Emergent Name-Writing Abilities of Preschool-Age Children With Language Impairment

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Emergent literacy skills comprise a set of foundational abilities that are considered to be developmental precursors to skilled and fluent reading (Whitehurst & Lonigan, 1998). These abilities are thought to develop in an interconnected fashion and include oral language, phonological awareness, print concepts, alphabet knowledge, and emergent writing. In the present report, we focus specifically on children’s name writing, which is an important early measure of emergent writing skill. Evidence suggests that there are significant interrelationships between children’s emergent literacy skills, including emergent writing skill, and their later reading success (Badian, 2000; Chaney, 1998; Hammill, 2004; Lomax & McGee, 1987; Lonigan, 2006; Lonigan, Burgess, & Anthony, 2000; Storch & Whitehurst, 2002; for review, see Adams, 1990; Snow, Burns, & Griffin, 1998). The results of the recent meta-analysis of 234 longitudinal studies by the National Early Literacy Panel (NELP, 2004) showed that among typically developing children, measures of emergent writing, phonological awareness, print concepts, and alphabet knowledge were among the strongest and most reliable predictors of later reading ability in both decoding and comprehension.

Given the importance of emergent literacy abilities to later reading success, it is of concern that children with early language impairment (LI) exhibit considerable difficulty in this area. Indeed, studies comparing the developmental achievements of children with LI to those of their typical language (TL) peers consistently demonstrate that children with LI have depressed emergent literacy skills (Boudreau & Hedberg, 1999; Gillam & Johnston, 1985; Justice, Bowles, & Skibbe, 2006; Kahmi, Lee, & Nelson, 1985; Magnusson & Naucler, 1990; Nathan, Stackhouse, Goulandris, & Snowling, 2004). These studies show early deficits in emergent literacy to be widespread, to include phonological awareness, print concepts, and alphabet knowledge. Much less is known, however, about the

ABSTRACT: Purpose: The 2 studies reported in this manuscript collectively address 3 aims: (a) to characterize the name-writing abilities of preschool-age children with language impairment (LI), (b) to identify those emergent literacy skills that are concurrently associated with name-writing abilities, and (c) to compare the name-writing abilities of children with LI to those of their typical language (TL) peers.

Method: Fifty-nine preschool-age children with LI were administered a battery of emergent literacy and language assessments, including a task in which the children were asked to write their first names. A subset of these children ($n = 23$) was then compared to a TL-matched sample to characterize performance differences.

Results: Results showed that the name-writing abilities of preschoolers with LI were associated with skills in alphabet knowledge and print concepts. Hierarchical multiple regression analysis indicated that only alphabet knowledge uniquely contributed to the variance in concurrent name-writing abilities. In the matched comparison, the TL group demonstrated significantly more advanced name-writing representations than the LI group.

Conclusions: Children with LI lag significantly behind their TL peers in name-writing abilities. Speech-language pathologists are encouraged to address the print-related skills of children with LI within their clinical interventions.

KEY WORDS: language impairment, writing, name writing, emergent literacy, preschool
earliest writings of children with LI, despite emergent writing being an important element of emergent literacy development (NELP, 2004). In the present manuscript, we report the outcomes of two studies that were designed to investigate the emergent name-writing abilities of children with LI, to include consideration of the name-writing skills of children with LI to those of age-matched TL peers.

Research on Preschool Name-Writing Abilities Among Typically Developing Children

The broad construct of emergent writing includes the physical marks that young children make on paper, the meanings that children attribute to these markings, and the social contexts in which the writing takes place (Clay, 1975; Rowe, 2008). At first, these early writings are “readable” only by their authors, as children use drawing, scribbles, letter-like forms, and random letters to represent meaning. The act of writing becomes a type of laboratory where children test out hypotheses about how print works; for example, children may write from right-to-left on a page after exhibiting left-to-right directionality (Clay, 1975). As children experiment with different forms of writing for different purposes, they often mix earlier and later developing forms, especially when writing stories. For example, it is not uncommon for children to write letters and scribbles in the same composition, even after they can write their names accurately and have demonstrated some ability to invent spellings (Bus et al., 2001). When children begin to grasp the alphabetic principle, namely the understanding that written letters systematically represent spoken sounds, they begin to use their knowledge of letter-sound correspondences to invent spellings. These invented spellings at first represent the salient sounds in a speech stream (e.g., IKJS for I like juice), then progress to initial sounds in words (e.g., B for bat), initial and final sounds (e.g., BT for bat), and finally, phonemically complete representations (e.g., BAT for bat) (for review, see Bear, Invernizzi, Templeton, & Johnston, 2008). Some researchers would argue for the inclusion of invented spelling under the construct of emergent writing (e.g., NELP, 2004); other experts view these accomplishments as evidence of moving beyond the emergent literacy period of development (e.g., Bear et al., 2008). Regardless, the approach that children use in writing their names appears to differ markedly from their strategy when inventing spellings. Levin, Both-De Vries, Aram, and Bus (2005) reported that Israeli and Dutch children ages 2 through 5 wrote their names at a consistently higher level than they wrote other words, indicating that children do not use the same approach to writing their names as they do to writing other words.

Name writing represents one component of the broader construct of emergent writing and is viewed by literacy experts to serve as a window into a child’s emergent literacy development (Ferreiro & Teberosky, 1982). His or her name is often the first word that a child attempts to write (Clay, 1975). Indeed, the “own-name advantage” is a seminal theory of early letter knowledge, with children prone to learn the letters comprising their own name (particularly their first initial) significantly earlier than other letters (see Justice, Pence, Bowles, & Wiggins, 2006). Yet, even as children begin to write with letters in their names, it seems that they are not thinking about the individual letters and sounds in their names but rather view their names as logograms. This notion is consistent with the idea that before children begin to match up letters with sounds, they may progress through a pre-alphabetic, or logographic, phase of development (Ehri, 2005). During this phase, children use context cues to remember words and symbols, such as the Cheerios label. They would not likely recognize the same word in an alternative context, converging with Gillam and Johnston’s (1985) seminal findings on print concept development in preschoolers with LI. Similarly, children may recognize their names but may not connect the letters in their names to corresponding letter-sounds (Bloodgood, 1999; Treiman & Broderick, 1998). Children who write their names accurately may primarily scribble when they are asked to produce another form of writing, indicating a lack of understanding that writing stands for oral language (Bialystok, 1995).

