Longitudinal Relations Between Parental Writing Support and Preschoolers' Language and Literacy Skills

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ABSTRACT

Parental writing support was examined over time and in relation to children's language and literacy skills. Seventy-seven parents and their preschoolers were videotaped writing an invitation together twice during one year. Parental writing support was coded at the level of the letter to document parents' graphophonemic support (letter-sound correspondence), print support (letter formation), and demand for precision (expectation for correcting writing errors). Parents primarily relied on only a couple print (i.e., parent writing the letter alone) and graphophonemic (i.e., saying the word as a whole, dictating letters as children write) strategies. Graphophonemic and print support in preschool predicted children's decoding skills, and graphophonemic support also predicted children's future phonological awareness. Neither type of support predicted children's vocabulary scores. Demand for precision occurred infrequently and was unrelated to children's outcomes. Findings demonstrate the importance of parental writing support for augmenting children's literacy skills.

Preschool is a critical time for the development of foundational language and literacy skills, including oral language and vocabulary, phonological awareness, alphabet knowledge, and conventions of print (Bowman, Donovan, & Burns, 2000; Teale & Sulzby, 1986; Welsch, Sullivan, & Justice, 2003). Writing activities are uniquely valuable for promoting young children's competence in these fundamental areas because they allow children to practice and integrate many skills simultaneously. Composing a message requires the child to consider the individual sounds within a word and then choose and form letters that represent the sounds, all while considering the meaning associated with the writing (Diamond, Gerde, & Powell, 2008; Neumann & Neumann, 2010; Ouellette & Sénéchal, 2008; Puranik & Lonigan, 2011). Accordingly, a host of studies over the past two decades has demonstrated the predictive import of writing skills for children's later reading ability (e.g., Bond & Dykstra, 1997; Ehri, 1998; Lonigan, Burgess, & Anthony, 2000; Shatil, Share, & Levin, 2000; Stuart 1995), and writing skills are now the focus of many curricula and intervention programs (Delano, 2007; Lienemann & Reid, 2008; Martins & Silva, 2006; Mayer, 2007; Rieben, Ntamakiliro, Gonthier, & Fayol, 2005).

Theoretical Framework

The current work utilizes an emergent literacy perspective, which states that children accumulate foundational literacy skills throughout early

childhood, well before they receive any formal instruction (Teale & Sulzby, 1986; Whitehurst & Lonigan, 1998). With regard to writing, children gather key principles about its function and production through their interactions with environmental print and more skilled caregivers (Ferreiro & Teberosky, 1982; Tolchinsky, 2003, 2006). Yet, the field has remarkably little information regarding what caregivers can do to promote writing development among young children.

Sociocultural theory asserts that children build complex competencies such as writing by interacting with more skilled adults and peers, mainly through scaffolding, which refers to remarks and actions by the expert that helps the child accomplish a task that he or she could not undertake independently (Vygotsky, 1978; Wood, Bruner, & Ross, 1976). By working with an expert on activities that fall into the child's zone of proximal development, the area of increased competence in which the child can perform only with support, the child begins to internalize these scaffolds and can do more independently. This perspective would suggest that parents should provide higher levels of writing support as children become more able to write independently.

Parental Support in Early Writing

There is empirical evidence to support Vygotsky's idea. For example, parents' explicit teaching about writing may foster children's knowledge of letters, sounds, and sound–symbol correspondence (Sénéchal, LeFevre, Thomas, & Daley, 1998). Yet, despite the importance of writing instruction (Ferreiro & Teberosky, 1982; Tolchinsky, 2003, 2006), relatively little is known about precisely how parents support children's writing skill development, including what particular techniques parents use and how often they use them. One case study suggests that mothers can utilize many writing strategies when working with their children, including providing writing materials, enunciating the sounds in words, and providing directions about how to form specific letters (Neumann, Hood, & Neumann, 2009). Parents also have been observed dictating letters to children as they write a letter or writing children's ideas down for them (Burns & Casbergue, 1992). Other parents have encouraged children to copy letters or words from their environment (Neumann, Hood, & Ford, 2012). In general, the existing evidence suggests that similar to other types of literacy activities (Reese & Cox, 1999; Skibbe, Justice, & Bowles, 2011), parents differ in the types, amount, and quality of writing assistance they provide.

The current study investigates three types of writing supports. First, graphophonemic support helps the child break a word into its segments and connect each segment (sound) with its corresponding letter. A parent providing high levels of graphophonemic support highlights the individual sounds in words and the corresponding symbols; alternatively, a parent supplying low levels of support does not elucidate this process, presenting no guidance or giving the child the answer (e.g., letter names) without explaining why that answer is correct. Higher support likely provides more of the explicit tuition that children need to develop phonological awareness and letter knowledge, malleable skills that underlie later reading success (Al Otaiba, Puranik, Ziolkowski, & Montgomery, 2009; Aram & Levin, 2004, 2011; Ehri, 2004; Ehri et al., 2001; National Early Literacy Panel, 2009).

Print support helps the child physically write individual letters, a skill closely associated with handwriting, as well as spell words (Aram & Levin, 2001, 2004; Neumann et al., 2012). A parent offering high levels of print support may provide guidance on making appropriate marks on paper (e.g., "You draw a line and then a circle next to it."); conversely, a parent providing low levels of support might offer no input or produce the letter for the child. Higher levels of print support are associated with children's concurrent literacy skills in preschool (Bindman, Skibbe, Hindman, Aram, & Morrison, 2013) and kindergarten (e.g., Aram, 2007) and could support learning thereafter. Higher levels of print support likely foster literacy competence in part through fine motor skills, which play an important role in writing during preschool (Gerde, Skibbe, Bowles, & Martoccio, 2012) and beyond (Berninger, Cartwright, Yates, Swanson, & Abbott, 1994). Indeed, for older preschoolers, writing letters by hand (as opposed to typing them) is beneficial for letter knowledge (Longcamp, Zerbato-Poudou, & Velay, 2005). Similarly, encouraging kindergarten children to copy letters is more beneficial for their letter knowledge than tracing them on a page (Askov & Greff, 1975; Hirsch & Niedermeyer, 1973).

Finally, we examined parents' demand for precision, or the degree to which parents point out unconventional aspects of children's writing and request that the child make corrections (Aram, 2007). This third type of support complements the other two by capturing how parents react to their children's mistakes in producing letters on paper. Young children's writing is often unconventional with respect to the shapes of the letters, the spacing between the letters, their horizontal and vertical alignment, and their size (Burns & Casbergue, 1992; Puranik & Lonigan, 2011). Parents who provide low demand for precision accept children's unconventional writing products without pointing out inaccuracies; parents using higher levels of demand for precision point out errors and/or require children to correct them.

Although demand for precision has never been examined among English-speaking families, findings

from previous work in Hebrew suggest that it is related to young children's early literacy skills, including word writing, letter knowledge, and phonemic awareness (Aram, 2007, 2010). It is unclear whether these findings will extend to the sample of English-speaking families included in the current study. For example, there is some evidence that in comparison with other ethnic groups, European-American families are less likely to require their children to use correct form when writing (Huntsinger, Jose, Larson, Krieg, & Shaligram, 2000) and may in general use a less directive parenting style (Chaudhuri, Easterbrooks, & Davis, 2009).

The current study targets several unanswered questions in the field. First, research has not explored the predictive value of parents' support for writing during the preschool years on children's language and literacy gains. However, results from other grades are encouraging; for example, in kindergarten, Sénéchal and colleagues (1998) found that many parents reported teaching children to read and write in English and that more frequent efforts predicted stronger literacy skills in first grade, although these efforts did not extend to growth in children's vocabularies. Israeli children whose mothers provided higher levels of graphophonemic and print support during a joint writing activity when the children were 5 or 6 years old had stronger literacy skills in second grade (Aram & Levin, 2004).

