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A Multidimensional–Multilevel Approach to Literacy-Related Parental Involvement and Its Effects on Preschool Children's Literacy Competences: A Sociopedagogical Perspective

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Abstract: From a sociopedagogical perspective, literacy development in preschool is conceptualized as a social phenomenon. Sociopedagogical models emphasize the connection between family and school processes to foster children's literacy competences and parental involvement. Although contemporary models regarding parental involvement reflect its multidimensional and multilevel nature, research focusing on early literacy mainly addresses certain parenting practices, especially at home, and their association with a few literacy skills. Based on Bronfenbrenner's bioecosystemic theory, Epstein's model of overlapping spheres of influence and the typology of parental involvement as well as Rohde's Comprehensive Emergent Literacy Model, the present study investigates how different dimensions and components of parental involvement interact to affect young children's literacy competences. We investigate the complex relationships among all dimensions of parental involvement and their association with children's literacy outcomes. Additionally, we explore the role of several contextual factors (children's age, parental education, urbanity, number of children's books) in these associations. Parents of 214 typically developing children aged 4–6 years filled in four parent-report scales developed and validated for measuring the different dimensions of parental involvement and children's literacy competences. Results illustrate how multilevel parental practices mediate the effect of literacy-related parental perceptions and family–school relationships on children's literacy competences. Among the contextual factors, only maternal education was found to have a robust, albeit indirect, effect on literacy outcomes. Implications about the school's role and strategic planning in promoting literacy-focused parental involvement are discussed.

Keywords: early literacy competences; parental involvement; parent perceptions and practices; parent–teacher relationship; preschool

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1. Introduction

From a sociopedagogical perspective, a primary objective of the school with reference to 21st-century learning is to provide children, as early as possible, with the tools to develop an understanding of their social, physical, and mental worlds so as to actively engage in meaningful interactions with their environment [1,2]. Language, as a symbolic system, is one of the most powerful tools to promote communication, a principal component of the 21st-century competences that new pedagogies, curricula, and instruction should invest in to prepare children and youth for the complex demands of life and work in a rapidly changing society [3]. Competence-based education contributes to lifelong learning by promoting social interaction and improving the way in which people overcome difficulties, starting from an early age, given the fact that the preschool period is significant for the development of key competences [4]. Incorporating a combination of knowledge, skills, and attitudes, key competences are those that promote personal development, social inclusion, and active citizenship for each individual. Within this framework, literacy competences are a top priority since they constitute the basis for further learning and communication [5].

Development of 21st-century competences, including literacy, necessitates a systemic approach to learning, which considers children's funds of knowledge, invests in positive relationships, and establishes continuity in children's education and learning. Collaboration between contexts of children's everyday experiences, especially school and family, is a prerequisite to making learning meaningful and promoting holistic development and well-being. Family and early childhood education settings are primarily learning contexts for preschool children, and the quality of the processes within these environments is related to children's language development [6,7]. Sociopedagogical models emphasize the connection between family and school processes to foster children's literacy competences and parental involvement; collaboration transforms interactions and relationships among stakeholders into a collaborative network that is committed to the vision of the school community as a community of learning [8,9]. A strong sense of community allows stakeholders to benefit from interactions with one another.

Bronfenbrenner's bio-ecosystemic theory avails a valuable theoretical framework that assists us in better comprehending and investigating the social construction of literacy. According to Bronfenbrenner [10], school efforts to promote parental involvement have a pivotal role in establishing continuity and quality of children's educational experiences in everyday settings that constitute the microsystem by building on a strong mesosystem that supports holistic development in general and mastery of literacy skills in particular [11,12]. This is of particular importance with reference to literacy development, as proximal processes have a crucial role in children's literacy competences, which are established and flourish at the crossroads of children's microsystems [8]. Literacy development "nests" within the proximal processes and evolves as these interactions increase in complexity over time. At the same time, as all parties interact and collaborate, they increase in skill level and attentiveness to each other's needs [11]. Within this line of thought, to understand the way literacy competences are developed, studies should account for the proximal processes and the contextual factors that may shape the quality and quantity of these processes to determine literacy development. Proximal processes take place both at school and in the family context. From the family perspective, literacy-related parental involvement could be defined as the way parents and other members of the family respond to children's literacy development and collaborate with the school on literacy issues.

However, research focusing on early literacy fails to capture the interaction between multifaceted literacy-related parental involvement indices and children's literacy competences. Initially, researchers investigated parental involvement in children's literacy, focusing either on socioeconomic criteria [13–15] or on specific practices, mainly the frequency of reading books with children [16]. The tendency to focus primarily on reading-related parental involvement practices seems to reflect the dominant belief that writing is a school activity and, therefore, inappropriate for parent–child interactions [17], reflecting the distinct roles attributed to family and school with regard to literacy development. Oral language skills were also excluded from these studies as oral language did not fit in the earlier models of literacy development.

Subsequently, research interest has started to focus on a broader array of parent–child activities and literacy dimensions [18,19], revealing that different parental involvement practices affect different literacy components, such as language skills [20]. For example, parent–child interactions during reading, focusing on story meaning, were consistently associated with improvements in oral language [21,22], while interactions regarding "formal instruction" (e.g., learning letters) appeared to have a greater effect on literacy skills related to "code cracking" [23]. Van Voorhis et al. [24], after a thorough review of 52 rigorously selected studies from the period 2002–2012, argue that it is still unclear how parents influence children's literacy outcomes, especially which dimensions of parental involvement impact children's literacy skills and emphasize the need for further systematic research. In addition, they suggest that studies should examine the father's role. Moreover, by identifying young children's literacy profiles, theoretical models on literacy have started to promote a

more holistic competence-based notion of literacy development and the importance of a cross-context contribution of the social environment [25,26].

However, to our knowledge, apart from Penderi and Papanastasatou's study [8], no other research design has incorporated a competence-based approach to literacy outcomes in preschool education. Regarding the corresponding Greek literature, relevant research is scarce, especially with reference to the preschool period [8,27]. Taking into account that the new Greek curriculum [9] for preschool education has (a) introduced a competence-based approach to educational outcomes, (b) identified the importance of literacy to promote communication and children's holistic development and education, and (c) laid emphasis on parental involvement and family–school partnership as integral parts of the sociopedagogical mission of the preschool education, it is imperative to investigate how new insights in literacy-related parental involvement may relate to early literacy competences.

Within this line of thought, we present a new perspective regarding the holistic nature of early literacy competence-based learning and the multifaceted cross-context notion of literacy-related parental involvement through an interdisciplinary sociopedagogical approach. Accordingly, the study aims to investigate the complex relation between this new consideration of multiple components of literacy-related Home Learning Environment and competence-based literacy outcomes.

1.1. A Holistic Approach to Young Children's Literacy Competences

According to the Council of Europe [28], every person needs to develop four dimensions of literacy competences: speaking, listening, reading, and writing. When we refer to literacy outcomes in the preschool age, the need to follow a holistic approach that takes into consideration different components of emergent literacy competences is particularly stressed [26,29,30]. Most of the existing models tell only part of the story, not only because they focus on discrete skills but also because they fail to incorporate the perspective of the environment surrounding the development of literacy competences and their developmental dimensions [26]. Revisiting research findings from early models of literacy unveils the complexity of early literacy development and stresses the need for a more comprehensive conceptualization of literacy acquisition. To portray the heterogeneity of early literacy skills among preschool children, a number of researchers include both oral language and code-related literacy skills [25,31,32].

The Comprehensive Emergent Literacy (CEL) model proposed by Rohde [26] adopts a holistic and systemic approach to literacy development that attempts to describe early literacy as an interactive process, not just a series of individual elements [33]. Components of early literacy, that is, language, print awareness, and phonological awareness, are presented schematically with circles that intersect, showing that certain skills develop at the interface of different components of the model while surrounded by environmental indicators that form the context of literacy development, namely culture, community, and demographics.

Oral language includes understanding and using vocabulary/semantics, morphosyntactic structures, pragmatics, as well as background knowledge. Print awareness includes alphabet knowledge and concepts of print that lead to word identification. Phonological awareness includes skills like rhyming and segmenting sounds that are closely related to listening comprehension. A basic strength of the model is that it highlights the relationship and overlap of skills and knowledge between these major components. Writing, the fourth component of the model, is determined by the reciprocal interaction of the other three components. Being situated at the center of the model, writing is the way that children show how they master knowledge and skills regarding literacy concepts, as it includes all the pieces of the model.

