

Performance of children with typical language development in tasks of production and understanding relative clauses in relation to school performance

Performance de crianças com desenvolvimento típico de linguagem em tarefas de produção e compreensão de orações relativas em relação ao desempenho escolar

Rendimiento de niños con desarrollo típico de lenguaje en tareas de producción y comprensión de oraciones relativas en relación al desempeño escolar

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Abstract

Objective: To analyze the performance of children with typical language development, in production tasks and in the understanding of relative clauses, comparing with school performance. **Methods:** This study included 30 children, aged between 4: 0 and 8:11 (years: months). A phonological evaluation of the child (AFC), articulatory examination, relative sentence comprehension test, relative sentence production

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Authors' contributions:

YALG: design of research, acquisition, analysis and interpretation of data, statistical analysis and writing of the manuscript.
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test, oral language evaluation and auditory screening were performed. For analysis of school performance, a scale of 1 to 5 was given to the teacher responsible for the child. Afterwards, the children were selected according to inclusion criteria and divided by school performance. Samples were analyzed statistically, performing tests comparing school performance and understanding of relative sentences. **Results:** In the comparison between the school performance and the comprehension test, there was a statistical difference, indicating that the better the school performance, the better the test for understanding relative sentences. In the comparison of school performance with production, there was no significant statistical difference. **Conclusion:** School performance interferes in the understanding of relative clauses and the better the school performance, the better the performance of children in the test of relative sentence comprehension. As for production, school performance does not interfere.

Keywords: Vocabulary; Linguistics; Student; Acquisition; Children's language.

Resumo

Objetivo: Analisar a performance de crianças com desenvolvimento típico de linguagem, em tarefas de produção e de compreensão de orações relativas comparando com o desempenho escolar. **Métodos:** Fizeram parte deste estudo 30 crianças, com idades entre 4:0 e 8:11 (anos:meses). Foi realizada avaliação fonológica da criança (AFC), exame articulatório, teste de compreensão de orações relativas, teste de produção de orações relativas, avaliação da linguagem oral e triagem auditiva. Para análise do desempenho escolar, foi dada uma escala de 1 a 5 para a professora responsável pela criança. Após, foram selecionadas as crianças dentro dos critérios de inclusão e divididas por desempenho escolar. Os resultados foram analisados estatisticamente, realizando a comparação entre o desempenho escolar e a compreensão de orações relativas, e entre o desempenho escolar e a produção das orações relativas. **Resultados:** Na comparação entre o desempenho escolar e o teste de compreensão, houve diferença estatística, indicando que quanto melhor o desempenho escolar, melhor o desempenho no teste de compreensão de orações relativas. Na comparação do desempenho escolar com o teste de produção, não houve diferença estatística significativa. **Conclusão:** O desempenho escolar interfere na compreensão das orações relativas, pois, quanto melhor o desempenho escolar melhor será a performance das crianças no teste de compreensão de orações relativas. Quanto à produção, o desempenho escolar não interfere.

Palavras-chave: Vocabulário; Linguística; Escolar; Aquisição; Linguagem infantil.

Resumen

Objetivo: Analizar el desempeño de los niños con el desarrollo típico del lenguaje, las tareas de producción y la comprensión de las oraciones relativas comparando con el desempeño escolar. **Métodos:** Hizo parte de este estudio 30 niños, con edades entre 4:0 y 8:11 (años:meses). Se realizó una evaluación fonológica del niño (AFC), examen articulatorio, prueba de comprensión de oraciones relativas, prueba de producción de oraciones relativas, evaluación del lenguaje oral y clasificación auditiva. Para el análisis del desempeño escolar, se dio una escala de 1 a 5 para la profesora responsable del niño. Después de haber sido seleccionados los niños dentro de los criterios de inclusión y divida por desempeño escolar. Los resultados fueron analizados estadísticamente, realizando la comparación entre el desempeño escolar y la comprensión de oraciones relativas, y entre el desempeño escolar y la producción de las oraciones relativas. **Resultados:** En la comparación entre el desempeño escolar y la prueba de comprensión, hubo diferencia estadística, indicando que cuanto mejor el desempeño escolar, mejor el desempeño en la prueba de comprensión de oraciones relativas. En la comparación del desempeño escolar con la prueba de producción, no hubo diferencia estadística significativa. **Conclusión:** El desempeño escolar interfiere en la comprensión de las oraciones relativas, pues, cuanto mejor el desempeño escolar mejor será el desempeño de los niños en la prueba de comprensión de oraciones relativas. En cuanto a la producción, el desempeño escolar no interfiere.

