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RESEARCH ARTICLE

A multilevel analysis of home and classroom literacy environments in relation to preschoolers' early literacy development

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Abstract

This study aimed to investigate the characteristics of preschoolers' home and classroom literacy environments and the relationships between receptive and expressive vocabulary, phonological awareness, and concepts about print (CAP) development. The participants were 168 parents and their children from five private preschools in a large suburban area. Two waves of data were collected. Multilevel linear modeling was used to analyze the two-level data set. The findings of the study revealed that children have more oral language related home experiences than print-related experiences. Similarly, the scores of the children's classroom environment that were related to oral language sources had the highest average of all rated dimensions. Print-related resources and experiences and provisions for book corners in the classrooms were limited. The results revealed that children's spring semester early literacy scores were significantly associated with their initial early literacy scores, mother's education level, and the classroom literacy environment. However, the home literacy environment was not significantly related to spring semester CAP scores.

KEYWORDS

classroom, concepts about print, home literacy environment, phonological awareness, preschool, vocabulary

1 | INTRODUCTION

Because of the importance of reading as the basis for lifelong learning and educational opportunities, literacy instruction is a fundamental component of education programs for students at all levels (UNESCO, 2006). In the primary grades, the focus is on ensuring children become accurate and fluent decoders of print, and in the higher grades reading becomes a tool for students to gain and synthesize the information needed for on-going learning. Reading is an essential foundation for academic success (Duncan et al., 2007; Hernandez, 2011), and considerable evidence confirms that reading achievement in primary school is a strong predictor of a child's later reading achievement

(Cunningham & Stanovich, 1997; Juel, 1988; Phillips, Norris, Osmond, & Maynard, 2002; Spira, Bracken, & Fischel, 2005). Furthermore, primary grade reading skills are predicted by preschool-aged children's literacy skills (e.g., Badian, 1998; Kim & Petscher, 2011; Lonigan, Burgess, & Anthony, 2000; Munger & Blachman, 2013; Ozernov-Palchik et al., 2017; Sparks, Patton, & Murdoch, 2014; Storch & Whitehurst, 2002), confirming that the antecedents of reading skills are established in the early childhood years (Clay, 1977; Lonigan, 2004; Scarborough, 2009; Whitehurst & Lonigan, 2001).

The National Early Literacy Panel (2008) conducted a meta-analytic study to synthesize empirical evidence on early literacy development and the precursors of later literacy achievement. Early literacy skills have medium to large predictive relationships with future literacy skills (NELP, 2008). Similarly, another meta-analysis revealed that early print-related knowledge, oral language proficiency, and nonverbal and visual abilities are related to later reading achievement (Scarborough, 1998). Scarborough (2001) examined the multifaceted nature of reading and how children acquire reading skills. Phonological awareness, letter knowledge, and sight recognition of familiar words are the antecedents of the word recognition process, whereas vocabulary, print concepts, background knowledge, and verbal reasoning are the antecedents of language comprehension (Scarborough, 2009). Thus, attention has been drawn to the importance of experiences that might promote language and literacy during the early childhood period.

Two lines of research reinforced this focus on early literacy development. First, brain research examined the intellectual capacities of young children and the way they process their environmental inputs. The findings showed that the first 3 years of life are a period of rapid brain development. The structures of the brain are established through dynamic interactions between the child's neurons and the psychosocial environment of their early years (Shonkoff & Phillips, 2000; Walker et al., 2011). Children need to be exposed to linguistic inputs: interactions, experiences, and sources to acquire language (Clark, 2009; Ingram, 1989; Kuhl, 2000).

Second, Vygotskian perspective advocated that language acquisition is a socially mediated process in which children internalize language via social interactions (Vygotsky, 1986). Vygotskian social constructivist studies showed that children require the assistance of more capable or knowledgeable people to scaffold their language development (Morrow, 2009; Ochs, 1988; Vygotsky, 1978). Similarly, Bronfenbrenner's (1994) ecological systems theory emphasized the influence of contextual factors on children's development. Human beings develop within a nested environment, one that contains both social and physical elements, and there is a reciprocal relationship between an individual and the environment that impacts development (Berns, 2004; Bronfenbrenner, 1979, 1994). Family and school compose the innermost level of the ecological system, and these initial environments have a crucial influence on a child's development (Bronfenbrenner, 1979; Crockenberg & Leerkes, 2003; Krishnan, 2010). The aforementioned cognitive studies and contextualization theories show the importance of extensively nourishing the development of early literacy skills in the home and school environments.

1.1 | Home literacy environment

Studies consistently have shown that features of the home literacy environment (HLE) are associated with children's early development of (a) phonological awareness (Burgess, 2002; Foy & Mann, 2003; Reese, Robertson, Divers, & Schaughency, 2015), (b) concepts about print (CAP) (Korat, Klein, & Segal-Drori, 2007; Levy, Gong, Hessels, Evans, & Jared, 2006), (c) vocabulary (Kim, Im, & Kwon, 2015; Meng, 2015; Niklas, Tayler, & Schneider, 2015), (d) letter knowledge (Burgess, Hecht, & Lonigan, 2002; Hood, Conlon, & Andrews, 2008), and (e) later reading skills (De Jong & Leseman, 2001; Gottfried, Schlackman, Gottfried, & Boutin-Martinez, 2015; Tichnor-Wagner, Garwood, Bratsch-Hines, & Vernon-Feagans, 2015). However, new questions have emerged because of the influence of changes in society and technology on the affordances of the home environment. Cultural differences in home literacy experiences and literacy habits expand the diversity of developmental trajectories in children's language and literacy skills (Evans, Kelley, Sikora, & Treiman, 2010; Phillips & Lonigan, 2009; Wasik, Dobbins, & Herrmann, 2001).

The conceptualization of the HLE has evolved over the years. The earliest attempts to explain the relations between children's early literacy development and home background mainly revolved around the general demographics of the families, such as household income, parents' education level, ethnicity, and time spent on parent–child shared reading

(Bus, Van Ijzendoorn, & Pellegrini, 1995; Goldenberg, 1987; Snow et al., 1976). Recent studies have examined the home background from a more complex, literacy-specific approach, attending to home literacy resources, interactions, opportunities, and habits that support children's language and literacy development (e.g., Grieshaber, Shield, Luke, & Macdonald, 2012; Kluczniok, Lehrl, Kuger, & Rossbach, 2013; Niklas et al., 2015; Rodriguez et al., 2009). Though the complex, multidimensional nature of the HLE is widely agreed upon, differences exist in definitions of its scope, and the inventories used to measure it (e.g., Burgess et al., 2002; Leseman & de Jong, 1998; Marjanovič Umek, Podlesek, & Fekonja, 2005; Wheaton, 2010). Marjanovič Umek et al. (2005) analyzed HLE using five categories: (a) *stimulation to use language and explanation* covers items related to using oral language in daily home life, such as conversing with the child, answering the child's questions, giving explanations, encouraging repetition, and expanding conversations; (b) *reading books, visiting a library, and puppet theater* consists of items such as shared reading frequency, parents' responsiveness to the child's reading demands, buying books, and visiting the library; (c) *joint activities and conversations* contains items such as parent–child shared play activities, visual reading, talking about cartoons, and supporting children's narrative skills; (d) *interactive reading* includes elements related to parents expanding on the content of the book and allowing time for the child to ask questions and make up his or her own stories during the reading process; and (e) *zone of proximal development* involves parents encouraging their child's letter, oral language, number, and word learning. The conceptualization of Marjanovič Umek et al. (2005) was used in the present study to assess the HLE.

