

PRECONVENTIONAL READING SKILLS FOR 5-6 YEARS OLD CHILDREN FROM BULGARIA AND SPAIN

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Abstract: Background: *The creation of the writing systems revolutionized the development of the human brain. Man learned to encrypt and decrypt information by utilizing additional symbols.*

Preconventional reading and writing skills, which develop from birth to 5 years of age, have a strong connection with later conventional literacy. Six variables have prognostic value for literacy: Alphabet Knowledge; Phonological Awareness; Rapid Automatic Naming; Writing Awareness; Short-term Phonological Memory. Five early skills also correlate moderately: Concept of Writing; Writing Knowledge; Readiness To Read; Spoken Language; Visual Processing (National Reading Panel, 2000).

The aim of this study is to identify the gender and age differences during the formation of preconventional reading skills and the correlation between the different components in children with two different phonological and writing systems (Bulgarian and Spanish).

The methodology of the study includes the use of the PreLec test in Spanish, adapted for Bulgarian. It consists of 4 subtests: 1. Knowledge Of Written Material; 2. Syllabic Awareness; 3. Phonemic Awareness; 4. Awareness Of The Written System.

In this study, 150 children are examined in the age range between 56 and 72 months from Bulgaria and Spain.

Results: *There are no statistically significant differences between the four subtests. For Bulgarian and Spanish children some differences are observed in subtest 4 (Awareness Of The Written System) with girls performing better.*

No statistically significant age differences were found in three of the subtests (Knowledge Of The Written Material, Syllabic Awareness, Awareness Of The Written System). A statistically significant difference is only observed for Subtest 3 (Phonemic Awareness), most likely because at that age awareness of the phoneme level is still under improvement.

For Bulgarian and Spanish children Knowledge Of The Written Material is in a moderate connection with Syllabic Awareness. On the other hand, Syllabic Awareness for the two groups of children is moderately

linked to Phonemic Awareness. An interesting fact is that we find some differences in Awareness Of The Written System: in Bulgarian children, it exhibits a significant correlation with the Phonemic Awareness, while for the Spanish children it is in moderate connection with Knowledge Of The Written Material.

Keywords: Preconventional Reading, Literacy, Syllable Awareness, Phonemic Awareness, Written System.

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Contribution:

Katerina Shtereva – Abstract; Introduction; Subjects; Research methodology; Research results; Discussion of the results; Conclusion and recommendations; Bibliography

Anelia Ivanova Iotova – Abstract in English; Subjects; Research methodology; Statistical processing; Research results; Bibliography

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INTRODUCTION

The literacy process

Reading and writing are learned by children through education, and most of them reach knowledge in this field before they are literate. Optimal development in the early years is achieved through the interaction of a number of physical, emotional, social and cognitive characteristics and abilities. This development is realized gradually and following a relatively predictable order.

Towards the end of the first year, when babies begin to purposefully grasp and manipulate various objects, books and writing instruments enter their world. Parents are the ones who prepare children for their attitude towards books. Babies between 8 and 12 months of age, whose parents read to them regularly, show knowledge of page turning and attitudes toward book covers. Very often in the process of reading this behavior is accompanied by prattle (Snow & Ninio, 1986; Bus & van IJzendoorn, 1997).

Even after the age of 2, children are able to distinguish the text from the illustrations in children's books, as well as to recognize individual letter segments and later to realize the connection between the phoneme and its graphic notation. Studies conducted by Taylor & Dorsey-Gaines (1988) and Gadsden (1994) reveal that literacy support resources are available even to very poor and stressed families, but they differ in quantity and diversity compared to those available to middle-class or higher-income families. The authors find that children who are often read to begin to produce key phrases or longer sections specific to certain books. At the end of this period, many children describe the actions depicted in the illustrations and engage in dialogues by recreating the words and timbre characteristics of the characters (Sulzby and Kaderavek, 1996; Whitehurst et al., 1988). Mol, Suzanne E., Bus, Adriana G. (2011) investigate whether in the process of children's development the connection between knowledge of written materials and reading becomes stronger. The authors made a meta-analysis involving 99 surveyed participants (preschool children and

kindergartens; students from grades 1-12 and students). They found that shared reading of books by pre-conventional readers facilitated the development of the language, and later supported conventional reading and spelling. It is interesting to note that according to other authors in the field of writing, these connections are not so widespread (Burns & Casbergue, 1992; Anderson & Stokes, 1984; Teale, 1986).