Name-writing research among typically developing children indicates that early growth follows a developmental sequence that is consistent across alphabetic languages (i.e., English, Spanish, Hebrew, Dutch) (Bloodgood, 1999; Ferreiro & Teberosky, 1982; Hildreth, 1936; Levin et al., 2005; Lieberman, 1985; Villaume & Wilson, 1989). Name writing tends to progress in the following manner: (a) scribble; (b) linear scribble; (c) separate symbols, with letter-like forms; (d) name written with correct letters and mock letters/symbols; (e) name generally correct, with some letters reversed or omitted; and (f) name written correctly (Ferreiro & Teberosky, 1982; Hildreth, 1936; Lieberman, 1985). The specific taxonomies presented below (i.e., Lieberman, 1985; Welsch, Sullivan, & Justice, 2003) are relevant to the present studies and are consistent with this developmental sequence.

In an early longitudinal study of the development of children’s early name-writing attempts, Lieberman (1985) followed two cohorts of preschoolers (n = 47; mean age = 50 months) over the course of a school year, analyzing the changes in their name-writing representations. A major goal of the study was to investigate children’s logic underlying their writing development. Asking children to write their names along with a self-portrait, Lieberman collected an average of 9.7 name-writing samples per child. Results showed that children’s name-writing representations increased in sophistication over time through changes, or transitions, in their understandings about writing. Lieberman inductively identified and ordered 16 developmental transitions, with most writing samples (78%) increasing in transition number over the previous sample and with every child ending the year with a higher transition than his or her starting point. Lieberman then organized the transitions into moments, or logical groupings based on name-writing development over time. She observed that children stayed in each moment for a period of time and then moved to the next moment of development as their knowledge of name writing became more refined. Specifically, Moment 1 consists of Transitions 1 through 3, where children begin to understand that writing and drawing are distinct systems. In Moment 2 (Transitions 4–6), children begin to use zigzag scribbles and move to representing separate letter-like graphemes. In Moment 3 (Transitions 7–11), recognizable letters emerge and children use combinations of letters and placeholders. Placeholders are letter-like forms or dots that children use to take the place of letters that they do not yet know how to write. Finally, in Moment 4 (Transitions 12–16), children begin to represent all letters in their first and last names.

In addition to a developmental sequence, researchers have shown there to be a strong relationship between preschoolers’ name-writing skills and their knowledge about print. Bloodgood (1999) found that among 3- and 4-year-olds (n = 29), more advanced name-writing representations were significantly associated with superior ability to write the letters of the alphabet and recognize words. Building on Bloodgood’s findings, Welsch and colleagues (2003)
examined the relationship between a child’s written name and concurrent emergent literacy skills in 4- and 5-year-old children, with an age range from 48 to 60 months \( (n = 3,546) \). They separated children’s name-writing representations into four groups representing qualitative increases in sophistication: (a) name writing was unconventional or nonsymbolic (e.g., scribble), (b) name writing included symbols such as letters and/or numbers, (c) name writing was nearly correct, and (d) name writing was accurate. After controlling for age, significant pair-wise differences were found among the four groups in terms of alphabet knowledge, concept of word, print knowledge (i.e., print concepts), rhyme awareness, and beginning sound awareness. These five abilities accounted for 36% of the variance in concurrent name-writing ability. However, the print-related skills (i.e., alphabet knowledge, print concepts) alone accounted for 34% of the variance. Therefore, Welsch and colleagues concluded that preschool name-writing ability primarily reflects knowledge about print, rather than phonological awareness, in typically developing children.

The extent to which phonological awareness is related to emergent name-writing ability is unclear. Bloodgood (1999) found no significant correlations between phonological awareness skills (i.e., rhyme and beginning sound awareness) and children’s ability to write their names among 3- and 4-year-olds. As aforementioned, Welsch et al. (2003) found between-group differences in rhyme and beginning sound awareness, but these skills did not contribute significant unique variance after print-related skills were taken into account. In contrast, Blair and Savage (2006) reported that phonological awareness (i.e., awareness of onset, rime, and final sound) was a stronger predictor of name-writing abilities than letter-sound knowledge among prereading 4-year-olds \( (n = 38) \). However, print-related skills such as alphabet knowledge (i.e., letter-name knowledge) and print concepts were not included in their analyses.

Evidence also suggests that preschool name-writing ability is predictive of later reading ability, providing further demonstration that name-writing skills offer an important window into children’s emergent literacy achievements. Badian (1982) reported that in the end of first, second, and third grades, name writing was among the five best univariate predictors of reading outcomes \( (r = .55, r = .45, r = .46, \) respectively). In subsequent studies, when partialing out verbal IQ and prereading ability, preschool name-writing ability correlated significantly with end-of-first-grade spelling and reading comprehension outcomes \( (r = .24, r = .20, \) respectively; Badian, 1994, 1998). Share, Jorm, Maclean, and Matthews (1984) also found a significant correlation between preschool name writing ability and end-of-first-grade reading achievement \( (r = .48) \).

### Purpose of the Present Studies

The present studies represent an initial step in exploring the emergent writing skills of preschool-age children with LI. Study 1 examined the emergent name-writing abilities of fifty-nine 4-year-old children with LI. The goals were twofold: (a) to characterize the emergent name-writing abilities of preschool-age children with LI and (b) to identify those emergent literacy and language skills that are concurrently associated with preschoolers’ name-writing abilities. On the basis of findings from Bloodgood (1999) and Welsch et al. (2003), we hypothesized that positive concurrent relationships would exist between other emergent skills (i.e., phonological awareness, print knowledge/concepts, alphabet knowledge) and name writing. The present study makes an important contribution to the literature in that very little is known about the emergent writing skills of children with LI. Importantly, the results of this work also contribute to a larger literature that has explored the writing abilities of school-age children with histories of LI. Due to the interconnected nature of reading and writing development (see Berninger, 2000), it is not surprising that elementary schoolchildren with early diagnoses of LI also experience difficulties with writing in addition to reading difficulties. Evidence suggests that these children lag behind their peers in terms of both written narrative and expository skills (Fey, Catts, Proctor-Williams, Tomblin, & Zhang, 2004; Gillam & Johnston, 1992; Gillam, McFadden, & van Kleeck, 1995; Liles, Duffy, Merritt, & Purcell, 1995; Scott & Windsor, 2000; Strong & Shaver, 1991). Moreover, writing problems may continue well into adulthood, affecting all facets of life (Bialock & Johnson, 1987). It is plausible that these writing difficulties were first manifested during the preschool years. Nevertheless, we were unable to identify a single study focused on the emergent writing abilities of children with LI, and the present study seeks to add to the body of literature on this topic. Because the child’s name is often the first stable string of writing that is produced by a child (Clay, 1975; Ferreiro & Teberosky, 1982), it is logical to examine name writing in 4-year-olds with LI as a first step of research in this area.