1.2 | Classroom literacy environment

School is the second and broader context for children's literacy development. Classroom settings provide systematic and professional learning opportunities, environments, interactions, and experiences that differ from those offered at home (Gianvecchio & French, 2002; Hindman, Connor, Jewkes, & Morrison, 2008). There are three categories of differences. First, the school environment has a formal structure and applies planned and systematic curricula to develop children's learning and development, whereas most children's home literacy experiences are informal and spontaneous. Second, most teachers in preschools are professionals with specific preparation to support children's development and learning, whereas parents generally do not have this training (Department for Education and Skills, 2007; Neuman, 1999). Third, children frequently have small group or individual interactions with parents, but in the classroom, they have small or whole group interactions with adults and their peers (Burgess et al., 2002; Foy & Mann, 2003; Hindman et al., 2008; Moll & Whitmore, 1993). The physical and instructional features of the preschool classroom environment are related to child development and learning gains (e.g., Early et al., 2007; Guo, Piasta, Justice, & Kaderavek, 2010; LoCasale-Crouch et al., 2007).

Researchers have developed domain-specific instruments to assess the literacy quality of a preschool classroom (Goodson, Layzer, Smith, & Rimdzius, 2006; Smith, Brady, & Anastasopoulos, 2008). The classroom literacy environment (CLE) covers opportunities for both the materials and classroom climate to be inviting and motivating, thus encouraging child participation and extending children's literacy experiences (Wolfersberger, Reutzel, Sudweeks, & Fawson, 2004). These studies have mainly focused on the physical and instructional dimensions of the classroom. The physical dimensions include classroom organization and the availability of different books, print sources, and literacy materials (Maier, Vitiello, & Greenfield, 2012; Neuman & Roskos, 1993; Xu, Chin, Reed, & Hutchinson, 2014; Zhang, Hur, Diamond, & Powell, 2015). The instructional dimension covers literacy-related curriculum goals, daily routines and activities, teacher–child and child–child interactions, and the teacher's communication skills, responsiveness, and language and instructional methods to scaffold the children's language and literacy development (Hamre & Pianta, 2005; Justice, Kaderavek, Fan, Sofka, & Hunt, 2009; Schachter, Spear, Piasta, Justice, & Logan, 2016).

CLE quality was related to children's (a) print awareness (Guo et al., 2010), (b) vocabulary (Connor, Son, Hindman, & Morrison, 2005; Xu et al., 2014), (c) phonological awareness (Bus & Van IJzendoorn, 1999; Phillips, Clancy-Menchetti, & Lonigan, 2008), (d) letter knowledge (Guo, Justice, Kaderavek, & McGinty, 2012), (e) writing skills and name writing (Guo et al., 2012; Zhang et al., 2015), and (f) overall language and literacy skills (Connor et al., 2005; Cunningham, 2010; Mashburn, 2008).

In the Turkish context, the CLE is an emerging issue. Only a small number of studies have examined preschool teachers' literacy practices in classrooms; most often, these studies found that Turkish preschoolers had a limited quantity and quality of literacy experiences in school settings (Ergül et al., 2014; Kerem & Cömer, 2005; Tuğluk, Kök, Koçyiğit, Kaya, & Gençdoğan, 2008). As Justice (2004) pointed out, the classroom environment is related to and reflects the sociocultural aspects of societies and educational philosophy of programs. Therefore, the scholarly culture and literacy policy of countries should also be considered when examining the CLE.

1.3 | National context: Profile of the literacy of Turkish people and early childhood education program

Turkish primary grade and high school literacy programs both aim to raise students to be competent and skilled readers (Ministry of National Education [MONE], 2015). However, international comparative studies, such as the Programme for International Student Assessment (PISA, 2003, 2006, 2009, 2012, 2015) and Progress in the International Reading Literacy Study (PIRLS, 2001), consistently have shown that Turkish students' reading performance scores are below the international average. According to PISA (2015) results, the reading performance of Turkish 15-year-old students ranked 50th out of 72 countries that participated. Studies have shown that Turkish students had poor reading habits (Balcı, Uyar, & Büyükikiz, 2012; Saracaloğlu, Karasakaloğlu, & Aslantürk, 2010; Sünbül et al., 2010). These results prompted educators to question the possible reasons for the reading failure of Turkish students and the ineffectiveness of the Turkish education system's literacy policy.

Preschool education is not compulsory in Turkey; 55.48% of 5-year-olds and only 32.28% of 3- to 5-year-olds are in school (MONE, 2015). Preschool education is predominantly provided by public schools, but the number of private preschools is increasing. Some parents whose children are enrolled in private school are partially financially supported by the MONE. MONE (2017) reported that there were 4,089 public preschools and 4,630 private preschools. Nationwide, 1,124,727 children were enrolled in public preschools, and 201,396 children were enrolled in private preschools. Education in private and public preschools is based on the National Early Childhood Education Program (MONE, 2013), which addresses children's developmental domains, including language. The language domain specifies 12 skill domains, including oral language, vocabulary, visual reading, and some simple phonological awareness and CAP indicators. The program offers suggestions and content for preparing for reading and writing activities. According to the program, preparedness for reading and writing can include activities that foster children's self-care skills, ability to hold a pencil properly, knowledge of basic concepts, motivation and awareness of reading and writing, and cognition, attention, and visual and auditory perceptual skills (MONE, 2013). The Turkish language section clearly states in bold that "The program certainly does not aim to teach reading and writing to children and does not cover any goals for children to be introduced to letters and learn to write letters" (MONE, 2013, p. 45). Preschool is defined as a preparation period for first grade. This policy reflects the MONE's embrace of "reading readiness," the notion that maturation is a key determinant of success in reading and that instruction should thus be postponed until the child is mentally and physically equipped (Gillen & Hall, 2003; Morphett & Washburn, 1931; Morrow, 2009).