Between the ages of 3 and 4, children show rapid progress in the literacy process. They gradually enter the writing through scribbles of random lines and letter-like written forms. Some children begin to identify characteristic sounds within words and are able to use certain letters of consonant sounds (this applies to English-speaking children; many Spanish children initially use the letters of vowel sounds) (Sulzby & Teale, 1991). During this period, learning the names of letters and sounds helps children to differentiate phonemes, as phonemes have no real physical value. Y. Stoyanova (2009) notes that the interest in written speech is manifested too early in children, enriching their vocabulary with a number of metalinguage concepts - such as letter, write, read, names of languages, etc.

Frequently reading children begin to „read“ their favorite books, imitating adults (Sulzby & Teale, 1991). Some are aware of the transition to conventional reading through their favorite books (Anbar, 1986; Jackson, 1991). F. Daskalova notes (1994: 223) that „in the process of literacy speech becomes the object of study by the child as a linguistic reality.“ This is especially true for children who are learning to read in an alphabetic written language system, such as Bulgarian and Spanish, who have transparent, clear spelling in the relationship between sound and letter.

Janet et al. (1984) found in their study of four children aged four to six with a slight delay in language development. In the study, the children's mothers had to teach them to recognize either the letters of the alphabet or whole words while reading stories. The results show that predictive knowledge can be successfully acquired at home. In addition,

the results show that there are more benefits for the children involved, such as increasing their receptive vocabulary. Lieberman (1974) notes that children who are in the process of learning to read need to further develop their sense of the internal structure of words. As a result of this connection, the good development of phonological awareness during kindergarten attendance is a sure harbinger of subsequent success in reading (Ehri, Wilce, 1985). Moll et al. (2016) confirm that children with language difficulties in preschool are at high risk of literacy problems. The authors included 308 children from Slovakia and the Czech Republic in the study and found that children with reading difficulties showed a concomitant deficit related to code acquisition and the decoding process.

Ho & Bryant (1997) conducted a four-year study on the relationship between Chinese children's phonological skills and their reading success. The authors initially tested the visual and phonological skills of 100 3-year-olds from China and Hong Kong. The results show that phonological abilities significantly predict the acquisition of reading by children 2-3 years later, even after the data processing controls the impact of age, IQ and education of mothers. The authors conclude that the main reason for this connection is that phonological awareness helps children use the phonetic components in Chinese characters.

Yu et al. (2018) describe the appearance of the phonological neural network in 28 children through a study conducted in three stages (preliminary preparation, initial stage of reading and early stage of reading). The authors' findings emphasize the importance of the early emergence of the phonological neural network for the development of reading. The authors note that this is, in a sense, evidence in support of the interactive theory of neural specialization and neurological patterns of development in reading.

Critical predictors for mastering reading in the early childhood

As noted, preconventional reading and writing skills, which develop during the years

from birth to 5 years of age, have a clear and consistently strong link to later conventional literacy. Six variables representing early literacy skills play a prognostic role for later literacy opportunities (National Reading Panel, 2000). These six variables not only correlate further with literacy, as evidenced by data from numerous studies with large numbers of children, but also retain their impact even when other variables such as IQ or socioeconomic status are taken into account. These six variables include:

1. Knowledge of the alphabet (AK): knowledge of the names of the sounds associated with the respective capital letters;
2. Phonological awareness (PA): the ability to detect, manipulate and analyze the acoustic aspects of spoken language (including the ability to distinguish different levels: words, syllables or phonemes);
3. Rapid automatic naming (RAN) of letters or numbers: the ability to quickly name sequences of randomly written letters or numbers;
4. Rapid automatic naming (RAN) of objects or colors: the ability to quickly pronounce a series of randomly repeating objects (e.g., car, tree, house, person) or colors;
5. Awareness of the essence of writing or writing names: the ability to write individual graphemes and one's own name;
6. Short-term phonological memory: the ability to memorize orally presented information for a short period of time.