Study 2 compared the name-writing skills for a subset of the LI sample from Study 1 with those of a matched sample of children with TL. The aim of this study was to determine the extent to which the name-writing abilities of preschool-age children with LI differed from those of TL children when matched for age and socioeconomic status (SES). Based on previous research indicating that children with LI had underdeveloped emergent literacy skills (e.g., Boudreau & Hedberg, 1999), we hypothesized that children with LI would lag significantly behind their TL peers in their name-writing development. From a normative perspective, this study provides an important contribution to a larger body of work providing clear evidence that children with LI differ significantly from their TL peers in key emergent literacy skills. Given the increased risk for later literacy difficulties that has been exhibited by children with LI (Catts, Fey, Tomblin, & Zhang, 2002), developing a precise understanding of emergent literacy development among children with LI, including how skills compare to those of their typical peers, is an important area of research.

### STUDY 1

#### METHOD

### Participants

Participants were enrolled in a larger study of early literacy intervention for children with LI (Justice, Bowles, et al., 2006; Skibbe, 2006; Skibbe, Justice, McGinty, & Zucker, in press; Stanton-Chapman, Justice, Skibbe, & Grant, 2007). Children were recruited from rural, urban, and suburban areas of four mid-Atlantic states over a 4-year period; flyers were distributed to a variety of locations (e.g., preschools, day care centers, and pediatricians’ offices). Children were required to meet the following eligibility criteria,
which are similar to those reported in the literature pertaining to specific LI (e.g., Flax et al., 2003):

- Pass a bilateral hearing screening (30dB at 500, 1000, 2000, and 4000 Hz, with higher threshold used due to screening conducted in children’s homes).
- Have an unremarkable developmental history in the areas of sensory, neurological, and motor performance as reported by the mother on a questionnaire.
- Receive a standard score of 80 or higher on a nonverbal cognitive screening (i.e., matrices subtest of the Kaufman Brief Intelligence Test, Kaufman & Kaufman, 1990).
- Live in a home in which English is the primary language spoken.
- Receive two subtest scores below the 10th percentile and/or receive standard scores below 85 on either the spoken language quotient or the syntax quotient on the Test of Language Development—Primary, Third Edition (TOLD–P;3, Newcomer & Hammill, 1997).

Of the 62 children who were found to be eligible for the larger study, the present study reports findings for 59 of these children for whom a complete dataset was available for key study variables.

The children (41 boys, 18 girls) were preschool age, with a mean age of 54.6 months (SD = 3.46; range = 48–60). Based on parent report, the majority of children were identified as Caucasian (76.3%; n = 45), although other races/ethnicities were represented: African American (10.2%; n = 6), Hispanic/Latino (3.4%; n = 2), multiracial (6.8%; n = 4), other (3.4%; n = 2). SES varied among the 59 children as measured by maternal education (which commonly serves as a proxy for SES; e.g., Burchinal, Peisner-Feingold, Pianta, & Howes, 2002; Leseman & de Jong, 1998). Specifically, we created three SES categories based on self-reported maternal education: low (education of high school or below), mid (partial or completed college education), and high (graduate education). Approximately 34% of the children (n = 20) lived in low-SES homes, 54.2% (n = 32) lived in mid-SES homes, and 11.9% (n = 7) lived in high-SES homes. Forty-three of the children (72.9%) were receiving special education services.

Procedure and Materials

Each child completed a variety of individually administered assessments during a single 2-hr home visit that was conducted at a time that was convenient to their parents’ schedules. (Assessments were administered before intervention for the larger study.) Trained doctoral students or research assistants administered all assessments in a setting that had been identified by parents as being comfortable to the child and was generally free of distraction (e.g., at the kitchen table). Parents completed questionnaires while their children were assessed, and they were not permitted to provide their children with any assistance. The questionnaires requested demographic information as well as ratings regarding the frequency of home literacy practices, including how often books were read to children and the regularity of library visits. Child assessments followed a uniform order to first involve measures for establishing eligibility (i.e., hearing screening, language and cognitive measures), followed by assessments of emergent literacy skill. Five measures administered were of relevance to the present study:

- Uppercase alphabet knowledge.
- Print concepts.
- Rhyme awareness.
- Listening comprehension.
- Name writing.

Frequency of home literacy activities. The frequency of home literacy activities was measured using the Literacy Activities Scale (Weigel & Martin, n.d.; see Bennett, Weigel, & Martin, 2002; Weigel, Martin, & Bennett, 2005). This parent questionnaire contains nine questions to which parents respond using a 5-point Likert scale (1 = hardly ever, 2 = once or twice a month, 3 = once or twice a week, 4 = once a day, and 5 = two or more times a day). Questions examine the frequency of reading books, telling stories, purchasing books, drawing, reciting rhymes, playing games, and visiting the library. Ratings were summed across the nine questions to achieve a score representing the frequency of home literacy activities.

Uppercase alphabet knowledge. To measure children’s knowledge of the 26 letters of the alphabet, the Phonological Awareness Screening Test for Preschool (PALS–PreK; Invernizzi, Sullivan, & Meier, 2001) uppercase alphabet recognition task was administered. The children were asked to provide the names of letters presented in random order on an 8.5-in. × 11-in. page. Responses were scored as 0 (incorrect or no response) or 1 (correct response), with 26 points possible. Inter-rater reliability was reported with a Pearson product–moment correlation coefficient of .99 (Invernizzi, Sullivan, Meier, & Swank, 2004).

Print concepts. To assess children’s knowledge of print concepts (e.g., location of the title, directionality, purpose of print), the Pre-school Word and Print Awareness test (PWPA; Justice & Ezell, 2001; also see Justice, Bowles, et al., 2006) was administered. This standardized measure examines children’s knowledge of 14 concepts about print. Items are administered individually during a shared storybook reading session using a trade storybook. The examiner embeds a series of tasks during reading such as, “Show me a capital letter” and “Show me where I start to read.” Correct responses are generally assigned 1 point, although for some items, correct responses receive 2 points and partially correct responses receive 1 point. A maximum of 17 points is possible. This score is converted to a print concept knowledge estimate, which is a scaled score based on a normal curve (M = 100, SD = 15). Justice, Bowles, et al. (2006) demonstrated that the PWPA is a valid and reliable measure of print concept knowledge in 3- to 5-year-old children.