Parallel to the curriculum literacy policy, the undergraduate preschool teacher education program does not offer any specific course related to early literacy skills. Studies have pointed out that neither in-service nor preservice teachers have accurate and adequate knowledge related to early literacy. According to the literature, most teachers believe that early literacy refers to children being able to read before the first grade (Altun & Tantekin-Erden, 2016; Ergül et al., 2014; Özdemir & Bayraktar, 2015). Early literacy is an emerging topic in the Turkish context, but early literacy education is not standardized across schools (Erdoğan, Altınkaynak, & Erdoğan, 2013; Tantekin-Erden & Altun, 2014; Yapıcı & Ulu, 2010). Most private school programs cover activities related to letter recognition. For example, some private preschools introduce only vowels (*a*, *e*, *ı*, *i*, *o*, *ö*, *u*, *ü*), while others anticipate the letters that will be introduced early in first grade and teach those as preparation (e.g., *e*, *l*, *a*, *t/i*, *n*, *o*, *r*, *m*). A small number of preschools teach all 29 letters of the Turkish orthography.

2 | THE PRESENT STUDY

Turkish society differs from more widely studied societies. Turkey's distinctive features fall into three domains: scholarly culture and HLE, early literacy policy, and Turkish language structure. First, studies have shown that Turkish children's home literacy index is below the international average (Martin, Mullis, & Gonzalez, 2004; PIRLS, 2001). A vast number of studies have consistently demonstrated that majority of Turkish people do not read much and they have no regular reading habits (e.g., Akman & Akman, 2017; Baltacı, 2017; Child Foundation, 2006; Demirer, Yıldız, & Sünbül, 2011; Sünbül et al., 2010; Ulusoy & Dedeoğlu, 2011; Yalman, Özkan, & Kutluca, 2013). Furthermore, the oral culture is more dominant than the written one (Ungan, 2008; Yıldız, 2008).

Second, as noted above, the reading readiness perspective has a consistent and persistent influence on Turkish Early Childhood Education (ECE) programs (MONE, 1994, 2002, 2006, 2013). MONE suggests that formal literacy instruction be delayed until children enter the first grade, though private preschools often teach letter recognition and letter sounds. The early literacy and the emergent literacy perspectives are underdeveloped in Turkish discussions of early education regarding educational practices in preschools, teacher education programs, and research literature.

Third, most early literacy research has been conducted with English-speaking children who were tasked with learning the deep orthography of English. Turkish, in contrast, has a shallow orthography (Rayner, Pollatsek, Ashby, & Clifton, 2013). These orthographic differences can influence the course and speed of acquiring code-related skills. Therefore, the current study provides information concerning early literacy development in the Turkish language. The research investigates the following questions:

RQ1. How would we characterize Turkish preschoolers' HLEs and CLEs?

RQ2.a. Are there differences in the preschoolers' spring term early literacy skills (receptive vocabulary, expressive vocabulary, phonological awareness, and CAP) across classrooms?

RQ2.b. Is the CLE associated with the differences in the preschoolers' spring term early literacy skills?

RQ2.c. Which child-level variables (mother's education level, HLE, and fall term early literacy scores) explain the differences in the preschoolers' spring term early literacy skills?

RQ2.d. Is the CLE related to the association of the child-level variables (mother's education level, HLE, and fall term early literacy scores) with the preschoolers' spring term early literacy skills?

3 | METHOD

3.1 | Participants

Two waves of longitudinal data were collected from preschoolers to enable the examination of early literacy development as related to HLE and CLE. Early literacy tests were administered twice in the fall and spring semesters of the preschool year. The duration of the data collection process was about 8 months. The participants in the first wave of data collection were 168 children attending private preschools in a large suburban area. It was decided to select participants from private preschools in order to be able to use the Concepts about Print test (Şimşek-Çetin & Alisinanoğlu, 2013), which tests the aspects of letter knowledge that are not taught in public preschools. The children came from 20 classes. The children's average age in this phase was 66.44 months (range 60–72 months, $SD = 3.87$). Fifty-six percent were girls and 44% were boys. None had any reported hearing, vision, speech, or mental problems. All were monolingual Turkish speakers. During the second wave of data collection, two girls and one boy were absent because of health problems. The children's average age was 70.08 months (range 63–75 months, $SD = 3.82$) for the second wave. Three hundred and forty consent forms and questionnaires were distributed to the children's parents; 259 (76%) questionnaires were returned and 167 provided consent.

The adults involved in the study were the children's parents and, indirectly, the preschool teachers ($n = 27$). Seven classes had two teachers each; 23 of the 27 teachers graduated from university, and four had a master's degree in

TABLE 1 Parental demographic information

	Mother		Father	
	f	%	*F*	%
Questionnaire completed by	197	75.5	64	24.5
Educational level of parents*				
Primary school	41	15.7	39	15.0
Middle school	35	13.4	41	15.7
High school	85	32.5	82	31.4
University	82	31.4	78	29.9
Postgraduate	18	7.0	21	8.0
Age group of parents*				
21—25	20	7.7	9	3.4
26—30	81	31.0	47	18.0
31—35	76	29.1	98	37.5
36—40	62	23.8	71	27.2
41–45	17	6.5	23	8.8
45+	5	1.9	13	5.0

*Both mothers' and fathers' demographic information was collected through a demographic information questionnaire.

education. As part of the CLE observation tool, the researcher briefly interviewed the teachers to obtain information to supplement the data gathered from the classroom observations. The HLE questionnaires were mostly completed by the mothers (78%), who had a mean age of 37.48 ($SD = 4.01$). Most parents (mothers: 52%; fathers: 60%) graduated from a university (see Table 1). The monthly household income of most families (72%) was above 6,000 TL (±1,585).[1]

3.2 | Instrumentation

The data were collected using two sets of instruments. The first set was used to assess the preschoolers' early literacy skills and the second to gain information about the children's HLE and CLE.

3.2.1 | Early literacy skills assessment instruments

Phonological awareness scale of early childhood period

The Phonological Awareness Scale of Early Childhood Period was a measure developed in Turkey (Sarı & Acar, 2013) to measure preschoolers' phonological awareness skills. The scale consists of 78 items and eight subscales (recognizing rhyme, beginning sound detection, generating new words, grouping words based on initial sounds, blending phonemes, segmenting a word into its syllables, omitting a word in a compound, and alphabet knowledge), with each subscale including a training item. The total Cronbach's alpha coefficient was 0.96, with variations from 0.78 to 0.97 for the subscales. The eight subscales together explained 59.179% of the variance in preschoolers' phonological awareness.

Turkish expressive and receptive language test

The Turkish Expressive and Receptive Language Test was used to assess children's expressive and receptive vocabulary skills. The test was developed and standardized by Kazak-Berument and Güven (2013) to assess the vocabulary skills of Turkish children aged 2–12 years old. The receptive vocabulary test consists of 104 pictorial cards. Originally, the test was administered to 3,755 children aged 2–13 years old from 61 cities to obtain a nationally representative sample.

