children were asked to select the printed word and to explain their decision. They were scored twice, on word selection and on explanation, according to the number of items correctly selected and the number of selections correctly explained.

Procedure

The data on the child's independent literate abilities were collected in the kindergartens, on four sessions per child that were carried out individually within the same week or two. Word Writing and Recognition was tested on each of the four days, upon completion of a former test. In each session, the child dealt with each of the four different types of pairs, drawn randomly from each of the four groups and differently across participants. A test of Word Definition appeared in the first session, but was omitted from this paper because of a tendency toward a floor effect. The two Phonological Awareness tests (initial and final) appeared in the second and fourth sessions, counterbalanced across children. Orthographic Awareness appeared in the third session.

Videotaped data on maternal mediation were collected in the child's home, on two separate afternoons within a few days. The first session of the dyadic interaction dealt with the unstructured task, which was a more familiar activity. The mother was asked to help her child to do the best s/he can, without any further directions.

In the first session, upon completion of the interaction, the mother completed a demographic questionnaire to assess SES, and the interviewer observed the home and

completed the HOME inventory. In the second session, upon completion of the interaction, the mother completed the Vocabulary Test, the adults TRT (Title Recognition Test), and the children TRT. The home visits took place after the child was tested in the kindergarten.

RESULTS

The results are presented in four parts. First we present the construction of each of the sociocultural factors. Second, we display the intercorrelations among the sociocultural factors on the one hand, and among emergent literacy measures, on the other hand. Thirdly, we present the relationship between sociocultural factors and measures of the child's emergent literacy. Finally, we present a qualitative analysis demonstrating the range of maternal strategies of mediation and of four protocols that illustrate how maternal mediation can be either within or below the child's zone of proximal development (ZPD).

Sociocultural Factors

The sociocultural factors included in the study, arranged from the macrosystem to the microsystem, were SES, Maternal Literacy, Child's Literacy Tools and Activities at Home, and Maternal Mediation in mother-child joint writing. Despite the restricted range of SES in our sample, which extended from middle-low to low, representing the population of an Israeli development town, we expected intercorrelations among the sociocultural factors studied. Each factor was computed as a mean Z score across measures.

SES

SES was based on the following constituents: maternal and paternal education, vocation, and occupation and the family's residential area. Means, standard deviations, and intercorrelations are presented in Table 1. All the correlations are moderate to high and are significant. The mean Z score across all constituents was highly reliable (Cronbach α = .92) and served as the SES score.

_____ Insert Table 1 about here _____

Maternal Literacy

Maternal Literacy was based on mother's Exposure to Print and Vocabulary. The possible range on Exposure to Print was -20 to 20; the obtained range was -2 to 15; and the mean and standard deviation were 3.85 and 3.78, respectively. The range on Vocabulary was 25 – 88% (M = 60, SD = 17). The mean Z score was highly reliable, Cronbach α = .85, and served as the Maternal Literacy score.

Child's Literacy Tools and Activities at Home

This factor was assessed by the mother's Exposure to Children's Print and the HOME inventory. The possible range on Exposure to Children's Print was -20 to 20; the obtained range was -1 to 14, and the mean and standard deviation were 6.15 and 3.52, respectively. The obtained range on the HOME inventory was 0 to 100% (M = 60, SD = 34). These statistics indicate sufficient variances on these measures. The mean Z score was sufficiently reliable, Cronbach α = .62, and served as the Child's Literacy Tools and Activities at Home score.

Maternal Mediation

Maternal mediation derived from analysis of mother-child joint writing was composed of Literate Mediation and Printing Mediation.

Literate mediation was measured by Grapho-phonemic Mediation and Reference to Orthographic Rules. The scale of Grapho-phonemic Mediation ranged from 1 to 6, and the obtained range was 1.21 to 5.28 (M = 3.17, SD = 1.09). The number of letters mediated across the two activities ranged from 43 to 72 (M = 59, SD = 7.76). Out of 41 mothers, 39 mediated on more than a single level. To examine the assumption that most mothers mainly used a part of the scale's range, thereby supporting it as an ordinal scale, we calculated the percent of letters mediated on the mode level, plus the previous and the next levels. When the mode was the highest or the lowest level of the scale we included the two previous or the two next

levels, respectively. The percent of letters mediated by the mother, on the mode level and its two neighboring levels combined, ranged from 38 to 100% (M = 90, SD = 14.29).