Rhyme awareness. To measure children’s sensitivity to rhyme in single-syllable words, the PALS–PreK rhyme awareness task was used (Invernizzi et al., 2001). For each of 10 items, children were shown a simple picture (e.g., pig) and were asked to identify one of three pictures that rhymed with the target (e.g., hem, foot, wig). The examiner pointed to and named each picture. For this study, raw scores ranging from 0 to 10 points were used. In a subsequent version of the same task (i.e., same administration protocol with different pictures), inter-rater reliability was reported at .99 (Justice product–moment correlation coefficient); internal consistency was reported at .84 (Cronbach’s alpha) and .87 (Guttman split-half) (Invernizzi et al., 2004).

Listening comprehension. Children’s receptive language skills were measured using the TOLD–P;3. Two subtests were relevant to this study. The Picture Vocabulary subtest measures children’s semantic skills by asking them to point to one of four pictures that best represents the meaning of a spoken word. This subtest contains 20 items. The Grammatical Understanding subtest measures children’s syntactic skills by asking them to point to one of three similar pictures that best represents the meaning of a spoken sentence. This subtest contains 25 items. The raw scores for these two subtests
were converted to a composite score for the listening quotient, which is used in this study to represent a child’s listening comprehension. Scores are based on a normal curve ($M = 100, SD = 15$).

**Name writing.** Children’s ability to write their first names was assessed following the PALS–PreK name-writing procedures (Invernizzi et al., 2001). The examiner gives the child an 8.5-in. × 11-in. piece of paper and asks the child to draw a self-portrait and write his or her name. In some cases, to reduce the duration of this task, children were asked only to write their names. For the present study, this task was not scored according to the PALS–PreK guidelines; rather, we used a 14-point scale that is discussed subsequently.

**Scoring of Name-Writing Performance**

Each child’s name-writing performance was scored using a 14-point coding scheme that was adapted from Lieberman’s (1985) work in this area. The Appendix describes this coding protocol, which aligns with Lieberman’s descriptions of 14 developmental transitions in early name-writing growth. Two transitions (i.e., 15, 16) were not included because they were not appropriate for analyzing the data in our sample. Transition 15 was not included because it requires multiple name-writing samples to address the flexibility that children use in name writing after they have achieved a full representation. Transition 16 was not included because it requires that first and last names be written; children in the present study were expected to write only their first names. The first and third author independently coded the name-writing samples for each of the 59 children. Within-one point agreement was 78%, with 90% agreement for moment assignments; the correlation between the two coders’ scores was .93 (Pearson product–moment correlation coefficient). All differences were resolved with conferencing, and the final score identified for each child’s production was agreed on by both coders.

For some analyses, children were differentiated into two groups based on the adapted Lieberman scoring system: (a) basic and (b) advanced. The basic writing group consisted of children who produced name-writing representations that were consistent with Lieberman’s Moments 1 and 2 (Lieberman, 1985); these children did not yet use recognizable letters in their name-writing representations. Rather, their name-writing representations lacked differentiation of picture and name, or exhibited linear scribbling, zig-zag lines, or some discrete letter-like forms. The advanced group consisted of children who produced name-writing representations that were consistent with Lieberman’s Moments 3 and 4; these children wrote their name with recognizable, pertinent letters in varying degrees of order, or full representations. Table 1 presents examples of name-writing representations across the basic and advanced groups.

### RESULTS

Table 2 provides means, standard deviations, and ranges on measures of emergent literacy and language for the fifty-nine 4-year-old children with LI. These descriptive statistics show considerable variability in the sample in terms of emergent literacy and language skill. Bivariate correlations for these measures are also presented, indicating that name writing was significantly correlated with uppercase alphabet knowledge ($r = .46$), print concepts ($r = .37$), and rhyme awareness ($r = .39$) (all $p’s < .01$). However, in this sample, name writing was not significantly correlated with home literacy practices ($r = .19$) or listening comprehension ($r = .08$). Gender differences were not significant, $F(1, 57) = 3.62, p = .06$.

To address the first aim of this study (i.e., to describe the name-writing abilities of 4-year-old children with LI), we examined descriptive data from the name-writing measure. The mean name-writing score was 6.78 ($SD = 4.10$) on the 14-point scale, and the full range of scores was represented (0 to 14). The percentage of letters in their names that children were able to write recognizably ranged from 0% to 100%, with a mean of 33% ($SD = .36$). This distribution is clearly reflected in Lieberman’s (1985) four-moment classification system. Moment 1 comprised 20% of the sample ($n = 12$), and Moment 2 comprised 22% ($n = 13$), indicating that 42% of the children were not yet representing a recognizable letter in their name. Moment 3 comprised 44% ($n = 26$) of the sample, with children recognizably representing at least some letters in their names. Moment 4 comprised 14% ($n = 8$); these children were able to represent all letters in their names.

As described earlier, children were divided into two groups: basic ($n = 25$; 42% of sample) and advanced ($n = 34$; 58% of sample). We first considered whether differences between groups could be attributed to experiential, language, or age differences. The results of one-way analyses of variance (ANOVAs) showed there to be no

<table>
<thead>
<tr>
<th>Group</th>
<th>Score range</th>
<th>Description</th>
<th>Name-writing sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic (Moments 1 &amp; 2)</td>
<td>0–3</td>
<td>Beginning to distinguish name from picture</td>
<td><img src="../image.png" alt="John" /></td>
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<tr>
<td></td>
<td>4–6</td>
<td>Continuous zigzag line, unrecognizable discrete letter-like forms</td>
<td><img src="../image.png" alt="Zack" /></td>
</tr>
<tr>
<td>Advanced (Moments 3 &amp; 4)</td>
<td>7–11</td>
<td>Emergence of recognizable letters with placeholders</td>
<td><img src="../image.png" alt="Gus" /></td>
</tr>
<tr>
<td></td>
<td>12–14</td>
<td>Complete name representation, conventional order and number</td>
<td><img src="../image.png" alt="Theresa" /></td>
</tr>
</tbody>
</table>

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significant difference between the groups with regard to parent-reported home literacy practices, $F(1, 57) = 2.07, p = .16, \eta^2 = .067 [95\% CI = -0.15–0.89]$, or listening comprehension, $F(1, 57) = .23, p = .64, \eta^2 = .004$. In other words, the frequency of home literacy behaviors as well as children’s receptive and expressive language appeared to be comparable across the two groups. However, the basic versus advanced writing groups differed significantly in terms of children’s age in months, $F(1, 57) = 19.04, p < .01, \eta^2 = .25$, $d = 1.14 [95\% CI = -.58–1.69]$, with the older children tending to produce more advanced name-writing representations than the younger children ($M_{BA} = 5.56; M_A = 56.03$). In subsequent analyses, age served as a covariate.