[1] (The net minimum wage in Turkey is 1,000 TL, the individual poverty threshold is set at 2.076 TL, and a living wage for a four-person family is 4,626 TL. According to the Ministry of Labour and Social Security (*MLSS*, 2015),

The Cronbach's alpha coefficients were 0.99 for the total test and 0.96 for the 5-year-old group. The expressive test, which is composed of 80 words, was piloted with 3,467 children. The Cronbach's alpha coefficients were 0.98 for the total subscale and 0.95 for the 5-year-old group (Kazak-Berument & Güven, 2013).

Control list for the evaluation of the print awareness of preschool children

Şimşek-Çetin and Alisinanoğlu (2013) adapted the Clay's (1972) Concepts About Print tasks to the Turkish context, developing a control list to evaluate the print awareness of Turkish preschool children. The list contained 17 items and two factors. The two-factor structure explained 73.71% of the variance, of which 45.26% was related to the book concepts factor and 28.45% to the CAP factor. The Cronbach's alpha value was 0.78 for both administrations.

3.2.2 | Literacy environments assessment instruments

Home literacy environment questionnaire

The Home Literacy Environment Questionnaire (HLEQ) was developed by Marjanovič Umek et al. (2005) to assess different aspects of the home literacy context and interactions that support children's language development. The questionnaire represents five dimensions with 32 items that together explain 54.1% of the variance. The HLEQ was translated and adapted into Turkish by Altun (2013). The Cronbach's alpha coefficient was 0.89 for the Turkish version (varying from 0.74 to 0.84). The five factors include 32 items, and these factors explained 48.7% of the variance for the Turkish version.

Early language and literacy classroom observation (ELLCO-Pre-K) tool

The tool consists of 19 items with five main sections: classroom structure, curriculum, the language environment, books and book reading, and print and early writing (Smith et al., 2012). Smith et al. (2012) reported Cronbach's alpha scores of 0.86 for the General Classroom Environment subscale and 0.92 for the Language and Literacy subscale. In the present study, the Cronbach's alphas were 0.91 for the total tool, 0.88 for the General Classroom Environment subscale, and 0.93 for the Language and Literacy subscale.

3.3 | Design

The current study employed Johnson's (2001) longitudinal-predictive research design for nonexperimental quantitative research. Johnson (2001) classified nonexperimental quantitative research using two dimensions, research objective and time (cross-sectional, longitudinal, and retrospective). Children were followed over time, and data were collected in two waves. Data were made up of two levels: the child (mother's education level, HLE, and fall and spring early literacy scores) and the classroom (CLE).

3.4 | Data analysis

Multilevel linear modeling (MLM) was used to analyze these nested data. A large sample size is suggested for MLM analyses. In the related literature, there are different recommendations for the sample size. Hox (2010) pointed out that sample size is an important issue for more accurate estimates, standard errors, and the power of the analysis for the results; he recommended 100 groups with 10 individuals each. Kreft, Kreft, and de Leeuw (1998) indicated that 20 groups are appropriate for determining the intraclass correlation. Snijders and Bosker (1999) stated that a minimum of 10 groups would be required for multilevel modeling because having at least this number of groups tends to show a small bias for level one variance components and level two regression parameters. In the present study, there were 20 groups and 165 children. The study group size was relatively small but acceptable for multilevel modeling. The normality of the residuals was checked for both level one and level two residuals for full models. The assumption was met for the present study.

The two-level model was used to analyze the children nested within classrooms and to predict their residualized gain from the level two measures of CLE quality scores. Four sets of models were designed for each early literacy

outcome: receptive vocabulary, expressive vocabulary, phonological awareness, and CAP. STATA 14 data analysis and statistical software was used to conduct MLM analyses. The analyses were performed using the "xtmixed-multilevel mixed-effects linear model" command (Rabe-Hesketh & Skrondal, 2008). First, a null model was tested to examine the variation in the outcome scores within and between the classes. The intraclass correlation coefficient (ICC) was calculated for each model. Then, level one and level two variables were entered into the models. The predictors included in the models were grand mean centered. A null model was as follows:

RQ2.a. Level one (child-level) model: $Yij = \beta 0j + eij$

Level two (classroom-level) model: $\beta 0j = \gamma 00 + u0j$

To explore the variances in the preschoolers' spring term early literacy scores (ELS-Spring) in relation to the classroom-level predictor (CLE), a means as outcome model was utilized. The following regression equation was used to test this model:

RQ2.b. Level one (child-level) model: $Yij = \beta 0j + eij$

Level two (classroom-level) model: $\beta 0j = \gamma 00 + \gamma 01\ (\text{CLE}) + u0j$

The random coefficient model was used to examine which of the child-level variables could explain the variance in the ELS-Spring. The following regression equation was used to test the random coefficient model:

RQ2.c. Level one (child-level) model: $Yij = \beta 0j + \beta 1j\ (\text{ELS-Fall}) + \beta 2j\ (\text{HLE}) + \beta 3j\ (\text{DUMMY\_ME}) + eij$

Level two (classroom-level) model: $\beta 0j = \gamma 00 + u0j$

A model with intercepts and slopes as outcomes was used to answer whether there was a classroom-level variable that could predict ELS-Spring and influence the strength of the association between the child-level variables and ELS-Spring. This model allowed for the investigation of the child- and classroom-level variables in one regression equation. The following regression equation was used to test the intercepts and slopes as outcomes model:

RQ2.d. $\textit{Spring term ELSij} = \gamma 00 + \gamma 10\ \textit{ELS-FALL}_{ij} + \gamma\ 20\ \textit{HLE}_{ij} + \gamma\ 20\ \text{DUMMY-ME}_{ij} + \gamma 01\ \text{CLEij} + \text{uoj} + \text{eij}$

3.5 | Data collection procedures

Classroom teachers sent the consent forms to parents, and the study was conducted with children whose parents gave permission to participate. The parents completed the forms at home and returned them in a sealed envelope. The early literacy instruments were administered to each child individually by the first researcher. Because preschoolers have a short attention span, instruments were administered in three separate sessions: (a) vocabulary tests, (b) phonological awareness, and (c) CAP. The same researcher administered the instruments to children outside their classroom in separate rooms that had the common characteristics of being away from the classroom traffic and noise and having child-sized tables and chairs. The ELLCO-Pre-K tool observations were conducted during the fall and spring terms, during 1-month period in each school. After data collection, the ELLCO-Pre-K tool was rated based on the accumulated observational notes and teacher interview data. Five instances of the classroom data from each preschool (25% of the observation data) were also rated by a second rater. The second observer was a preschool teacher with 5 years of teaching experience who was a graduate student attending an ECE program. The interrater agreement was calculated at 85%.