Similarly, Lin and colleagues (2009) studied the ways that parents in Hong Kong support their children's writing in kindergarten and first grade and found that mothers' support for writing Chinese characters predicted a significant amount of variance in children's later word reading ability. This suggests that across multiple languages and orthographies, children whose parents support them in learning about writing are at an advantage when learning to read in later grades. The current study investigates whether parental support during a shared writing activity in preschool predicts children's literacy skills approximately one year later.

Second, although children's writing has been measured in a number of ways, such as writing words (see Lin et al., 2009) and writing a guest list (see Aram & Levin, 2002), much of the research on emergent writing focuses on children's name-writing skills (Diamond et al., 2008; Levin & Ehri, 2009; Tolchinsky, 2006). Such inquiries are useful because children's own names are personally meaningful (Bloodgood, 1999) and may elicit special attention from caregivers (Bindman et al., 2013).

The current study adds to the extant literature in the field by examining children's emergent writing on two occasions using a semistructured invitation to a birthday party. Using this type of meaningful context may help promote children's vocabulary development in addition to other literacy skills (Wasik, 2010). In sum, the current methodology allows us to capture children's efforts (and parents' support of these efforts) to write a broader selection of words than typically observed, but that still have an important communicative function.

Finally, it is unclear whether and how parents adjust their support for children's writing over time, working within children's zone of proximal development. In general, it appears that many parents of preschoolers increase the quality of the home learning environment that they provide as children grow older (Son & Morrison, 2010). With regard to writing support, research shows that the level of graphophonemic and print support provided by mothers depends on mothers' perceptions of their child's literacy skills as well as children's actual performance during a task (Aram, 2007; Aram, Most, & Simon, 2008). This suggests that mothers adjust their level of support to coincide with children's development, a finding consistent with other research indicating that parents provide varying levels of assistance to children based on the children's reading level (Evans, Moretti, Shaw, & Fox, 2003; Mansell, Evans, & Hamilton-Hulak, 2005). However, changes in the nature of specific instructional supports that parents provide during shared writing activities in preschool have yet to be examined over time. The current longitudinal study examines parents' writing support over two points in time to investigate whether parents provide a higher level of writing support as children grow older.

Research Aims

Given the burgeoning evidence of the import of early writing and the relative paucity of data describing how English-speaking parents support this skill in preschoolers, the current study explored two specific research aims:

1. To investigate changes in the nature and amount of writing support parents provide to their children by examining parental support at two points in time over the period of one year. It is hypothesized that parents will provide a higher level of graphophonemic and print support for their children as they mature. Demand for precision will be explored for its use in English-speaking families.

2. To examine whether the support that parents provide during the first time point studied predicts children's literacy skills during that (preschool) year as well as one year later. We predict that results from the current study will coincide with previous research with older children (e.g., Aram,

2007, 2010), which suggests that the quality of all three types of parents' writing support will positively predict children's literacy development, although it is unclear whether it will also support their language skills (see Sénéchal et al., 1998).

Method

Participants

The present study included 77 children (43 girls) and one parent each, recruited from a suburb of a major city in the Midwest. All children were attending preschool at one of six schools within the same district at the onset of this study. Data on children's development were collected in the children's schools as part of a larger study examining their academic and social growth within a school context. Understanding how parental involvement might contribute to children's development was a secondary aim of the study and thus was collected separately for a subset of families. The current sample represents those families who expressed interest in this work.

Seventy-four mothers and three fathers participated in the study; data were collected at two points in time, spaced one year apart. At the beginning of the study, children were 4.62 years old ($SD = 0.56$) on average (range = 3.61–5.81). Of the 71 families who chose to provide information about their children's ethnicity, parents indicated that the majority of children were white ($n = 58$), with African American ($n = 3$), Asian ($n = 4$), Middle Eastern ($n = 3$) and biracial children ($n = 3$) also included. Parents had between 10 and 18 years of formal schooling, although the majority of mothers (81%) and fathers (73%) had an education equivalent to a bachelor's degree or higher. Annual household income varied considerably between families (range = $16,000 to $400,000); however, the median annual income was high ($118,000).

During the spring preceding the home visits at each time point, data on children's lowercase letter knowledge was collected using 26 lowercase letter flashcards presented to children one at a time in random order. Children's letter knowledge at time points 1 ($M = 16.72$, $SD = 8.05$) and 2 ($M = 22.73$, $SD = 4.57$) was quite high, indicating that most children had sufficient letter knowledge to be full participants in a writing activity. More specifically, at time point 1, fully 40% of children knew 20 or more letters, and at time point 2, more than 80% of children knew 20 or more letters.

Materials and Design

Parents and their children were observed engaging in a semistructured writing activity within their homes during two consecutive summers. Dyads were provided with an invitation, which comprised five blank sections, termed *segments*: TO, FOR, DATE, TIME, and PLACE. Children's language and literacy skills were also assessed at two time points: the spring before the first summer observation and the spring before the second summer observation. Parental writing supports (i.e., print support, graphophonemic support, demand for precision) were the independent variables in the study, and children's literacy and language skills were the dependent variables, as operationalized by children's performance on the Woodcock–Johnson III Tests of Achievement (Woodcock, McGrew, & Mather, 2001).

Procedure

At each testing point, parents and children were asked to fill in a blank invitation in preparation for a pretend birthday party. Parents were not provided with any specific instructions about how to fill out the invitation, and there was no time limit on the task. The interactions were videotaped, and the writing products obtained from the interaction were saved. With the writing products and coding systems in hand, research assistants later coded the parent–child interactions from the videos with specific directions to note the parental support provided for each letter as well as parents' reaction to each error on the invitation. Videos were stopped and restarted as needed. Children's literacy and language skills were assessed during a visit to children's schools in the spring immediately prior to each home visit. In all cases, child outcome data were collected within three months of the data collected during the writing activity.

Parental Writing Support

Using a coding scheme adapted from work by Aram and Levin (2001, 2004), the present study observed the support that parents provided during the joint writing activity. Specifically, three codes were applied for each letter that the dyads wrote, representing three dimensions of parental support: graphophonemic support, print support, and demand for precision.

Numbers, punctuation, and symbols were not coded because they were not the focus of the current study. No codes were assigned when children were able to write the correct letter without any type of parental support. The three types of support were coded by five trained research assistants, who were all trained by the same master coder. More than 20% of the sample was coded by at least two coders. Inter-rater agreement is subsequently provided for each scale separately.

Graphophonemic Support

The ways in which parents helped children understand links between letters and their corresponding sounds was captured by the graphophonemic support scale.

Scores on this scale ranged from 1 to 9, with 1 representing the lowest level of support (i.e., parents did not provide support that would help children learn to segment words into sounds) and 9 representing support that encourages children's independent thinking about individual sounds and their corresponding letters (see Appendix A for the entire scale). In cases where the parent did not give graphophonemic support for each letter (i.e., the parent said the whole word without helping the child segment it into sounds), the same score was assigned to each letter in that word.

Mean scores were computed by averaging scores across all letters for which parents provided support. The average inter-rater agreement for individual letters coded on this scale was 90.70%.