Table 3 provides the adjusted means and standard deviations on measures of emergent literacy for the basic and advanced groups, controlling for age. We conducted a multivariate analysis of covariance (MANCOVA, with age as the covariate) to examine whether the basic and advanced writing groups differed on a combination of three measures of emergent literacy skills (i.e., uppercase alphabet knowledge, print concepts, and rhyme awareness). Results (Wilk’s $\Lambda$) indicated a significant multivariate effect for group, $F(3, 54) = 3.88, p = .01, \eta^2 = .18$.

Post hoc Roy-Bargman stepdown analyses were employed to examine the unique contribution of each dependent variable to name-writing group status. In these analyses, the three variables were prioritized based on findings reported by Welsch et al. (2003), with the highest priority given to the print-related variables (i.e., alphabet knowledge, print concepts) and the lowest priority given to rhyme awareness. The higher priority variables served as covariates in each subsequent analysis. In the first step, we conducted a univariate analysis of covariance (ANCOVA) to examine the unique contribution of alphabet knowledge to group status after controlling for children’s chronological age in months. Comparisons between name-writing groups revealed a statistically significant difference on alphabet knowledge, stepdown $F(1, 56) = 6.72, p = .01, \eta^2 = .09$. In the second step, after controlling for age and alphabet knowledge (the highest priority variable), ANCOVA revealed a significant group difference in terms of print concepts, stepdown $F(1, 55) = 4.69, p = .04, \eta^2 = .08$. The final emergent literacy skill, rhyme awareness, was examined for the third step of the stepdown analyses. With age, alphabet knowledge, and print concepts serving as covariates, rhyme awareness did not make a significant unique contribution to the variance in group membership, stepdown $F(1, 54) = .004, p = .95, \eta^2 < .001$.

Our second research aim was to identify those emergent literacy and language skills that are significantly associated with the name-writing abilities of 4-year-olds with LI. To address this aim, we conducted a hierarchical multiple regression analysis to examine the extent to which specific emergent literacy and language skills were predictive of children’s name-writing abilities. Independent variables were entered in separate blocks in the following order: age, uppercase alphabet knowledge, print concepts, rhyme recognition, and listening comprehension. An examination of the variance inflation index (VIF) showed no multicollinearity in the data.

The total variance explained by the full model (with all predictors) was 34.8%. After controlling for age, $R^2 = .19, F(1, 57) = 12.94; p < .01$, our analysis revealed that alphabet knowledge contributed a unique variance to children’s name-writing scores,
DISCUSSION

The purpose of Study 1 was to characterize the emergent name-writing abilities of preschoolers with LI, to include considering relations with concurrent emergent literacy and language skills. The results showed tremendous range among preschoolers with LI in the area of name-writing development, with 58% of the sample producing relatively sophisticated representations (i.e., Lieberman’s Moments 3 and 4) and 42% producing relatively immature representations (i.e., Moments 1 and 2). When children with LI were categorized on the basis of whether they used recognizable letters during writing (basic vs. advanced groups), differences in name-writing abilities were associated with differences in alphabet knowledge and print concepts. Children who could not yet represent letters in their names knew fewer letters of the alphabet. In addition, these children demonstrated less knowledge about how print works in a book (i.e., print concepts). Consequently, these findings suggest that the name-writing abilities of children with LI reflect their knowledge about print forms and functions.

The results of this study also provide empirical support for the assertion that name-writing abilities among 4-year-olds with LI primarily reflect print-related knowledge rather than oral-language-related knowledge or phonological awareness. This finding converges with research on the name-writing representations of typically developing children (Welsch et al., 2003), which has shown that children’s print-related skills (i.e., alphabet knowledge, print concepts) in addition to age account for most of the variance in preschoolers’ name-writing abilities. A child’s ability to produce a correct name-writing representation is not necessarily indicative of phonological insights (Bialystock, 1995; Bus et al., 2001; Levin et al., 2005). In other words, it appears that young children are not encoding sounds while writing their names (Lieberman, 1985). Rather, they view their names as logograms, unconnected to oral language. Therefore, it is not surprising that in this study, name-writing representations did not seem to reflect phonological awareness, but rather children’s print-related skills. Children seem to employ a very different strategy when writing their names than when inventing spellings, which requires at least a rudimentary grasp of the alphabetic principle (Levin et al., 2005). The present findings stand in contrast to the assertion that name-writing ability is significantly associated with phonological awareness (Blair & Savage, 2006). It is most likely the case that these differences in findings arise from measurement differences (i.e., name-writing scoring; phonological tasks) rather than from a unique characteristic of children with LI. Specifically, Blair and Savage used a limited 4-point name-writing scale that did not take into account the full range of name-writing development. However, they did analyze several phonological awareness tasks, whereas the present study included only rhyme recognition.

Finally, the present study showed that after controlling for the effects of age, understandings of print concepts did not explain variance in name-writing ability, and the most powerful explanatory variable was alphabet knowledge. It is not possible to determine from our results whether such relationships are causal. Thus, we interpreted our findings to suggest a bidirectional developmental interrelationship between name-writing ability and alphabet knowledge such that children’s knowledge of letters aids in their name writing, and children’s active encoding of letters in the act of writing likely enhances their alphabet knowledge.

STUDY 2

Study 1 examined the name-writing abilities of preschoolers with LI. A second study was conducted to compare the name-writing representations of children with LI to those of their TL peers, using a between-subjects design involving a subsample of children with LI from Study 1.

METHOD

Participants

A subsample of children with LI from Study 1 was matched with children in a TL sample on the basis of age and SES, with 23 children in each group (n = 46). The TL participants had enrolled in a study of preschoolers’ literacy development (Justice, Pullen, & Pence, in press; Justice, Skibbe, Canning, & Lankford, 2005). Eligibility for the larger study was determined using the same criteria that children with LI met in Study 1, with the exception of performance on the TOLD—P.3. Specifically, to participate in the larger study, children were required to receive a score greater than or equal to –1 SD of the mean (standard score ≥ 85) on both the Oral Vocabulary and Grammatic Completion subtests, which together comprise the speaking quotient.

