Performance of preschool children with normal language development in past tense task

Desempenho de pré-escolares em desenvolvimento normal de linguagem em tarefa de flexão de tempo verbal no passado

ABSTRACT

The acquisition of tense inflection is a gradual process, and the children appear unaware of the significance of inflectional endings, without recognizing that there is a general rule for deriving one form from another. Purpose: To investigate the ability of past tense in children with normal language development (NLD).

Methods: The subjects were 30 children with NLD, aged between 4 and 6 years. To evaluate the use of past tense, we developed a test composed of 30 regular and irregular verbs. The analysis of the answers considered the correct ones, the replacement, overregularization and errors. Results: The 4 years old children with NLD had worse performance than the children of 5 and 6 years in correct answers and total score. There was no difference between the numbers of replacement based on age. By the age of 4, we observed more tense inflection errors. The overregularization errors did not differ between age groups. By the age of 4, children had more regular than irregular verbs correct answers. Conclusion: The 4 years old children with NLD had worse performance than 5 and 6 years old children, because they are still improving the use of verbs in their productions. At this age, we observed tense inflection errors. The 5 and 6 years old children already master the skill of past tense and do not differentiate.

RESUMO

A aquisição da flexão de tempo verbal é um processo gradual, realizado inicialmente sem conhecimento de significado e regra que diferencia as formas. Objetivo: Verificar a habilidade gramatical de flexão de tempo verbal no passado em crianças em desenvolvimento normal de linguagem (DNL).

Métodos: Foram sujeitos 30 crianças em DNL, com idades entre 4 e 6 anos. Para avaliar o uso dos verbos no passado, foi desenvolvido um teste composto por 30 verbos regulares e irregulares. A análise das respostas considerou os acertos, as substituições, as generalizações e as respostas incorretas. Resultados: As crianças de 4 anos em DNL tiveram desempenho inferior às crianças de 5 e 6 anos para acertos e a pontuação total. Não houve diferença entre a quantidade de substituição em função da idade. Aos 4 anos, observaram-se mais erros de modificação do tempo verbal. Os erros de generalização de regra não diferiram entre os grupos etários. Aos 4 anos, as crianças acertaram mais verbos regulares do que irregulares. Conclusão: Os sujeitos de 4 anos em DNL tiveram desempenho inferior aos demais, pois ainda estão aprimorando o uso de verbos em suas produções. Nessa idade, observamos erros de modificação do tempo verbal. Aos 5 e 6 anos as crianças já dominam a habilidade de flexão do verbo no passado e não se diferenciam.
INTRODUCTION

Language development maturation entails the development of a child’s ability to process increasingly complex information (1), and it is, therefore, evolutionary (2,3). The first phrasal productions of children consist of imitating structures they hear frequently from adults (4,5), who set the model they adopt as the basis for these productions. In this sense, the morphosyntactic knowledge necessary to conjugate phrasal structures is a gradual process (6,7).

When children use a conjugated form for the first time, it appears that they do not know the meaning of this conjugation and are unaware of the existence of any rule that differentiates one word from another. It is a gradual process, from the first conjugation of a specific word to the identification of a pattern that enables the generalization of knowledge (8).

Thus, children who are in the midst of the learning process costumarily use substitutions for structures they do not know and generalize the use of a known rule, applying it to unknown situations (5). These mistakes appear in the process of grammar acquisition and indicate that a child has formulated a general conjugation principle (6,9). It also marks the stage of verb conjugation acquisition (10). As the number of contexts experienced by a child increases, the understanding of the meaning of conjugational markers becomes more generalized and less dependent on context (5).

According to the theory of Words and Rules, the distinction between regular and irregular conjugation involves the distinction between lexicon and grammar. Thus, irregular forms are words acquired and stored as any other simple word, but with grammatical traces attached to the lexical content; and irregular forms are words that can be produced and generalized according to a rule, in similarity to phrases and sentences, within the grammatical system (6,9,11).

Research studies carried out with English speakers show that children undergoing normal development utilize verbs conjugated in the past around 2 years of age (12), and that they improve this use between their third and fourth year of life (5). For English speakers, beginning to use verbs in the past can pose difficulties in the morphological construction of some verb types, such as the irregular ones; therefore, in this initial period, a frequent occurrence of generalization mistakes is observed (13).