Print Support

The measure of print support represented the ways in which parents facilitated children's independent writing of a particular letter form. Scores on this measure also ranged from 1 to 9, with 1 representing the lowest level of support (i.e., the parent wrote the letter for the child without discussion of the letter form) and 9 representing the highest level of support (i.e., the parent encouraged the child to use his or her own background knowledge to draw the letters independently). When the parent did not provide print support for individual letters in a word (i.e., the parent wrote the letters), the same score was assigned to every letter in the word (see Appendix B for information on the scale in its entirety).

Similar to graphophonemic support, scores for print support were computed by averaging scores across all letters for which parents provided support. The average inter-rater agreement for individual letters coded for print support was 97.15%.

Demand for Precision

Similar to previous work (Aram, 2010), this scale examined the ways in which parents dealt with errors that children made during the writing process. For each of the five segments in the invitation, up to three errors were coded, allowing for 15 errors per child to be coded. The intention of this constraint was to allow for comparisons across segments, although the number of errors across segments was prohibitively low for this aim. The number of errors coded at the first time point ranged from 1 to 12 ($M = 3.69$, $SD = 2.43$); at the second time point, they ranged from 1 to 10 ($M = 3.63$, $SD = 2.09$). Eligible errors included incorrect spacing and/or letter placement as well as mistakes in letter production (e.g., form, directionality). Any misspellings within a given segment were counted as one error. Scores on this scale were 1 (i.e., error was present, but the parent did not point out or correct it), 2 (i.e., the parent

pointed out an error in the child's writing but did not ask the child to correct it), and 3 (i.e., the parent pointed out an error and asked the child to correct it). Parents' reactions to children's writing errors were averaged across segments to provide one score. The inter-rater agreement for demand for precision for each error coded was 89.33%.

Children's Language and Literacy Development

The Woodcock–Johnson III was used to assess children's decoding, phonological awareness, and vocabulary skills through administration of the following three subtests: letter–word identification, sound awareness, and picture vocabulary. Children's performance on each measure is described using W scores, which have Rasch measurement properties that afford examination of change over time. Initial (basal) testing items were determined based on children's age, and testing was discontinued once children reached a ceiling of six consecutive incorrect items, consistent with instructions within the testing manual (Mather & Woodcock, 2001).

Decoding

The letter–word identification measure assesses children's letter knowledge and their early decoding skills. Initial items require children to identify letters, whereas later items require children to decode increasingly complex words. Reliability coefficients on this measure range from .98 to .99 for children ages 4–6.

Phonological Awareness

The sound awareness subtest uses four types of tasks to assess children's phonological awareness: rhyming awareness and production, phoneme deletion, substitution, and reversal. For children 4–6 years of age, reliability coefficients range from .71 to .93.

Vocabulary

The picture vocabulary subtest assesses children's expressive language and word knowledge, requiring children to name objects portrayed by a series of pictures. Reliability coefficients for children ages 4–6 are .70 to .81 for this measure.

Results

Preliminary Analyses: Changes in the Amount and Type of Writing on the Invitation

During the first time point, parents and children wrote an average of 21.66 letters together during the invitation writing activity ($SD = 8.04$), which significantly

TABLE 1
Descriptive Statistics

Variable	n	Time point 1 Range	M (SD)	n	Time point 2 Range	M (SD)
Letters written on the invitation	76	4–41	21.66 (8.04)	77	3–47	18.77 (7.47)
Letter knowledge	75	0–26	16.44 (8.04)	72	3–26	22.69 (4.58)
Graphophonemic support	75	1–5.57	2.34 (1.40)	65	1–7.50	3.05 (1.75)
Print support	63	1–8.33	2.68 (1.58)	37	2–8.33	2.68 (1.68)
Demand for precision	61	1–3	1.52 (0.60)	59	1–3	1.50 (0.62)
Decoding	75	264–438	354.80 (29.92)	72	331–501	389.58 (38.18)
Phonological awareness	75	420–494	451.04 (18.89)	72	420–515	477.46 (14.22)
Vocabulary	75	452–498	474.98 (9.93)	72	452–510	482.69 (10.04)

decreased to an average of 18.77 letters (SD = 7.47) during the second time point: $t(76)$ = 2.35, p = .02. Although there were fewer letters written overall during the second time point, children independently wrote significantly more correct letters without graphophonemic support at this time (M = 7.41, SD = 6.83) than during the first time point (M = 3.81, SD = 4.08): $t(76)$ = 4.53, p < .001. Similarly, children wrote significantly more letters without print support during the second time point (M = 12.70, SD = 8.39) than during the first (M = 8.29, SD = 8.25): $t(76)$ = 3.95, p < .001. See Table 1 for descriptive information on all of the variables of interest.

Aim 1: Maternal Writing Support Over Time

Graphophonemic Support

Of the total sample of children, two did not receive graphophonemic support at the first time point because they used conventional writing without adult guidance, and during the second time point, 12 other children received no scores for this reason; thus, the comparison

sample size for this aspect of parental support was 63 dyads.

For letters that children did not write independently, average levels of graphophonemic support were significantly higher during the second time point (range = 1–7.50, M = 3.05, SD = 1.75) than during the first (range = 1–5.57, M = 2.34, SD = 1.40): $t(62)$ = 4.36, p < .001. Across dyads, the distribution of graphophonemic support was bimodal; at both time points, parents were most likely to say the word as a whole (i.e., a score of 1), which is a low level of support, and to dictate letters separately as children wrote out the word (i.e., a score of 4), which is considered to be a moderate level of support. See Table 2 for the number and percentage of graphophonemic supports that parents provided to children at each time point.

Print Support

Fourteen children did not receive print support during the first time point because they formed letters without adult support; at the second time point, 40 children received no scores for this reason. The total comparison sample size for this aspect of parental support was 30 dyads.

TABLE 2
The Total Number of Letters (and percentage) That Were Coded for Each Type of Graphophonemic Support for Each Time Point Studied

Graphophonemic support	Parental support code 1	2	3	4	5	6	7	8	9
Time point 1	874 (64%)	30 (2%)	30 (2%)	389 (29%)	12 (1%)	6 (<1%)	2 (<1%)	13 (1%)	0 (<1%)
Time point 2	455 (52%)	0 (0%)	11 (1%)	349 (40%)	3 (<1%)	15 (2%)	21 (2%)	19 (2%)	5 (1%)
Total	1,329 (59%)	30 (1%)	41 (2%)	738 (33%)	15 (1%)	21 (1%)	23 (1%)	32 (1%)	5 (<1%)

Note. Children wrote 290 letters without graphophonemic support at time point 1 and 567 letters without graphophonemic support at time point 2.

TABLE 3
The Total Number of Letters (and percentage) That Were Coded for Each Type of Print Support for Each Time Point Studied

Print support	Parental support code								
	1	2	3	4	5	6	7	8	9
Time point 1	9 (1%)	952 (94%)	5 (<1%)	1 (<1%)	26 (2%)	7 (1%)	7 (1%)	7 (1%)	2 (<1%)
Time point 2	1 (<1%)	461 (97%)	2 (<1%)	0 (0%)	4 (1%)	3 (<1%)	2 (<1%)	3 (<1%)	1 (<1%)
Total	10 (1%)	1,413 (95%)	7 (<1%)	1 (<1%)	30 (2%)	10 (1%)	9 (1%)	10 (1%)	3 (<1%)

Note. Children wrote 630 without print support at time point 1 and 968 letters without print support at time point 2.

For letters that children did not write independently, parents provided statistically equivalent levels of print support during time points 1 (range = 1–8.33, *M* = 2.68, *SD* = 1.58) and 2 (range = 2–8.33, *M* = 2.68, *SD* = 1.68): $t(29) = -0.14$, $p = .89$. At the letter level, support during both time points was relatively low overall because parents were most likely to write letters themselves and not provide instruction to the child (i.e., a score of 2). See Table 3 for the number and percentage of print supports that parents provided to children at each time point.

