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Design and validation of the Emergent Literacy Domains Development Test (ELDT) for Pre-school

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Abstract

This paper describes the design and validation of the Emergent Literacy Domains Development Test (ELDT), aimed at evaluating emergent literacy skills of Chilean pre-school pupils. The instrumental case study involved a sample of 210 children from low, low-middle, and middle socioeconomic levels. The factorial analysis confirmed the proposed model, based on four pillars: phonological awareness, alphabet knowledge, print awareness and emergent writing, with Cronbach's alpha reliability of .79 and an omega coefficient of .82 for the total test. The results show that the test presents an optimal factorial structure and internal consistency for the assessment of emergent literacy among Chilean pre-school pupils.

Keywords: Emergent Literacy; Pre-school Education; language precursors; phonological awareness; alphabet knowledge; print awareness; emergent writing.

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Diseño y validación de la Prueba de desarrollo de los Dominios de Alfabetización Emergente (PDAE) en Preescolar

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Resumen

Este artículo describe el diseño y validación de la Prueba de desarrollo de los Dominios de Alfabetización Emergente (PDAE), cuya finalidad es evaluar las habilidades de alfabetización emergente en estudiantes chilenos de enseñanza pre-escolar. El estudio fue de tipo instrumental con una muestra de 210 niños/as de los niveles socioeconómicos bajo, bajo-medio y medio. El análisis factorial confirmó el modelo propuesto, conformado por cuatro componentes: conciencia fonológica, conocimiento del alfabeto, conocimiento de lo impreso y escritura emergente, con una fiabilidad de alfa de cronbach de .79 y un coeficiente de omega de .82 para el total de la prueba. Los resultados reflejan que la prueba presenta una estructura factorial y consistencia interna idónea para la evaluación de la alfabetización emergente en estudiantes de enseñanza pre-escolar chilenos.

Palabras clave: Alfabetización emergente; Educación Preescolar; precursores del lenguaje; conciencia fonológica; conocimiento del alfabeto; conocimiento de lo impreso; escritura emergente.

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Introduction

Emergent Literacy (EL) skills start to develop in early childhood, as children are introduced to reading and writing processes, and the skills are consolidated thanks to formal education (Tale & Sulzby, 1986; Whitehurst & Lonigan, 1998; Purinak et al., 2018). These skills include knowledge and behaviours shown by children, even though they are not incorporated into literacy activities related to conventional reading and writing (Justice & Kadaraveck, 2002; Berná, 2015; Rohde, 2015). Manifestations include oral communication skills and attempts by infants to interpret and use printed symbols to communicate (Skibbe et al., 2008; Pavelko et al., 2018), and these manifestations constitute a set of reading and writing predictors. The predictors relate to Phonological Awareness (PA), Alphabet Knowledge (AK), Print Awareness (PrA), and Emergent Writing (EW) (National Early Literacy Panel, 2008; Schwartz, 2017; Pavelko et al., 2018; Purinak et al., 2018).

The literature does not identify an exact time when these skills begin to develop, since children gradually advance mastering them by using oral language and through pre-reading and pre-writing activities (Rugerio & Guevara, 2015). However, Saracho (2017) highlighted that most EL skills develop naturally during the first three years, mostly by handling books, labelling images, and listening to stories. More advanced EL skills appear as children grow. Emergent behaviours that simulate real reading and writing activities include pretending to read, doodling as part of play, and connecting stories to real life. Hence, EL shows how reading and writing skills progressively emerge during oral and written language development. During EL development, children also begin to acquire opinions, behaviours, and habits regarding reading and books, which they retain throughout their personal development (Deasley et al., 2016).

Likewise, research showed that pre-school EL development explains differences in reading and writing acquisition in later years – evidence of a direct link between EL and formal or conventional literacy (Allan et al., 2013; Hannon et al., 2019; Pinto et al., 2013; Pinto et al., 2016). Konold and Pianta (2005) argued that literacy learning is slower and more difficult with low EL skills early in the process. Reading and writing difficulties may even last through the end of basic education and sometimes persist into adolescence (Tale & Sulzby, 1986; Catts et al., 2002; Rohde, 2015). Therefore, emergent literacy skills are precursors to the development of conventional forms of reading and writing acquisition (Allan et al., 2013).

Consequently, fostering and developing EL skills does not just favour the acquisition of the reading-writing process as a broad construct, but also provides the tools for learners' continuous socio-cognitive development. Therefore, and in line with the literature, EL skills and/or internal domains correspond to the above set of literacy predictors.

Phonological awareness (PA)

According to the literature, PA corresponds to the ability to develop an awareness that speech-related sound units (phonemes and syllables) constitute words, even though the units have no meaning in isolation (Infante, 2003; Pérez & González, 2004; Mariángel & Jiménez, 2015; Bravo-Valdivieso et al., 2006a). PA skills comprise the ability to identify, reflect and manipulate sounds that make up words according to their unit of analysis (syllables, rhymes, phonemes) and the tasks infants are able to perform with these units (detect, synthesise, segment) (Pinto et al., 2016).

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PA is the best predictor of reading and writing learning (Blair & Savage, 2006; Skibbe et al., 2008; Puranik et al., 2011; Berná, 2015). Results of meta-analyses by Melby-Lervag et al. (2012) and Allan et al. (2013) showed that all phonological skills were related to reading acquisition, with phonological awareness being the most important predictor. Studies like Pinto et al. (2016), conducted with Spanish-speaking children, also showed that PA can predict reading learning in first grade (Escobar & Meneses, 2014), and that it interrelates with other emergent literacy skills of first-grade pupils. The findings relate to results by Allan et al. (2013), who found that PA, AK and PrA are precursors to decoding, i.e., the ability to identify printed words and produce meaningful sounds from those words accurately and fluently (Bravo-Valdivieso et al., 2006a; Lonigan et al., 2007).