However, language and literacy competences are more than knowledge and skills. They include the ability to draw on psychosocial resources (including skills and attitudes) in a specific context [34]. Accordingly, one limitation of the CEL model is that it does not lay emphasis on the third component of literacy competences, namely the attitudes children

develop in relation to literacy concepts. However, children's attitudes towards literacy in the early years are a critical aspect of early literacy development. As Penderi et al. [2,9] stress, knowledge describes the "what" of learning, skills denote the "how" of learning, and attitudes support the "why" of learning, providing a holistic notion of the learning experience. Knowledge, skills, and attitudes concerning oral and written communication are harmoniously intertwined and interact to support children's literacy development. Positive attitudes towards literacy have crucial relevance for developing a lifelong literacy learning mindset in students. In other words, if these early language and literacy experiences are exciting and enjoyable for a child, that child is likely to continue feeling that way about literacy throughout life and develop a positive stance towards lifelong literacy development. Children develop literacy learning attitudes within a large learning ecosystem, starting at home and continuing throughout the school years. These positive or negative attitudes continue to develop through adulthood, influencing students' well-being and cognitive development [35].

On the other hand, the way the CEL model incorporates oral language and literacy knowledge and skills is in line with the prospect of the Council of Europe [28] and the conceptualizations of new preschool education curricula that support a unified development of oral language and early literacy competences [2,9]. The literacy competences that children are expected to develop determine the context of expected learning outcomes as described in current preschool education curricula, which incorporate both emergent literacy experiences and literacy-related teaching [2,9]. The learning literacy contents of the new Greek Preschool Education Curriculum (Table 1) are organized under the umbrella of literacy competences, which include knowledge, skills, and attitudes.

Table 1. Examples of literacy competences based on the new Greek Preschool Education Curriculum [2,9].

Competences	Literacy Components	Expected Learning Outcomes
Knowledge	Oral Language	Recognize that oral language constitutes a system that is made up of individual language units (e.g., phonological, morphological)
	Print Awareness	Know how to follow left-to-right and top-to-bottom directions when reading
	Phonological Awareness	Understand the analysis of oral text to individual phonological units (words, syllables, phonemes)
	Writing	Recognize limits of words and sentences in the text
Skills	Oral Language	Make descriptions with logical order and consistency
	Print Awareness	Choose the appropriate materials and media (non-digital and digital) that are necessary for writing in daily life and according to the purpose of the communication
	Phonological Awareness	Analyze the words in forms and combine forms, according to the rules of the language, to produce new words/identify and produce (orally) words that rhyme
	Writing	Produce written texts (digital and non-digital multimodal texts) utilizing various genres of writing (e.g., scribbles, pseudo-letters, invented writing) and various semiotic ways
Attitudes	Oral Language	Take turns when speaking in a group
	Print Awareness	Appreciate the utility of the various semiotic ways to produce written text and evaluate the "permanence" of written texts in time
	Phonological Awareness	Adopt language principles and rules as structure and as a communication system when speaking
	Writing	Respect anyone's/their classmates' effort to be engaged in writing

Based on these developments, the study uses a newly constructed measure [8] that reflects developmentally appropriate early literacy competences, incorporating an array of knowledge, skills, and attitudes that capture the early development of both oral language and emergent literacy learning.

Another limitation of the CEL model [26] concerns the generic perception of the environmental indicators. In particular, it fails to capture the complex relationship between proximal processes in the family and at school and how they interact with other forces, such as personal characteristics and contextual variables, to determine their influence on literacy

development. Moreover, based on a sociopedagogical perspective, a cross-context consideration of processes and contextual influences should be highlighted, especially during early literacy development, when family and school literacy experiences are intertwined, to determine later literacy competences. This may include investigating literacy-related behaviors and factors within and between family and school contexts or focusing on the same indicators within family or school but with a cross-context orientation. From the family perspective, the way parents or other members of the family respond to formal schooling in general or in specific with reference to certain developmental or learning areas, such as literacy, is captured in the conceptualization of parental involvement [12].

1.2. Multidimensional and Multilevel Literacy-Related Parental Involvement

Family contributions to early literacy development have been mainly understood and studied through two basic constructs: family background and the Home Learning Environment (HLE). The HLE is defined as oral and written experiences with print that describe children' s interactions with parents [36] that promote emergent literacy competences. Family background indicators refer to structural variables related to literacy outcomes, such as home language, parental socio-economic status, or parental education level, among others [37,38]. For example, according to research evidence, there are differences in language skills between children from low- and high-socioeconomic status (SES) families [39]. However, even within families of the same SES, there is great variability in children's early language and literacy skills. This finding has brought to the fore the influence of more proximal process indicators that describe the quality of the Home Learning Environment [40,41]. These include parental involvement activities (such as reading to the child; teaching nursery rhymes; verbalizing intentions, emotions, and actions; or playing with phonemes, words, and letters) or the quality of parent–child interactions and storybook exposure [42,43]. Although the family contribution to literacy development is well documented, the way this contribution is conceptualized and empirically tested is relatively restricted. Relevant studies do not account for the recent developments in understanding and measuring parental involvement holistically, as explained earlier. Regarding literacy development, Incognito and Pinto [44] argue that the appropriate environment should not be considered through a specific set of favorable circumstances either in school or the community but as a cross-context condition. New sociopedagogical conceptualizations of parental involvement reflect this cross-context condition [12,45,46].

Contemporary perspectives highlight parental involvement as an umbrella term that regards various processes, behaviors, perceptions, and practices that determine the way parents respond to children's education in general or with reference to specific areas, such as literacy development. On the premises of bio-ecosystemic theory, three basic dimensions of parental involvement are identified [47], referring directly to the first three systemic levels of Bronfenbrenner's ecological model of human development: (a) the microsystem which regards the children's immediate environments (e.g., parents' involvement at home); (b) the mesosystem, the systemic level that encompasses interactions between the child's microsystemic contexts (e.g., parents' participation in school activities and communication with teachers); and (c) the exosystem, which incorporates social structures that do not involve the child but exert their influence on children's development and learning through their effect on the microsystem (parents' efforts to promote children's literacy outcomes indirectly, for example, through their participation in parent–teacher organizations). Based on relevant research [12,47], parental involvement dimensions are discussed in this paper with an emphasis on language and literacy learning:

a. The *quantitative dimension* of parental involvement regards parents' practices in relation to children's education. These practices do not constitute a unified construct. Based on Epstein's approach of overlapping spheres of influence, parents' involvement practices reflect family–school connection expanding on the three spheres: family, school, and community. Epstein suggested six types of parental involvement practices that provide a comprehensive model of behaviors that describe family engagement with schooling. As

she noted, although these types of involvement are relatively distinct, they are interrelated and sometimes complement each other to produce unique outcomes. Results from meta-analytic studies [48,49] support this position, showing that a general parental involvement framework, incorporating aspects of different types of involvement, has better results on educational outcomes than type-specific involvement practices.

Emphasizing literacy-related parental involvement, Epstein's typology could incorporate specific behaviors, as described in Table 2, that represent different levels of the ecological system and reflect informal and formal activities, those with a focus on the activity itself or those with a focus on learning, respectively [50].

Table 2. Literacy-related parental involvement practices based on Epstein's typology [8].

Typology of Literacy-Related Parental Involvement Practices	Examples of Behaviors
Literacy-related parenting	Parents read books or attend a seminar about preschool children's literacy development and family contribution
Two-way communication between parents and teachers for literacy aspects	Parents communicate with teachers to discuss children's progress regarding language and literacy skills development
Volunteering in literacy-focused school activities	Parents participate in school activities regarding book reading
Promoting literacy-related learning at home	Parents engage in shared book reading with their children at home
Participating in decision-making regarding literacy-related issues	Parents develop initiative and collaborate with teachers to organize a book exchange bazar or a cultural storytelling night
Collaboration with the community to foster literacy outcomes	Parents enroll their children in local library to borrow books or/and attend literacy-related workshops

b. The *qualitative dimension* of parental involvement, less evident in the relevant literature, describes the emotional climate of involvement, as perceived by parents, which is reflected in the relationships they develop when they interact with other stakeholders, such as teachers (mesosystemic level) or their child (microsystemic level), regarding educational issues [12,47,51]. It also encompasses parents' perceptions regarding their role in shaping children's learning experiences in connection with the school [47].

The parent–teacher relationship, as perceived by the parents, reflects the emotional climate of their interaction with the school setting [47]. It is a critical component of parental involvement that seems to have a predictive value over children's educational outcomes [52,53]. They are formulated over a continuum of positive and negative emotional blueprints, reflecting characteristics of the relationship such as responsiveness, satisfaction, or discontinuity (e.g., evaluating children's literacy-related skills), different expectations (e.g., regarding collaboration), etc. [47,51]. With reference to literacy-related involvement, such indicators of the positive and negative parental perceptions of their relationship with the teacher are presented in Table 3. We should note that this variable has not been investigated with reference to literacy competence-based learning.