To select participants for the present study, we systematically created pairs of children from the TL database (n = 53) and the LI database (n = 59) by matching on age (within 3 months) and the highest level of maternal education (as a proxy for SES). When more than one exact match was found, we chose the first sequential match according to child identification number. A total of 23 matches were formed based on these procedures. All other children in the larger databases for whom no age matches were found were excluded from the study.
The mean age of the children with LI (19 boys, 4 girls) was 54 months (SD = 3.50), and the mean age of the TL children (10 boys, 13 girls) was 53.65 months (SD = 3.76). The groups did not statistically differ with regard to age, F(1, 44) = .11, p = .75, d = -.09 [95% CI = - .67–.48]. The ethnicities of children with LI were reported by mothers as Caucasian (78.3%, n = 18), African American (8.7%, n = 2), and multiracial or other (13%, n = 3). The ethnicities of the TL children were reported as Caucasian (78.3%, n = 18) and multiracial (21.7%, n = 5). As expected, there was a statistically significant difference between groups on the TOLD–P:3 speaking quotient, which represents children’s expressive language ability, F(1, 44) = 102.89, p < .01, d = 2.94 [95% CI = 2.11–3.77].

Procedure and Materials

The data collection procedure for the children with TL was identical to that described in Study 1 for the children with LI (n = 23). Specifically, the same set of measures of literacy and language was collected by trained research assistants during a 2-hr home visit. For some children, data were collected in a research lab at the parent’s request. Parents of the TL children completed questionnaires that were identical to those that were completed by parents of the children with LI.

The following measures were described in Study 1: frequency of home literacy activities, uppercase alphabet knowledge, print concepts, rhyme awareness, and name writing. We used scoring procedures identical to those detailed in Study 1, adapted from Lieberman (1985), to arrive at a score for each child’s name-writing representation. As with the LI sample, the first and third author independently coded all name-writing samples for the 23 children in the TL group. Within-one point agreement was 91.3%, and the Pearson product–moment correlation coefficient between the two coders’ scores was .96. For all scoring discrepancies, agreement was reached between the two coders and a final score was assigned.

RESULTS

The means and standard deviations of all major study variables are presented in Table 5. These descriptive statistics show that the two groups exhibited mean differences on all study variables with the exception of age. As a preliminary analysis, a series of ANOVAs was conducted to determine whether differences between the two groups were statistically significant on the following five measures: home literacy practices, uppercase alphabet knowledge, print concepts, rhyme awareness, and name writing. A Bonferroni adjustment (α = .05/5 = .01) was applied, and Cohen’s d was calculated to report the Hedges’ bias corrected effect size. The test statistics showed that the LI and TL groups did not differ significantly on the frequency of parent-reported home literacy practices, F(1, 43) = 2.82, p = .10, d = .50 [95% CI = -.10–1.09], although the result demonstrated a trend toward less frequent literacy practices for the LI group, with a medium-sized effect. The two groups differed significantly on uppercase alphabet knowledge, F(1, 44) = 29.17, p < .01, d = 1.56 [95% CI = 9.23]; print concepts, F(1, 43) = 27.60, p < .01, d = 1.54 [95% CI = .87–2.20]; and rhyme awareness, F(1, 43) = 46.90, p < .01, d = 2.01 [95% CI = 1.29–2.72]. The TL children also demonstrated significantly more advanced name-writing representations than did the children with LI, F(1, 44) = 20.49, p < .01, which is consistent with a very large effect size, d = 1.31 [95% CI: .68–1.95].

Considering the name-writing findings in greater depth, the mean name-writing score for the children with LI (n = 23) was 6.39 (SD = 3.97), with the full range of scores represented (0 to 14). (Note that the mean score for the LI subsample was slightly lower than that of the full sample, at 6.78; however, there was no statistical difference between the name-writing scores of the subsample and those children remaining in the larger LI sample (n = 36, M = 7.03, SD = 4.21), F(1,57) = .34, p = .57.) The children with LI represented, on average, 26.8% of the letters in their name (SD = .33). By comparison, the mean name-writing score of the TL children (n = 23) was considerably higher at 11.2 (SD = 3.14; range = 1–14), with children representing an average of 83.7% of the letters in their names (SD = .32). When considering the percentage of children within each group (TL, LI) using the Lieberman 4-moment classification, the data in Table 6 show that the TL group’s name-writing representations were more sophisticated than those of the LI group. For the children with LI, Moment 1 comprised 26.1% of the sample, Moment 2 comprised 21.7%, Moment 3 comprised 47.8%, and Moment 4 comprised 43.3%. In other words, 11 of the children in the

<table>
<thead>
<tr>
<th>Variable</th>
<th>Language impairment</th>
<th>Typical language</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>1. Age (months)</td>
<td>54.00</td>
<td>3.50</td>
</tr>
<tr>
<td>2. Expressive language ability</td>
<td>82.39</td>
<td>9.24</td>
</tr>
<tr>
<td>4. Uppercase alphabet knowledge</td>
<td>6.78</td>
<td>8.80</td>
</tr>
<tr>
<td>5. Print concepts</td>
<td>93.43</td>
<td>12.68</td>
</tr>
<tr>
<td>6. Rhyme awareness</td>
<td>3.27</td>
<td>2.43</td>
</tr>
</tbody>
</table>

Note. Expressive language ability scores are from the speaking quotient of the TOLD–P:3, based on M = 100, SD = 15; home literacy practices scores are from the Literacy Activities Scale, maximum score = 45; uppercase alphabet scores are from the PALS–PreK, maximum score = 26; print concept scores are from the PWPA, based on M = 100, SD = 15; rhyme awareness scores are from the PALS–PreK, maximum score = 10; name-writing scores are based on a 14-point scale adapted from Lieberman (1985). *n = 22.
L1 group could not write a recognizable letter in their names (Moments 1 and 2), and 12 could write at least one letter. Only 1 child with LI was able to write his or her name correctly. In contrast, the overwhelming majority of children (i.e., 15) in the TL group were able to represent all letters in their names (either conventionally or unconventionally; ordered or unordered). For the TL children, Moment 1 comprised 4.3% of the sample, Moment 2 comprised 4.3%, Moment 3 comprised 26.1%, and Moment 4 comprised 65.2%. Therefore, all but 2 children in the TL group could write at least one recognizable letter.

To further investigate the differences between the two groups, we categorized children into two groups as occurred in Study 1: basic (Moments 1 and 2) and advanced (Moments 3 and 4). By definition, the children in the basic group could not yet represent a single recognizable letter in their names, whereas children in the advanced group represented at least one letter. A two-way contingency table analysis indicated that significantly more children with LI were in the basic group as compared to those with TL. Pearson, $\chi^2(1, N = 46) = 7.22, p < .01$, with a medium-to-large effect size ($\phi = .40$). The percentage of children with LI in the basic group was 47.8% compared to 8.7% of those with TL.