The scale of Reference to Orthographic rules ranged from 0 to 2, and the obtained range was 0.00 to 1.83 (M = 0.65, SD = 0.56). The mean Z score was highly reliable, Cronbach α = .85, and served as the Literate Mediation score.

Printing Mediation ranged from 0 to 3, and the obtained range was 0.21 to 3.00 (M = 1.64, SD = 0.79).

_____ Insert Table 2 about here _____

The intercorrelations among the sociocultural factors, presented in Table 2, are moderate to high and are all significant.

Emergent Literacy

Word Writing and Recognition was based on three scores: on Word Writing, Recognition, and Explanation. The obtained range on Word Writing was 11 to 98% (M = 35, SD = 21). The range on Word Recognition was 19 to 100% (M = 60, SD = 22). The obtained range of Explanation of Recognition was 27 to 100% (M = 64, SD = 24). The correlation between Word Writing and Word Recognition was r = .78, p < .001; between Word Writing and Explanation of Recognition was r = .82, p < .001; between Word Recognition and its Explanation was r = .83, p < .001. The mean Z score was highly reliable, Cronbach α = .93, and served as the Word Writing and Recognition measure.

Phonological Awareness was averaged across two scores of initial and final phoneme. The obtained range on initial phoneme was 45 to 95% (M = 67, SD = 13). On final phoneme, the obtained range was 40 to 90% (M = 66, SD = 12). The correlation between the two tests was r = .66, p < 0.001. The mean score across the tests served as the Phonological Awareness measure. Mean percentage and standard deviation of this measure were M = 66, SD = 11.

Orthographic Awareness was averaged across two scores of Word Selection and Explanation. The obtained range on Word Selection was 30 to 100% (M = 71, SD = 19). On the Explanation, the obtained range was 0 to 100% (M = 59, SD = 32). The mean Z score was sufficiently reliable, Cronbach α = .91, and served as the Orthographic Awareness measure.

The correlations between Word Writing and Recognition and Phonological Awareness was r = .58, p < .001, between Word Writing and Recognition and Orthographic Awareness was r = .63, p < .001, and between Phonological Awareness and Orthographic Awareness was r = .54, p < .001. These correlations indicate that the measures are related but do not assess the same construct.

Relationship Between Sociocultural Factors and Emergent Literacy

Table 3 presents the correlations between each sociocultural factor and each of the child's emergent literacy factors. All the correlations were in the positive direction, and most of them were significant. However, the factors representing layers that are close to the child – Child's Lliteracy Tools and Activities at Home and Maternal Mediation were consistently correlated with all of the child's emergent literacy factors.

_____ Insert Table 3 about here _____

According to our model, sociocultural factors were ordered from macrosystem to microsystem. To examine the link between sociocultural factors and emergent literacy, the contribution of each factor was calculated after controlling for the variance associated with the broader sociocultural factors. Separate, fixed-order hierarchical regression analyses were carried out with SES in the first step, Maternal Literacy in the second, Literacy Tools and Activities at Home in the third, and Maternal Mediation (i.e., Literate Mediation or Printing Mediation) in the fourth step. The criterion variables were Word Writing and Recognition, Phonological Awareness and Orthographic Awareness.