Table 3. Indices of parents' perceptions of their relationship with teachers regarding literacy-related issues.

Emotional Components of Parent–Teacher Relationship	Examples of Behaviors
Positive Orientation	
Mutual responsiveness	Teacher and parent respond to each other's literacy-related requests and suggestions
Mutual recognition of contribution	Teacher and parent acknowledge each other's contribution to children's literacy-related development
Satisfaction	Parent and teacher are satisfied with their communication regarding literacy-related issues

Table 3. *Cont.*

Emotional Components of Parent–Teacher Relationship	Examples of Behaviors
Negative orientation	
Different expectations	The way teacher and parent collaborate regarding children's literacy development does not fulfill their expectations
Discontinuity in evaluation of children literacy-related progress	Parents and teacher disagree regarding child's literacy-related progress

General *perceptions on the role of the family and the school* in children's education may function as a driving force regarding parent–teacher collaboration. Most empirical research focuses on older children [54]. Penderi [47] investigated mothers' general perceptions of family and school connectedness regarding preschool education, using a four-dimension questionnaire that captured (a) perceptions about the ability of the family to produce positive effects on children's education, (b) perceptions about the importance of positive relationship between parents and teachers, (c) perceptions about the contribution of family–school collaboration, and (d) perceptions about the role of teachers to promote contact and interaction with parents. Findings showed that the construct of mothers' general perceptions of the role of family and school in children's preschool education was among the variables that predicted their parental involvement practices and their relationship with the teacher. With reference to literacy-related parental involvement, the framework of parental perceptions is considered a major factor that determines not only children's literacy experiences at home but also later successful literacy development [55]. Theory and research focus primarily on parents' perceptions concerning literacy development, mainly as advocates of either the autonomous–cognitive literacy model or the socio-cultural model [56]. Thus, they reflect different role ideologies, respectively, only implying the role of the school or the importance of family–school collaboration. The study of Tsirmpa et al. [55], using both quantitative and qualitative data on parental literacy perceptions, found that when parents believed that school is the basic agent responsible for teaching children, they were involved in more direct instruction and skill-based practices, while those who had a more facilitative orientation used a variety of literacy-related practices in congruence with school practices. The authors emphasize the importance of teachers as partners with parents to help them understand their role in facilitating children's literacy-related learning by empowering parents to acquire knowledge and strategies to establish a rich home literacy environment. This notion is in congruence with the sociopedagogical perspective of the synergetic forces in the environment surrounding the development of literacy.

The quality of parent–child interactions is another construct embedded in the qualitative dimension of parental involvement that regards its affective character in the family context (microsystemic level). It should be considered along with the frequency and content of parent–child interactions (quantitative dimension) during literacy-related activities since the quantitative characteristic of literacy-related interactions between parents and children seem to tell only parts of the story about how effective the HLE could be. Emotionally supportive and enjoyable interactions for both the parent and the child were found to be positively correlated with measures of children's development of early literacy skills [57,58]. Although relevant research focuses mainly on the emotional domain of storybook reading, findings show that when parents encourage their children's emergent literary experiences and they are responsive to their needs and enthusiastic about their efforts, children's interest and progress in reading are reinforced [59,60]. It should be noted that parental perceptions of the quality of their interaction with their children during literacy-related activities or situations have a stronger relation to children's literacy outcomes compared to other constructs under the umbrella of the qualitative dimension of parental involvement because they refer to the proximal processes of the microsystem. Incorporating the component of emotional climate between parent and the child during literacy-related parental involvement practices

is a new insight that may enrich our understanding of the way parents' practices may affect literacy learning.

c. The *developmental dimension* refers to the differences in parental involvement practices, perceptions, and relationships due to changes in children's educational needs as they grow up and due to differences in the way schools and teachers operate at different educational levels. Accordingly, to understand and empirically approach parental involvement in different developmental periods and with reference to diverse developmental and learning outcomes, such as literacy competences, parents' perceptions, practices, and relationships should be targeted appropriately, reflecting age-related and context-specific content. With reference to literacy, there is a lack of a multidimensional and context-specific approach to parental involvement, especially in early childhood education. Little is known about how different dimensions and components of parental involvement influence children's literacy outcomes, although already existing evidence suggests that there are different pathways through which HLE affects children's language skills at different ages during the preschool period [8,24,43].

1.3. The Present Study

Based on the above multidimensional–multilevel conception of parental involvement, the present study focuses on multiple facets of parental literacy-related involvement to investigate how they relate to young children's literacy competences. In addition, it takes into account a number of contextual factors that seem important in determining the relation between HLE and literacy development. The study introduces three basic constructs that underlie the complex nature of literacy-related parental involvement, namely (i) parents' general perceptions about the role of the family and the school in children's literacy early learning; (ii) parents' interaction and relationship with the teacher, with reference to literacy-related issues; and (iii) parental literacy-related involvement practices and quality of interactions with the child. Moreover, it provides a parent report tool for measuring early literacy competences that contemplates literacy development in a holistic and comprehensive way.

We report on the psychometric properties of the corresponding psychometric tools and explore the way quantitative and qualitative dimensions of literacy-related parental involvement are related to preschool children's literacy competences. Based on Eccles and Harold's model [61], we hypothesize that parental perceptions and relationships with the teachers interact with each other to affect parental practices, which are directly related to children's early literacy competences. Finally, we explore the effect of several contextual factors in these interactions, namely children's age, urbanity, maternal and paternal educational level, as well as the number of books available in the household.

2. Materials and Methods

The study has a cross-sectional design with three dimensions of literacy-related parental involvement as predictor variables and children's literacy competences as a criterion variable. In addition, the effect of several contextual factors is explored: urbanity, children's age, parental education, and number of children's books in the household.

2.1. Participants

The sample consisted of 214 children aged 48–74 months and their parents. All children attended public kindergarten schools from all 13 geographical regions of Greece. Greek was the only language spoken in the children's homes. Moreover, parents of children with a diagnosed sensory, physical, cognitive, or language impairment were not included in the sample. Most questionnaires were filled in by children's mothers (84%) and the remaining 16% by their fathers. Table 4 illustrates the sample distribution for maternal and paternal educational levels, the family's urbanity, and children's age.

Table 4. Demographic characteristics of participants.

	Levels	N (%)
Maternal educational level	Compulsory Education	6 (02.8%)
	Secondary Education/Baccalaureate	57 (26.8%)
	University degree	109 (51.2%)
	Master's Degree/PhD	41 (19.2%)
Paternal educational level	Compulsory Education	20 (09.4%)
	Secondary Education/Baccalaureate	98 (46.0%)
	University degree	71 (33.3%)
	Master's Degree/PhD	24 (11.3%)
Urbanity	Metropolitan Area	52 (24.4%)
	Urban Area	79 (37.1%)
	Semi-Urban Area	49 (23.0%)
	Rural Area	33 (15.5%)
Children's age	48–60 months	139 (65.3%)
	61–74 months	74 (34.7%)

2.2. Materials

A battery of questionnaires was developed, validated, and used for the needs of the present study to capture literacy-related parental involvement and preschool children's literacy competences. A background questionnaire captured the contextual characteristics of the children and the families.

2.2.1. Parental Involvement Questionnaires

Three questionnaires were validated and used to assess parental involvement in a multidimensional and multilevel way. Pilot testing followed a three-step procedure. Initially, a panel of experts reviewed the items of each of the questionnaires to check for content validity, and some changes were made based on their comments, using the initial pool of items. Next, the questionnaires were given to ten parents to comment on the readability, comprehension, and practicality of the questionnaires. A pilot survey (N = 80) was then conducted to explore the questionnaires' reliability and validity, using Exploratory Factor Analysis (EFA) and Cronbach α estimation for internal consistency while testing for item-total scale correlation and Cronbach's α of the scale if item deleted.

A description of the three parental involvement questionnaires is presented below, together with their psychometric properties, as derived based on the sample of the present study.

(1) Parental perceptions about Family and School Role in Literacy (PFSRL). Based on the questionnaire developed by Penderi [47], which investigated parents' general perceptions regarding family–school connectedness to promote preschool children's development and learning, the PFSRL (developed by Penderi & Papanastasatou) reflected parents' considerations concerning the role of the family and the school in facilitating children's literacy-related learning (see Table 5). It consists of 16 items capturing perceptions about (a) the ability of the family to produce positive effects regarding literacy-related outcomes (7 items), (b) the role of the school in promoting literacy-related parental involvement (6 items), and (c) the role of school to promote children's literacy competences (3 items). Parents are asked to mark on a 5-point Likert scale (from 1—totally disagree to 5—totally agree) the level of their agreement with the items of the questionnaire. The total score of the scale reflects parents' positive perceptions about literacy-related parental involvement and family–school collaboration.