Children who speak Brazilian Portuguese (BP) begin to use verbs with a certain confidence between 2 years and 2 years plus six months of age (14), while they improve the use of verbs between 2 and 4 years of age (15). They show more dominance of the several functions that a verb can have between 5 and 6 years of age (16).

This study is justified by the importance of knowing language development in relation to specific aspects that can be the basis for precise diagnoses that aim at better suiting the rehabilitation process of children with language alterations, as well as tailoring the therapy focus and promoting rehabilitation optimization whenever possible.

In light of this, the purpose of this study was to analyze the performance of children who speak Brazilian Portuguese (BP) undergoing Normal Language Development (NLD) concerning the linguistic ability to conjugate verbs in the past tense and to gather reference data to investigate the normality of the ability studied. The hypotheses of the study were that there would be differences in performance across the age ranges, considering the evolution of the linguistic ability to conjugate verbs in the past tense in the age ranges studied; that 4-year-old participants would resort to verb substitution and make generalization mistakes more frequently than individuals who were 5 years of age; and that these substitutions would not be detected in the 6-year age range.

METHODS

The study was conducted at Universidade de São Paulo. This research study was approved by the clinics hospital ethics committee under report number 0605/07. The participants’ legal guardians signed the informed consent.

The individuals were 30 children of both sexes in NLD, aged between 4 to 6 years and 11 months, with an age average of 5 years and 4 months. Ten individuals were 4 years old, ten were 5 years old, and ten were 6 years old. They attended municipal JK and SK classes, lived in the city of São Paulo, had no complaints of language development alterations (confirmed by a standardized Phonology Verification test (17) and by a standardized Expressive Vocabulary Verification test (18)), and were not under psychological, neurological and/or psychiatric care. The tasks used indicated the age range, therefore we included only children who were within normality standards, which, we believe, ensures typical development patterns, considering that, for each age range studied, intellectual level assessments are not considered reliable. The participants’ hearing was indirectly assessed in a natural situation, and none of the children demonstrated any difficulty to comprehend the requests made in a normal voice tone. A formal hearing assessment was not conducted.

In order to evaluate the children’s grammatical use of verbs in the past, we developed a test composed of 30 verbs (20 regular and 10 irregular), selected from the collection corpus of a previous study (16) specifically to represent the most common actions or situations in the children’s routine. The verbs were displayed on boards with black-and-white images. All images that compose the test album were judged by five speech-language pathologists — PhDs or PhD candidates — with the purpose of ensuring the clarity of the images. Following the initial appraisal, we altered 12 out of the 30 images in accordance with the judges’ suggestions; the modified figures were analyzed by them again and finally approved with 100% agreement. For all verbs selected, a sentence was developed to elicit the production of the conjugated verb in the past tense (Appendix 1).

Figure 1 displays an example of the boards used in the verb tests.

The individuals selected were evaluated by means of tests on past tense verbs, which were applied in approximately 15 minutes, at their school, in a silent and adequate location where the examiner conducted the test with each individual separately. For the application of the verb tense tests, the boards with the figures that indicated each verb were presented.
to the individuals along with a sentence referring to the verb represented by the image. For instance, “The girl is kissing her father. She kisses him every night before going to bed”. Then, the researcher started the last sentence, which should be completed by the individuals, intonating it properly so that the children would understand that they should finish the sentence. For instance; “Yesterday she _______ (kissed her father)”. The individuals’ answers were registered on a specific protocol, and three points were attributed to each correct answer, considering when they used the expected verb in the past tense. The same amount of points was attributed to substitutions of a regular verb by a regular verb (R-R), of a regular verb by an irregular verb (R-I), and of an irregular verb by an irregular verb (I-I) without altering the meaning of the sentence, as, for instance, “abraçou” (“hugged”) when the expected was “beijou” (“kissed”), because the lexical item was adequately modified without decreasing the complexity of the conjugation. Two points were attributed to substitutions of an irregular verb by a regular verb (I-R), because although the final sentence was correct, the choice for a regular verb to substitute an irregular verb might indicate that the child has not yet mastered how to conjugate irregular verbs and prefers to use regular verbs instead. When the individuals generalized a conjugation, that is, conjugated an irregular verb using a rule to conjugate a regular verb, as, for instance “fazeu” instead of “fez” (“did”/“made”), one point was attributed. This point was attributed because although the child conjugated the verb incorrectly, he/she was able to formulate the general principle of the conjugation rule of verbs in the past tense. No points were attributed for incorrect answers, that is, when the individuals did not use verbs in the past (VTM), as in “dorme” (“sleep”)/ “sleeps”) instead of “dormiu” (“slept”), when they did not answer (DNA), when the answer was unintelligible segment (US), or when another grammatical category was used (GCM).