According to the same source, in addition, five early skills also moderately correlated with further literacy achievement (National Reading Panel, 2000). They include:

1. The concept of writing (eg left-right and top-down tracking) and those related to written sources (book cover, author, text, etc.);
2. Knowledge of writing: a combination of elements of knowledge of the alphabet, the concept of writing and initial decoding;
3. Readiness: a combination of knowledge of the alphabet, the concept of written material, vocabulary, phonological memory and phonological awareness;

4. Spoken language: the ability to produce or understand spoken language, including vocabulary and grammar;
5. Visual processing: the ability to relate or discriminate visually represented symbols.

The report of the National Reading Group (2000) provides an analysis of the specific relationships between these variables. These 11 variables are the established predictors of literacy at the end of kindergarten or the beginning of first grade, and not so much for later literacy. For example, the development of oral language plays a greater role in further achievement when more complex skills are involved, such as grammar, the ability to define words and understand text / context.

In addition, it is worth noting that Catherine E. Snow, M. Susan Burns & Peg Griffin (Snow, CE, Burns, MS, & Griffin, P., 1998) talk about the presence of group and individual risk factors in the literacy process. Regarding the group risk factors, they note irregular school attendance; low family incomes; limited knowledge of the official spoken language, and the use of a dialect. To the individual risk factors the authors include: the presence of a parent with a history of reading difficulties; limitations in the cognitive sphere; the lack of age-appropriate skills related to phonological awareness, the ability to naming; general language ability; hearing impairment; the presence of a primary medical diagnosis in which reading problems appear as a secondary symptom.

Bulgarian and Spanish writing systems and traditions in literacy

The Bulgarian writing system has a clear spelling and „transparent“, as well as a connection between sound and letter. The number of graphemes is 30. In the Bulgarian writing system, a characteristic feature is an established syllabic principle of writing. It is historically related to the Russian model, characterized by the presence of a glide plus a vowel. Thus, combinations of palatal / j / and vowel a / a / or y / u / are transmitted in writing through the letters я and ю: тя [tja], тюл [tjuł] (Boyadzhiev and Tilkov, 1999:

267). F. Daskalova (1994: 224) notes that literacy training in the Bulgarian school is carried out by the sound analytical-synthetic method. This is based on the study of sounds in living language. It „presupposes both the analysis of the connected speech as consisting of sentences, the sentences - of words, the words - of syllables, the syllables - of sounds, and the synthesis (merging) of the sounds into syllables, the syllables - into words, the words - into sentences, the sentences - into a related text“. For the Bulgarian educational system another characteristic is the simultaneous study of reading and writing. School education begins at the age of seven. Bulgarian children study four written characters for each sound at the same time (two printed and two handwritten letters).

Spanish is also a transparent language and consistent in terms of sounds and letters (Lopez-Escribano S., Ivanova Io., Shtereva K., 2018). The number of graphemes in Spanish is 27. In terms of spelling, the connections are not always so consistent. Graphemes are related not so much to phonological and phonotactic rules as to the spelling of the word. Words contain phonemes that are represented by different graphemes, for example the sound [b] is represented by the letters „b“ and „v“ (true of most European Spanish dialects).

In Spain, reading instruction usually starts at the age of 5 to 6 years, followed by getting to know the smaller to larger units within the word, i.e. similar to Bulgaria, the analytical-synthetic principle of literacy is applied. Gradually, the method of synthetic phonetics is used to encode simple CV syllables, which subsequently form simple words. More complex syllables such as CCV are included in learning only after children have acquired basic knowledge and built an initial vocabulary. Seymour et al. note that the basic process of mastering reading is achieved by the end of first grade (Seymour et al., 2003).