A Confirmatory factor analysis (CFA) (see Table 6) supported the three-factor solution with a higher-order general factor.

Table 5. The PFSRL dimensions and item examples.

PFSRL Dimensions	Examples of Items
The Ability of the Family to Produce Positive Effects Regarding Literacy-Related Outcomes	Parents know how to support their children's acquisition of reading and writing skills Parents can act as role models for children in acquiring early literacy skills
The Role of the School to Promote Literacy-Related Parental Involvement	It is important that the school informs parents about the goals and content of the program/activities it implements for children to acquire the necessary early reading and writing skills The school must inform parents about the progress of the child's acquisition of early reading and writing skills
The Role of the School to Promote Children's Literacy Competences	The practices followed by the school are appropriate and sufficient to help my child acquire the necessary early reading and writing skills When children face some difficulties in developing early reading and writing skills, the school can help them to master these skills

Table 6. PFSRL—Confirmatory factor analysis (higher order model): fit indices *.

Fit Indices	PFSRL
Chi-square (χ^2)	102.506
Degrees of freedom (df)	101
Significance (p)	.439
Comparative Fit Index (CFI)	.999
Tucker–Lewis Index (TLI)	.999
Root Mean Square Error of Approximation (RMSEA)	.008
Standardized Root Mean Square Residual (SRMR)	.067
Adjusted Goodness of Fit Index (AGFI)	.956

* In all CFA models, due to the ordinal nature of the data, the WLSMV estimator was used with NLMINB optimization using lavaan 0.6.16 in R.

- The first factor concerns the *Ability of the Family to Produce Positive Effects Regarding Literacy-Related Outcomes* and includes 7 items and Cronbach's α estimated to α = .79.
- The second factor, the *Role of the School in Promoting Literacy-Related Parental Involvement*, includes 7 items with Cronbach's estimated to α = .80.
- The third factor is related to the *Role of the School in Promoting Children's Literacy Competences*, with 3 items and Cronbach's α estimated to α = .72.
- The Cronbach's α of the total scale was estimated to an α = .86.

(2) Parent–Teacher Relationship on Literacy issues (PTRL). Based on the Quality of Parent–Teacher Relationship Scale [47,51], the PTRL consists of 11 items that capture the quality of parent–teacher relationship regarding literacy-related issues as perceived by parents. Parents are asked to mark on a 5-point Likert scale (from 1—totally disagree to 5—totally agree) the level of their agreement with the items of the questionnaire.

Considering that the quality of the parent–teacher relationship is understood through a continuum of both negative and positive behaviors [51], three items of the PTRL-P had a negative orientation, while seven items had a positive orientation regarding the emotional blueprint of parent–teacher literacy-related interactions. The score of these three negatively oriented items was reversed so that the total score of the scale reflects positive interactions with the teacher regarding children's literacy competences development. Although an initial EFA pointed towards a two-factor solution, CFA suggested the one-factor solution as having a better fit (see Table 7). Cronbach's α was estimated to α = .88.

Table 7. Confirmatory factor analysis (one-factor model): fit indices.

Fit Indices	PFSRL
Chi-square (χ^2)	64.120
Degrees of freedom (df)	44
Significance (p)	.025

Table 7. *Cont.*

Fit Indices	PFSRL
Comparative Fit Index (CFI)	.984
Tucker–Lewis Index (TLI)	.980
Root Mean Square Error of Approximation (RMSEA)	.046
Standardized Root Mean Square Residual (SRMR)	.063
Adjusted Goodness of Fit Index (AGFI)	.954

(3) Literacy-related Parental Practices and Quality of Interactions (LPPQI). The LPPQI [62] was designed based on Epstein's typology [45] of parental involvement, focusing specifically on the development of literacy. The development of the questionnaire followed Kohl and associates' [63] paradigm of measuring the multidimensional construct of parental involvement in children's education by proposing literacy-related specific practices that reflect Epstein's typology of involvement and emotional underpinnings of interaction between the parent and the child during such practices.

It originally included 40 items concerning all 6 types of parental involvement (quantitative dimension of involvement), but also a number of items concerning the quality of interaction between the parent and the child during literacy-related activities, which refer to the qualitative dimension of involvement at the microsystemic level (Table 8).

Table 8. The LPIQI dimensions and item examples.

LPIQI Dimensions	Examples of Items
Engagement with Book Reading	I read books with my child at home.
Active Participation in School Activities	I participate/help in decisions regarding actions related to literacy (for example, in helping to organize a book fair, etc).
Parent–Child Interaction	When I go for a walk with my child I encourage him/her to read signs, posters or other printed materials in the environment.
Communication with the Teacher	I contact the kindergarten teacher when I see that my child has some difficulty in mastering literacy skills.
Support and Motivation	I show/say to my child how proud I am of his/her efforts to master early literacy skills.

Parents respond using a five-point scale (from 1—never to 5—very often). A higher score reflects higher literacy-related parental involvement. The EFA led to the elimination of 11 propositions and proposed a 5-factor structure. The CFA confirmed the 5-factor model with a higher-order general factor (see Table 9).

Table 9. LPPQI—Confirmatory factor analysis (higher order model): fit indices.

Fit Indices	LPPQI
Chi-square (χ^2)	420.872
Degrees of freedom (df)	345
Significance (p)	.030
Comparative Fit Index (CFI)	.989
Tucker–Lewis Index (TLI)	.987
Root Mean Square Error of Approximation (RMSEA)	.032
Standardized Root Mean Square Residual (SRMR)	.069
Adjusted Goodness of Fit Index (AGFI)	.954

- The first factor, *Engagement with Book Reading* (8 sentences), is about promoting engagement with book reading and printed text and the enjoyment of reading. Cronbach's α was estimated to $\alpha = .87$.
- The second factor, *Active Participation in School Activities* (6 sentences), with Cronbach's α estimated to $\alpha = .87$, describes the involvement of parents in the school environment,

focusing on parents' participation in decision-making, voluntary help in organizing activities, and participation in activities, all related to literacy.

- The third factor, *Parent–Child Interaction* (7 sentences), describes literacy-related activities and interactions in the family and the community. Cronbach's α was also estimated at α = .80.
- The fourth factor, *Communication with the Teacher* (4 sentences), with Cronbach's α = .84, concerns the communication practices with teachers to exchange information about the child's progress in relation to the development of literacy.
- Finally, the fifth factor, *Support and Motivation* (4 sentences), focuses on the promotion of positive attitudes towards literacy. Cronbach α was acceptable(α = .71).

2.2.2. Children's Literacy Questionnaire

Children's literacy outcomes were measured by a validated parental report questionnaire, the **Preschool Children's Literacy Competences (PCLC** [8]**).**

The PCLC consists of 19 items related to children's literacy competences. It is based on Rohde's [26] Comprehensive Early Literacy Model and the new Greek National Curriculum for Preschool Education [2,9] to cover literacy competences that refer to the entire range of early literacy development. Parents are asked to report on a 5-point Likert scale (from 1—not at all to 5—very much) the level of their agreement with the items of the questionnaire in relation to the literacy development of their child. A higher score reflects a higher level of the reported literacy competences.

Initial EFA revealed a 4-factor structure. A CFA conducted with the present data confirmed the 4-factor structure with a higher-level general factor (see Table 10).

Table 10. PCLC—Confirmatory factor analysis (higher order model): fit indices.

Fit Indices	PCLC
Chi-square (χ^2)	153.419
Degrees of freedom (*df*)	148
Significance (*p*)	.363
Comparative Fit Index (CFI)	.998
Tucker–Lewis Index (TLI)	.998
Root Mean Square Error of Approximation (RMSEA)	.013
Standardized Root Mean Square Residual (SRMR)	.077
Adjusted Goodness of Fit Index (AGFI)	.954

The factorial structure and internal consistency measures are as follows (see Table 11):

- The first factor, *Engagement in Reading*, consists of 5 sentences describing reading-related competences. Cronbach's α is estimated to α = .85.
- The second factor, *Oral Production*, with 6 sentences referred to oral language with Cronbach's α estimated to a lower but satisfactory level (α = .79).
- The third factor, *Engagement in Writing*, focuses on competences related to writing and includes 5 sentences. Cronbach's α was estimated to α = .87.
- Finally, 3 items are related to *Attitudes toward Book Reading*. Cronbach's α was estimated to α = .66, which is lower than .70 but still acceptable [64].