#### DISCUSSION

The purpose of Study 2 was to compare the name-writing representations of 4-year-old children with LI to those of their TL peers. Results found that the children with TL were significantly more advanced in their name-writing abilities relative to the children with LI, which is consistent with a very large and clinically meaningful effect ($d = 1.31$). This effect-size contrast is similar in magnitude to that which has been reported for other indices of emergent literacy skill, including print concept knowledge, alphabet knowledge, and phonological awareness (Boudreau & Hedberg, 1999; Justice, Bowles, et al., 2006). Concerning specific contrast-comparisons in the area of name writing, the present work found that 65.2% of children with TL were able to write all of the letters in their names, whereas 47.8% of those with LI were unable to represent even one recognizable letter. Considered collectively with recent reports in the literature (e.g., Boudreau & Hedberg, 1999; Justice, Bowles, et al., 2006), it is clear that preschoolers with LI exhibit comprehensive lags in emergent literacy development—encompassing emergent writing, print knowledge, and phonological awareness—with differences corresponding to both practical import as well as statistical significance. Given the consistent longitudinal associations of early performance in emergent writing, print knowledge, and phonological awareness to later reading and spelling outcomes (NELP, 2004), the present findings in conjunction with earlier results show that emergent literacy development is an area of considerable disadvantage for children with LI.

Theoretically, it is important to consider several alternative explanations as to why children with LI exhibit substantial delays relative to typical peers in their name-writing abilities. It has sometimes been assumed that early writing performance typically reflects phonological awareness (specifically, phonemic awareness) abilities. Although this may be true for beginning readers who are inventing spellings (e.g., Ehri et al., 2001), the lack of a relationship observed in this study between children’s phonological awareness and name-writing ability indicates that this is not a reasonable explanation for the emergent writing abilities of prereading children with LI. Rather, the results of this and other research (e.g., Gillam & Johnston, 1985) show that children with LI appear to have a specific vulnerability in their development of knowledge about print, represented in name-writing tasks, alphabet-naming tasks, and print concept tasks. We explore three hypotheses here concerning why print-related skills may be an area of specific vulnerability for children with LI.

First, oral language impairment and written language difficulties may reflect a common underlying processing problem. Written language problems in older children (often manifested as deficits in word decoding and spelling) are often viewed to manifest within a causal chain of events whereby oral language difficulties precede (and contribute to) written language difficulties (e.g., Storch & Whitehurst, 2002). Scarborough (2001) posited a hybrid alternative, suggesting that these difficulties might be considered both causally related and symptomatic of an underlying root cause. For example, a child’s problems in syntactic ability, phonological awareness, and decoding may all be symptomatic of a single underlying condition, namely, a core language vulnerability. We extend this model to the preschooler with LI. Language difficulties may inhibit the acquisition of print-related skills (causal linkage), but it is also plausible that print-related deficits represent another manifestation (symptom) of a core weakness in language that extends to both oral and written language abilities.

A second hypothesis concerning the reduced print-related skills of children with LI relates to potentially low engagement of these children during literacy tasks. Because language is a source of

<table>
<thead>
<tr>
<th>Writing group</th>
<th>Language impairment</th>
<th>Typical language</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Basic</td>
<td>11</td>
<td>47.8</td>
</tr>
<tr>
<td>Moment 1</td>
<td>6</td>
<td>26.1</td>
</tr>
<tr>
<td>Moment 2</td>
<td>5</td>
<td>21.7</td>
</tr>
<tr>
<td>Advanced</td>
<td>12</td>
<td>52.2</td>
</tr>
<tr>
<td>Moment 3</td>
<td>11</td>
<td>47.8</td>
</tr>
<tr>
<td>Moment 4</td>
<td>1</td>
<td>4.3</td>
</tr>
</tbody>
</table>
difficulty in print-related skills relates to the quantity of children’s name writing. In general, school-age children who are motivated over a long period of time demonstrate increased reading abilities (see Guthrie & Wigfield, 2000). Although less frequently studied for preschool-age children, evidence shows that children’s positive orientation to print is a positive predictor of later reading outcomes (Frijters, Barron, & Brunello, 2000). One study reported that observational ratings of children’s active engagement during shared storybook reading and other literacy activities in a 12-week intervention program for preschoolers with LI was a positive and unique predictor of the literacy gains of preschoolers with LI during this period (Justice, Chow, Capellini, Flanigan, & Colton, 2003). Among preschool-age children, early engagement with and interest in print is viewed as a critical steppingstone to later literacy success (see Justice & Ezell, 2004). Children who are interested in print will likely take advantage of their print-rich environments through active exploration of their surroundings. Children who are interested in print will also be more likely to seek out opportunities to explore print through writing. This active exploration is believed to help children progress to more advanced levels of understanding about how print works (e.g., Chomsky, 1971; Clay, 1975, 1977). In their earliest writing, TL children continually request adult guidance, and this seemingly enables them to progress to increasingly sophisticated levels of understanding (e.g., Bissex, 1980; Clay, 1977). Unfortunately, children with LI tend to have a decreased interest and engagement in literacy events as compared with their TL peers (Kaderavek & Sulzby, 1998), potentially undermining their learning within print-focused interactions, even for a task that is personally meaningful, such as name writing.

A third explanation for why children with LI may be susceptible to difficulty in print-related skills relates to the quantity of children’s home literacy experiences, with some evidence suggesting that children with LI may be provided with fewer literacy encounters than their TL peers. Parents of children with disabilities generally report engaging in fewer literacy activities at home compared to parents of TL children, likely because of their focus on concerns or beliefs that are directly related to the disability (e.g., Boudreau, 2005). Similarly, findings from the present study showed a medium-sized effect for differences in the frequency of home literacy practices even after controlling for age and SES. It seems plausible to assume that if parents are consumed with helping their children overcome basic language barriers, opportunities to read and write may not be a prominent feature in the home environment. Preschool and kindergarteners who display high levels of interest in print tend to live in home environments that support literacy with book reading and opportunities to write (e.g., Lomax, 1978; Morrow, 1983), which suggests that the home environment helps to facilitate this interest. Although parents of children with LI may provide their children with similar exposure to print as compared to their TL peers, the overall home literacy experiences may differ with regard to activities such as listening to stories, discussing books, and writing (Marvin & Wright, 1997).

