

## Chapter # 15

### SCHOOLCHILDREN'S PERFORMANCE ON COGNITIVE-LINGUISTIC SKILLS DURING THE CONTEXT OF A PANDEMIC

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#### ABSTRACT

Aim: to characterize the performance of cognitive-linguistic skills of schoolchildren in early literacy during the pandemic. Twenty-two Brazilian schoolchildren participated in this preliminary study, distributed in GI, composed by ten schoolchildren for 1<sup>st</sup> grade and GII, composed by twelve schoolchildren for 2<sup>nd</sup> grade, submitted to the application of the Cognitive-Linguistic Skills Assessment Protocol. Results: schoolchildren from GI and GII showed average performance for writing the name, sequential alphabet recognition, and visual memory of shape. The GI presented a refusal response for the subtests of word, nonword and, picture dictation, word repetition and visual sequential memory of shapes and poor performance for alphabet recognition in random order and average performance for alphabet recognition in sequence. GII showed lower performance for the subtests of word, nonword and, picture dictation and superior performance for alphabet recognition in random order, alphabet in sequence and visual sequential memory of shapes. Discussion: the appropriation of the letter-sound relationship mechanism raises questions, since it evidenced the difficulty of all schoolchildren in cognitive-linguistic skills necessary for the full development of reading and writing. Conclusion: schoolchildren in the 1st and 2nd grade showed lower performance in cognitive-linguistic skills important for learning reading and writing.

*Keywords:* literacy, pandemic, learning, child development.

#### 1. INTRODUCTION

COVID-19 spread rapidly around the world in 2020 and generated the unprecedented situation where 90% of the student population was being isolated worldwide (Arruda, 2020). In this pandemic scenario, social isolation was initiated as a measure of prevention and attenuation of the virus. Among these measures, in addition to the closing of many educational institutions, the suspension of in-person classes and remote teaching were implemented (Camacho, Joaquim, Menezes, & Sant'Anna, 2020).

Regarding remote learning, it was implemented on an emergency basis, that is, the schoolchildren would only return to the face-to-face format once the health crisis had been resolved or controlled, thus providing schoolchildren with temporary access to educational content in a way that minimizes effects of social isolation on their education and learning (Joye, Moreira, & Rocha, 2020).

Therefore, the aim of this study was to characterize the performance of cognitive-linguistic skills of schoolchildren in the initial stage of literacy during the pandemic.

## **2. BACKGROUND**

The covid-19 pandemic made even more evident the discrepancies between the different realities experienced by young students, insofar as access to virtual classes with the use of more advanced digital tools and teachers trained for this practice were not equal or homogeneous in the public and private education systems (Joye, Moreira, & Rocha, 2020; Camacho, Joaquim, Menezes, & Sant'Anna, 2020; Nascimento, Ramos, Melo & Castioni, 2020).

Many were the challenges faced by the need for the realization of emergency remote teaching (Batista & Martins, 2021). Brought issues related to the limitations in the teaching process, in view of the new configurations in the family environment facing the study at home. They also elucidated how complex and difficult it was to contemplate the school curriculum during face-to-face classes and adjust such content to the family environment.

The repercussions of the pandemic on the academic learning of Brazilian schoolchildren are still inestimable, according to (Stolf et al., 2021; Santana, Capellini & Germano, 2022). Thus, professionals working in the field of education must be aware of the overlapping of learning difficulties in reading and writing, due to the lack of instructional teaching of the alphabetic basis of the Brazilian Portuguese writing system, added to the difficulties in the teaching-learning relationship imposed by the pandemic. Such aspects may imply in failures in the identification of possible diagnoses of learning problems, as well as in the understanding of normality parameters for the acquisition and development of reading and writing.

Hence, more than an educational problem, the blocking of access to school reconfigured the education system, society and, consequently, the performance of education speech language therapy and clinical their therapy clinic.

Based on the above, this study aimed to investigate whether the period of remote access education established during the pandemic compromised the development of cognitive-linguistic skills necessary for the full literacy of schoolchildren in the early literacy phase.

## **3. OBJECTIVE**

To characterize the performance of cognitive-linguistic skills of schoolchildren in early literacy phases during the pandemic

## **4. METHODS**

This study was approved by the Research Ethics Committee at Faculty of Philosophy and Sciences of the São Paulo State University – FFC/ UNESP, Marília, São Paulo, Brazil, under number 4.862.668.

The sample of the study was composed of 48 schoolchildren of both sexes, ranging in age from 6 to 7 years and 11 months, from the 1<sup>st</sup> and 2<sup>nd</sup> year of elementary school, with complaints about learning problems and referred by municipal public schools in the region of Marília-SP.

From the analysis of the performance of the schoolchildren it was verified that 26 could not read and write, so the number of participants was redefined to 22 schoolchildren, of both sexes, in the age group of 6 years to 7 years and 11 months of the 1st and 2nd year of elementary school, divided into two groups:

- Group I (GI): composed of 10 schoolchildren from the 1st year of Elementary School, 50% male and 50% female and;

Schoolchildren's performance on cognitive-linguistic skills during the context of a pandemic

- Group II (GII): composed of 12 schoolchildren from the 2nd year of Elementary School, 83.3% male and 16.7% female.