Demand for Precision

During the first time point, there were no errors on 16 invitations, so demand for precision was not coded for them; 18 invitations had no errors on them during the second time point and thus were also not coded for demand for precision. The total comparison for this aspect of parental support was 48 dyads.

Parents' average demand for precision was similar during time points 1 (range = 1–3, *M* = 1.52, *SD* = 0.60) and 2 (range = 1–3, *M* = 1.50, *SD* = 0.62): $t(47) = 0.44$, $p = .66$. Average scores indicated that when children made a writing error, parents only sometimes pointed it out to children and usually did not require them to correct it (i.e., a score of 1).

Data Reduction

Because variables capturing parents' support for children's writing were not normally distributed, we created categories to better reflect the nature of parents' support and avoid violating foundational statistical assumptions for regression analyses.

Graphophonemic Support Categories

We created two categories of graphophonemic support: (1) The parent says the whole word or a sequence of sounds or letters (score of 1.00–3.99), neither of which is likely to support the child's letter or sound knowledge; and (2) the parent says discrete letters or sounds (score of 4.00 and above), which is more likely to support the child's skills. At time point 1, 69% of the sample said the whole word or multiple letters or sounds, whereas 31% mentioned discrete letters or sounds. At time point 2, 51% of the sample mentioned the whole word or multiple letters or sounds, whereas 49% mentioned discrete sounds.

Print Support Categories

We created two categories of print support: (1) The parent allows the child to use invented spelling or writes the letter for the child (score of 1.00–2.99), neither of which is likely to support alphabet or sound awareness skills; and (2) the parent provides any support that allows the child to write the letter on his or her own (score of 3.00 and above), which is more likely to advance the child's skills. At time point 1, 82% of parents allowed children to use invented spelling or wrote the letter for them, whereas 18% of parents helped children write on their own. At time point 2, 84% of parents allowed invented spelling or wrote the letter, whereas 16% provided support for children's own writing.

Demand for Precision Categories

We created two categories of demand for precision: (1) The parent does not point out the error (score of 1.00–1.99), and (2) the parent points out the error and may demand correction (score of 2.00 and above). At both time points, 75% of parents did not point out the error, whereas 25% pointed out the error and may have requested its correction.

Aim 2: Relations Between Writing Support and Children's Language and Literacy Skills

Analytic Strategy

The relations between the categories of support were conducted using chi-square analyses. Results showed that parents who used higher levels of graphophonemic support at time point 1 by mentioning individual letters or sounds used higher levels of print support,

helping children write on their own: time point 1: $\chi^2(df = 1) = 44.63$, $p < .001$; and time point 2: $\chi^2(df = 1) = 6.36$, $p = .012$. Similarly, parents who used more graphophonemic support at time point 2 had higher print support at time points 1 ($\chi^2(df = 1) = 8.11$, $p = .004$) and 2 ($\chi^2(df = 1) = 30.69$, $p < .001$). Demand for precision was unrelated to either graphophonemic support or print support at both time points ($p > .05$ for all analyses).

To examine the relations between these aspects of parental writing support and child language and literacy outcomes, we employed multivariate regression techniques (Muthén & Muthén, 2009). Several covariates were included in initial models, including child gender, ethnicity (white vs. nonwhite), age at the first home visit, and age at language/literacy evaluation for each year. Family covariates included parental schooling (in years). However, to reduce multicollinearity and preserve sample size, covariates were trimmed from final models because they did not predict any of the child outcomes. Therefore, final models for each outcome (i.e., letter–word identification, sound awareness, or vocabulary skill at time point 2) included only parental writing support and the child's score on that assessment at time point 1.

Because dyads in which children used conventional writing without support were excluded from analyses, different numbers of children had data for each type of support (i.e., graphophonemic support, print support, demand for precision). These three types of writing support could not be included in the same model because listwise deletion would lower the total number of subjects for all analyses, substantially limiting power. Thus, we created separate models to examine graphophonemic support, print support, and demand for precision individually.

In addition, the smaller number of dyads with writing support data at the second time point likely compromised the representativeness of those data as compared with the first time point and limited power in models that included them. Thus, our models only examined relations between time point 1 writing support and child outcomes at time point 2, controlling for the covariates previously noted as well as child skills on the outcome in question at time point 1. In this way, we were able to examine the contributions of parents' support for children's writing in preschool and children's literacy and language outcomes one year later, controlling for earlier skills (see Figure 1 for a conceptual model of the results).

Percentages of missing data were small to moderate (i.e., <20% for covariates; <7% for outcomes). Thus, data for these covariates were imputed using mean imputation and then included in models.

Graphophonemic Support

Complete results are presented in Table 4, and key findings are summarized here. Accounting for time point 1 skills, parents' efforts to highlight individual letters or

FIGURE 1
Conceptual Model for How Parental Support at Time Point 1 Relates to Children's Language and Literacy Outcomes at Time Point 2
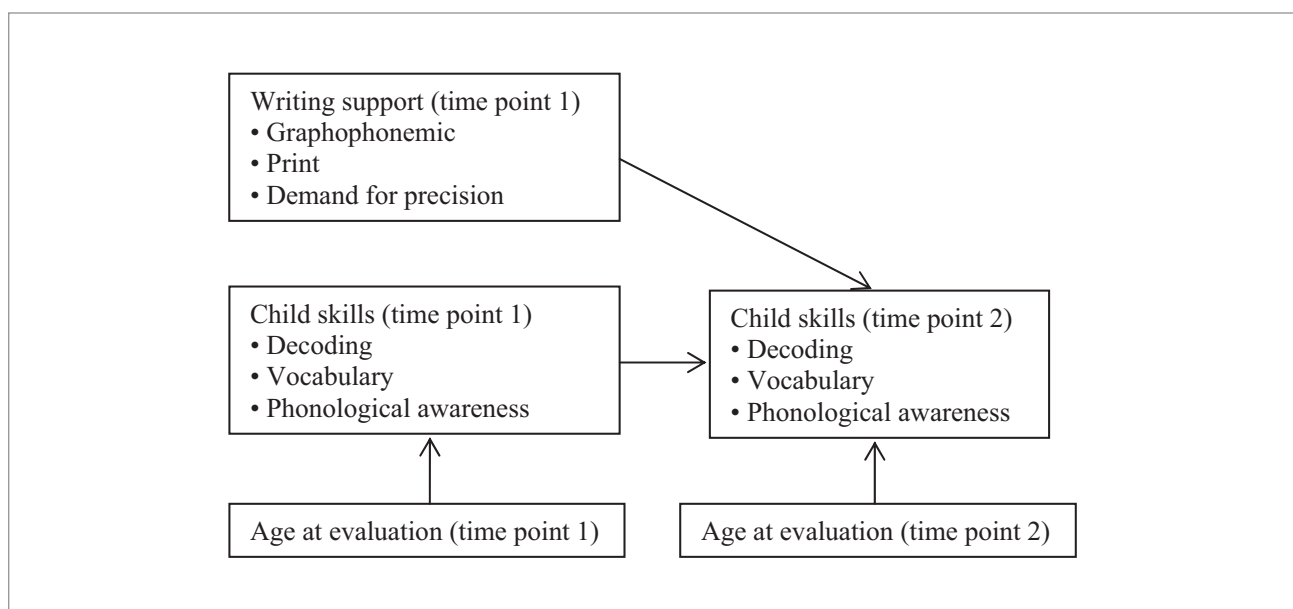
TABLE 4
Effect of Parental Writing Support on Children's Language and Literacy Outcomes

Parental writing support	n	Letter–word identification			Sound awareness			Vocabulary		
		β	p	Total R^2	β	p	Total R^2	β	p	Total R^2
Graphophonemic support (4 or higher) (0 = parent says the whole word or sequence of sounds or letters. 1 = refers to each letter.)	68	.22	.004	.69	.22	.023	.46	.15	.092	.47
Print support (3 or higher) (0 = parent provides no aid or writes for child. 1 = parent helps child write the letter.)	57	.22	.027	.50	.05	.624	.38	.17	.106	.44
Demand for precision (2 or higher) (0 = parent does not point out error. 1 = parent points out error.)	56	−.03	.738	.67	.04	.378	.41	.11	.264	.46

sounds were predictive of decoding (β = .22, p = .004) and phonological awareness (β = .22, p = .023) at time point 2. This type of graphophonemic support was unrelated to vocabulary (β = .15, p = .092).