RESULTS

Firstly we present the statistical descriptive data for the 4, 5 and 6-year-old individuals undergoing NLD in Table 1, with median values and intervals between the 1st and the 3rd quartiles. The results indicate that individuals in different age ranges differed in the quantity of correct answers (p=0.000) and to the overall test score (p=0.044) but not in relation to the quantity of substitutions and mistakes. The post hoc analyses indicate that only the 4-year-old individuals differed from the rest, both in correct answers as well as in total score, as visualized in Graph 1. The participants in all age ranges differed in relation to all categories of correct answers (p=0.004 for first-conjugation verbs, p=0.000 for second-conjugation verbs, p=0.001 for third-conjugation verbs, p=0.001 for regular verbs, and p=0.000 for irregular verbs). The 4-year-old individuals had less correct answers than the other participants in all categories. Concerning third-conjugation verbs, however, we found differences among individuals in all age ranges, with an atypical pattern: 4<6<5. These data are displayed in Graph 2.

There were no differences concerning the frequency of substitutions based on age: R-R (H=0.80, gl=2, p=0.664), I-I (H=4.75, gl=2, p=0.093) and I-R (H=2.54, gl=2, p=0.128). In our subsequent analysis, we grouped the substitution categories in which conjugation complexity was not decreased, with the purpose of verifying potential differences among the age ranges. Based on these groupings, we did not find any differences in the quantity of this type of substitution by age either (H=4.89, gl=2, p=0.082). In order to analyze the I-R substitutions, we set up two types of grouping: in the first, the individuals who did not present any occurrences of substitutions were separated from those who presented at least one occurrence. The χ² test indicated that there was no statistically significant associations between the occurrence of I-R and each group (χ²=2.1, gl=2, p=0.35). After this, we arranged a second grouping using a new separation criteria; the individuals who presented at least one occurrence. The χ² test did not indicate any association between these variables (χ²=1.36, gl=2, p=0.506). The individuals in all age ranges differed only in relation to VTM mistakes (H=3.13, gl=2, p=0.044). The post hoc analyses indicated that the 4-year-old participants presented more VTM mistakes than the others, as displayed in Graph 3.

In the subsequent analysis, VTM mistakes, DNA, US, and GCM were grouped with the purpose of verifying potential differences among the groups. In this analysis, generalization mistakes were not included in the grouping. The results indicate that there was no difference concerning the quantity of mistakes grouped (VTM, US, DNA and GCM) based on the individuals’ age (H=4.77, gl=2, p=0.091).

To analyze the generalization mistakes, we arranged two types of grouping with the purpose of investigating potential differences among the groups. In the first grouping, the individuals
who did not present any occurrences of this mistake were separated from those who presented at least one occurrence. The \( \chi^2 \) test indicated that there was no statistically significant association between the occurrence of generalizations and each group (\( \chi^2 = 0.83, \text{gl}=2, p=0.659 \)). After this, we arranged a second grouping using a new separation criteria; the individuals who presented up to one generalization occurrence were separated from those who presented more than one occurrence. Once again the \( \chi^2 \) test did not indicate any association between these variables (\( \chi^2 = 0.58, \text{gl}=2, p=0.749 \)).

Considering that the group of 4-year-old individuals was the only one that differentiated itself from the others, we conducted nonparametric tests with paired samples in order to verify any differences concerning the types of correct answers. The results showed a larger quantity of correct answers for regular verbs than for irregular verbs (\( p=0.008 \)) and significant differences regarding the quantity of correct answers for each conjugation (\( \chi^2 = 10.52, \text{gl}=2, p=0.005 \)). Our analyses indicated a larger quantity of correct answers for first-conjugation verbs than for second-conjugation verbs (\( p=0.007 \)), but there were no
these children utilized the present tense with marked frequency (19). Verb tense conjugations that differentiate one form from the other, the mistake that differentiated the groups. Before using the individuals, we found that the occurrence of verb tense modification and generalization among the 4, 5 and 6-year-old individuals undergoing normal language development differences between the first and the third conjugations (p=0.340) or between the second and the third conjugations (p=0.033).