Table 11. The PCLC dimensions and item examples.

PCLC Dimensions	Examples of Items
Engagement in Reading	When I (or other family members) read stories to my child, he/she seems to participate and understand the content.
Production of Oral Texts	My child can retell a short story.
Engagement in Writing	My child can write some words (his/her name etc.) without copying them.
Attitudes toward Book Reading	My child enjoys listening to stories when I read him/her books.

2.2.3. Contextual Factors

A background questionnaire was used for collecting information on demographic factors; children's language; and potential diagnoses, problems, or difficulties. Five demographic factors were investigated: a. child's age, b. mother's education, c. father's education, and d. urbanity (see Table 4 for distribution of the sample according to demographic factors). In addition, a question concerning the number of children's books available at home was introduced aiming to explore the effect of appropriate reading material availability in the household.

2.3. Procedure

The research was conducted in accordance with the Declaration of Helsinki and approved by the Research Ethics Committee of the Department of Education Sciences in Early Childhood of the Democritus University of Thrace (Ref. ΔΠΘ/ΤΕΕΠΗ/40108/866/16/03/2022). To recruit participants, the research protocol was disseminated by email to public kindergarten school principals. Subsequently, kindergarten teachers contacted parents through emails that included (i) a letter explaining the research purpose and procedure, (ii) an informed consent form, and (iii) a link to access the online questionnaire as implemented in an institutional installation of LimeSurvey configured to collect anonymized data. Participants were invited to complete the online questionnaires on a voluntary, anonymous, and confidential basis, registering the participant code that was provided to them in the invitation.

3. Results

In the first part of the results, we present a series of analyses (regressions and correlations) aimed at establishing the nature of the associations among the various factors examined in the study. In the second part of the results, we present the structural model that emerged from the data on the basis of all complex interactions. All analyses were conducted using the standardized z-scores of the scales.

3.1. Associations among Contextual Factors, Parental Involvement, and Children's Literacy Competences

3.1.1. Children's Age and Contextual Factors

Initially, hierarchical multiple regression analyses were conducted to examine the combined effect of children's age and the contextual factors contemplated in the study (urbanity and maternal and paternal educational level) on each parental involvement factor (literacy-related perceptions, practices, and relationship with the teacher).

In the following analyses, children's age was entered as a first block in the hierarchical models, and the three contextual factors were entered as a second block. The Variance Inflation Factor (VIF) was between 1.00 and 1.20 in all cases, indicating low correlations between the predictors. Further collinearity diagnostics (Condition Index and Variance Proportions) confirmed the lack of multicollinearity.

Table 12 summarizes the regression results. Each model's regression statistics for the three hierarchical regressions are presented separately, together with the change statistics after entering each group of predictors. Neither children's age nor any of the contextual factors appeared to significantly affect parental perceptions on literacy-related issues or the parental relationship with the teacher in the context of literacy issues. Maternal education, on the contrary, was found to be the only factor exerting a significant effect on parental practices.

A second set of hierarchical multiple regression analyses examined the effect of children's age, contextual factors (urbanity and maternal and paternal educational level), and number of books available in the household on children's literacy competences (Table 13).

Table 12. Hierarchical multiple regressions (enter method): the effect of children's age, urbanity, maternal and paternal education on literacy-related parental involvement.

						BLOCK 1 (std.β)	BLOCK 2 (std. β)		
DVs	**Model**	R^2	F	ΔR^2	ΔF	**Age**	**Urbanity**	**Mother Edu**	**Father Edu**
Perceptions	1	.002	.48 ×	.002	.48	.048 ×			
	2	.004	.22 ×	.002	.14	.053 ×	-.044 ×	.008 ×	.002 ×
Relationship	1	.000	.09 ×	.000	.09 ×	.021 ×			
	2	.004	.23 ×	.004	.28 ×	.032 ×	-.049 ×	.040 ×	.014 ×
Practices	1	.006	1.35 ×	.006	1.35 ×	.080 ×			
	2	.102	5.90 **	.095	7.37 **	.084 ×	-.118 ×	.278 **	.004 ×

Notes. ** $p < .001$, × p = n.s. **Model 1**—Predictors entered: [Chidren's age]. **Model 2**—Predictors entered: [Chidren's age], [Urbanity, Maternal education, Paternal education].

Table 13. Hierarchical multiple regressions: the effect of children's age, urbanity, maternal and paternal education, and number of books in the household on children's literacy.

						BLOCK 1 (std. β)	BLOCK 2 (std. β)			BLOCK 3 (std. β)
DV	**Model**	R^2	F	ΔR^2	ΔF	**Age**	**Urban.**	**Mother Edu**	**Father Edu**	**Nr. Books**
Literacy competences	1	.026	5.69 *	.026	5.69 *	.162 *				
	2	.087	4.97 **	.061	4.64 *	.180 *	-.019 ×	.181 *	.112 ×	
	3	.118	5.53 **	.030	7.16 *	.176 *	-.002 ×	.116 ×	.101 ×	.190 *

Notes. ** $p < .001$, * $p < .01$, × p = n.s. **Model 1**—Predictors entered: [Chidren's age]. **Model 2**—Predictors entered: [Chidren's age], [Urbanity, Maternal education, Paternal education]. **Model 3**—Predictors entered: [Chidren's age], [Urbanity, Maternal education, Paternal education], [Number of children's books].

Age alone was found to have a significant, albeit quite low, effect on children's literacy competences, predicting 2.6% of the variance of the respective score. When the three contextual factors were introduced in the model, its predictive capacity rose to 8.7%, mainly due to the significant effect of maternal education on literacy. However, when the factor "number of books" was last introduced in the model, it absorbed the effect of maternal education. The capacity of the model to predict children's literacy competences reached 11.8%, with age and the number of books being the only significant factors contributing to it.

3.1.2. Literacy-Related Parental Involvement and Children's Literacy Competences

In this section, we present a series of analyses aimed to explore the relationships among the three latent factors of parental involvement contemplated in this study and their association with children's literacy competences.

Table 14 illustrates bivariate (Pearson's) correlations among literacy-related parental perceptions, parental relationship with the teacher, literacy practices, and children's literacy outcomes.

Table 14. Pearson's r correlations among factors of parental involvement and children's literacy.

	Perceptions	**Relations Edu.**	**Practices**
Relations edu	.424 **	--	--
Practices	.367 **	.473 *	--
Children's literacy	.147 **	.287 **	.464 *

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

The three parental involvement factors present moderate intercorrelations. The largest shared variance is evidenced between parental practices and relations with the teacher (r^2 = .22), followed by the covariance between parental perceptions and relationship with

the teacher (r^2 = .18) and by the association between parental practices and perceptions (r^2 = .13). As for the associations between the three parental involvement factors and children's literacy competences, the largest covariance is evidenced in the relationship between children's literacy and parental practices (r^2 = .22), followed by its association with the relations with the teacher (r^2 = .08), and by parental perceptions (r^2 = .02).

Next, we aimed to uncover the effect of the three dimensions of parental involvement (literacy-related perceptions, practices, and relationship with the teacher) on children's literacy competences while also taking into account the contextual factors contemplated in the study (age, urbanity, parental education, and the number of books).

In the following hierarchical multiple regressions, the three factors of parental involvement were entered as a first block, followed by all contextual factors in a second block. The Variance Inflation Factor (VIF) was between 1.005 and 1.343 in all cases, and further collinearity diagnostics confirmed the lack of multicollinearity. Their combined effects on children's literacy are detailed in Table 15.

Table 15. Hierarchical multiple regressions: the effect of the three dimensions of parental involvement on children's literacy competences.

						BLOCK 1 (Std. β)			BLOCK 2 (Std. β)				
DV	**Model**	R^2	F	ΔR^2	ΔF	**Perc.**	**Relat.**	**Pract.**	**Age**	**Urb.**	**Moth. Edu**	**Fath. Edu**	**Nr. Book**
Literacy competences	1	.224	20.08 **	.224	20.08 *	.058 ×	.105 ×	.436 **					
	2	.272	9.55 **	.049	2.73 *	.045 ×	.114 ×	.366 **	.140 ×	.031 ×	.031 ×	.101 ×	.127 ×

Notes. ** $p < .001$, * $p < .01$, × p = n.s. **Model 1**—Predictors entered: [Literacy-related perceptions, Practices, and Relationship with teacher]. **Model 2**—Predictors entered: [Literacy-related perceptions, Practices and Relationship with teacher] [Children's age, Urbanity, Maternal education, Paternal education].