Palabras claves: Vocabulario, Lingüístico; Escolar; Aquisición; Lenguaje infantil.

Introduction

Relative clauses are those composed by a relative pronoun, which modifies a noun phrase, phrase, and can perform the syntactic function of adjective. Relative pronouns have the function of avoiding the repetition of words or expressions within a sentence, among which we have: which (plural and singular), whose (plural and singular), what, where other terms that can be replaced by them^{1,2}. These relative pronouns are classified into variables and invariables. The variables are: which, whose and how much (many); the invariables are: that, who and where.

Among the invariable pronouns, the relative pronoun “who/that”, considered a universal relative, stands out because it is considered of greater use in both oral and written language. This pronoun also makes reference to persons and objects, both singular and plural², as can be seen in examples 1 and 2.

The girl who fell is my sister. (reference to the subject of the sentence)

I picked up the book that was on the table. (reference to the object of the sentence)

In this way, the relative clauses of subject and object emerge^{1,2}. The relative clause of subject (example 3) focuses on the subject of the sentence, these being the relative clauses considered the easier to understand in the Portuguese language, that is, they are easier to process, since they follow the same sequence as the canonical order of the language (SUBJECT-VERB-OBJECT). On the other hand, the relative clause of object (example 4) presents a different order, that is different from the basic structure of the language (SUBJECT-OBJECT-VERB), thus requiring a greater linguistic and processing knowledge^{3,4}.

The student who irritated the teacher left school. (relative clause of subject sentence)

The student that the teacher irritated left the school. (relative clause of object sentence)

Given the above, it is understood that relative clause of object sentences are more difficult than relative clause of subject sentences. Regarding the use of oral language, the acquisition of the various types of relative clauses, whether simple or com-

plex, occurs gradually, sequentially and late, and it is important to determine the degree of difficulty in acquiring these structures³.

In a study conducted with Portuguese children between the ages of three and a half and eight and a half years old, the authors analyzed the comprehension and production of different types of relative clause sentences through the application of several tests. In order to test comprehension, the children were instructed to represent/imitate the actions described in phrases that the experimenter pronounced using puppets, and to evaluate the production it was requested that the child repeated immediately and deferred, a certain action represented in drawing⁵.

In another study, comprehension tests of relative clauses were performed, as a result children did not present difficulties in understanding relative clauses in a real communication situation. However, phrases with center-fit and with alterations in the canonical order of the relative clauses reveal difficulties related to processing, since the direct object comes before the verb⁶.

Concerning the acquisition of relative clauses, they emerge in the oral language of children around the age of three, more easily in relative clauses docked right, subject function, however, the syntactic knowledge that allows the construction of relative clauses, as well as other complex constructions, is still under development at the beginning of the first year of basic education. This acquisition also depends on the input that the child receives, in both the environment in which the child lives, and the stimuli that the child receives during school age⁷.

Between the age of five and six years old, language is acquired and the child knows how to use it correctly, mastering the basic structure of the language. By the age of five, children’s speech already present complete relative clauses, and all forms of conjunctive subordinates, be they temporal, final, and causal, among others. Children of ages three and four understand the relative clauses that are identified only by the situational context and not by the linguistic context^{7,8}.

Studies show that children have, since very early, grammatical competence to produce relative clause sentences, but the difficulty in understanding or producing these structures means that these types of sentences generate difficulties because of slow processing. Although children occasionally produce relative clauses in the first years of life, it is

only in school age that the use of relative clauses in their oral language stabilizes, given its complexity in relation to other types of structures^{7,8,9}.

Method

This research is part of a larger project, which was approved by the Research Ethics Committee (CEP) of the University, under the number 54363016.8.0000.5346.

Prior to the data collection, the parents/legal guardians signed the Informed Consent Form (ICF). All the children who were allowed to participate in the research signed the Child Assent Agreement (CAA). The choice of the site to perform the data collection was made for convenience, carried out in a Municipal School located in the central region. Children with typical phonological development (TFD) were selected.

The inclusion criteria adopted for the research were: children of age from four years and eight months old (4:8) to eight years and 11 months old (8:11) at the date of data collection; be monolingual Brazilian Portuguese speaker, to present normal overall development and normal hearing. The exclusion criteria were: children who presented hearing loss and emotional and/or cognitive neurological impairment. A total of 30 children between the ages of 4:8 to 8:11 were selected.

In order to select the sample, the following evaluations were performed: parents' questionnaire, Children's Phonological Assessment (CFA)¹⁰, Orofacial Myofunctional Assessment Protocol (AMIOFE)¹¹, observational language evaluation and hearing screening. After the sample selection, the children who met the inclusion criteria were selected for data collection. Children who did not meet the inclusion criteria were referred to the appropriate assessments and professionals needed in each case. It is worth noting that the comparison of the tests was made taking into consideration only the school performance, discarding the influence of age in this study.