4 | RESULTS

Table 2 presents the main characteristics of the data set. The mother's education level was used only as a dummy coded variable ($M = 0.69$, $SD = 0.46$, 1: graduated at least from university, 0: graduated from high school or college). College offers only 2-year degrees, whereas university covers at least 4 years Bachelor of Science degrees and also graduate programs.

TABLE 2 Descriptive statistics for the data set

Variables	*N*	Min	Max	*M*	*SD*	Skewness	Kurtosis
Child variables (level-1)							
Child's age (months)	168	60	72	66.44	3.87	0.73	0.94
Home literacy environment (HLE)	168	125	185	155.31	14.64	−0.22	−0.40
Phonological awareness/ (PA-1)	167	29	77	49.72	13.02	0.01	−0.31
Phonological awareness (PA-2)	164	33	78	58.97	11.53	−0.02	−0.65
Concepts about print (CAP-1)	168	4	16	9.80	2.71	0.28	−0.24
Concepts about print (CAP-2)	165	5	17	12.10	2.93	0.10	−0.80
Vocabulary receptive (VOC-REC1)	166	67	94	82.40	6.20	−0.54	−0.14
Vocabulary receptive (VOC-REC2)	163	78	98	88.74	4.36	−0.20	−0.11
Vocabulary expressive (VOC-EXP1)	166	45	76	61.04	7.03	−0.33	−0.45
Vocabulary expressive (VOC-EXP2)	163	48	79	66.95	6.12	−0.41	0.25
Classroom variable (level-2)							
Classroom literacy environment (CLE)	20	50	86	70.05	9.21	−0.71	0.99

TABLE 3 Descriptive information concerning home literacy environment questionnaire

Factor name	Number of items	Min	Max	Factor average	Item average[a]
1. Stimulation to use language explanation	11	39	66	57.48	5.22
2. Reading books to the child, visiting a library, and puppet theatre	8	18	46	33.71	4.21
3. Joint activities and conversation	6	16	36	26.97	4.49
4. Interactive reading	3	8	18	14.82	4.94
5. Zone of proximal development stimulation	4	8	24	17.94	4.48
Total	32	125	185	155.31	4.85

[a]7-Point rating scale.

4.1 | HLE characteristics

Table 3 presents descriptive information about the subdimensions in the HLEQ instrument. *Stimulation to use language, explanation* had the highest item average ($M = 5.22$). The total score of the 11 items on the first subdimension ranged from 39 to 66, with a mean of 57.48. The second subdimension; *Reading books to the child, visiting a library, and puppet theater*, had the lowest item average ($M = 4.21$).

Of the parents, 30.4% had more than 201 books in their homes, and 41.1% had between 26 and 100 books, and 6% had fewer than 11 books. The total number of books at home ranged from 0 to 5,000, with a mean of 267. There were between 26 and 50 children's books in most homes (66.5%), and 14.9% had between 11 and 25 children's books. Only 4.2% of preschoolers had more than 100 books, and the same percentage had fewer than 11 books. The total number of children's books ranged from 0 to 500, with a mean of 74. The parents' responses indicated that 30.4% of preschoolers spent 3–4 h a week in shared reading experiences. Although 17.3% of preschoolers spent 1 h or more every day in shared reading activities at home, 2.4% did not have any shared reading experiences.

4.2 | CLE characteristics

The total scores of the *General Classroom Environment Dimension* ranged from 20 to 32, with a mean of 26.55. The item average of the dimension was 3.79. The *Language and Literacy Dimension* ranged from 30 to 54, with a mean of 43.50.

TABLE 4 The descriptive information of ELLCO-Pre-K

Dimensions of the ELLCO-Pre-K	Number of items	Min	Max	Mean	Item average[a]
1. Classroom structure	4	10	19	15.25	3.81
2. Curriculum	3	10	13	11.30	3.76
General classroom environment	7	20	32	26.55	3.79
3. Language environment	4	11	19	15.90	3.97
4. Books and book reading	5	12	23	17.30	3.46
5. Print and early writing	3	7	12	10.30	3.43
Language and literacy dimension II	12	30	54	43.50	3.62
Total	19	50	86	70.05	3.68

[a]5-Point rating scale.

TABLE 5 The results of the intercepts and slopes as outcomes model

Fixed effects	β^a	*SE*	*P*
Intercept	25.30	1.927	0.000
Child-level predictors			
VOC-REC1	0.534	0.033	0.000
HLE	0.036	0.009	0.000
DUMMY-ME	0.773	0.322	0.017
Classroom-level predictor			
CLE	0.054	0.017	0.001
Model fit statistics			
Deviance	606.500		
AIC	620.500		
BIC	632.242		

LR test versus linear model: chibar2 (01) = 148.05, Prob ≥ chibar2 = 0.0000.
[a]Unstandardized regression coefficients are reported.

The language environment section had the highest item average (3.97), whereas the print and early writing section had the lowest item average (3.43) in the ELLCO-Pre-K sections. The mean scores of all sections and dimensions were above the 2.5 midpoint (see Table 4).

4.3 | Receptive vocabulary

The null model shows that the grand mean of the preschoolers' spring term receptive vocabulary (VOC-REC2) scores ($\gamma 00$) was statistically different from zero, with an ICC of 0.168. The means as outcome models reveal that the CLE was significantly and positively associated with the preschoolers' VOC-REC2 ($\gamma = 0.119$, $SE = 0.024$, $P < 0.001$).

The three child-level predictors were entered into the model. The random coefficient model show that the fall term VOC-REC1 was significantly and positively associated with the VOC-RE**C2** ($\gamma = 0.534$, $SE = 0.033$, $P < 0.001$). The VOC-REC1 slope coefficient indicates that a higher VOC-REC1 score corresponded to a higher VOC-REC2 score. The HLE slope coefficients ($\gamma = 0.038$, $SE = 0.009$, $P < 0.001$) reveal that children with a higher HLE score had a better VOC-REC2 score. The mother's education level slope coefficients ($\gamma = 0.891$, $SE = 0.322$, $P = 0.006$) indicate that children of university graduates had higher VOC-REC2 scores.

According to the final model, both the classroom- and child-level predictors were significantly and positively associated with the VOC-REC2 scores. Table 5 presents the results.

TABLE 6 The results of the intercepts and slopes as outcomes model

Fixed effects	β^a	*SE*	*P*
Intercept	19.923	1.23	0.002
Child-level predictors			
VOC-EXP1	0.628	0.041	0.000
HLE	0.080	0.019	0.000
DUMMY-ME	1.37	0.642	0.032
Classroom-level predictor			
CLE	0.078	0.029	0.018
Model fit statistics			
Deviance	832.789		
AIC	846.789		
BIC	868.573		

LR test versus linear model: chibar2 (01) = 96.87, Prob ≥ chibar2 = 0.0000.
[a]Unstandardized regression coefficients are reported.