_____ Insert Table 4 about here _____

SES contributed significant amounts of variance (21% and 19%) to Word Writing and Recognition and to Orthographic Awareness, respectively. It had no significant contribution to Phonological Awareness. Maternal Literacy had no significant contribution to any measure of emergent literacy, after the variance due to SES had been partialled out. After partialling out the contribution of both SES and Maternal Literacy, Child's Literacy Tools and Activities at Home added significant amounts of variance (13%, 11%, 16%) to Word Writing and Recognition, Phonological Awareness and Orthographic Awareness, respectively. After partialling out the above, Literate Mediation added significant amounts of variance (30% and 20%) to Word Writing and Recognition and to Phonological Awareness. A similar trend appeared on Printing Mediation, which added a significant amount of variance (22%) to Word Writing and Recognition and an almost significant amount of variance (7%) to Phonological Awareness ($p < 0.07$). Neither Literate Mediation nor Printing Mediation contributed uniquely to Orthographic Awareness.

Word Writing and Recognition was highly explained cumulatively by the sociocultural factors. The variance accounted for amounted to 68% and 60% when the fourth step was Literate Mediation and Printing Mediation, respectively. Phonological Awareness was explained by the sociocultural factors, with 39% and 26% of the variance accounted for, respectively. Orthographic Awareness was explained, with 39% and 37% of the variance accounted for, respectively.

Qualitative Analyses

The correlations between level of maternal mediation and the child's independent word writing and recognition were surprisingly high. The obvious reason for this link is that mothers in general were sensitive to their children's literacy abilities and adjusted their mediation accordingly. However, mothers differed in the extent to which they adjusted mediation to their child's literacy level. To illustrate this relative independence, we present

four protocols. The first pair of children achieved literacy scores around the average, and the second above the average. However, within each pair, one mother mediated the child's writing within the child's ZPD, challenging her child and providing help when the challenge was unmet, whereas the other mother mediated below the child's level.

Elit and Yakov (fictitious names) achieved average scores. They wrote all 32 words with random letters, showing no sensitivity to the phonological length of the words. Their word recognition was within chance level. Their explanations on word recognition were rudimentary incorrect alphabetic or egocentric. Their mothers differed in the dominant level they used in grapho-phonemic and in printing mediation.

Elit's mother frequently encouraged her daughter to provide the upcoming segment in a word but sometimes had to eventually provide the segment. She often named the required letter right away. She tried to scaffold Elit in retrieving letter shapes. Her mode score was 4 on Grapho-Phonemic Mediation and 1 on Printing Mediation.

Yakov's mother wrote each pair of words on a sheet of paper and put them in front of him, asking him to copy the words. While he was copying, she wrote the next pair of words. Then she watched his written product and helped him correct the shape of a few letters. Her mode Grapho-Phonemic Mediation score was 2, and her Printing Mediation score was 1. We concluded that Elit's mother mediated writing within the girl's ZPD, whereas Yakov's mother mediated below his ZPD.

Adi and Lili's (fictitious names) scores were above average. They wrote mostly in basic or middle consonantal writing. They used random letters in a few words, but in all these cases the longer sounding word was written with more letters. They recognized almost all the words and consistently provided alphabetic explanations.

Adi's mother often segmented the entire word into units, retrieved the required unit, and expected her daughter to provide the letter name and to print it. When Adi retrieved the letter

name but could not print it, the mother mediated letter printing by either providing a word including this letter or giving her directions how to graphically modify a known letter to create the required one. Her prevalent Grapho-Phonemic Mediation was scored 5, and her Printing Mediation was scored 2-3.

Lili's mother often provided a segmented unit, named the required letter, and pointed at this letter written in a previous word as a model for copying. Her prevalent Grapho-Phonemic Mediation was scored 4, and her Printing Mediation was scored 1. While Adi's mother mediation took into account the child's advanced level of emergent writing, and mediated within the ZPD, Lili's mother's mediation was below her child's ZPD.