**DISCUSSION**

The results of this work offer several implications to contemporary practice in speech-language pathology, especially pertaining to clinicians who regularly collaborate with teachers working in preschool classrooms. Specifically, the present findings suggest the need to actively cultivate the emergent writing skills of young children with LI from the preschool years forward. We can draw from recent reported findings in the scientific literature on how best to do so. Justice and Ezell (2004) have suggested that a first step in facilitating the growth of emergent writing in children with LI is to foster print interest, which is believed to facilitate subsequent literacy learning. Educators can foster general interest in print by providing an environment in which books are regularly being read to children and where they see others engaging in literacy acts, such as modeled writing. Interest in writing can be explicitly fostered through encouraging children to freely write by providing them with the necessary tools. One study among typically developing children (Neuman & Roskos, 1992) indicated that simply providing children with literacy tools such as writing implements and paper during dramatic play time in preschool increases the frequency with which children spontaneously engage in writing. However, children with LI will likely need some explicit and deliberate adult mediation to explore writing and other print-related experiences during dramatic play. Adult mediation during dramatic play has been shown to increase children’s literacy skills (Neuman & Roskos, 1993). For example, in a restaurant-themed dramatic play center, the adult can initially play the role of the waiter, then encourage children to write down orders. In addition, sign-in procedures in which students write their names (e.g., doctor’s office) can easily be included in play scenarios. Adult mediation (i.e., maternal mediation) during writing tasks involving kindergarten children has been associated with children’s concurrent literacy skills and later reading outcomes (Aram & Levin, 2001, 2004). Speech-language pathologists (SLPs) can draw on the salience of children’s own names as a way to build emergent literacy skills. Children’s names have special developmental significance such that children are much more likely to learn the letters contained in their own names compared to other letters (Justice, Pence, et al., 2006). SLPs can use simple strategies to promote children’s writing of their names. For instance, in a recent intervention involving children with LI, children working with therapists traced their names on paper at the start of each of 12 intervention sessions over a 6-week period (Justice et al., 2003). Similarly, Aram and Biron (2004) successfully implemented a joint writing program with low-SES Israeli preschoolers, during which children completed small-group activities that involved matching pictures of children with their written names. As the program progressed, children’s names were used to identify beginning sounds, lengths of words, letters, and letter-sounds. Children subsequently practiced writing with tools such as pencils, magnetic letters, and stickers. Children who participated in this writing program significantly outperformed comparison groups on a variety of literacy skills, including phonological awareness and alphabet knowledge (Aram & Biron, 2004; Aram, 2006).

**LIMITATIONS AND FUTURE DIRECTIONS**

Several limitations of the present studies warrant note. The first limitation concerns the scoring of children’s name-writing....
representations. Children’s writing samples were scored offline (i.e., after children had written their names) by researchers who did not administer the name-writing task to the children. Researchers have cautioned against offline interpretation of early writing (see Sulzby, 1985) because it can make scoring more difficult (e.g., the coder is unable to witness how children formed the letters). Online scoring would have provided an opportunity to watch children as they wrote and to ask them to provide information about their writing attempts when needed. For example, a child who writes letter-like marks for his or her name and proceeds to draw a picture on top of the name would be able to clarify which part represents his or her name, helping the scorer to identify whether the name was distinct from the drawing.

A second limitation concerns the writing samples themselves. We collected only a single name-writing sample from each child, thus limiting our analyses. It would have been informative to analyze several different writing attempts (e.g., a list, a story, a name) as well as writing attempts that were collected longitudinally over time. Examination of various writing samples collected over time for children with LI will be an important line of future research and will shed light on children’s unfolding knowledge of how print works.

Third, the children who were identified as LI in these studies may differ from those who are seen clinically. Some research has shown there to be only moderate congruence between the children identified as LI in research reports with those identified in clinical settings (see Aram, Morris, & Hall, 1993). The children comprising the LI sample in this study were identified as such using specific a priori criteria that may differ from those used within clinical settings. Consequently, it is not certain that the results of this study will readily generalize to clinically identified populations.

The present studies focused primarily on children’s written products. Some researchers emphasize the role of social context in emergent writing, highlighting the importance of adult and peer interaction to children’s written productions (e.g., Dyson, 2002; Kissel, 2006; Rowe, 2008). Future research should examine the contexts in which children’s writing takes place and the differences with regard to children’s language abilities. Given that children with LI demonstrate reduced social skills and increased difficulty interacting with peers compared with TL children (e.g., Fujiki, Brinton, Isaacs, & Summers, 2001; Fujiki, Brinton, & Todd, 1996), it would be interesting to examine the influences of the social contexts of writing on children’s production of their names as well as other forms of writing (e.g., stories). It would also be important to note whether children with LI exhibit reduced experimentation with writing due to these social factors. Such work could inform possible ways of successfully mediating writing experiences for children with LI.

To conclude, these studies represent an initial step toward examining the emergent writing skills of children with LI, focusing specifically on their name-writing representations. Name-writing ability represents an important aspect of emergent literacy development and likely reflects children’s print knowledge. Our findings showed preschoolers with LI to exhibit significant lags in the development of name-writing skills, particularly when compared to age-matched peers. As clinicians attempt to scale up evidence-based emergent literacy assessment and intervention, they should include an analysis of children’s early writing skills as one part of a comprehensive language assessment, and the use of systematic interventions to support this aspect of development should be carefully explored.

**ACKNOWLEDGMENT**

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Laura M. Justice is now at The Ohio State University.
## APPENDIX. NAME-WRITING SCORING (BASED ON LIEBERMAN, 1985)

<table>
<thead>
<tr>
<th>Moment</th>
<th>Score</th>
<th>Description of transition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>No distinction between drawing and writing, with scribbling intertwined with picture.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>No distinction between drawing and writing, with some discrete letter-like graphemes intertwined with picture.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Distinction between drawing and writing. (Assumed from this point forward.)</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>Continuous zigzag scribble.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Continuous zigzag scribble with the beginnings of distinct graphemes.</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Discrete, letter-like symbols.</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>Approximately one to three symbols, with at least one pertinent, recognizable letter present.</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>A string of letters (approximately 4 or more) with pertinent letters and/or placeholders (may be letter-like forms). The number of symbols does not equal the number of letters in the child’s name.</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>A string of unordered pertinent letters. Some letters may be omitted or added. No placeholders are present.</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>A string of ordered pertinent letters. Some letters may be omitted or added. No placeholders are present.</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>A string of pertinent letters and placeholders equal to the number of letters in the child’s name.</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>Complete ordered name is written using recognizable but not conventional letters.</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Complete name is written using conventional letters, but letters are unordered.</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Complete name is written using conventional letters in a correct order.</td>
</tr>
</tbody>
</table>

**Note.** Our scoring protocol differed from Lieberman’s (1985) descriptions in that we did not heavily consider the idea of linearity; rather, our emphasis was on the recognizability of letters. If letters were recognizable in a representation, it was automatically scored at Transition 7 or above, regardless of orientation on the page or graphemes blending with a picture. These decisions were based on other studies of developmental name-writing abilities (e.g., Hildreth, 1936).