Similar to the results from the random coefficient model, children with higher VOC-REC1 scores had higher VOC-REC2 scores ($\gamma = 0.534$, $SE = 0.032$, $P < 0.001$). The results reveal that children whose mothers graduated from a university ($\gamma = 0.773$, $SE = 0.322$, $P = 0.017$) and who came from a more enriched HLE ($\gamma = 0.036$, $SE = 0.009$, $P < 0.001$) had higher VOC-REC2 scores. The CLE together with child-level predictors was still positive and significantly related to the VOC-REC2 scores ($\gamma = 0.054$, $SE = 0.017$, $P = 0.001$). The results reveal that the coefficient of the CLE was slightly lower than the means as outcome model ($\gamma = 0.119$, $SE = 0.024$, $P < 0.001$), but the direction and significant relation are the same as in the previous model. The intercepts and slopes as outcomes model shows that 41% of the between-classroom variance in the mean VOC-REC2 scores can be explained by including the CLE.

4.4 | Expressive vocabulary

The grand mean of the preschoolers' spring term expressive vocabulary (VOC-EXP2) scores ($\gamma 00$) was statistically different from zero ($SE = 0.59$, $P < 0.001$). The results reveal that there were significant differences among classrooms, with an ICC of 0.196. The means as outcome model reveals that the CLE was significantly and positively associated with the VOC-EXP2 scores ($\gamma = 0.207$, $SE = 0.045$, $P < 0.001$).

The random coefficient model reveals that fall term expressive vocabulary (VOC-EXP1) scores were significantly and positively associated with VOC-EXP2 scores ($\gamma = 0.632$, $SE = 0.042$, $P < 0.001$). The VOC-EXP1 slope coefficient shows that a higher VOC-EXP1 score corresponded to a higher VOC-EXP2 score. The HLE slope coefficients show that children with a higher HLE score had a better VOC-EXP2 score ($\gamma = 0.085$, $SE = 0.019$, $P < 0.001$). The HLE was significantly and positively associated with the VOC-EXP2 score. The mother's education level slope coefficients ($\gamma = 1.53$, $SE = 0.642$, $P = 0.017$) were significantly and positively related to VOC-EXP-2; children whose mothers graduated from a university had higher VOC-EXP-2 scores.

The final model reveals that both the classroom- and child-level predictors were significantly and positively related to the VOC-EXP2 scores. The VOC-EXP1 scores ($\gamma = 0.628$, $SE = 0.041$, $P < 0.001$) were significantly and positively related to the VOC-EXP2 scores. The children whose mothers had a bachelor's degree ($\gamma = 1.37$, $SE = 0.642$, $P = 0.032$) and who came from a more enriched HLE ($\gamma = 0.080$, $SE = 0.019$, $P < 0.001$) had higher VOC-EXP2 scores. The CLE was still positive and significantly related to the VOC-EXP2 scores ($\gamma = 0.078$, $SE = 0.029$, $P = 0.018$) together with the child-level predictors. Table 6 shows that the coefficient of the CLE was slightly lower than the means as outcome model ($\gamma = 0.207$, $SE = 0.045$, $P < 0.001$), but the direction and significant relation replicate those from the previous model.

TABLE 7 The results of the intercepts and slopes as outcomes model

Fixed effects	β^a	*SE*	*P*
Intercept	8.11	1.20	0.011
Child-level predictors			
PA-1	0.757	0.025	0.000
HLE	0.050	0.021	0.021
DUMMY-ME	1.51	0.738	0.041
Classroom-level predictor			
CLE	0.058	0.029	0.043
Model fit statistics			
Deviance	874.230		
AIC	886.230		
BIC	904.866		

LR test versus linear model: chibar 2 (01) = 81.22, Prob ≥ chibar2 = 0.0000.
[a]Unstandardized regression coefficients are reported.

The intercepts and slopes as outcomes model shows that approximately 47% of the variance in the between-classroom difference in the mean VOC-EXP2 scores can be explained by including the CLE.

4.5 | Phonological awareness

The one-way random effects ANOVA model shows that the grand mean of the preschoolers' spring term phonological awareness (PA-2) scores ($\gamma 00$) was statistically different from zero ($SE = 0.121$, $P < 0.001$). The results reveal that there were significant differences between classrooms that had an ICC of 0.257. The means as outcome model reveals that the CLE was significantly and positively associated with the PA-2 scores ($\gamma = 0.458$, $SE = 0.079$, $P < 0.001$). The random coefficient model shows that fall term phonological awareness (PA-1) scores were significantly and positively associated with the PA-2 scores ($\gamma = 0.764$, $SE = 0.025$, $P < 0.001$). The PA-1 slope coefficient reveals that a higher PA-1 score corresponded to a higher PA-2 score. The HLE slope coefficients ($\gamma = 0.056$, $SE = 0.021$, $P = 0.010$) show that children with a higher HLE score had a better PA-2. Thus, HLE was significantly and positively associated with the PA-2 scores. Similarly, the mother's education level slope coefficients ($\gamma = 1.68$, $SE = 0.740$, $P = 0.023$) were significantly and positively related to PA-2; children whose mothers graduated from a university had higher PA-2 scores.

The final model showed that both classroom- and child-level predictors were significantly and positively related to the PA-2 scores. Table 7 presents the results. Children with higher PA-1 scores had higher PA-2 scores ($\gamma = 0.757$, $SE = 0.025$, $P = 0.001$). Children whose mothers graduated from a university ($\gamma = 1.51$, $SE = 0.738$, $P = 0.041$) and who came from a more enriched HLE ($\gamma = 0.050$, $SE = 0.021$, $P = 0.021$) had higher PA-2 scores. The CLE together with child-level predictors was still positive and significantly related to the PA-2 scores ($\gamma = 0.058$, $SE = 0.029$, $P = 0.043$). The results reveal that the coefficient of the CLE was slightly lower than the means as outcome model ($\gamma = 0.458$, $SE = 0.079$, $P < 0.001$), but the direction and significant relation remain the same. The R_2 calculation shows that 47% of the variance in the between-classroom difference in mean PA-2 scores can be explained by including the CLE.

4.6 | Concepts about print

The null model shows that the grand mean of the preschoolers' spring term CAP (CAP-2) scores ($\gamma 00$) was statistically different from zero ($SE = 0.333$, $P < 0.001$), with an ICC of 0.348. The results indicate that there were significant differences between classrooms. The means as outcome model shows that the CLE was significantly and positively associated with the preschoolers' CAP-2 scores ($\gamma = 0.103$, $SE = 0.023$, $P < 0.001$).