Among all seven factors entered in the models, only parental practices predicted significantly, with a robust effect, children's literacy competences (predicting 22.4% of its variance). The other two parental involvement factors did not appear to have a significant direct effect on children's literacy nor on any of the contextual factors contemplated.

Given the unique direct effect of practices on children's literacy, the last preliminary analysis we present aimed at exploring which factors affect parental practices. In this hierarchical multiple regression (Table 16), the other two parental involvement factors (parental perceptions and relations with the teacher) were entered as a first block, and the contextual factors were entered as a second block. Parental perceptions and relations together predicted 25.8% of the variance in parental literacy practices, with relations (β = .387) presenting a higher effect than perceptions (β = .203). In the second step, when children's age and the four contextual factors were added, the predictive capacity of the model reached 36%, mainly due to the additional contribution of maternal education.

Table 16. Hierarchical multiple regressions: the effect of literacy-related parental perceptions and relations with the teacher, and contextual factors on their literacy practices.

						BLOCK 1 (Std. β)		BLOCK 2 (Std. β)				
DV	**Model**	R^2	F	ΔR^2	ΔF	**Percept.**	**Relati.**	**Age**	**Urban.**	**Moth. Edu**	**Fath. Edu**	**Nr. Books**
Practices	1	.258	36.46 **	.258	36.46 **	.203 *	.387 **					
	2	.360	16.50 **	.103	6.57 **	.192 *	.377 **	.080 ×	−.118 ×	.227 **	.007 ×	.099 ×

Notes. ** $p < .001$, * $p < .01$, × p = n.s. **Model 1**—Predictors entered: [Literacy-related perceptions, Relationship with teacher]. **Model 2**—Predictors entered: [Literacy-related perceptions, Relationship with teacher] [Children's age, Urbanity, Maternal education, Paternal education].

3.2. Structural Model: Mediation of Literacy Practices on the Effect of Parental Perceptions and Relationships with the Teachers

Based on all previously presented results, we wished to explore the complex interactions and relationships among all the factors measured in the study. Taking into account the direct effect of parental practices on children's literacy (Table 15); the effect of maternal education and the number of books on children's literacy (Table 14); the simultaneous effects of parental perceptions, relations with the teacher, and maternal education on parental practices (Table 16); as well as the effect of age on children's literacy outcomes (Table 13), we tested several mediation and mediated moderation models with different structures and directions of effects.

All models were estimated using the ML (Maximum Likelihood) estimator with NLMINB optimization using Lavaan 0.6.16 in R. Bootstrapping of the standard errors (1000 draws) was applied. No missing cases were observed in the data. The skewness and kurtosis values of the variables are all within acceptable levels (skewness from −1.045 to −0.083; kurtosis from −0.389 to −1.425). All models that converged with acceptable indices of fit had the same basic structure (see Figure 1):

(a) No direct effects of parental perceptions (PERC) or parent–teacher relationships (RELAT) on children's literacy competences (LITRCY).
(b) Full mediation of parental practices (PRACT) in the effect of parental perceptions (PERC) and parent–teacher relationships (RELAT) on children's literacy competences (LITRCY).
(c) Significant, albeit very small, effect of age (AGE) on literacy competences (LITRCY).
(d) Absence of any significant association between paternal education, urbanity, and the number of books.

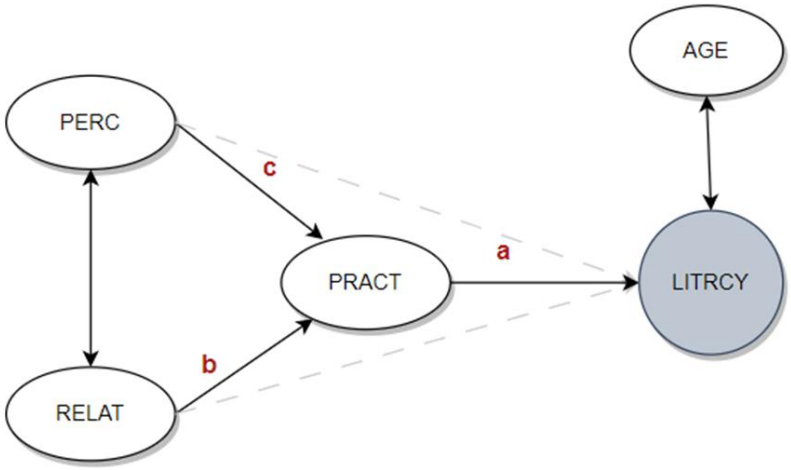

Figure 1. Common structure of all models that converged with acceptable indices of fit. Dashed grey lines indicate non-significant associations that were excluded from models.

The only difference among the various models that converged successfully consisted in the function/role of maternal education in the model.

Below, we outline two alternative models with the most robust indices of fit.

Model 1 is a full mediation model of parental literacy practices (PRACT) in the effect of parental perceptions (PERC), parent–teacher relationships (RELAT), and maternal education (EDU_M) on children's literacy competences (LITRCY).

Model 2 is a full mediation model of parental literacy practices (PRACT) in the *conditional effect—moderated by maternal education* (EDU_M)- of parent–teacher relationships (RELAT) and parental perceptions (PERC) on children's literacy competences (LITRCY).

The two models' fit indices are presented in Table 17.

Table 17. Fit indices of the two alternative models.

Fit Indices	Model 1	Model 2
Chi-square (χ^2)	10.826	14.460
Degrees of freedom (df)	9	12
Significance (*p*)	.288	.272
Comparative Fit Index (CFI)	.990	.983
Tucker–Lewis Index (TLI)	.983	.975
Root Mean Square Error of Approximation (RMSEA)	.031	.031
Standardized Root Mean Square Residual (SRMR)	.039	.031
Adjusted Goodness of Fit Index (AGFI)	.961	.884

Based on the difference in χ^2 given the *df* of the two nested models, we adopt and interpret the simpler Model 1 (see, Figure 2), which shows a better fit to the data.

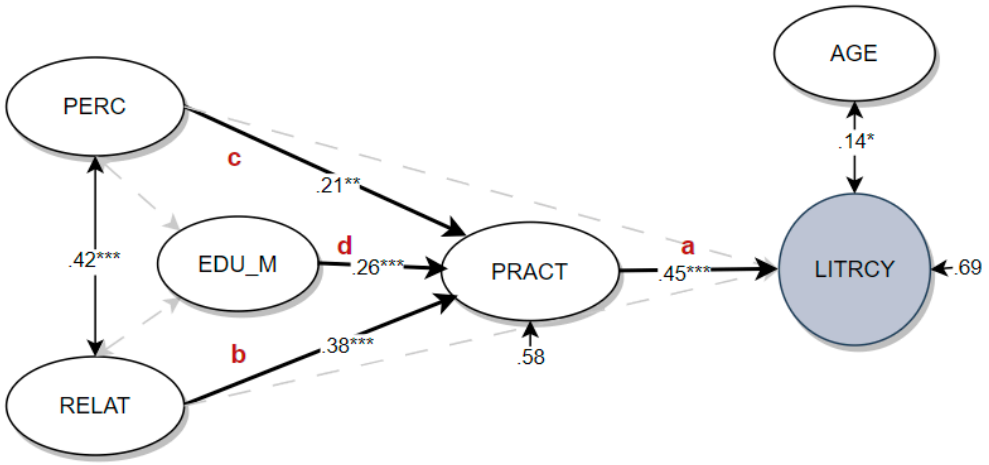

Figure 2. Model 1—full mediation of parental literacy practices (PRACT) in the effect of parent-educator relationships (REL_EDU), parental perceptions (PERC), and maternal education (EDU-MOTH) on children's literacy competences (LITRCY). Grey lines indicate non-significant associations that were excluded from model. *** $p < .001$, ** $p < .005$, * $p < .05$.

According to Model 1, parental practices (PRACT) have a significant direct effect on children's literacy. At the same time, they are significantly regressed on two correlated factors, parent–teacher relationships (RELAT) and perceptions (PERC), and a non-correlated factor, maternal education (EDU_M). Accordingly, three full mediation paths are formed, all three deemed significant (see Table 18). The path with the largest effect is b*a (RELAT–PRACT–LTRCY), followed by path d*a (EDU_M-PRACT-LTRCY), followed by path c*a (PERC-PRACT-LITRCY).

Table 18. Regression, covariance, and path statistics for Model 1.