Alphabet knowledge (AK)

AK allows for the recognition of alphabet letters and use them for reading and writing (Whitehurst & Lonigan, 1998; Puranik et al., 2018; Pavelko et al., 2018). Knowledge of letters is a good predictor for the acquisition of the alphabetic principle (Dehaene, 2015) and contributes to the development and consolidation of phonological sensitivity, which facilitates grapheme-phoneme correspondence and vice versa (Whitehurst & Lonigan, 1998; Skibbe et al., 2008; Pavelko et al., 2018). Evidence suggests that children with knowledge of at least five letters of the alphabet when entering the first grade gain a significantly higher reading level than peers without that knowledge (Skibbe et al., 2008; Puranik et al., 2018; Pavelko et al., 2018). Also, some studies have shown that AK is the best predictor for reading and writing outcomes in second and fourth grade (Piasta et al., 2021; Purcell-Gates & Dahl, 1991; Skibbe et al., 2008; Rugerio & Guevara, 2015), that is, in the short and long term. In Chile, Bravo-Valdivieso et al. (2006a) tested the predictive effect knowledge of letters has on written language learning. They found that children who knew five letters of the alphabet at least on entering first grade acquired much higher reading proficiency than peers without that knowledge.

Print awareness (PrA)

PrA -or textual knowledge- refers to the recognition of the characteristic forms of written texts (Villalón, 2008), specifically children's knowledge of the nature and conventions of written language, such as understanding cultural particularities about the direction in which words must be read and letter names (Allan et al., 2013). In addition, it includes the visual identification of elements of written language, such as punctuation (McGee & Richgels, 2003), capital letters, cover, title and page recognition, knowledge of printing conventions (left to right, top to bottom), and concepts about words and letters (first word, last word, first letter, last letter, among others). Therefore, PrA is strongly linked to the writing/copying of names, writing of names and, subsequently, spontaneous writing (Pavelko et al., 2018).

Direct prediction of PrA from early reading has been scarcely explored, while this construct might be predictive of text reading, rather than word reading skills (Pinto et al., 2016). This is crucial, as PrA also represents an early indicator of spelling skills and influences reading acquisition (Pinto et al., 2015). Regarding the latter, Pinto et al. (2016) demonstrated in a longitudinal study covering pre-school to first-grade years that PrA of the writing system was the only statistically significant predictor for early reading acquisition. These findings also emerged in similar studies, but with different research designs (Arab-Moghaddam & Sénéchal 2010; Georgiou

et al., 2012). Consequently, both PA and PrA are precursors to decoding (Lonigan et al., 2007; Allan et al., 2013).

Emergent writing (EW)

EW is a key domain for understanding the development and evolution of emergent literacy (Ferreiro & Teberosky, 1982; Ferreiro, 2006; Villalón, 2008; Pavelko et al., 2018). EW encompasses the manual act of producing physical or mechanical marks, the meanings subjects attribute to these marks, and an understanding of how written language works (orthographic knowledge) (Cabell et al., 2011; Pavelko et al., 2018). These skills allow individuals to reach the reading threshold and enable conventional education and consolidation of decoding processes (Bravo et al., 2006a; Villalón, 2008, Dehaene, 2015).

The National Early Literacy Panel (NELP, 2008) proposed 11 EL-related skills that consolidate thanks to formal conventional literacy instruction. These skills fall into two categories. First-order skills include alphabet knowledge, phonological awareness, rapid automatic naming (RAN), object and colour RAN, name writing and phonological memory. Second-order skills include concepts about print, reading preparation, oral language, and visual processing.

However, for this research, the claims of Schwartz (2017), Pavelko et al. (2018) and Purinak et al. (2018) were considered. They emphasised that pure emergent literacy skills are PA, AK, PrA and EW. Psychometric tests that have been validated in Chile to evaluate EL do not cover all these proposed skills. For example, both the *phonological awareness assessment test* and the *phonological-type metalinguistic skills test* for the construction of the ELDT evaluate only PA-related skills. The *initial literacy test*, also observed as part of this work, focuses on 5-year-olds, and considers assessment of word and sentence reading, a skill that develops after the acquisition of EL skills. This latter instrument contains words and images that require updating to be useful for the contemporary context.

Therefore, the first version of the ELDT seeks to evaluate the main skills required for the acquisition of the reading-writing process. Consequently, the development of this instrument was motivated by the limitations of the instruments available at a national level today.

Method

The primary aim of this study was to design and validate a psychometric test to measure emergent literacy skills of Chilean pre-school pupils corresponding to Transition Levels 1 and 2 (pre-kindergarten and kindergarten; ages 4 to 6).

Construction and validation of ELDT content

The instrument was built by deploying complementary strategies. At the empirical level, national psychometric tests measuring some EL skills were reviewed. Three validated tests of Chilean authors, shown in table 1, were found.