TABLE 8 The results of the intercepts and slopes as outcomes model

Fixed effects	β^a	*SE*	*P*
Intercept	4.588	0.428	0.001
Child-level predictors			
CAP-1	0.624	0.042	0.000
HLE	0.002	0.006	0.684
DUMMY-ME	0.583	0.215	0.007
Classroom-level predictor			
CLE	0.039	0.017	0.026
Model fit statistics			
Deviance	476.729		
AIC	490.729		
BIC	511.428		

LR test versus linear model: chibar2 (01) = 34.52, Prob ≥ chibar2 = 0.0000.
[a]Unstandardized regression coefficients are reported.

The random coefficient model shows that the fall term CAP (CAP-1) scores were significantly and positively associated with the CAP-2 scores ($\gamma = 0.634$, $SE = 0.042$, $P < 0.001$). The CAP-1 slope coefficient reveals that higher CAP-1 scores corresponded to higher CAP-2 scores. The slope coefficient for mother's education ($\gamma = 0.608$, $SE = 0.215$, $P = 0.005$) was significantly and positively related to the CAP-2 scores. The HLE slope coefficients ($\gamma = 0.001$, $SE = 0.006$, $P = 0.076$) were not significantly associated with the CAP-2 scores.

The final model shows that both the classroom- and child-level predictors and the CAP-1 scores were significantly and positively related to the CAP-2 scores. Table 8 presents the full results. Children with higher CAP-1 scores had higher CAP-2 scores ($\gamma = 0.624$, $SE = 0.042$, $P < 0.001$). Furthermore, children whose mothers graduated from a university scored higher ($\gamma = 0.583$, $SE = 0.215$ $P = 0.041$). HLE ($\gamma = 0.002$, $SE = 0.006$, $P = 0.684$) was not significantly associated with the CAP-2 scores. The CLE together with the child-level predictors was still positive and significantly related to the CAP-2 scores ($\gamma = 0.039$, $SE = 0.017$, $P = 0.026$). The results reveal that the coefficient of the CLE was slightly lower than the means as outcome model ($\gamma = 0.103$, $SE = 0.023$, $P < 0.001$), but the direction and significant relation are the same as in the previous model. The R_2 calculation indicates that 56% of the variance in the between-classroom difference in mean CAP-2 scores can be explained by including the CLE.

5 | DISCUSSION

The present study provided descriptive data about the HLE and CLE of high SES Turkish children attending private preschools in a large suburban area and investigated the relationship of those environmental features to the children's receptive and expressive vocabulary, phonological awareness, and CAP. The findings indicated that the children's home experiences offer more support for oral language than for print-related experiences. Although most participants had a high SES, the frequency of book reading, visits to the library, and scores on other print-related experiences were lower than expected, confirming previous reports about Turkish preschoolers' limited printed-related home literacy experiences (Altun, 2013; Çakmak & Yılmaz, 2009). Similarly, the CLE had low scores for print and early writing, book reading, and book corners.

These results suggest that the predominant oral literacy culture (Ungan, 2008; Yıldız, 2008) in Turkey is reflected in both the classroom and home environments. The current study revealed that the quality of the CLE varied between and within the participating private school classrooms. The studied schools applied the same curriculum and had similar physical resources, yet the CLE scores varied across classrooms, suggesting the teacher plays a key role in

applying the curriculum effectively and using the available sources to prepare a well-designed classroom environment. This interpretation is also consistent with the literature (Handler, 2010; Roehrig, Kruse, & Kern, 2007).

Turkish private schools apply the MONE program more flexibly than public preschools and address a longer list of literacy development goals; they also have sufficient materials and other resources. However, the reading readiness perspective adopted by the MONE program influences the implementation of their literacy instruction. The preschools in the current study occupied a middle ground between the focus on reading readiness predominant in the national curriculum and the emergent literacy perspective. All participating preschool programs aimed to foster children's familiarity with letters and wanted to adopt emergent literacy approaches in their curriculum; however, most schools lacked a clear idea of developmentally appropriate activities and environmental features that would support their aims. Three of the five schools received support from first-grade teachers to plan letter recognition activities, but the teachers lacked confidence in supporting children's letter knowledge. These current observations are supported by previous research conducted with in-service (Ergül et al., 2014; Kerem & Cömert, 2005; Parlakyıldız & Yıldızbaş, 2004) and preservice (Altun & Tantekin-Erden, 2016) preschool teachers showing that the teachers did not have adequate knowledge about children's early literacy development or instructional methods to foster child development. The in-service teachers requested more in-service training (Kerem & Cömert, 2005; Uşun & Cömert, 2003), and it was suggested that preservice teachers take undergraduate courses related to children's language and literacy development (Altun & Tantekin-Erden, 2016).

Four sets of multilevel models were tested to identify predictors for each of the early literacy skills assessed. The null model findings reveal that 17% of total variability in the VOC-REC2 scores and 20% of total variability in the VOC-EXP2 scores could be attributed to differences between classrooms. Similarly, Guo et al. (2010) reported the ICC value for vocabulary as 0.15 and indicated that the highest variation was related to the child level. Another study found 8% of total variability in receptive vocabulary and 13% of total variability in expressive vocabulary could be attributed to child-level variables (Gonzalez et al., 2014). Although there was significant variation in children's vocabulary among classrooms, most variation could be localized at the child level.

The MLM results showed that the fall term vocabulary score, HLE, and mother's level of education were positively associated with both VOC-REC2 and VOC-EXP2 scores. Furthermore, a positive correlation was found between the CLE and the spring term vocabulary scores. The current findings are consistent with previous studies that indicated that mothers' level of education affected the quality and quantity of maternal speech and the level and quantity of conversation with their child or children (Dickinson, McCabe, Anastasopoulos, Peisner-Feinberg, & Poe, 2003; Pan, Rowe, Singer, & Snow, 2005; Westerlund & Lagerberg, 2008).

The HLE findings are consistent with previous studies (DeTemple & Snow, 2003; Kim et al., 2015; Rodriguez et al., 2009) that showed that HLE has multiple components, each of which relates to children's vocabulary development. The children's fall term vocabulary scores are positively related to the spring term vocabulary scores. These findings are in line with previous studies, such as that by Connor, Morrison, and Slominski (2006), who found that children who have lower vocabulary scores in the fall term showed lower vocabulary growth in the spring term, and Guo et al. (2010), who reported that fall term vocabulary scores are a predictor of spring term vocabulary gains. Hindman, Skibbe, Miller, and Zimmerman (2010) found that children who have weaker vocabulary scores at the beginning of the program have higher growth rates than other children, perhaps because most of their sample came from disadvantaged families where the Head Start program helped to close the initial vocabulary gap. The present study, with its population of nondisadvantaged children, suggests that children's vocabulary development is a cumulative process; therefore, their initial word repertoire is important for vocabulary gains (Schady, 2011). At the classroom level, the literacy environment quality is positively linked to the children's vocabulary scores. These findings are in line with previous studies (Guo et al., 2010; Hindman et al., 2010; Xu et al., 2014). Bryant, Burchinal, Lau, and Sparling (1994) found that the quality of the classroom environment was linked to preschoolers' language gains independent of their home environment. The current study showed that children's vocabulary development is related to both child- and classroom-level variables.