		Est.	S.E.	Statistic	*p*	CI Low	CI High	Std. Est.
REGRESSIONS	LITRCY~PRACT (a)	.454	.058	7.880	<.001	.333	.561	.454
	PRACT~RELAT (b)	.377	.072	5.216	<.001	.242	.524	.378
	PRACT~PERC (c)	.203	.072	2.823	.004	.066	.363	.205
	PRACT~EDU_M (d)	.355	.083	4.296	<.001	.197	.516	.263

Table 18. *Cont.*

		Est.	S.E.	Statistic	*p*	CI Low	CI High	Std. Est.
COVARIANCES	PERC~~RELAT	.422	.074	5.678	<.001	.288	.570	.424
	LITRCY~~AGE	.061	.030	4.325	.004	.005	.124	.142
	PRACT~~PRACT	.671	.077	8.681	<.001	.518	.830	.680
	LITRCY~~LITRCY	.781	.104	7.540	<.001	.591	.995	.793
	PERC~~PERC	.995	.122	8.162	<.001	.780	1.254	1
	RELAT~~RELAT	.995	.109	9.133	<.001	.793	1.210	1
	EDU_M~~EDU_M	.540	.049	11.140	<.001	.449	.637	1
	AGE~~AGE	.240	.006	25.270	<.001	.224	.249	1
Paths	RELAT–PRACT–LITRCY (b*a)	.171	.042	4.011	<.001	.098	.264	.172
	PERC–PRACT–LITRCY (c*a)	.093	.035	2.660	.007	.028	.168	.093
	EDU_M–PRACT–LITRCY (d*a)	.161	.044	3.646	<.001	.255	.161	.119
	Total indirect (b*a) + (c*a) + (d*a)	.424	.078	5.439	<.001	.282	.582	.384

More specifically, parental relations with the teacher concerning literacy issues, maternal education, and parental perceptions regarding literacy, though they do not seem to affect directly children's literacy outcomes, do so significantly by affecting parental literacy-related practices. The overall indirect effect of the three factors has a standardized estimate of .384, $p < .001$, while the total effect on parental practices is $R^2 = .320$, and their total effect on children's literacy competences is $R^2 = .206$.

4. Discussion

Parental involvement is well documented as a significant contributor to preschool children's literacy competences [65–67], although relevant studies in the Greek context are very scarce in the literature [27]. Contemporary sociopedagogical approaches and theoretical models regarding parental involvement reflect its multidimensional nature; research on early literacy, however, has failed to implement a holistic approach to children's early literacy experiences and capture the complex interactions among the various levels and dimensions of literacy-related parental involvement and their effect on children's literacy competences. As a result, the complex ways in which different dimensions of parental involvement and other contextual factors of the Home Learning Environment (HLE) interact to impact children's literacy development is still unclear [24].

The present study is, to our knowledge, the first to measure and analyze a combination of quantitative and qualitative dimensions of literacy-related parental involvement at the microsystemic and mesosystemic level and a holistic and competence-based approach to literacy development. Based on a sociopedagogical perspective that promotes synergies between children's microsystems and acknowledges the significance of parental involvement in children's education and literacy outcomes, this study aimed to expand our understanding of multilevel facets of literacy-related parental involvement and the way they relate to children's literacy outcomes. Accordingly, it aimed to explore the contribution of a number of factors in the family and focus not only on the quantitative dimension of parental involvement but also highlight the importance of qualitative ones.

More specifically, based on Rohde's [26] Comprehensive Emergent Literacy (CEL) model, we introduced a holistic approach to studying literacy competences. The CEL describes literacy development as an interactive process that incorporates language, print awareness, phonological awareness, and writing knowledge and skills. The study added to the CEL model by proposing a third component: the attitudes that harmoniously interact with the other two components—knowledge and skills—to support children's literacy learning [2].

Another novel contribution is the cross-context consideration of literacy-related parental involvement processes and contextual factors in the family environment that surrounds and affects literacy development. We focused on three parental involvement constructs:

(a) parents' perceptions concerning the role of the family and the school in facilitating children's literacy-related learning, (b) the parent–teacher relationship, and (c) parents' literacy-related practices reflecting Epstein's typology of involvement and the emotional climate between the parent and the child. Finally, we aimed to explore the effect of children's age, urbanity, parental educational level, and the number of children's books at home on the relationship between literacy-related parental involvement and children's early literacy competences.

To address the aims of the present study, a battery of four new parent-report questionnaires were validated and tested for their factorial structure. Parents have traditionally been used as informants for both the HLE and children's early literacy competences in a wide array of previous studies. It is argued that parents provide valuable and ecological insights about children's literacy development; their reports of preschool children's literacy have been found to correlate highly with teachers' reports and class assessments [68]. In this study, we also confirmed that all parental measures had robust psychometric properties.

The results we presented provided a clear picture of the complex associations and interactions among the three parental involvement dimensions explored and their effect on children's literacy competences. More specifically, the only parental involvement factor that was found to have a direct effect on children's literacy outcomes was the parental literacy practices. Indeed, literacy practices in the family context (e.g., reading books with the child, communicating with the teacher about children's literacy development, playing educational games with letters and words) have been highlighted in the literature as an important factor affecting literacy development [69,70]. In the present study, however, the parental practices' latent factor included both a quantitative and a qualitative dimension, adding to the amount and frequency of exposure to literacy materials and other literacy-related experiences, a measurement of the quality of the parent–child literacy interactions. Limited relevant research suggests the importance of the affective–emotional domain of parent–child interaction during literacy activities, either informal (such as book-reading) or formal (such as a direct letter or word instruction), in children's motivation and engagement [71]. Parents' encouragement, responsiveness, and enthusiasm, which reflect the emotional bonding between the parent and the child during shared literacy-related activities, are linked to the quality of children's experience with literacy and better literacy outcomes [59]. Meng [72] investigated the mediating role of parent–child interactions in the association between shared literacy activities and emergent literacy and oral language skills, showing the direct effect of both constructs on literacy outcomes.

The other two parental involvement factors, parent–teacher relationships and pa-rental perceptions on the role of the family and the school in children's literacy competences, were not found to directly affect children's literacy outcomes. Hughes and Kwok [73] provided evidence for the effect of the parent–teacher relationship on reading skills, but the study regarded older children and data were derived from teachers, while the HLE was not included in the research design. Another study [74] showed no direct effect of parent–school quality of interaction as perceived by parents on children's early literacy skills but provided evidence for the importance of parental involvement practices, which predicted early literacy skills.

However, both family–teacher relationships and parental perceptions were found not only to significantly shape parental practices to an important extent but also to exert a significant indirect effect, mediated by parental practices, on children's literacy competences. More specifically, parental perceptions on the role of the two major settings with the potential to affect children's literacy development were found to predict the extent to which parents expose children to literacy-related activities, the way they interact with them, and the level of collaboration with the school. Earlier studies [75,76] provided evidence for the predictive function of parental literacy perceptions on their literacy-related practices. Also, there is evidence, albeit very limited [77], that parental literacy beliefs are also related to children's reading outcomes. Results of the present study confirmed but also expanded these findings showing that parental perceptions about the role of family and school in

literacy development constitute adriving force for early literacy development through the power they exert on parents' decision to engage in literacy-related activities at home and in the school, and therefore, interact positively with the child. This is particularly relevant to inform social and educational policies. Education and empowerment of parents should include the development of positive attitudes towards their efficacy in shaping children's literacy development along with a repertoire of knowledge and skills/practices.

As for parent–teacher relationships, their effect, as it emerged from our results, was even more robust than that of parental perceptions. In contrast to parents' perceptions that reflect their understanding of their role in literacy development with respect to the school and, thus, incorporate both microsystemic and mesosystemic considerations, the construct of the parent–teacher relationship regards proximal processes in the family–school mesosystem and has a strong connection with parenting practices, as evidenced in other studies not specifically addressed to literacy [12,47,78]. Regarding literacy development, most studies focus on the qualitative dimension of parental involvement at the microsystemic level, namely the parent–child relationship. The research design of the present study, however, took into consideration qualitative aspects of literacy-related parental involvement both at the microsystemic level of the family and the mesosystemic level of the school. Results reveal that the more parents perceive their literacy-related interactions with the teacher in a positive way (for example, there is trust and rapport during the communication and exchange of information about the child's literacy learning, or they have mutual respect and responsiveness regarding their contribution to literacy development) the highest is their engagement in literacy-related activities, at home and at school; this highest engagement will, in turn, strengthen the effect of their practices on children's literacy competences.