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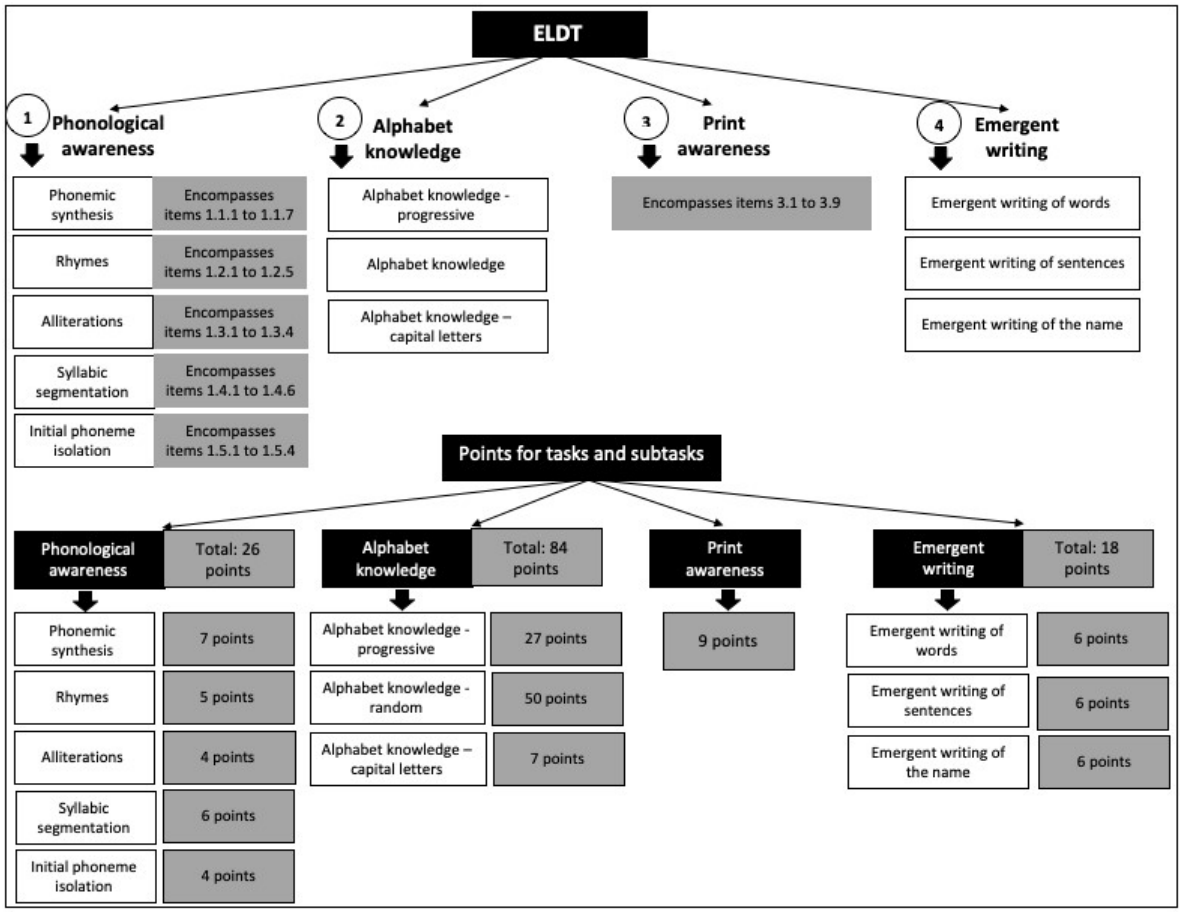
Table 1. ELDT design instruments

Instrument	Authors	Reported reliability	Design/ validation country	Participants
Initial literacy test	Malva Villalón and Andrea Rolla	Phonological awareness: .72 Print awareness: .63 Alphabet knowledge: .93 Reading: .83 Name writing: .93 Overall score: .96	Chile / Peru	250 5-6-year-olds
Phonological awareness test	Virginia Varela and Zulema De Barbieri	Cronbach's alpha overall: .893 The test does not record Cronbach's alpha at the task level.	Chile	120 children (distributed evenly) across four age ranges: 4 to 4 years 11 months, 5 to 5 years 11 months, 6 to 6 years 11 months, 7 to 7 years 11 months
Phonological metalinguistic skills test	Paula Yakuba, María Valenzuela, and Mónica Renz	Cronbach's alpha overall: .81 The test does not record Cronbach's alpha at the task level.	Chile	1,088 4-6-year-olds

Source: Own elaboration

Instrument revision allowed to order the variables of interest related to the development of the internal EL domains and design the items to measure them. The four tasks with their respective subtasks and/or items were generated as reported in Figure 1 and Annex 1.

Figure 1. Organisational chart of EL domains: tasks-subtasks of analysis and scores



Three national and two international experts then agreed to judge the asses in order to ensure the validity of the content. Participation requirements were possessing a doctoral degree in education or psychology, and research experience related to emergent literacy, reading and/or writing in early childhood education. The experts were asked to indicate their level of agreement with the adequacy and relevance of the tasks, subtasks and items, using the response format reproduced in annexes 2 and 3, where 1 equals 'strongly disagree' and 6 'strongly agree'.

Overall, the experts evaluated the instrument as good or excellent. But they also requested changes to the instructions of the AK task to clarify that the name of the letters was requested; the syllabic segmentation subtask to sort words according to length (syllable number); the final syllabic sound-rhyming subtasks to sort words according to difficulty, starting with the easiest; and an example item for each task and subtask.

Participant consent

Educational establishments that were potentially interested in participating were contacted to facilitate the test's practical implementation. The study purpose was explained to the establishments' representatives, who then decided on participation. Subsequently, pre-school education and special education teachers received a training regarding the instrument and to teach them how to administer it to the final sample.

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At this stage, informed consent was received from the guardians and legal guardians of the participating children. Sampling took place between October and December 2019. As reward, each establishment received reports with the results of each pupil, which were included as part of the school year's final evaluations.