All schoolchildren were submitted to application of the collective and individual version of the Cognitive-Linguistic Skills Assessment Protocol for schoolchildren in the early phase of literacy (Silva & Capellini, 2019), consisting of the following tests: writing of the name, writing of the alphabet in sequence, copying of shapes, dictation of words and pseudowords or non-words, dictation of figures, dictation of numbers, recognition of the alphabet in sequence, recognition of the alphabet in random order, reading of words, reading of non-words, rhyme, alliteration, syllabic segmentation, discrimination of sounds, repetition of words, repetition of non-words, repetition of numbers in reverse order, fast automatic naming of figures, fast automatic naming of digits, visual memory of shapes.

The procedure of this study was applied in person and followed the Unesp guidelines to reorganize activities during the pandemic. Data analysis was performed using the Statistical Package for Social Sciences, version 25.0. The results were statistically analyzed at a significance level of 5% (0.05).

## 5. RESULTS

Table 1 shows there was a statistically significant difference between the study groups with the application of the Likelihood-Ratio Test.

In Table 1, it was possible to verify that the schoolchildren from GI and GII showed average performance for writing their name and writing the alphabet in sequence.

*Table 1.*  
*Frequency distribution of the performance classifications of schoolchildren from groups GI and GII in the Cognitive-Linguistic Skills Assessment Protocol. Likelihood-Ratio Test (p<0.05).*

Subtests	Classification	G1		GII		p Value
		Freq.	%	Freq.	%	
WN	Refusal	0	0.00	0	0.00	0.036*
	Inferior	4	40.00	1	8.30	
	Average	6	60.00	6	50.00	
	Superior	0	0.00	5	41.70	
CS	Refusal	0	0.00	0	0.00	0.015*
	Inferior	4	40.00	0	0.00	
	Average	6	60.00	12	100.00	
	Superior	0	0.00	0	0.00	
WD	Refusal	7	70.00	2	16.70	0.027*
	Inferior	3	30.00	7	58.30	
	Average	0	0.00	3	25.00	
	Superior	0	0.00	0	0.00	
NWD	Refusal	7	70.00	2	16.70	0.036*
	Inferior	3	30.00	9	75.00	
	Average	0	0.00	1	8.30	
	Superior	0	0.00	0	0.00	
FD	Refusal	8	80.00	2	16.70	0.023*
	Inferior	2	20.00	6	50.00	
	Average	0	0.00	2	16.70	
	Superior	0	0.00	2	16.70	
RAS	Refusal	2	20.00	0	0.00	0.002*
	Inferior	3	30.00	0	0.00	
	Average	4	40.00	1	8.30	
	Superior	1	10.00	11	91.70	
RARO	Refusal	2	20.00	0	0.00	0.006*
	Inferior	4	40.00	0	0.00	
	Average	3	30.00	3	25.00	

RW	Superior	1	10.00	9	75.00	0.030*
	Refusal	5	50.00	0	0.00	
	Inferior	1	10.00	1	8.30	
	Average	3	30.00	5	41.70	
VMS	Superior	1	10.00	6	50.00	0.031*
	Refusal	5	50.00	0	0.00	
	Inferior	2	20.00	2	16.70	
	Average	2	20.00	5	41.70	
	Superior	1	10.00	5	41.70	

Caption: WN: writing name, CS: copy shapes, WD: word dictation, NWD: nonword dictation, ND: figure dictation, RAS: recognition of the alphabet in sequence, RARO: recognition of the alphabet in random order, RW: repeating words, VMS: visual memory for shapes.

Table 1 allows verifying that both GI and GII students presented average performance for writing the name and writing the alphabet in sequence. GI presented a refusal response for the subtests of word dictation, pseudowords dictation and figure dictation, word repetition and visual sequential memory of shapes, in addition to inferior performance for alphabet recognition in random order and average performance for alphabet recognition in sequence.

GII presented inferior performance for the subtests of word dictation, pseudowords dictation, and figure dictation, in addition to superior performance for alphabet recognition in random order, alphabet in sequence and visual sequential memory of shapes.

## 6. DISCUSSION

The process of reading and writing development process was already questionable before the pandemic occurred and widely debated before the pandemic due to the fact that current literacy methodologies in Brazil do not focus on the explicit teaching of the alphabetic and orthographic principle of the Portuguese Language (Pacheco & Hubmer, 2021). Now, in a virtual education system, issues related to the appropriation of knowledge of the letter-sound relationship mechanism bring questions and discussions, since, among the results of this study, it was possible to observe the difficulty of both 1st and 2nd graders with the cognitive-linguistic skills necessary for the full development of reading and writing in an alphabetic writing system such as Brazilian Portuguese.

Around the world, the pandemic has caused substantial changes in the most varied domains and the education sector was no exception. The current unprecedented situation has required a rapid transition from face-to-face teaching-learning to virtual education, now giving rise to a hybrid model.