An important finding is that parental perceptions on the role of the family and the school regarding children's literacy competences were found to interact with their relationship with the teacher to promote, in interaction, literacy-related parental involvement practices and, through them, aftect indirectly literacy competences. We assume that positive literacy-related parental perceptions may promote positive parent–teacher relationships about literacy and vice versa; a positive parent–teacher interaction would be expected to reinforce parental beliefs regarding the family's and the school's positive contribution to children's literacy development. This interaction was found to significantly feed parents' actual engagement in shaping a stimulating and rich literacy-learning opportunities environment, both at home and at the school. The results provide empirical evidence, thus, of the importance of the sociopedagogical stance over the HLE, which should focus on proximal processes regarding both microsystemic and mesosystemic interactions. This cross-context conception of the qualitative dimension of parental involvement introduces a synergetic approach toward literacy development, acknowledging that it is the interrelationships among contexts that play a decisive role in human development [79]. Parental perceptions and beliefs regarding these interrelations are of paramount importance as they reflect personal understandings of roles and relationships that may facilitate or hinder parental involvement activities and relevant children's outcomes [80]. Our hypothesis concerning the effect of the interaction between parental perceptions and the parent–teacher relationship on parental involvement practices was based on Eccles and Harrold's model [61]. An important novel contribution of the results we presented is the evidence provided about the high impact of parent–teacher relationships on how perceptions and practices are developed to produce certain developmental outcomes.

In a different vein, the research design adopted in this study, by incorporating proximal processes through several indices of the qualitative and quantitative dimensions of literacy-related parental involvement, gave us the opportunity to explore how contextual variables may function not only with regard to different dimensions of parental involvement and children's literacy competences but, most importantly, with regard to the dynamic interaction among all these factors.

Concerning the contextual factors' effect on parental involvement, neither the significance parents attributed to their role and the school's role in literacy development nor

the quality of their relationship with their child's teacher were found to be affected by their child's age; whether they lived in a metropolitan, urban, or rural area; or by their educational level. These contextual factors were not found to affect parental literacy practices either, with the exception of maternal education, which was found to exert a robust effect on their parental involvement practices (quantitative dimension) along with the quality of parental literacy interactions with their children. This result supports previous findings showing that the level of education is related to greater value placed by parents on children's school success and, consequently, to higher levels of engagement with children in home-learning activities and promotion of more school-related activities [81]. It also supports findings showing the prevalence of maternal educational level in comparison to paternal education [82].

A quite interesting finding, however, is that maternal education appeared to have a significant direct effect on children's literacy outcomes when this was measured in isolation from parental involvement factors, as in previous studies on the role of maternal education in literacy outcomes [67,83]. However, when integrated in the complex model that included parental involvement factors, maternal education appeared to affect children's outcomes only indirectly through its aforementioned effect on parental practices. This finding supports previous results proposing that the factor of maternal education functions as a proxy of different dimensions of the HLE [37,84] and, therefore, its effect on children's learning outcomes should be interpreted in that context.

The results concerning the number of books available in children's households were similar. When their effect was measured on the isolated factor of children's literacy competences, it was found to be robust and significant, even absorbing the effect of maternal education. However, when integrated into the same complex model with parental involvement factors, it lost any effect (direct, indirect, or as a moderator) on children's literacy outcomes. This finding adds to the recent discussion about the role of the number of children's books in the HLE and its effects on literacy development. For some researchers, the number of children's books at home is regarded within home literacy resources [85]. However, as some others argue [36,86], there is ambiguity regarding the role of the availability of books for children with reference to the relation between literacy-related parent–child interactions and literacy skills development. Our research findings show that although the number of children's books may be an important contextual factor in the HLE, other aspects of the environment related to proximal processes and parents' involvement have strong effects on children's literacy development, outscoring the impact of the availability of books for children. This is particularly important as the number of books itself does not say anything about how these books are used by both children and parents. It should be noted, though, that the availability of books for the child may reflect the importance placed by parents in literacy experiences. However, it is evident that what counts most is the quality of parent–child interactions around book reading and the ability of the parents to ensure quality literacy-related interactions with their children [87].

Overall, the results presented in this study illustrate a coherent picture of how a sociopedagogical perspective of HLE determines children's literacy competences. The study addresses a cross-context and synergetic parental involvement identification, which sheds light on the way parents' perceptions and parent–teacher relationship interact to provide the basis for literacy-related multilevel parental involvement practices that support child–parent interactions, which in turn affect literacy outcomes. Another contribution of the study regards the conceptualization and measurement of early literacy development using a holistic approach that provides a unified picture of oral language and emergent literacy knowledge, skills, and attitudes.

To foster literacy-related parental involvement, schools should be aware of its dynamic nature and its contribution to children's literacy. This understanding should find its way into educational policies that emphasize partnerships with parents to promote a holistic approach to children's oral language and literacy skills and tackle educational inequalities [67,88]. The fact that parental practices are directly related to literacy outcomes

shows the importance of school guidance to parents to establish a coherent and effective repertoire of literacy-related practices in school, family, and community contexts. However, for parents to be engaged, their perceptions about the family and school's role in literacy development are important. Accordingly, schools and teachers should promote a common vision between family and school regarding literacy development and establish a culture of collaboration. This is particularly relevant as the way parents understand the quality of their relationship with teachers was found to be an important factor for their literacy-related parental involvement practices.

5. Conclusions

According to Rohde's Comprehensive Emergent Literacy Model [26], literacy development is a holistic process that involves children's language development, phonological and print awareness, and their interaction with the cultural and social environment. Although the acknowledgment of the role of context in shaping literacy learning is of great importance, the model did not explain how contextual factors function, especially with reference to the home environment and its relationship with the school context, when the child enters preschool education. Taken that early literacy-related learning is fundamental for the children's later educational success and, based on Bronfenbrenner's' bio-ecosystemic theory and Epstein's approach of overlapping spheres of influence, the study considered the multidimensional and multilevel nature of parental involvement to approach its quantitative and qualitative dimensions through preschool age-specific, literacy-related behaviors, that reflect both microsystemic and mesosystemic processes while providing developmentally appropriate indices.

Considering that (a) language skills constitute important precursors of all aspects of development [67], (b) oral language and emergent literacy skills are considered the two most fundamental areas for literacy learning and successful communication [89], (c) much of children's early literacy learning takes place long before they enter formal schooling and these learning experiences are closely related to successful literacy development during school years [90], (d) children begin school with disparities in communication and language skills while some of them fall quite behind mainstream trajectories [40,43,91], (e) synergies promoting language and early literacy competences in early childhood produce better short- and long-term literacy outcomes overtime [92–94], (f) new trends in curricula and pedagogy in preschool education lay emphasis on both emergent literacy and literacy instruction [2,43,95], (g) families and schools need to be sensitive to appropriate literacy instruction taking into account children's developmental level and their cultural and linguistic knowledge to provide appropriate learning environments at home and at school that promote seamless and quality literacy learning experiences [95], the present study focuses on multidimensional and multilevel facets of parental literacy-related involvement to investigate the way they relate to young children's literacy competences, controlling for a number of contextual factors that seem important in determining the relation between HLE and literacy development in the Greek preschool education context.

The results we presented have some limitations that should be taken into account. The first refers to the cross-sectional nature of the research design. Although we present data from newly constructed measurements and interdisciplinary, theory-based constructs, data cannot provide details on how these constructs interact to capture the trajectories of the developmental dimension of literacy-related parental involvement and their developmental effect on children's literacy competences.

Another concern pertains to the educational background of the families represented in this study. Very few parents (less than 3% of the mothers and 10% of fathers) had just completed compulsory education, whereas roughly 70% of the mothers and 50% of the fathers held University degrees. The imbalanced representation of parents with a very low educational level may have resulted in an underestimation of the impact of this factor on the study's outcomes. Future research should consider oversampling families from lower economic and educational backgrounds to address this issue.

Finally, another issue that should be taken into account concerns the small number of fathers participating in the study. Most published studies on children's literacy development have predominantly mothers as informants [96,97], with the role of fathers in the acquisition of literacy competences being largely neglected. Although mothers tend to be more often involved in children's literacy-related activities than fathers, fathers' involvement has been reported to be a more robust predictor compared to mothers' involvement [98]. Future studies should, therefore, try to incorporate a more representative sample of fathers as informants of both parental involvement factors and children's literacy outcomes.

Despite these limitations, we believe that the results of the study offered a new perspective on environmental contributions in early literacy development through a sociopedagogical approach. It presented a coherent picture of the way different indices of the multidimensional and multilevel literacy-related parental involvement are related to children's early literacy competences, addressing the role of basic contextual factors. The evidence provided can serve as a solid empirical basis for further explorations and for formulating more specific theoretical hypotheses and expansions, addressing the specific knowledge gaps that still exist in the relevant literature. The results of the present study could be useful for parents, educators, policymakers, and school leaders to design and implement sociopedagogical programs that aim to promote literacy development through empowering family and school literacy-related collaboration.

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