The sample comprised 210 pupils[1], 86 from transition level 1[2] and 124 from transition level 2[3], from five educational establishments in Metropolitan Region, Libertador General Bernardo O'Higgins Region and Biobío Region. Average age was 5 years 6 months. The establishments were public or state-subsidised private schools. For the analysis, the sample included children from low, low-middle, and middle socioeconomic levels (SEL), according to percentages of priority[4] and preferential[5] pupils enrolled in each establishment. Specifically, the sample involved 72 low (34%), 69 low-middle (33%) and 69 middle SEL students (33%).

Data analysis

Reliability of basic psychometric properties of the instrument was determined through Cronbach's alpha as a measure of internal consistency, both for the overall score and for each task contained in the test (PA, AK, PrA, EW). However, considering criticism of Cronbach's alpha coefficient for estimating the reliability of response data, the omega coefficient was used in addition. A Confirmatory Factor Analysis (CFA) and a correlation between tasks were performed to examine factorial structure and model adequacy. Finally, to complement the study, differences by courses (TL1 and TL2) were analysed. All analyses were performed using RStudio software, version 7.8.

Results

Descriptive analysis

Table 2 shows the average age of pupils was 67.44 months (standard deviation 6.7), that is, 5 years 6 months. Average scores for the different tasks were 21.31 for PA (SD 4.1), 36.28 for AK (SD 22.9), 5.9 for PrA (SD 2.2) and 12 for EW (SD 3.3). The table also shows a minimum age of 49 months (4 years 1 month) and maximum age of 79 months (6 years 9 months).

Table 2. Descriptive analysis

Variables	Min	Max	Median	Average	SD	Asymmetry	Kurtosis
AGE	49	79	69	67.44	6.7	-0.375	-0.954
PA	7	26	22	21.31	4.1	-1.019	0.618
AK	2	84	33	36.28	22.9	0.562	0.562
PrA	0	9	6	5.9	2.2	-0.436	-0.573
EW	4	18	12	12	3.3	0.106	-0.331

Note Min=Minimum; Max=Maximum; SD=Standard Deviation; PA=Phonological Awareness; AK=Alphabet Knowledge; PrA=Print Awareness; EW=Emergent Writing

Correlation analysis

According to data in histograms and scatter plots, it was necessary to confirm the data using the Kolmogorov-Smirnov Test for samples larger than 50 subjects before analysing variables' correlations. The values were below .05, therefore, the Spearman rank correlation coefficient was used for non-parametric tests. Table 3 shows all correlations between the variables were direct and significant at the .001 level. The relationships between PA and AK, PrA and EW were direct and significant, with a medium effect. As far as AK with PrA and EW were concerned, the relationships were direct, significant, and with a medium-large effect, while the PrA-EW relationship was also direct, significant, and of medium effect.

Table 3. Spearman rank correlation coefficient between variables

	PA	AK	PrA	EW
PA	1	.48***	.41***	.47***
AK		1	.44***	.68***
PrA			1	.50***
EW				1

Note ***. p<.001

Reliability. Cronbach's alpha (α)

Reliability of α=.79 was obtained for the total ELDT. In general, Cronbach's alpha values equal to or greater than .70 were considered good (Argibay, 2006). Table 4 shows the α for each subscale.

Table 4. ELDT Cronbach's alpha coefficient by subscale

Subscales	Cronbach's alpha (α)
PA	.74
AK	.82
PrA	.75
EW	.83
ELDT Total	.79

Legend. ELDT=Emergent Literacy Domains Development Test; α=Cronbach's alpha coefficient; PA=Phonological Awareness; AK=Alphabet Knowledge; PrA=Print Awareness; EW=Emergent Writing

Reliability. Omega coefficient (ω)

A second reliability analysis was performed using the omega coefficient, since it allows calculating reliability with the factorial load of the items (Domínguez-Lara & Merino-Soto, 2015a, 2015b). The test had an omega coefficient of .82, which represents a good internal consistency value (Ventura-León & Caycho-Rodríguez, 2017). Also, the dimensions yielded ω values above .72, confirming the instrument's reliability (table 5).

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Table 5. ELDT Omega coefficient per subscale