The beginning of literacy, a phase in which the schoolchildren in this study found themselves, is an important period for the acquisition of cognitive-linguistic skills, considered predictors for the learning of reading and writing (Cunha & Capellini, 2010; Silva & Capellini, 2019; Santos & Capellini, 2020). Furthermore, any delays resulting from an inadequacy in the teaching of alphabetic and orthographic principle, that is, in teaching the letter-sound conversion mechanism, can trigger difficulties in the reading and writing of words.

In this study, we found that among the schoolchildren in the GI group there was a refusal response for the tasks of dictation and repetition of words and visual sequential memory of shapes and poor performance for alphabet recognition in random order. On the other hand, the schoolchildren from GII presented lower performance in the dictation tasks, showing that knowledge of the sequence of the letters of the alphabet for the two groups was not a guarantee of acquisition for the application of the alphabetic and orthographic principle at the time of writing.

When receiving schoolchildren with complaints of learning problems today, professionals in the clinical field, such as speech therapists and, educational speech language

pathologist should extend their considerations about complaints from their parents or teachers to include the context of exposure to teaching-learning situations and the consequences of its deprivation.

Thus, the repercussions on the academic learning of Brazilian schoolchildren are still invaluable because the problems of academic learning in the country are not recent, dating back to pre-Covid 19 times. Overlapping between reading-and-writing difficulties can have varied, distinct and perhaps incomparable repercussions.

The present study found that whereas among the students of the GI group there was a refusal response for the tasks of dictation and repetition of words and visual sequential memory of shape, as well as an inferior performance in the recognition of the alphabet in random order, GII students presented an inferior performance in the dictation tasks, evidencing that, for both groups, knowing the knowledge of the sequence of the alphabet letters, alone, did not ensure acquisition for applying the alphabetic and orthographic principle at the time of writing.

The results of this study indicate that health professionals, including speech therapists, should be prepared to establish an interface between health and education during the performance of their diagnostic and interventional clinical reasoning.

This is because, according to UNESCO, the natural decline in learning could expand for more than a decade without new public policies to invest in educational improvements (UNESCO, 2020). In other words, immediate improvement in distance learning is not enough thinking and rethinking public policies that represent the planning of recovery strategies for academic learning (Queiroz & Paula, 2021) have never been more urgent.

Furthermore, the alphabetizing teacher's lack of knowledge about the instructional teaching of the alphabetic and orthographic principles, allied with the lack of professionals such as educational speech therapists at school causes the teaching-learning relationship of schoolchildren in the initial phase of literacy to be at risk, since the lack of qualified and trained educators in the educational field, from the early identification of reading and writing problems in the classroom, can contribute to an educational planning which does not develop the strategies necessary for the acquisition and development of coding and decoding mechanisms of the writing system of the Portuguese language (Stolf et al., 2021, Santana, Capellini & Germano, 2022).

The data from this study remind us of the need to think, as clinical and educational speech therapists, that there is still much to be done for these schoolchildren. A literature review carried out by the authors (Almeida & Júnior, 2021) found 15 scientific articles in 2020 addressing the impacts of the pandemic on schoolchildren and observed a frequency of psychological and eating disorders and negative emotions in 40% of the articles, anxiety in 33%, depression in 26%; irritability, sedentary lifestyle and sleep disturbance was cited in 20% of the articles, stress and post-traumatic stress disorder in 6% of the articles.

The data collected in the aforementioned study are alarming because referrals to the speech therapy clinic will be carried out by the school and, if educational speech therapists are not able to conduct these referrals in a proper manner, most of these children will probably be misdiagnosed. However, it should also be considered that four of the articles in this study reported that the social and educational isolation suffered by the child population made it vulnerable to the occurrence of symptoms of lack of social contact, lack of need for social communication, inattention and hyperactivity besides anxiety, irritability, obsession, hostility and impulsivity, which can compromise memory formation for learning.

Based on the data found in the present study, we conclude this article by highlighting the need for clinical and/or educational speech therapists to act as guardians of the acquisition and development of school learning, assisting in the planning of specific actions to promote normal development and the detection of deviant processes of the teaching-learning process,

thus conquering an important space together with teachers and the educational staff. This space can be a forum for dialogue not only about the relevance of cognitive-linguistic skills for the development of academic learning, but also about child development milestones and predictors for literacy, so important to ensure the success of reading and writing of these students in the initial phase of literacy and so disregarded or not prioritized during the remote teaching-learning process during the COVID-19 pandemic.

## 7. FUTURE RESEARCH DIRECTIONS

Future studies need to be carried out with a larger sample, aiming to verify the impact of the pandemic on the development of reading and writing learning in the initial phase of literacy.

## 8. CONCLUSION

Schoolchildren in the initial phase of literacy in the 1<sup>st</sup> and 2<sup>nd</sup> years had lower performances in important cognitive-linguistic skills that are essential for the development and learning of reading and writing, with 1<sup>st</sup> year students also presenting a refusal response in several of those skills. They did not know how to perform the tasks requested probably because they were not literate enough and did not know how to use the cognitive-linguistic skills necessary to trigger the analysis and synthesis processes necessary for the formation of words for both reading and writing.

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