DISCUSSION

This study analyzed the nature of mothers' mediation of writing with their kindergarten aged children. Writing is a multidimensional activity that includes meaning-focused and code-focused processes. The first encompasses contemplating the meaning and composing the text, whereas the second includes spelling words and preserving the conventional features of writing (e.g., spacing). Past studies that analyzed parent-child joint writing aimed to assess mediation of both meaning and code (Burns & Casbergue, 1992; DeBaryshe et al., 1996). However, the instructions guided the dyads to focus on the construction of meaning, encouraging a lenient approach to conventionality of code. The authors' stance was that mediation is productive if it focuses on the meaning of the message, and if the parent exerts a low level of control on what and how to write. Burns and Casbergue found that meaning-focused mediation was a result of an interaction where the child was more initiative and the parent less controlling. The products of such interactions were less conventional. DeBaryshe et al. found that code-focused mediation resulted in a more conventional product and that almost all mothers insisted that the dyadic letter be spelled conventionally, regardless of the child's level of solo writing.

We uphold that code-focused mediation is fruitful in promoting literacy and is developmentally appropriate. Moreover, it does not exclude mediation of meaning. We analyzed maternal mediation of writing in a context calling for mediation of grapho-phonemic mapping. Children were asked to write dictated words and a list of guests invited to their birthday party, and the mothers were invited to help them. It was not suggested, as in the previous studies, that writing could be done with pre-conventional means, like drawings or invented spelling, or that the mother might be the scriber. The children in our study could spell none of the dictated words and only a few of the guests' names autonomously, and the latter were excluded from analyses. All of the mothers guided their children to produce conventional readable spellings, in line with DeBaryshe et al. (1996).

Significant correlations emerged between the level of maternal mediation and a broad range of children's literacy competencies. We suggest that, when children are more skilled in letter knowledge, phonological awareness, and grapho-phonemic mapping, their mothers make use of these skills, consequently mediating writing at a higher level. Still, some mothers may be unaware of their children's literacy level and cognitive abilities, underestimating them and therefore making demands below the child's actual level. This approach involves a vicious circle: Underestimating the child's literacy leads to mediation at a lower level than suitable, thereby providing no opportunity to reveal the child's level of literacy. For example, mothers who provided a word model to copy could not discover their children's letter naming, letter printing, or phonological awareness.

Yet, to function as a competent writing mediator, mothers must accept the role of mediator, to understand the different steps involved in word writing, and to have insights into how these steps can be mediated. A low level of mediation, like providing a model for copying or dictating letters, may stem from limited maternal awareness of the encoding process or lack of insight into how to carry out the mediation.

In general terms, maternal mediation style is molded by her previous experiences with her children, as well as by cultural beliefs and norms of behavior related to parenting (Korat & Levin, in press; Lightfoot & Valsiner, 1992). Mediation within the ZPD infers not only sensitivity to the child's actual level, but also the ability to challenge the child beyond this level, within the limits of his/her potential level (Feuerstein, 1998; Vygotsky, 1978). Furthermore, maternal contribution is an ongoing phenomenon affecting the trajectory of child development. Mothers who mediate on a higher level, from the child's early age on, learn about the child's competencies and use this knowledge to shape their coming interactions. This is consistent with the systematic finding that cognitively advanced children tend to have parents who are accurate in attributions of cognitive achievement to their children (Hiebert & Adams, 1987; Miller, Manhal, & Mee, 1991).

In line with Bronfenbrenner's ecological model, we view development as embedded in the sociocultural context. We elaborated a model of four contextual layers related to emergent literacy: SES, Maternal Literacy, Child's Literacy Tools and Activities at Home, and the quality of Maternal Mediation of Writing. We expected that the contribution of the layers closer to the child would be more prominent, an expectation partially supported.

Studies on the effects of SES usually compare low SES to middle or to high SES groups. The conclusions drawn refer to the deficiencies (or sometimes lack thereof) among the low SES group. This approach is prone to conceiving low SES cohorts as homogenous (Holden, 1997; Pflaum, 1986). Our study was restricted to low SES families in order to shed light on interfamilial differences that may be relevant to literacy development. Despite the narrow range of SES, we found differences between the families in all of the sociocultural background factors, as suggested by Renck-Jalongo (1996).