Subscales	Omega (ω)
PA	.98
AL	.72
PrA	.98
EW	.73
ELDT Total	.82

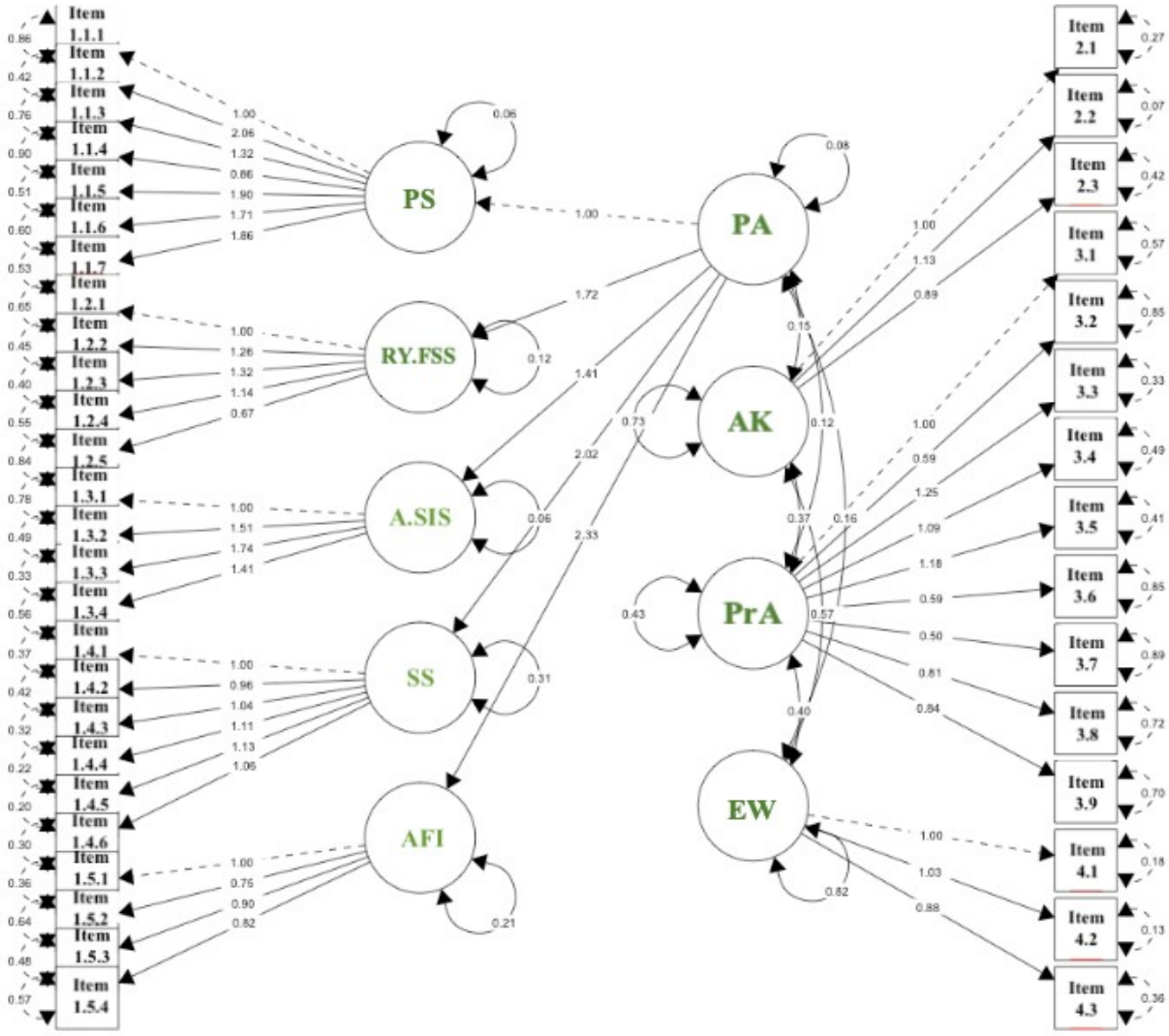
Legend. ELDT=Emergent Literacy Domains Development Test; α=Cronbach's alpha coefficient; PA=Phonological Awareness; AK=Alphabet Knowledge; PrA=Print Awareness; EW=Emergent Writing

Confirmatory factor analysis (CFA)

Since items were dichotomous, a tetrachoric matrix CFA was conducted to evaluate the adequacy of the data for the model. This analysis was selected to contrast the formulation of the instrument with the proposed theoretical model. Therefore, it was necessary to corroborate the proposed links between items, subtasks, and tasks (Field et al., 2012). However, variables of instruments or battery-type psychometric tests are usually correlated (López-Rondal & Fachelli, 2015), so models may present adjustment difficulties. However, comparative fit index .976, root mean square error of approximation .024, both excellent according to Kline (2015), with corresponding 90% consistency index of [.012, .032] and standardised root mean square of .122 were obtained. The $\chi 2$ statistic was 503.679 ($p<.001$). Figure 2 shows the CFA route diagram, which agrees with the theoretical proposal. The factorial loads of the items were about .07, an optimal value to avoid eliminating items. In turn, the relationships between skills are significant. As a whole, the analysis showed a good model fit and a satisfactory saturation of the items.

Figure 2. ELDT CFA diagram

Legend. PA=Phonological Awareness; PS=Phonemic Synthesis; RY.FSS=Rhymes-Final Syllabic Sound; A.ISS=Alliteration-Initial Syllabic Sound; SS=Syllabic Segmentation; IPI=Initial Phoneme Isolation; AK=Alphabet Knowledge; PrA=Print Awareness; EW=Emergent Writing



Difference analysis by educational level

To detect differences between TL1 and TL2, a 1x2 univariate mean analysis was performed through the Mann-Whitney T-test, as shown in table 6. The table shows significant differences in favour of TL2 children related to Phonemic Synthesis (PS), PrA, and EW variables, with a small to medium effect on PS, a large one on PrA, and a small to medium one on EW. The differences are shown in the boxplot in Figure 3.

Table 6. Differences by course: TL1 and TL2

Variables	W	p	Bi-serial range correlation	*d*	Median		Average		SD		Q1		Q3	
					TL1	TL2	TL1	TL2	TL1	TL2	TL1	TL2	TL1	TL2
PS	2647.500	.001	-.283	-.42	4.8	5.5	5	6	1.6	1.7	4	5	6	7