OWN RESEARCH

The aim of this study is to establish the differences between gender and age in the period of formation of preconventional reading skills

TABLE 1
SUBJECTS - DEMOGRAPHIC DATA BULGARIA AND SPAIN

VARIABLE		FREQUENCY		PERCENTAGE /% /	
		Bulgaria	Spain	Bulgaria	Spain
Age in months	56-61	14	-	14	-
	62-67	57	16	58	30,8
	68-72	27	36	28	69,2
Total		98	52	100	100
Gender	boys	47	26	48	50
	girls	51	26	52	50

and the correlations between the individual components of these skills in children with two different phonological and writing systems (Bulgarian and Spanish).

Subjects

This study included 150 children with a mean age of 66 months as follows: 98 children aged 56 to 72 months: 47 boys and 51 girls from two kindergartens in Sofia, Bulgaria, and 52 children aged 62 to 72 months: 26 boys and 26 girls from two kindergartens in Madrid, Spain. Descriptive information is presented in Table 1.

All children are without disorders in sensory modalities and have normal intelligence. The study does not take into account preliminary data related to language and / or other types of disorders. Only children with written permission from their parents were allowed to participate in the study.

Research methodology

Description of PreLec Preschool Skills Test (specially translated and adapted in Bulgarian for the purposes of this study - (author's note))

(Authors: Judith Surro, Fernando Leal, Daniel Sarabaso, Maria Elena Lopez; illustrator: Alberto Fregoso Gafford - (Suro S. et al. 2010)) (Not sure if Et all is name, but if it isn't, it should be "et al.")

PreLec is a test that monitors the pre-reading skills of preschool children. Its duration is between 30-40 minutes. The team of authors

that created the test sought to include all the so-called „predictors“ for reading. There is a variety of cognitive aspects, according to research in cognitive psychology and developmental psychology, representing stable statistical relationships in previous research on reading and writing. The components are the following:

SUBTEST 1: AWARENESS OF WRITTEN MATERIAL

- 1.1. Knowledge of written tales
- 1.2. Knowledge of the parts of a book
- 1.3. Assumptions based on illustrations or parts of a fairy tale
- 1.4. Knowledge of the direction in which something is written
- 1.5. Assumptions about the text based on the general structure
- 1.6. Listening and memorizing a read story
- 1.7. Meanings of word (s)

EVALUATION: 1 point for each acceptable answer. Maximum points - 20.

SUBTEST 2: SYLLABIC AWARENESS

- 2.1. Counting the syllables of a spoken word
- 2.2. Identifying the different syllable
- 2.3. Eliminating a syllable from a word
- 2.4. Identifying of a stressed syllable
- 2.5. Connecting words that end in the same way / rhyme /

EVALUATION: 1 point for each acceptable answer. Maximum number of points 25.

SUBTEST 3: PHONEMIC AWARENESS

- 3.1. Identifying the initial sound of a word
- 3.2. Blending given phonemes to form a word
- 3.3. Segmenting phonemes in the word
- 3.4. Identifying the final sound of a word
- 3.5. Eliminating a phoneme from a word

EVALUATION: 1 point for each correct answer. Maximum points 25.

SUBTEST 4. AWARENESS OF THE WRITTEN SYSTEM

- 4.1. Know the sound or the name of the letter
- 4.2. Writing your own name and that of a friend
- 4.3. Writing a message asking for help

EVALUATION: It is marked for each task.

All participants were tested individually in a quiet room in the respective kindergarten within one session. The results of each session are recorded in a protocol created for this purpose.

Research results**Descriptive statistics**

Table 2 presents the average values of the variables according to the studied parameters included in the test for the two groups of children.