To know the children's history, a questionnaire was sent to the parents with questions related to gestation, delivery, newborn conditions, clinical history, feeding, sleep, neuropsychomotor development, language development (babble, first words and phrases), school performance (SP), relationship, personal characteristics, daily activities,

general aspects of family dynamics, family and pathophysiology history.

In the assessment of the orofacial aspects, the Orofacial Myofunctional Assessment Protocol (AMIOFE)¹¹ was used, which allowed to evaluate mobility issues, standard position of tongue and lips; tonus and mobility of the lips, tongue and cheeks; jaw mobility posture; appearance, depth and width of the palate and function of the soft palate; dentition and occlusion classification; breathing; chewing and swallowing.

The phonological system of each child was evaluated through the application of the figures of the Children's Phonological Assessment (CFA)¹⁰, which presents 125 words of Brazilian Portuguese (BP), composed of five thematic figures (living room, kitchen, bathroom, vehicles and zoo), allowing to evaluate phonology through spontaneous naming, performed with the objective of surveying the phonetic/phonological inventory and Percentage of Correct Consonants (PCC). The phonetic aspects of speech were examined through articulatory examination, which aims to aid in the detection of possible phonetic changes during speech production, by repetition.

In order to evaluate the oral language, an interaction was made with the child, using jokes and the application of a logical sequence, in order to verify the presence or absence of language alterations. The auditory evaluation was performed with the Conditioned Ludic Audiometry, using the calibrated Interacoustics Screening Audiometer AS208. The auditory thresholds were examined by air in the frequencies of 500Hz, 1000Hz, 2000Hz and 4000Hz tested at 20 dB NA.

In the data collection, the Relative Clauses Comprehension Test was applied, which is applied through the Image Identification Test, where two images were presented and the child was asked to point to the image corresponding to the relative clause sentence. The test consists of a total of 40 relative clauses, of which 20 are relative clauses of subject and 20 relative clauses of object, both of which are docked right and reversible and presented at random. All test images represent people/animals that perform an action on another person/animal.

The Relative Clauses Production Test consists of 20 relative clauses, 10 are relative clauses of subject, and 10 are relative clauses of object. In this task two similar situations involving two persons/animals were presented, and the tested child

must choose which one it prefers to be and then is stimulated to respond using a relative docted right sentence.

The tests lasted 15 to 20 minutes, depending on the degree of difficulty presented by the child. Regarding the score, the answer was marked as a hit (1 point) or error (0 point).

All children were evaluated in the same room and individually by the first author of this article. Both the sample selection and the data collection were recorded with the SONY Px 240 Digital recorder. After data collection, the transcription of the Children's Phonological Assessment (CFA) of each child was performed, and the tabulation of the data collected in the Relative Clauses Comprehension Test.

In order to evaluate the SP of each child, a Consent Form was first given to the teachers responsible for the students, in order to confirm their participation in the research. Subsequently, a questionnaire was given to each teacher, composed of a scale from 1 to 5, where 1 was classified as poor SP, 2 as regular SP, 3 as good SP, 4 as very good SP, and 5 as great SP, each teacher was instructed to indicate the number of the scale that fit the child, taking into account the overall school performance

(SP) of the child within the classroom, especially regarding reading and writing.

The data were processed and analyzed electronically as of the construction of a database (Excel® 2007). Statistical analysis was done using the Statistics 9.1 program, in order to obtain the means of correctness of the tests, descriptive statistics were applied. The U test of Mann Whitney was used to compare the means of correctness of the tests, which compares two independent samples with non-normal distribution.

Results

The results of the present study are presented in 2 tables and 2 graphs. Table 1 describes the means of the Comprehension Test and the Production Test scores by school performance (SP). It is observed that children with great school performance presented more correctness in the Comprehension Test in relation to children with poor school performance. In the Production Test, we did not observe an evolution in the production of relative clauses when comparing children with poor SP and children with great SP.

Table 1. Average scores for SP in the RCCT and RCPT test.

School Performance	Average RCCT	Standard Deviation RCCT	Average RCPT	Standard Deviation RCPT
SP poor	20,5	2,30	12,6	3,72
SP regular	26,0	1,00	13,7	5,80
SP good	27,2	1,17	12,2	5,71
SP very good	30,0	2,55	15	1,60
SP great	34,3	1,76	14,3	4,88

Subtitle: descriptive statistics; SP – school performance, RCCT - Relative Clauses Comprehension Test, RCPT - Relative Clauses Production Test.