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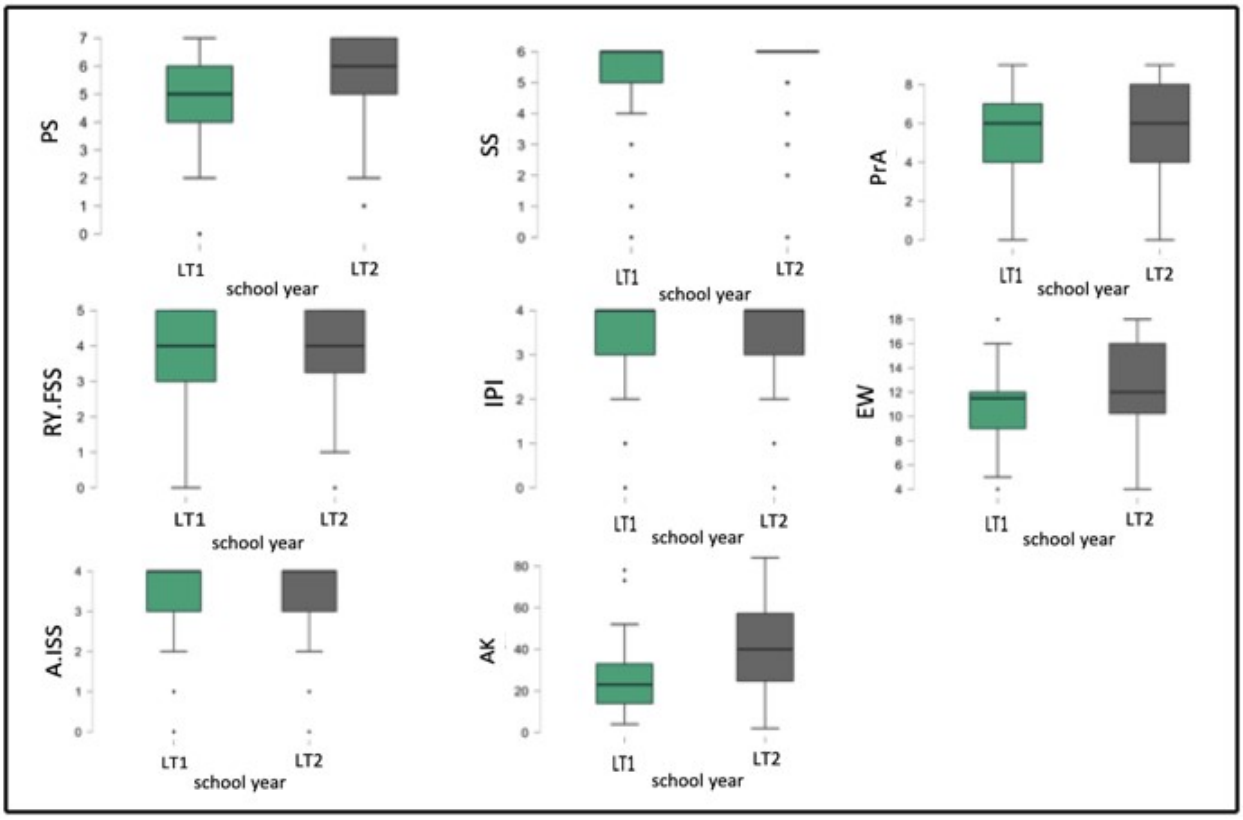
Variables	W	p	Bi-serial range correlation	*d*	Median		Average		SD		Q1		Q3	
					TL1	TL2	TL1	TL2	TL1	TL2	TL1	TL2	TL1	TL2
RY.FSS	3079.500	.050	-.165	-.25	3.7	4.0	4	4	1.3	1.2	3	3.3	5	4
A.ISS	3477.500	.466	-.058	-.15	3.2	3.3	4	4	1.2	0.9	3	3	4	4
SS	3407.500	.251	-.077	-.17	5.4	5.6	6	6	1.2	1.0	5	6	6	4
IPI	3821.500	.622	.036	-.02	3.5	3.5	4	4	0.9	0.8	3	3	4	4
AK	2137.500	< .001	-.421	-.82	24.9	41.6	23	40	14.8	24.5	14	24.8	33	57.2
PrA	3492.000	.542	-.054	-.09	5.6	5.9	6	6	2.3	2.2	4	4	7	8
EW	2242.500	< .001	-.392	-.77	10.1	12.9	11	12	2.7	3.4	9	10.2	12	16

Legend. PS=Phonemic Synthesis; RY.FSS=Rhymes-Final Syllabic Sound; A.ISS=Alliteration-Initial Syllabic Sound; SS=Syllabic Segmentation; IPI=Initial Phoneme Isolation; AK=Alphabet Knowledge; PrA=Print Awareness; EW=Emergent Writing; TL1=Transition Level 1 (pre-kindergarten); TL2=Transition Level 2 (kindergarten)

Figure 3. Boxplot of differences by educational level and ELDT variables

Legend. PS=Phonemic Synthesis; RY.FSS=Rhymes-Final Syllabic Sound; A.ISS=Alliteration-Initial Syllabic Sound; SS=Syllabic Segmentation; IPI=Initial Phoneme Isolation; AK=Alphabet Knowledge; PrA=Print Awareness; EW=Emergent Writing; TL1=Transition Level 1 (pre-kindergarten); TL2=Transition Level 2 (kindergarten).



Discussion

The objective of this study was to account for the psychometric properties of the Emergent Literacy Domains Development Test (ELDT) among pre-school children in Chile. The model demonstrated a structure of four main factors, which grouped the tasks of the test around

EL skills. The factors were phonological awareness, alphabet knowledge, print awareness, and emergent writing (Schwartz, 2017; Pavelko et al., 2018; Purinak et al., 2018).

The Cronbach's alpha for each subscale of the instrument met the appropriate criteria with the cut-off point of .70 (Cronbach, 1951). The values were even better than those of ELDTs currently used in Chile. Also, the omega coefficient yielded good reliability for the subscales and the test in general (Domínguez-Lara & Merino-Soto, 2015a, 2015b), corroborating the reliability of the instrument for psychometric uses.