Reliability of the test

Reliability (Cronbach α) in terms of internal consistency of the individual subtests and the test as a whole is given in Table 3. It should be noted that the test reliability indices are very good for both groups (this is the first application of the adapted version of the test for Bulgaria). (Table 3)

Levene's test for gender and age differences

The first source of variation studied by the ANOVA method was gender (at $P \leq 0.05$ and $F \sim 3$) (Table 4). No statistically significant gender differences were found for the four subtests included in the preconventional literacy study. Differences were found only

TABLE 2
DESCRIPTIVE STATISTICS FOR THE FOUR SUBTESTS - BULGARIA AND SPAIN

TESTS	Bulgaria			Spain		
	Subjects	Minimum-maximum	Average value	Subjects	Minimum-maximum	Average value
1. Awareness of written material	98	7-20	14,08	52	9-19	15,15
2. Syllabic awareness	98	3-20	12,56	52	4-23	15,58
3. Phonemic awareness	98	0-24	6,34	52	0-25	17,75
4. Awareness of the writing system	98	0-38	19,20	50	17-38	28,20

TABLE 3
TEST RELIABILITY - CRONBACH'S ALPHA COEFFICIENT / BULGARIA AND SPAIN /

Reliability of the test			
Bulgaria		Spain	
Alfa Cronbach	N of the elements	Alfa Cronbach	N of the elements
0,73	74	,814	74

in test 4 (Awareness of the writing system) with a better result in girls, without these differences being statistically significant (Table 5).

To identify differences in the next source of variation – age, a Levene Test - one-way analysis of variance (ANOVA) was also performed (Table 6). No statistically significant age differences were found in two of the subtests (Awareness of written material and Syl-

lable awareness). A statistically moderately significant difference was observed in the Writing System Awareness subtest. And in terms of subtest 3 (Phonemic awareness) the difference is of high statistical significance. In connection with the findings, a multi-layer comparison (Multiple Comparisons) is presented to illustrate the specific results of the individual parameters that determine this result (Table 7).

TABLE 4
INFLUENCE OF GENDER ON PRECONVENTIONAL LITERACY - ANOVA

VARIABLES	F	P
1. Awareness of written material	1,54	0,22
2. Syllabic awareness	0,05	0,82
3. Phonemic awareness	0,2	0,65
4. Awareness of the writing system	1,69	0,2

TABLE 5
DESCRIPTIVE STATISTICS FOR ALL SUBTESTS (GENDER DIFFERENCES) - BULGARIA AND SPAIN

PRELEC - tests	gender	Bulgaria and Spain		
		Subjects	Average value	Standard deviation
1. Awareness of written material	boys	73	13,52	2,33
	girls	77	14,71	2,51
2. Syllabic awareness	boys	73	13,52	4,4
	girls	77	13,69	4,48
3. Phonemic awareness	boys	73	9,41	8,26
	girls	77	10,01	7,45
4. Awareness of the writing system	boys	73	21,1	11,4
	girls	77	23,36	9,78

TABLE 6
INFLUENCE OF AGE ON PRECONVENTIONAL LITERACY - ANOVA

VARIABLES	F	P
1. Awareness of written material	0,44	0,51
2. Syllabic awareness	2,92	0,09
3. Phonemic awareness	8,99	0,003
4. Awareness of the writing system	3,81	0,05

TABLE 7
DESCRIPTIVE STATISTICS FOR ALL SUBTESTS REGARDING AGE - BULGARIA AND SPAIN

PRELEC - tests	Age /in months/	Bulgaria and Spain		
		Subjects	Average value	Standard deviation
1. Awareness of written material	56-66	69	14,61	2,46
	66-72	81	14,32	2,82
2. Syllabic awareness	56-66	69	12,94	3,91
	66-72	81	14,17	4,77
3. Phonemic awareness	56-66	69	7,75	6,92
	66-72	81	11,65	8,25
4. Awareness of the writing system	56-66	69	20,43	10,72
	66-72	81	23,82	10,37