Our study expands to the Israeli arena the conclusion that, nowadays, low SES children are not deprived of literacy-related tools and experiences (DeBaryshe, 1993, Fitzgerald,

Korat, & Levin, in press; Spiegel, & Cunningham, 1991; Stuart, Dixon, Masterson, & Quinlan, 1998). All of the families in our sample owned children's books and basic tools for writing (crayons, pencils, and paper). Half or more owned a computer and children's software and a tape recorder with audiocassettes.

Although Maternal Literacy was correlated with the child's literacy measures, it added no significant contribution to child's literacy beyond SES. Because SES reflects parental education and occupation, it may have captured overlapping variance with Maternal Literacy. In contrast, the Child's Literacy Tools and Activities at Home measure was both systematically correlated with the child's literacy measures and added a significant, unique contribution to the prediction of all literacy measures, beyond the broader sociocultural factors studied, i.e., SES and Maternal Literacy. These findings corroborate the literature based on different SES cohorts (Bus et al., 1995; Sénéchal et al., 1998). We assume that parents' construction of a relatively rich environment reveals their conception of experiences and activities that are likely to promote children's development. It also testifies to their perception of themselves as responsible for providing a development-supportive environment. This is particularly so in light of our families' generally limited financial resources. Low SES children are at risk in the realm of literacy and schooling, and we must look for ways to promote children at social risk. Our study emphasizes parental mediation as a possible major asset.

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Table 1

Means and Standard Deviations of SES Constituents and Intercorrelations Among Them (N=41)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
M	5.32	4.60	2.76	2.90	2.49	2.77	3.85
SD	1.72	2.16	1.70	1.24	1.60	1.39	2.12
(1) Mother's Education	---	.62***	.66***	.49**	.60***	.36*	.39*
(2) Father's Education		---	.70***	.52***	.66***	.66***	.60***
(3) Mother's Vocation			---	.59***	.88***	.56***	.55***
(4) Father's Vocation[a]				---	.63***	.74***	.43**
(5) Mother's Occupation					---	.60***	.55***
(6) Father's Occupation[a]						---	.53***
(7) Residential Area							---

p < 0.05; ** p < 0.01; *** p < 0.001

[a] On Father's Vocation and Father's Occupation (N=40)

Table 2

Intercorrelations Among the Socio-Cultural Factors (N=41)

	SES	Maternal Literacy	Literacy Tools/ Activities	Maternal Mediation	
				Literate Mediation	Printing Mediation
SES	---	.63***	.62***	.54***	.51***
Maternal Literacy		---	.54***	.51***	.41**
Literacy Tools/Activities			---	.66***	.60***
Literate Mediation				---	.82***
Printing Mediation					---

*** $p < 0.001$, ** $p < 0.01$.

Table 3

Correlations Between Scores on Sociocultural Factors and Child's Emergent Literacy Measures (N=41)

	Literacy Measures		
Sociocultural Factors	Word Writing & Recognition	Phonological Awareness	Orthographic Awareness
SES	.46**	.19	.44**
Maternal Literacy	.42**	.29^	.38*
Literacy Tools/Activities	.60***	.41**	.60***
Literate Mediation	.82***	.60***	.52***
Printing Mediation	.74***	.44**	.44**

^ $p < .07$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 4

Summary of Hierarchical Regression Analysis for Sociocultural Factors Predicting Emergent Literacy Measures (N=41)

Step and variables	Word writing/ Recognition	Phonological Awareness	Orthographic Awareness
	R^2 change		
1. SES	0.21**	0.04	0.19**
2. Maternal Literacy	0.03	0.05	0.02
3.Literate Tools/Activities	0.13**	0.11*	0.16**
4a. Literate Mediation	0.30***	0.20**	0.02
4b. Printing Mediation	0.22***	0.07^	0.01
	Cumulative R		
1. SES	0.21	0.04	0.19
2. Maternal Literacy	0.24	0.08	0.21
3.Literate Tools/Activities	0.37	0.19	0.37
4a. Literate Mediation	0.68	0.39	0.39
4b. Printing Mediation	0.60	0.26	0.37

^ $p < 0.08$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$