To analyze the nested data, four sets of MLM were applied to the phonological awareness scores. The current findings showed that the mother's level of education (a bachelor's degree) was positively associated with children's

phonological awareness skills. This positive relation is plausible because various studies have shown that a mother's education level influences her use of language and communication skills with a child (e.g., Pan et al., 2005; Westerlund & Lagerberg, 2008). This exposure to enriched oral language gives a child an opportunity to hear, identify, and differentiate different sounds in oral language. Previous studies (Goswami, 2001; Walley, Metsala, & Garlock, 2003) also discussed the connection between children's vocabulary and phonological awareness skills.

The studies indicated that children who have a large word repertoire need to organize and construct schemas to store it. The organization process can enable children to manipulate words and improve their phonological awareness (Senechal, Ouellette, & Rodney, 2006). The current findings showed that children's PA-1 scores are related to their PA-2 scores, indicating that children's early or preschool entrance skills are important and that initial gaps tend to last throughout the preschool education year. This situation is reminiscent of the *Matthew effect* ("the rich get richer and poor get poorer"); that is, children who have strong early literacy skills are more likely to take advantage of later educational opportunities (Stanovich, 1986).

Lastly, for the comparison of the early literacy ICC scores, the CAP scores had the highest ICC value, meaning that there was a high variation in CAP scores among the classrooms, confirming previous reports (Dobbs-Oates, Kaderavek, Guo, & Justice, 2011; Guo et al., 2010). It is possible that classroom-level factors, such as instruction and environment, are more related to CAP than other early literacy skills are. The interpretation is plausible for the Turkish context because children's print-related sources and experiences at home are more limited than their oral language experiences. Oral literacy culture is more dominant in Turkey, so it is logical that children's CAP scores vary more by classroom. When comparing the models, the Akaike information criterion (AIC) and the Bayesian information criterion (BIC) values of the CAP model are smaller than those of other outcomes, suggesting a better fit than for the other models (Symonds & Moussalli, 2011).

However, the HLE is not associated with CAP scores. This finding is partially supported by the existing literature (Korat et al., 2007; Neumann, Hood, & Ford, 2013). Studies have indicated a positive correlation between children's CAP and mother–child *print referencing* interactions during play and other daily activities (Justice & Ezell, 2004; Neumann et al., 2013). The responses to the HLE questionnaire indicate that the children were rarely encouraged or supported when it came to exposure to CAP at home. In the current study, the children's fall term CAP scores were associated with their HLE scores. Their initial scores mainly came from book concepts; an examination of the spring scores showed that the children gained more points in print knowledge. From this point of view, the CLE can be a print-related experience resource for children who have limited home print experience. The interpretation is plausible for the Turkish context because children have limited print-related sources and experiences at home, compared with oral language experiences.

Therefore, Turkish people should be encouraged to develop reading habits to support their children. An OECD report (2012) presented some successful national campaigns to improve the value of reading and develop reading habits in society. These programs aimed to shape societies' attitudes toward reading and its habits and to enhance a country's scholarly culture. For example, Poland devised the nationwide "*All of Poland Reads to Kids*" campaign, implemented since 2002 to increase parent–child shared reading experiences and raise awareness of the value and contribution of book reading to children's literacy development. Famous people and popular artists participated in the campaign, visiting preschools and reading books to children. Social media, TV shows, and advertisements broadcast celebrities engaged in reading activities with children as public service announcements. Seminars and conferences were held for parents. The campaign was successful; it was replicated in the Czech Republic under the slogan "*Every Czech Reads to Kids*" and then expanded to the whole of Europe ("*All of Europe Reads to Kids*"; OECD, 2012). Campaigns supporting a society's literate culture can be an important factor in developing an individual's literacy habits, suggesting the value of a nationwide program designed to break the vicious circle of illiteracy in Turkish people and to foster children's shared reading experiences.

The present study reveals that Turkish children are exposed to limited print-related resources and activities at home. Furthermore, the national literacy policy for early education specifies that children only need to start to learn letters at 6 years of age, in the first grade. Some educators have supported the Turkish system by invoking the Finnish case, as there is also no formal literacy instruction in preschool education in Finland. The Finnish language has a

shallow orthography, as in Turkish and children are not expected to learn to read or write in Finnish preschools (Leppänen, Nieme, Aunola, & Nurmi, 2006). Despite the lack of formal literacy instruction in preschools, Finnish children's reading scores are above the international average (PISA, 2009, 2012, 2015). Finland differs from Turkey, though in that Finnish children have enriched print experiences at home and parents encourage their print interest and scaffold their learning (Brueggeman, 2008; Korkeamaki, Dreher, & Pekkarinen, 2012). The scholarly culture in Finland is higher than in Turkey (e.g., Brueggeman, 2008; Mäkinen, 2015). Korkeamaki et al. (2012) indicated that 72% of Finnish children can recognize all the letters in the alphabet at the beginning of preschool, and only 2% of the children could not recognize any letters. Furthermore, 77% of Finish preschoolers can read when entering first grade (Korkeamaki et al., 2012). Preschool education enrollment is high, and pre-primary school education for 6-year-old children has been compulsory since August 2015. Furthermore, children aged 0–6 years have access to daycare, and daycare is free for low-income families (Heinämäki, 2008). In Turkey, ECE is not compulsory, and the schooling rate is 33.28 for children aged 3–5 years (MONE, 2016). Even though most children participating in the current study came from high SES families, they had limited home print-related experiences. This situation could be worse for children from low SES families. The advantages offered by the shallow Turkish orthography are undercut if children encounter a limited print environment. Therefore, children need to be actively exposed to a rich literacy environment and natural learning experiences to foster both oral and code-related early literacy skills.

6 | LIMITATIONS

The present study had three specific limitations. First, it was conducted with children attending private schools, and most were from high SES families. Further studies are needed to examine children's early literacy development in families from varying SES levels and different school types. Second, the HLE was measured using parent questionnaires. Further studies can examine children's HLE in more detail using observations and interviews. Third, the CLE was used to gain information regarding overall classroom literacy quality. A more targeted observation process would allow the researcher to determine literacy at the child level, taking into account that some children, especially those who have low motivation or low literacy skills, are less likely to benefit from classroom resources and teacher interactions. Further studies should investigate children's CLEs at both the classroom and individual levels. This would facilitate a clearer interpretation of the relationship between the classroom literacy context and the children's early literacy skills.

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