TABLE 8
PEARSON CORRELATION BETWEEN THE FOUR PRELEC TESTS / BULGARIA AND SPAIN /
(ABOVE THE DIAGONAL ARE THE RESULTS OF THE BULGARIAN CHILDREN,
AND BELOW IT ARE THE RESULTS OF THE SPANISH ONES)

PRELEC		1. Awareness of written material	2. Syllabic awareness	3. Phonemic awareness	4. Awareness of the writing system
1. Awareness of written material	<i>Correlation coefficient (r)</i>	-	,527**	,467**	,390**
2. Syllabic awareness	<i>Correlation coefficient (r)</i>	,647**	-	,547**	,493**
3. Phonemic awareness	<i>Correlation coefficient (r)</i>	,440**	,576**	-	,742**
4. Осъзнаване на писмената система	<i>Correlation coefficient (r)</i>	,650**	,434**	,431**	-

Correlation analysis

This section presents the correlation matrices between the four PRELEC components (Table 8). All correlations were significant at $r < 0.05$. This study proved a statistically significant relationship between the components of the test (Pearson correlation).

In both Bulgarian and Spanish children, Awareness of written material is moderately related to Syllabic awareness. For its part, the syllable awareness for both groups of children is moderately correlated with the phonemic awareness. Regarding the Awareness of the written system we find some differences: in Bulgarian children it is significantly correlated with the Phonemic Aware-

ness, while for Spanish children it is in a moderate relationship with the Awareness of written material.

DISCUSSION OF THE RESULTS

The aim of this study is to establish gender and age differences in the individual components of the PRELEC test, the reliability of the version adapted for the Bulgarian population and the correlations between its individual component subtests. Evaluation and analysis of the research questions is carried out through descriptive statistics, a measurement of internal consistency and reliability of the test (Cronbach α), and a correlation analysis.

The test reliability indices are very good. This study proves a statistically high relationship between all components of the test. As the design of the test is based on the findings of the National Reading Group in the USA (2000), it is somewhat logical to confirm the data for the studied groups of children from Bulgaria and Spain (Catherine E. Snow, M. Susan Burns, and Peg Griffin, 1998; National Reading Panel, 2000).

No statistically significant gender differences were found for the four tests included in the pre-conventional literacy study. Differences were found only in test 4 (Awareness of the writing system) with a better result in girls, but they were not statistically significant. The gender factor has not been commented on in the research literature, but the findings may justify a larger study and expansion of educational programs for children at this age (Catherine E. Snow, M. Susan Burns, and Peg Griffin, 1998; Escribano, Ivanova & Shtereva, 2018).

No statistically significant age differences were found in two of the subtests (Awareness of the written material; Syllabic awareness). A statistically moderate difference was observed in the Awareness of the writing system subtest. A number of authors also comment on the important role of children's familiarity with various written sources (Bus & van IJendoorn, 1997; Gadsden, 1994; Snow & Ninio, 1986; Suzanne, Bus, 2011). With regard to subtest 3 (Phonemic awareness), the difference is statistically significant, most likely because at this age the awareness of the level of the phoneme is in the process of development. In support of this, there are a number of studies on various phonological and writing systems (Ehri, Wilce, 1985; Ho & Bryant, 1997; Liberman, 1974; Yu X et al, 2018).

This study proved a statistically significant relationship between the components of the test. In both Bulgarian and Spanish children, Awareness of the written material is moderately related to Syllabic awareness. For its part, the Syllabic awareness for both groups of children is moderately correlated with the Phonemic awareness. Regarding the Awareness of the written system, we find

some differences: in Bulgarian children it is significantly correlated with the Phonemic awareness, while for Spanish children it is in a moderate relationship with the Awareness of the written material.

CONCLUSION AND RECOMMENDATIONS

The presented research proved that the adapted version of the PRELEC test in Bulgarian is an appropriate and highly reliable tool through which the progress of children in the pre-reading and literacy period can be monitored. In addition, we highlight the importance of considering and studying the predictors associated with conventional reading, as well as their universal nature for a number of phonological and written systems.

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