Print Support

Accounting for children's skills in the prior year, parents' efforts to help children write independently were linked to decoding (β = .22, p = .027) at time point 2 but were unrelated to phonological awareness (β = .05, p = .624) and vocabulary (β = .17, p = .106).

Demand for Precision

No links emerged between parents' mention of children's errors and children's skills in decoding (β = −.03, p = .738), phonological awareness (β = .04, p = .378), or vocabulary (β = .11, p = .264) at time point 2.

Discussion

Early writing is an important but understudied skill set, and the current study investigated the specific mechanisms by which parents support children's writing development. Parents' graphophonemic and print support were significantly correlated with each other at both measurement occasions, indicating that there is consistency and stability in the degree to which parents encourage children to function independently when writing. Across both time points, parents were most likely to rely on only a couple of print (i.e., writing the letter himself or herself) and graphophonemic (i.e., saying the word as a whole, dictating letters as children write) strategies when supporting children's writing.

Parents were also unlikely to point out or correct children's writing errors. Parents provided significantly higher graphophonemic support at the second time point as compared with the first; however, print support and demand for precision were similar across both time points. Graphophonemic support predicted children's decoding and phonological awareness skills but did not predict children's vocabulary scores. Print support predicted children's decoding skills but was unrelated to children's phonological awareness and vocabulary. Demand for precision was not related to the other types of support and did not predict any language or literacy skills.

The findings associated with children's writing products are consistent with a Vygotskian perspective, which suggests that parents will relinquish control of a task as children grow more independent. Although dyads wrote fewer letters on the invitation at the second testing point, children wrote more letters independently at this time. Previous work has indicated that written works produced jointly by parents and children tend to be longer than those children produce independently (DeBaryshe, Buell, & Binder, 1996). Our data suggest that parents were doing much of the writing themselves during the first time point and, as such, may not have felt compelled to tailor the number of words used to children's own writing skills. This implies that parents are working within children's zone of proximal development (Vygotsky, 1978), similar to what they do during book reading sessions (Evans et al., 2003; Mansell et al., 2005).

The fact that parents in the present study were likely to either say the whole word or dictate individual letters when providing graphophonemic support deviates somewhat from research with older children, which shows more variability in parental writing supports (e.g., Aram, 2007). This may be due not only to children's age and skill levels but also to the orthographic features of English. When investigating dyadic writing supports

across orthographies, research has shown that parents provide a higher level of graphophonemic support in Spanish, a more regular orthography, than in Hebrew, a less regular orthography (Levin, Aram, Tolchinsky, & McBride-Chang, in press). Perhaps parents were somewhat reluctant to draw children's attention to letter–sound correspondence because rules governing the spelling of English words are often complicated and inconsistent relative to other languages.

Alternatively, many parents may not have recognized that providing support grounded in phonological awareness is an important means by which to promote children's early literacy development. A large number of elementary school teachers, who have been formally trained to teach children to read, cannot articulate basic concepts associated with phonological awareness (Cunningham, Perry, Stanovich, & Stanovich, 2004). Thus, it is unlikely that parents, who generally have not been informed about how children learn to read, would have this knowledge without explicit tuition in this area.

Even though average levels of graphophonemic support were relatively low in both years, parents provided a higher level of graphophonemic support at the second time point. This finding is consistent with past work showing that mothers adjust their support to children's levels of emergent literacy skills (Aram, 2007; Aram et al., 2008). Consistent with a priori hypotheses and previous research (e.g., Aram & Levin, 2004), children whose parents provided higher levels of graphophonemic support had better decoding and phonological awareness skills one year later. In general, higher levels of support likely help children break down words into their respective sounds, targeting increasingly smaller units. These findings reinforce the importance of teaching children to connect letters to their corresponding sounds (Byrne & Fielding-Barnsley, 1991) and suggest that parents should target these concepts more often than observed in the present study, as has been recommended by others (Ehri et al., 2001).

Consistent with existing research (Sénéchal et al., 1998), graphophonemic support at time point 1 did not predict children's later vocabulary skills. Although writers and nonwriters score differently on vocabulary tests even before kindergarten (Bourke & Adams, 2010), it is also true that for children in elementary school, the relation between vocabulary and writing is different depending on the grade during which it is studied (Coker, 2006). In addition, young children's writing often focuses on words that are personally significant, such as their own name (e.g., Bloodgood, 1999). Thus, at this stage in children's development, parents may focus on writing words already in children's writing lexicons rather than using the task as a way to incorporate novel words into their writing instruction.

It is likely that, as with other studies (Burns & Casbergue, 1992; DeBaryshe et al., 1996), parents' print support was shaped by their beliefs about supporting writing. Instead of directly supporting children as they worked to form letters on the page, most parents in the current study wrote the letters themselves. It is possible that some parents believed that the physical formation of letters on the invitation was less important than other aspects of the task, such as planning the actual birthday party. Regardless of the limited variability in print support, findings suggest that higher levels of print support were associated with greater decoding skills for children. Previous research demonstrates that children who write letters by hand learn more letters than those who are only encouraged to type them (Longcamp et al., 2005). This, coupled with the fact that motor skills are one of the strongest predictors of writing sophistication for children (Berninger et al., 1994; Gerde, Skibbe, et al., 2012), suggests that having at least some opportunities to focus on the form of letters is helpful for promoting some aspects of literacy development.

Focusing on the form of letters does not require children to link those forms to particular sounds, perhaps explaining why support in this area did not relate to children's phonological skills. Similarly, print support did not predict children's growth in vocabulary. This finding may be explained by past research showing that young children, who have not yet mastered printing and spelling, have few mental resources to devote to ideation and composition in the writing process (Puranik & Lonigan, 2011). In addition, as children work to master the fine motor movements associated with printing letters, which is a large part of early writing (Gerde, Skibbe, et al., 2012), parents may encourage children to communicate using words that they already know, rather than trying to require them to learn too many new skills simultaneously.

In contrast to Aram's (2007, 2010) previous work conducted in Hebrew with children who were 5–6 years of age, children's literacy skills were not predicted by the degree to which parents pointed out or corrected children's writing errors. This may reflect cultural differences because European American parents, who represent the majority of the sample included in the present study, may pay less attention to whether writing is completed using correct form than parents representing other ethnic groups (e.g., Chinese American parents; see Huntsinger et al., 2000). Parents in the current work were less likely to correct unconventional writing than parents in Aram's studies were, and the low incidence of corrections could have limited the usefulness of this type of support as a means for promoting children's literacy skills.