In Table 2 it is possible to observe that there was a significant statistical difference in the comparison between the SP and the Relative Clauses Comprehension Test, where the better the SP, the

better the Relative Clauses Comprehension Test scores were. In addition, the SP does not interfere with the Relative Clauses Production Test.

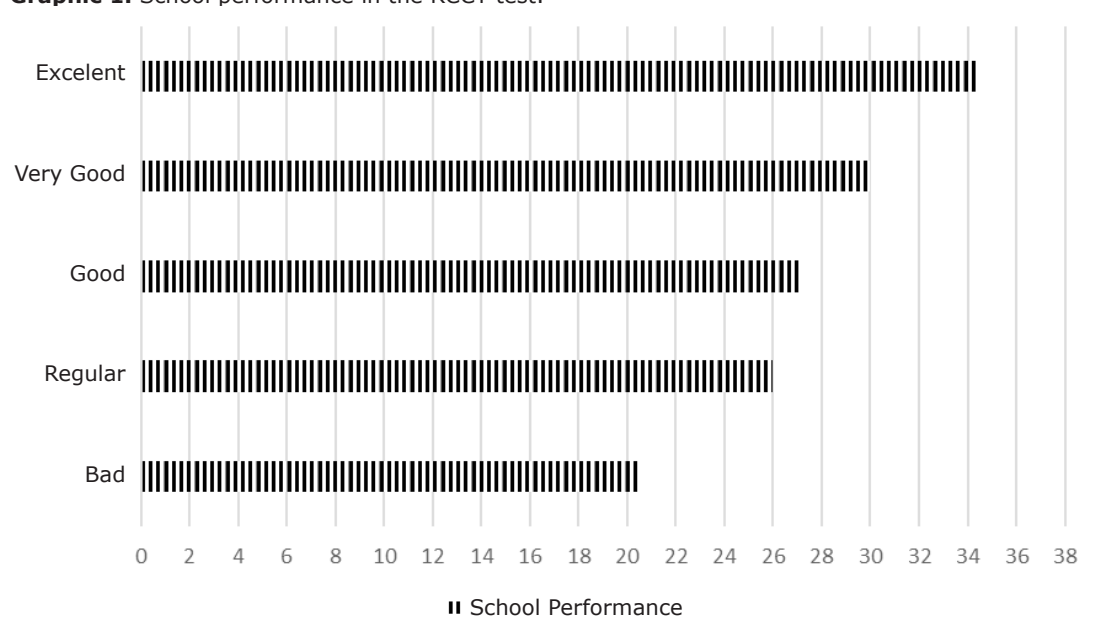
Table 2. Comparison between the SP in the RCCT and RCPT test.

Test	U	Z	Value p	Valid N	Valid N
RCCT	0,000000	-2,64575	0,007723	7	4
RCPT	15,50000	0,400320	0,688921	6	6

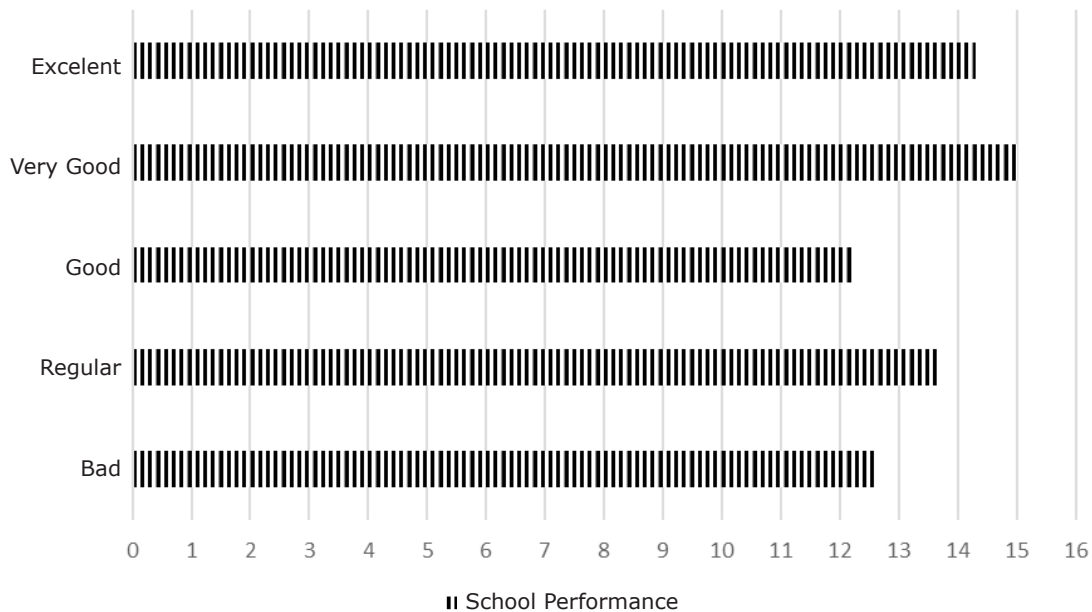
Subtitle: statistical test used – U test of Mann Whitney; SP – school performance, RCCT - Relative Clauses Comprehension Test, RCPT - Relative Clauses Production Test.