The results showed significant links between the internal domains (PA, AK, PrA, EW), explained by direct relationships with medium and large effects on their interactions. Specifically, AK, PrA, and EW develop according to PA, as found in studies by Allan et al., (2013), Pinto et al., (2016), Schwartz (2017), Pavelko et al. (2018), and Purinak et al. (2018), among others. It can be deduced that reinforcing AK would increase PrA and EW, explained by the relationship between the knowledge of the names of letters, conceptual knowledge of writing, and spontaneous writing (Deasley et al., 2016). Similarly, enhancing PrA could improve emergent writing skills of pre-school children, as observed in the study.

At an educational level, the differences related to PS, AK, and EW tasks may be due to age differences, since TL1 pupils start education at the age of 4 and TL2 pupils at the age of 5. Although TL1 attendance is not mandatory in Chile, the National Socioeconomic Characterisation Survey (CASEN, 2017) showed that 88.3% of Chilean children between 4 and 5 years of age study at TL1 and TL2. Future research could focus on the level of development as key factor, as it may differentiate TL2 pupils with and without TL1 experience, especially since figures by the Ministry of Education (2021) showed that during the first two years of the pandemic, TL2 dropout reached 130%, compared to the 10-year dropout rate.

Another differentiating factor could also relate to contextual variables, as shown by Escobar and Meneses (2014), who found that vocabulary development, intelligence and speed of denomination are related to socio-family variables, such as socioeconomic level. Results showed improved skills development by children with higher SEL.

In conclusion, the results of the present research showed that each of the tasks proposed as internal domain of emergent literacy is part of the EL theoretical construct and must be evaluated before consolidating reading and writing skills, as has been proposed by several researchers (Strasser & Lissi, 2009; Mendive et al., 2017; Schwartz, 2017; Pavelko et al., 2018; Pezoa et al., 2018; Purinak et al., 2018). Crucially, to acquire EL skills, it is necessary that children are exposed to quality experiences that facilitate written and oral language development in early childhood (Strasser and Lissi, 2009).

Finally, no quantitative instrument currently exists that measures EL domains and is statistically validated through tests with Chilean children. However, the present ELDT could be used in other Spanish-speaking countries, considering adjusting items that require lexical accommodation, although standard Spanish was used in the present design. This feature makes it an easier test to translate into other languages, too, expanding the range of instruments to assess emergent literacy skills, which would allow conducting comparative studies among children who speak languages other than Spanish.

Study limitations

A key study limitation was the impossibility of accessing high SEL pupils to enrich the sample. Also, future research could optimise model adjustment with greater control of variables

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such as age, SEL, gender, type of educational establishment, or other socio-contextual variables of families, and further refine the number of items by subtasks and tasks.

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Notes

[1] During the application stage of the test, Chile experienced a social uprising, which started on 18th October 2019. During the months-long upheaval, many educational establishments had to alter normal functioning, which impaired data collection from more establishments.

[2] Corresponds to the pre-kindergarten level of pre-school education in Chile and covers children between 3 years 9 months and 4 years 9 months.

[3] Corresponds to the kindergarten level of pre-school education in Chile and covers children between 4 years 9 months, and 5 years 9 months or more, depending on the date of birth.

[4] According to the Ministry of Education (2021), a priority pupil (from pre-kindergarten to 4th grade) is one whose socio-economic and family situation could hinder learning. Data provided by the establishments showed these are low SEL pupils.

[5] According to the Ministry of Education (2021), a preferred pupil belongs to the poorest 80% of the population, registered under the social characterisation instrument, the Social Household Registry. These are low-middle SEL pupils, according to data provided by the establishments.

Appendix

Annex 1

Organisation of ELDT by subtask, number of items and examples of instructions by subtasks

Subtask	What is evaluated?	Example of items	Belongs to task
Phonemic synthesis	PS evaluates mastering of speech sounds that make up words. The test consisted of seven evaluation items and the child had to mark the correct answer. Each correct answer equalled one point.	"Mark the drawing that corresponds to /M//O//N//K//E//Y/".	**Phonological awareness**
Rhymes-Final syllabic sound	RY.FSS evaluates mastering the similarity of final sounds at the syllable level. The test consisted of five items and the child had to mark the image whose description sounded different from two other images. For each correct answer, one point was awarded.	"Listen to the names of these drawings. Two end the same way and one ends differently. I want you to mark the one that ends differently." Showing the example, naming the figures, and adding: "mouse and house end the same, tree ends differently. Mark the one that ends differently: tree."	
Alliteration-Initial syllabic sound	A.ISS evaluates mastering the similarity of initial sounds at the syllable level. The test consisted of four items, and the child had to mark the image that sounded different from two others. For each correct answer, one point was awarded.	"Listen to the names of these drawings. Two start the same way and one starts differently. I want you to mark the one that starts differently." Showing the example, naming the figures, and adding: "dog and door start the same, pineapple starts differently. Mark the one that starts differently: pineapple."	
Syllabic segmentation	SS evaluates mastering the syllable count within a word, considers the evaluation of monosyllabic, disyllabic, trisyllabic and four-syllabic words. The test consisted of six items, and one point was awarded per correct answer.	"Look at the first drawing on this page (show), it's a donkey. The word donkey has two syllables: DO-NKEY. You must draw a line for each sound you hear. How many lines are you going to draw for the word donkey?	
Initial phoneme isolation	IPI evaluates the initial vowel recognition of words. The test consisted of four items. For each correct answer, one point was awarded.	"Listen to the names of these drawings. Two start with the same sound and one starts with a different sound: a-uto – a-rcade – ice cream. I want you to mark the one that starts with a different sound. Auto and Arcade start the same, Ice cream starts with a different sound. Mark the word that begins with a different sound: Ice cream"	
Alphabet knowledge-progressive	AK-P evaluates knowledge of letter names in alphabet and lower-case order. The test involved 28 letters. One point was awarded per correct answer.	"What is the name of the following letters?" (show example) C-F-A-M-L	**Alphabet Knowledge**
Alphabet knowledge-random	AK-R evaluates knowledge of the names of the letters repeated and presented without alphabetic order.	"What is the name of the following letters? (show example)" C-F-A-M-L	