Conversely, although past research on invented spelling suggests that developmentally appropriate

feedback about children's spelling is a uniquely beneficial addition to invented spelling tasks, enforcing conventional spelling during writing activities may not be necessary for those activities to be beneficial. In this way, our findings may support the idea that demand for precision, at least for spelling, is not crucial for children's emergent literacy development (Ouellette & Sénéchal, 2008).

Educational Implications

Results from the current study suggest that parental writing support can aid some aspects of children's literacy development, even if the support that parents provide generally does not coincide with best practices in the field (i.e., helping children connect letters with their sounds). Professionals recommend that teachers in preschool classrooms include activities that make writing meaningful for children while also incorporating writing into various play activities and social routines, such as sign-in sheets and thank-you notes (Gerde, Bingham, & Wasik, 2012). It is likely that children would receive some benefit from having access to writing activities at home, even if parents do not couple access with high-quality instruction.

Instruction targeting concepts associated with phonological awareness can be successful across a wide range of settings as implemented by a diverse group of professionals (Al Otaiba et al., 2009; Ehri et al., 2001), yet we observed that parents did not naturally incorporate these concepts into their joint writing activities. This is not necessarily surprising, as preschool teachers often do not fully recognize the importance of phonological awareness (Hindman & Wasik, 2008). Thus, parents may require training if they are to be a conduit for this information.

It is also important to consider that when parents participated in an intervention program that included phonological awareness prompts, parents were able to complete the activities assigned to them but rarely used these activities as a platform to extend children's learning in this area (Skibbe et al., 2011). Our findings suggest that with explicit guidance on how to incorporate graphophonemic concepts into writing activities, children would likely benefit even more from this activity at home.

Limitations

Several limitations should be considered in the present study. The median income of the families who participated in the present work was high. It is well established that parents' household income is related to the type of educational environment that they provide to children at home as well as to children's developmental outcomes (e.g., Linver, Brooks-Gunn, & Kohen, 2002). Given the robust findings from Aram and Levin's (2002, 2004) work with low–socioeconomic status (SES) Israeli families, it can be hypothesized that graphophonemic and print support would also be a significant predictor of children's literacy development in low-SES U.S. families. However, in the United States, low-SES parents are more likely to endorse an authoritarian parenting style, which is often controlling in nature, than middle-SES parents are (e.g., Martini, Root, & Jenkins, 2004).

We hypothesize that parents living in poverty may thus demand more precision than those living in higher income neighborhoods do, and given the aforementioned differences in parenting, it is possible that children living in lower SES homes may garner some benefits from this type of support. Future research should examine whether results from the current study would extend to preschool children living in different economic circumstances in the United States.

The semistructured nature of the writing task allowed for a broader representation of writing than seen in many other studies (e.g., Bloodgood, 1999; Diamond et al., 2008). However, it is unclear how our results relate to the type and frequency of writing activities commonly occurring within children's homes, an understanding of which may be more readily captured using naturalistic observation (for a description and history of this technique, see Athens, 2010).

It is also true that within our task, parents might have provided different types of support for some types of letters than others (e.g., those in children's names; see Bindman et al., 2013). Because no particular words or letters were required as part of the writing task, it is difficult to determine whether particular letters or concepts elicited a certain type of support. The types of parental support identified relied heavily on skills associated with spelling and handwriting rather than meaning and composition. Thus, the current study likely did not capture all the ways in which parents can support children's writing development. Note also that the nature of the task (i.e., invitation for a birthday party) may have supported more discussion and encouraged parents to assume a less didactic approach than other types of writing activities typically studied (e.g., dictated letters or words). Future studies should examine how parental support varies as a function of writing task.

Theoretically, changes in graphophonemic support reflect parents' ability to be attuned to their children's educational needs (Sameroff & MacKenzie, 2003; Vygotsky, 1978). However, when examined at a microlevel, parents do not always modify their speech in response to children's communicative output (McGinty, Justice, Zucker, Gosse, & Skibbe, 2012). Although studying these bidirectional interactions at the microlevel is an important area of inquiry, the current study was unable to distinguish whether individual parents adjusted their

support in response to children's output during the invitation activity. Furthermore, the underlying reasons why some parents did not provide any print and/or graphophonemic support to their children is unknown; specifically, a lack of support could be developmentally appropriate if a child is able to write independently, or a lack of support could represent a missed opportunity to teach the child more about writing. This is a matter for future inquiry.

Conclusion

In contrast to findings from past work with parents of older children, U.S. parents of preschool children primarily used three strategies: The parents said the word as a whole, dictated each letter as children wrote, and/or wrote the letter. Thus, the most commonly used strategies did not require children to work toward connecting letters with their sounds or physically forming letters on their own. However, even when taking children's initial skills into account, those children whose parents provided higher levels of graphophonemic support had better decoding and phonological awareness skills one year later. Stronger print support was also linked to decoding. These findings demonstrate that writing activities in the home represent a valuable opportunity for children to develop foundational literacy skills, although support might be more beneficial if parents encouraged children to make letter–sound connections and practice writing letters themselves.

REFERENCES

Al Otaiba, S., Puranik, C.S., Ziolkowski, R.A., & Montgomery, T.M. (2009). Effectiveness of early phonological awareness interventions for students with speech or language impairments. *The Journal of Special Education*, *43*(2), 107–128. doi:10.1177/00224 66908314869

Aram, D. (2007). Sensitivity and consistency of maternal writing mediation to twin kindergartners. *Early Education & Development*, *18*(1), 71–92. doi:10.1080/10409280701274733

Aram, D. (2010). Writing with young children: A comparison of paternal and maternal guidance. *Journal of Research in Reading*, *33*(1), 4–19. doi:10.1111/j.1467-9817.2009.01429.x

Aram, D., & Levin, I. (2001). Mother–child joint writing in low SES: Sociocultural factors, maternal mediation, and emergent literacy. *Cognitive Development*, *16*(3), 831–852. doi:10.1016/S0885-2014 (01)00067-3

Aram, D., & Levin, I. (2002). Mother–child joint writing and storybook reading: Relations with literacy among low SES kindergartners. *Merrill-Palmer Quarterly*, *48*(2), 202–224. doi:10.1353/mpq .2002.0005

Aram, D., & Levin, I. (2004). The role of maternal mediation of writing to kindergartners in promoting literacy in school: A longitudinal perspective. *Reading and Writing*, *17*(4), 387–409. doi: 10.1023/B:READ.0000032665.14437.e0

Aram, D., & Levin, I. (2011). Home support of children in the writing process: Contributions to early literacy. In S.B. Neuman & D.K. Dickinson (Eds.), *Handbook of early literacy research* (Vol. 3, pp. 189–199). New York: Guilford.

Aram, D., Most, T., & Simon, A.B. (2008). Early literacy of kindergartners with hearing impairment: The role of mother–child collaborative writing. *Topics in Early Childhood Special Education*, *28*(1), 31–41. doi:10.1177/0271121408314627

Askov, E.N., & Greff, K.N. (1975). Handwriting: Copying versus tracing as the most effective type of practice. *The Journal of Educational Research*, *69*(3), 96–98.

Athens, L. (2010). Naturalistic inquiry in theory and practice. *Journal of Contemporary Ethnography*, *39*(1), 87–125. doi:10.1177/ 0891241609343663

Berninger, V., Cartwright, A., Yates, C., Swanson, H.L., & Abbott, R. (1994). Developmental skills related to writing and reading acquisition in the intermediate grades: Shared and unique systems. *Reading and Writing*, *6*(2), 161–196.

Bindman, S.W., Skibbe, L.E., Hindman, A.H., Aram, D., & Morrison, F.J. (2013). *Parental writing support and preschoolers' early literacy, language, and fine motor skills.* Manuscript submitted for publication.