Graph 1 shows a better performance in the Relative Clauses Comprehension Test in children who presented better SP. Showing the evolution in the number of test hits compared to SP.

In Graph 2 it is possible to notice that there is an irregularity when comparing the SP with the Relative Clauses Production Test. Not being able to say that there is a relation between the SP and the Relative Clauses Production Test.

Graphic 1. School performance in the RCCT test.

Subtitle: Histogram; RCCT - Relative Clauses Comprehension Test.

Graphic 2. School performance in the RCPT test.

Subtitle: Histogram; RCPT - Relative Clauses Production Test.

Discussion

Comprehension is a complex act, defined as the action of comprehending, understanding and assimilating something, thus considered a cognitive process, where it is necessary to interpret a certain thing so that it can later be understood by the individual. The reading comprehension, whether of a sentence or a text, is the process that involves the elaboration of meanings through the learning of the relevant ideas of a text and the relationship that is established with previous ideas⁴.

The concept of comprehension refers to the action of understanding and to the faculty, ability or insight to understand and assimilate things, consisting of a set of qualities that integrate an idea, so that reading comprehension requires the abilities of anticipation, prediction, inference and paraphrases, among others, making the action complex^{12,13}.

As the production of relative clauses, studies prove that children since very early childhood produce these structures, but do not understand them correctly. Presenting difficulties, in wherever the connection of the relative clause is located^{6,7}. When referring to school performance and the production of these structures, there is no positive relation,

since it is considered that the sentence production emerges in the first years of child acquisition, preceding the insertion of the child in school⁷.

These studies corroborate the findings in this research, where children performed well in production tests. Thus school performance did not interfere in the production of relative clauses.

Through the observation of competence for the comprehension of sentences with relative clauses, we seek to assess problems in the cognitive-linguistic competence that may be interfering in the children's learning³.

In the data presented in the two tables, it is possible to explicitly observe a greater number of correct answers in children with good school performance, when compared with children who had poor school performance. The child uses the grammatical competence regarding to the basic mechanisms around five/six years old, and it can be said that the child has mastered the production capacity. Accordingly, it can be observed in the findings of this study^{7,13-15}.

The introduction of the restrictive relative clauses suggested for the 9th year of schooling is too late, when, in fact, the frequency of use of these sentences is already high in the 7th year of schooling, in terms of writing. In addition to their high

occurrence, they are of early acquisition (acquired between 32-33 months), much earlier than the temporal adverbs¹⁵ (38-39 months), for example, whose study is suggested for the 7th year⁷.

Some studies point out that children present early grammatical competence to produce relative clauses, occurring in children's discourse around two/three years of age, although it rarely occurs^{3,5-7}. The non-occurrence or the low frequency of these phrases may be due to several factors, among them the difficulty of processing that some phrases involve and the quality of the linguistic input that surrounds the child.

Therefore, the introduction of complex content, such as the application of adjectives or the in-depth study of relative clauses, in the form of grammatical workshops, stimulates the students' willingness to learn by discovery. Thus, it is necessary that from a very early age, children learn to use these structures at the school environment, since it helps to perform better in the acquisition of relative clauses, both in production and in comprehension⁷⁻¹³.

At the end of this study it may be noted that the more the child is stimulated in the school environment, the better the understanding of complex structures, such as relative clauses, which are considered to be scarcer early in the development of children's language¹⁴. Regarding the production of sentences, the school performance does not interfere; therefore, the children produce from a very early age the relative clauses, due to the difficulty that they impose, since it is known that the understanding of these structures requires a more detailed teaching, which involves syntax, semantics and morphology.

Conclusion

Children with poor school performance present difficulties in relative clauses comprehension, with greater difficulty in relative clauses of object. Regarding production tasks, school performance does not interfere with the production of relative clauses, since these arise early in children's language.

Therefore, it is important to emphasize the role of the teacher in the school performance, being that it acts as a mediator between the transmitter and

the receiver. Stimuli during school age help, not only the acquisition of relative clauses, but also the acquisition of complex structures.

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