Subtask	What is evaluated?	Example of items	Belongs to task
	The test consisted of 50 letters presented in a table. One point was awarded per correct answer.		
Alphabet knowledge-capital letters	AK-CL evaluates recognition of letters by saying them. The test consisted of seven items and one point was awarded per correct answer.	The child is told that a similar task as the previous one will follow, but that this time he/she will hear the name of the letter and must mark the correct one on the answer sheet. Example: "Mark the F"	
Print awareness	PrA evaluates the recognition of shapes and characteristics in a text, including recognising a letter, periods, commas, capital letters, title, cover, among others. The test consisted of nine items, and one point was awarded per correct answer.	The child is presented with a box that may contain upper-case and lower-case letters, signs and phrases and various instructions are given, such as: "What's in this picture? Mark the word." "What's written in this box? Mark the first line." "Look at the drawing on the cover of a storybook. Mark the title."	**Print Awareness**
Emergent writing-words	EW-W evaluates the writing of monosyllabic and disyllabic words with direct syllables. This task seeks to evaluate children's writing stage: - Scribbling - Linear doodles - Separate symbols - Writing correct letters and pseudowords - Writing with omissions of letters - Correctly written words	"For this task, we are going to write the names of the images that are here" (shows them in the booklet) "What is the name of the first image? Can you write its name?" The evaluator tells the child that it should write the name of the images that are on the left side of the sheet. The adult encourages writing, mentioning that form doesn't matter.	Emergent writing
Emergent writing-sentences	EW-S evaluates the writing of two simple sentences to evaluate children's writing stage: - Scribbling - Linear doodles - Separate symbols - Writing correct letters and pseudowords - Writing with omissions of letters - Correctly written words	"I'm going to dictate two sentences and you write them." The evaluator tells the child to write two sentences. The adult dictates each sentence and encourages writing, mentioning that form doesn't matter.	
Emergent writing-spelling	EE-Sp evaluates the writing of the first and last name to evaluate children's writing stage: - Scribbling - Linear doodles - Separate symbols - Writing correct letters and pseudowords - Writing with omissions of letters	"Could you write your first name and last name for me?" The evaluator asks the child to write their first and last name. The adult encourages writing, mentioning that form doesn't matter.	

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Subtask	What is evaluated?	Example of items	Belongs to task
	- Name and surname correctly written		

Annex 2

EXAMPLE OF EXPERT VALIDATION QUESTIONNAIRE

Question 1: In relation to internal domain *phonological awareness*, subtask 1.1: Phonemic Synthesis (PS), indicate your degree of agreement with the following statements related to the adequacy and relevance of the task:

CLAIMS (**1** = strongly disagree; **2** = disagree; **3** = disagree more than agree; **4** = agree more than disagree; **5** = agree; **6** = strongly agree)	**Degree of agreement**					
	1	**2**	**3**	**4**	**5**	**6**
ADEQUACY (properly formulated for the recipients we are going to survey):						
Subtask 1.1 is easily understood (clear, precise, unambiguous, according to the level of information and language for preschool-age subjects).						
• The answer choices are appropriate for each item.						
• The answer choices are presented in a logical order of difficulty.						
• The words and pictures selected for subtask 1.1. are suitable for the age of application of ELDT.						
RELEVANCE (contributes to collect relevant research data):						
• Subtask 1.1. It is relevant to assess phonemic synthesis.						
• Subtask 1.1 contributes directly to the internal domain of *phonological awareness.*						
• Subtask 1.1 is relevant to measuring aspects of emergent literacy.						
Comments and recommendations on Question 1						
Reasons why it is inappropriate						
Reasons why it is irrelevant						

CLAIMS (**1** = strongly disagree; **2** = disagree; **3** = disagree more than agree; **4** = agree more than disagree; **5** = agree; **6** = strongly agree)	**Degree of agreement**					
	1	**2**	**3**	**4**	**5**	**6**
Proposals for improvement (modification, replacement, or deletion)						

Annex 3

EXAMPLE OF FINAL ASSESSMENT OF THE INSTRUMENT BY EACH EXPERT

Task

Please mark X in the corresponding column:

CLAIMS	Yes	No
The instrument contains clear and precise instructions so that respondents can answer appropriately		
The number of ELDT tasks and subtasks is excessive		
Tasks and subtasks pose a risk to the respondent (if YES, please indicate which ones below)		

Tasks and subtasks the expert considers a risk to the respondent:	
Number of task(s) or subtask(s)	
Reasons why they could pose a risk	
Proposals for improvement (modification, replacement, or deletion)	

	Overall assessment of the questionnaire			
	Excellent	**Good**	**Regular**	**Deficient**
Validity of questionnaire content				

Remarks on the questionnaire and recommendations for improvement	
Reasons why it is inappropriate	
Reasons why it is irrelevant	
Proposals for improvement (modification, replacement, or deletion)	

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