Bloodgood, J.W. (1999). What's in a name? Children's name writing and literacy acquisition. *Reading Research Quarterly*, *34*(3), 342–367. doi:10.1598/RRQ.34.3.5

Bond, G., & Dykstra, R. (1997). The cooperative research program in first-grade reading instruction. *Reading Research Quarterly*, *32*(4), 348–427. doi:10.1598/RRQ.32.4.4

Bourke, L., & Adams, A. (2010). Cognitive constraints and the early learning goals in writing. *Journal of Research in Reading*, *33*(1), 94–110. doi:10.1111/j.1467-9817.2009.01434.x

Bowman, B., Donovan, M., & Burns, M. (2000). *Eager to learn: Educating our preschoolers.* Washington, DC: National Academy Press.

Burns, M.S., & Casbergue, R. (1992). Parent–child interaction in a letter-writing context. *Journal of Literacy Research*, *24*(3), 289–312. doi:10.1080/10862969209547779

Byrne, B., & Fielding-Barnsley, R. (1991). Evaluation of a program to teach phonemic awareness to young children. *Journal of Educational Psychology*, *83*(4), 451–455. doi:10.1037/0022-0663 .83.4.451

Chaudhuri, J.H., Easterbrooks, M.A., & Davis, C.R. (2009). The relation between emotional availability and parenting style: Cultural and economic factors in a diverse sample of young mothers. *Parenting, Science and Practice*, *9*(3/4), 277–299. doi:10.1080/ 15295190902844613

Coker, D. (2006). Impact of first-grade factors on the growth and outcomes of urban schoolchildren's primary-grade writing. *Journal of Educational Psychology*, *98*(3), 471–488. doi: 10.1037/0022-0663.98.3.471

Cunningham, A.E., Perry, K.E., Stanovich, K.E., & Stanovich, P.J. (2004). Disciplinary knowledge of K–3 teachers and their knowledge calibration in the domain of early literacy. *Annals of Dyslexia*, *54*(1), 139–167. doi:10.1007/s11881-004-0007-y

DeBaryshe, B.D., Buell, M.J., & Binder, J.C. (1996). What a parent brings to the table: Young children writing with and without parental assistance. *Journal of Literacy Research*, *28*(1), 71–90. doi:10.1080/10862969609547911

Delano, M.E. (2007). Improving the written language performance of adolescents with Asperger syndrome. *Journal of Applied Behavior Analysis*, *40*(2), 345–351. doi:10.1901/jaba.2007.50-06

Diamond, K.E., Gerde, H.K., & Powell, D.R. (2008). Development in early literacy skills during the pre-kindergarten year in Head

Start: Relations between growth in children's writing and understanding of letters. *Early Childhood Research Quarterly*, *23*(4), 467–478. doi:10.1016/j.ecresq.2008.05.002

Ehri, L.C. (1998). Grapheme-phoneme knowledge is essential for learning to read words in English. In J.L. Metsala & L.C. Ehri (Eds.), *Word recognition in beginning literacy* (pp. 3–40). Mahwah, NJ: Erlbaum.

Ehri, L.C. (2004). Teaching phonemic awareness and phonics: An explanation of the National Reading Panel meta-analyses. In P. McCardle & V. Chhabra (Eds.), *The voice of evidence in reading research* (pp. 153–186). Baltimore: Brookes.

Ehri, L.C., Nunes, S., Willows, D., Schuster, B.V., Yaghoub-Zadeh, Z., & Shanahan, T. (2001). Phonemic awareness instruction helps children learn to read: Evidence from the National Reading Panel's meta-analysis. *Reading Research Quarterly*, *36*(3), 250–287. doi:10.1598/RRQ.36.3.2

Evans, M.E., Moretti, S., Shaw, D., & Fox, M. (2003). Parents scaffolding in children's oral reading. *Early Education & Development*, *14*(3), 363–388. doi:10.1207/s15566935eed1403_5

Ferreiro, E., & Teberosky, A. (1982). *Literacy before schooling*. Portsmouth, NH: Heinemann.

Gerde, H.K., Bingham, G., & Wasik, B. (2012). Writing in early childhood classrooms: Guidance for best practices. *Early Childhood Education Journal*, *40*(6), 351–359. doi:10.1007/s10643-012-0531-z

Gerde, H.K., Skibbe, L.E., Bowles, R.P., & Martoccio, T.L. (2012). Child and home predictors of children's name writing. *Child Development Research*, *2012*. doi:10.1155/2012/748532

Hindman, A.H., & Wasik, B.A. (2008). Head Start teachers' beliefs about language and literacy instruction. *Early Childhood Research Quarterly*, *23*(4), 479–492. doi:10.1016/j.ecresq.2008.06.002

Hirsch, E., & Niedermeyer, F.C. (1973). The effects of tracing prompts and discrimination training on kindergarten handwriting performance. *The Journal of Educational Research*, *67*(2), 81–86.

Huntsinger, C.S., Jose, P.E., Larson, S.L., Krieg, D.B., & Shaligram, C. (2000). Mathematics, vocabulary, and reading development in Chinese American and European American children over the primary school years. *Journal of Educational Psychology*, *92*(4), 745–760. doi:10.1037/0022-0663.92.4.745

Levin, I., Aram, D., Tolchinsky, L., & McBride-Chang, C. (in press). Effects of orthographic depth on maternal mediation of writing: Relations to children's emergent reading and spelling. *Writing Systems Research*.

Levin, I., & Ehri, L.C. (2009). Young children's ability to read and spell their own and classmates' names: The role of letter knowledge. *Scientific Studies of Reading*, *13*(3), 249–273. doi:10.1080/10888430902851422

Lienemann, T.O., & Reid, R. (2008). Using self-regulated strategy development to improve expository writing with students with attention deficit hyperactivity disorder. *Exceptional Children*, *74*(4), 471–486.

Lin, D., McBride-Chang, C., Aram, D., Levin, I., Cheung, R.Y.M., Chow, Y.Y.Y., et al. (2009). Maternal mediation of writing in Chinese children. *Language and Cognitive Processes*, *24*(7/8), 1286–1311. doi:10.1080/01690960801970615

Linver, M.R., Brooks-Gunn, J., & Kohen, D.E. (2002). Family processes as pathways from income to young children's development. *Developmental Psychology*, *38*(5), 719–734. doi:10.1037/0012-1649.38.5.719

Longcamp, M., Zerbato-Poudou, M., & Velay, J. (2005). The influence of writing practice on letter recognition in preschool children: A comparison between handwriting and typing. *Acta Psychologica*, *119*(1), 67–79. doi:10.1016/j.actpsy.2004.10.019

Lonigan, C.J., Burgess, S.R., & Anthony, J.L. (2000). Development of emergent literacy and early reading skills in preschool children: Evidence from a latent-variable longitudinal study. *Developmental Psychology*, *36*(5), 596–613. doi:10.1037/0012-1649.36.5.596

Mansell, J., Evans, M.A., & Hamilton-Hulak, L. (2005). Developmental changes in parents' use of miscue feedback during shared book reading. *Reading Research Quarterly*, *40*(3), 294–317. doi:10.1598/RRQ.40.3.1

Martini, T.S., Root, C.A., & Jenkins, J.M. (2004). Low and middle income mothers' regulation of negative emotion: Effects of children's temperament and situational emotional responses. *Social Development*, *13*(4), 515–530. doi:10.1111/j.1467-9507.2004.00281.x

Martins, M.A., & Silva, C. (2006). The impact of invented spelling on phonemic awareness. *Learning and Instruction*, *16*(1), 41–56. doi:10.1016/j.learninstruc.2005.12.005

Mather, N., & Woodcock, R.W. (2001). *Examiner's manual for the Woodcock–Johnson III Tests of Achievement*. Itasca, IL: Riverside.

Mayer, C. (2007). What really matters in the early literacy development of deaf children. *Journal of Deaf Studies and Deaf Education*, *12*(4), 411–431. doi:10.1093/deafed/enm020

McGinty, A.S., Justice, L.M., Zucker, T.A., Gosse, C., & Skibbe, L.E. (2012). Shared-reading dynamics: Mothers' question-use and the verbal participation of preschoolers with SLI. *Journal of Speech, Language, and Hearing Research*, *55*(August), 1039–1052.

Muthén, L.K., & Muthén, B.O. (2009). M*plus 5.21: Statistical analysis with latent variables* [Computer software]. Los Angeles: Authors.

National Early Literacy Panel. (2009). *Developing early literacy: Report of the National Early Literacy Panel*. Washington, DC: National Institute for Literacy.

Neumann, M.M., Hood, M., & Ford, R. (2012). Mother–child joint writing in an environmental print setting: Relations with emergent literacy. *Early Child Development and Care*, *182*(10), 1349–1369. doi:10.1080/03004430.2011.615928

Neumann, M.M., Hood, M., & Neumann, D. (2009). The scaffolding of emergent literacy skills in the home environment: A case study. *Early Childhood Education Journal*, *36*(4), 313–319. doi:10.1007/s10643-008-0291-y

Neumann, M.N., & Neumann, D.L. (2010). Parental strategies to scaffold emergent writing skills in the pre-school child within the home environment. *Early Years*, *30*(1), 79–94.

Ouellette, G., & Sénéchal, M. (2008). Pathways to literacy: A study of invented spelling and its role in learning to read. *Child Development*, *79*(4), 899–913. doi:10.1111/j.1467-8624.2008.01166.x

Puranik, C.S., & Lonigan, C.J. (2011). From scribbles to scrabble: Preschool children's developing knowledge of written language. *Reading and Writing*, *24*(5), 567–589. doi:10.1007/s11145-009-9220-8

Reese, E., & Cox, A. (1999). Quality of adult book reading affects children's emergent literacy. *Developmental Psychology*, *35*(1), 20–28. doi:10.1037/0012-1649.35.1.20

Rieben, L., Ntamakiliro, L., Gonthier, B., & Fayol, M. (2005). Effects of various early writing practices on reading and spelling. *Scientific Studies of Reading*, *9*(2), 145–166. doi:10.1207/s1532799xssr0902_3

Sameroff, A.J., & MacKenzie, M.J. (2003). Research strategies for capturing transactional models of development: The limits of the possible. *Development and Psychopathology*, *15*(3), 613–640. doi:10.1017/S0954579403000312

Sénéchal, M., LeFevre, J., Thomas, E.H., & Daley, K.E. (1998). Differential effects of home literacy experiences on the development of oral and written language. *Reading Research Quarterly*, *33*(1), 96–116. doi:10.1598/RRQ.33.1.5

Shatil, E., Share, D.L., & Levin, I. (2000). On the contribution of kindergarten writing to grade 1 literacy: A longitudinal study in

Hebrew. *Applied Psycholinguistics*, *21*(1), 1–21. doi:10.1017/S0142716400001016

Skibbe, L.E., Justice, L.M., & Bowles, R.P. (2011). Implementation processes associated with a home-based phonological awareness intervention program for children with specific language impairment. *International Journal of Speech-Language Pathology*, *13*(2), 110–124. doi:10.3109/17549507.2011.524246

Son, S.H., & Morrison, F.J. (2010). The nature and impact of changes in home learning environment on growth of language and academic skills in preschool children. *Developmental Psychology*, *46*(5), 1103–1118. doi:10.1037/a0020065

Stuart, M. (1995). Prediction and qualitative assessment of five- and six-year-old children's reading: A longitudinal study. *British Journal of Educational Psychology*, *65*(3), 287–296. doi:10.1111/j.2044-8279.1995.tb01150.x

Teale, W.H., & Sulzby, E. (1986). *Emergent literacy: Writing and reading*. Norwood, NJ: Ablex.

Tolchinsky, L. (2003). *The cradle of culture and what children know about writing and numbers before being taught*. Mahwah, NJ: Erlbaum.

Tolchinsky, L. (2006). The emergence of writing. In C.A. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 83–95). New York: Guilford.

Vygotsky, L.S. (1978). *Mind in society: The development of higher psychological processes* (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds. & Trans.). Cambridge, MA: Harvard University Press.

Wasik, B. (2010). What teachers can do to promote preschoolers' vocabulary development: Strategies from an effective language and literacy professional development coaching model. *The Reading Teacher*, *63*(8), 621–633. doi:10.1598/RT.63.8.1

Welsch, J.G., Sullivan, A., & Justice, L.M. (2003). That's my letter! What preschoolers' name writing representations tell us about emergent literacy knowledge. *Journal of Literacy Research*, *35*(2), 757–776. doi:10.1207/s15548430jlr3502_4

Whitehurst, G.J., & Lonigan, C.J. (1998). Child development and emergent literacy. *Child Development*, *69*(3), 848–872. doi:10.2307/1132208

Wood, D., Bruner, J.S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry*, *17*(2), 89–100. doi:10.1111/j.1469-7610.1976.tb00381.x

Woodcock, R.W., McGrew, K.S., & Mather, N. (2001). *Woodcock–Johnson III Tests of Achievement: Examiner's manual*. Itasca, IL: Riverside.

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APPENDIX A

Parental Graphophonemic Support Scale

Low	1	The parent does not break the word into sounds but rather says the word as a whole.
	2	The parent refers to the word as a sequence of sounds or syllables (e.g., "Mmmonnnn-daaaay").
	3	The parent refers to the word as a sequence of letters (e.g., "Write R-A-C-H-E-L.").
High	4	The parent dictates each letter separately as the child writes.
	5	The parent emphasizes a consonant–vowel or vowel–consonant sound and connects it with a letter herself (e.g., "Rrrrraaaa-chel. The first letter is *R*.").
	6	The parent emphasizes a vowel or consonant sound and connects it to a letter herself (e.g., "SSSSSophie. Write *S*.").
	7	The parent emphasizes a consonant–vowel or vowel–consonant sound and asks the child to identify the correct letter (e.g., "Mmmmaaaa-dison. What letter do you think it starts with?").
	8	The parent emphasizes a single consonant or vowel sound and asks the child to connect it to a letter (e.g., "Rrrrrachel. What letter does *Rrrrrachel* start with?")
	9	The parent encourages the child to isolate a sound and connect it with a letter (e.g., "What letter do you think Brice's name starts with?").

Parental Print Support Scale

Low	1	The parent provides no assistance, and the child writes invented spelling.
	2	The parent writes the letter or changes the child's writing.
High	3	The parent holds the child's hand while writing the letter.
	4	The parent marks dots for the child to connect.
	5	The parent provides an example of the letter and asks the child to copy it.
	6	The parent gives a visual clue (e.g., traces the letter with a finger in the air or on the table).
	7	The parent gives a verbal hint (e.g., "A *P* is like a circle with a line next to it.").
	8	The parent gives a verbal hint using the child's existing letter knowledge (e.g., "It's *S* like the letter *S* in your name.").
	9	The parent encourages the child to think of clues (e.g., "Try to remember what an *M* looks like.").