DISCUSSION

We verified significant differences between the group with 4-year-old individuals and the other groups in regards to correct answers and total scores. The 4-year-old participants had poorer performances in comparison to the other groups. The groups with 5 and 6-year-old individuals did not differ in relation to either of these variables. According to the international literature, it is between the third and the fourth year of their lives that children improve the use of verb conjugations (5). Studies conducted with BP-speaking children point out that improvements in the use of verbs occur between the second and the fourth year of life. In this sense, the findings of the present study, which indicate that 4-year-old individuals achieve a smaller number of correct answers when conjugating verbs in the past tense from their fifth year of life. The groups with individuals in the specified age ranges did not differ from one another, and both presented a high rate of correct answers, thus indicating that children dominate the ability to conjugate verbs in the past tense from their fifth year of life. This result confirms the findings presented in a research study with BP speakers in which 5 and 6-year-old children showed that they mastered the several functions that a verb can have (16).

In this study, the groups with 5 and 6-year-old participants did not differ from one another, and both presented a high rate of correct answers, thus indicating that children dominate the ability to conjugate verbs in the past tense from their fifth year of life. This result confirms the findings presented in a research study with BP speakers in which 5 and 6-year-old children showed that they mastered the several functions that a verb can have (16).

The groups with individuals in the specified age ranges differed in all categories of correct answers, namely regular and irregular verbs, and first, second and third-conjugation verbs. In all these categories, the 4-year-old individuals presented less correct answers than the other participants.

The fact that all categories were different for the 4-year age range may be simply reflecting the result discussed previously, namely that 4-year-old individuals have poorer performances than their 5 and 6-year-old peers, regardless of verb type.

Third-conjugation verbs were an exception among the results presented as they showed an atypical pattern, namely the lack of improvement in performance as the children get older. In this category, the 4-year-old individuals had poorer performances than the other groups, as expected, but the individuals in the group with 6-year-olds had poorer performances than those presented by the 5-year-old.

With the exception of third-conjugation verbs, the results obtained show that 4-year-old individuals are the ones who differ from the other age ranges because they have not yet mastered the ability to conjugate all verb types.

To analyze the data concerning verb substitution, we grouped pertinent substitutions that did not decrease conjugation complexity, that is, substitutions of verbs in the same category (R-R and I-I) and R-I substitutions. I-R substitutions were not included in this group because although the final sentence was correct, choosing a regular verb to replace an irregular verb might indicate that the child has not yet mastered the conjugation of irregular verbs and prefers to use regular verbs instead.

Upon analyzing the group of pertinent substitutions without decrease in conjugation complexity, we did not find significant differences based on the participants’ age.

The analysis of I-R substitutions also showed that there was no significant statistical association between their occurrence and age.

These data refute the hypothesis initially formulated for this study. We expected that I-R substitutions would be more frequent in the 4-year age range and that the occurrence of this type of substitution would disappear between 5 and 6 years of age, thus indicating mastery of this ability (16). Considering that we have not yet observed the full ability to use verbs in the productions of children at 4 years of age, we expected that the 4-year-olds would present a smaller percentage of correct answers for irregular verbs, as the rules to conjugate these verbs are acquired later (5,8). Therefore, in the 4-year age range, correct answers should be less frequent owing to a larger number of mistakes made by generalizing the rules of conjugation.

For the analysis of the data referring to mistakes made to conjugate verbs in the past tense, we arranged groupings of VTM mistakes, DNA, US and GCM. Generalization mistakes were not included because although the conjugations were incorrect, the children were able to formulate the general principle of the rules of conjugation in the past tense. There were no differences between the quantity of mistakes grouped and age, and no association between age and generalization mistakes.

The fact that the generalization mistakes did not differ according to the age ranges might indicate that the 4-year-old individuals are no longer in the initial stages of acquiring past-tense morphology, considering that, according to a recent research study conducted with English speakers, generalization mistakes are frequent in the first production of verbs conjugated in the past tense (13).

As in the case of the substitutions, we expected that generalization mistakes would be more marked in the group with 4-year-olds, and that this type of mistake would disappear as the individuals’ ages progressed.
Although the mistakes and substitutions did not characterize the performance of the 4-year-old group, the intragroup analyses indicated that individuals in this age range obtain more correct answers when using regular verbs than irregular verbs. This, in turn, is in agreement with the theory of the gradual evolution of the ability to conjugate verbs in the past, in which the trajectory of the complete mastery of this ability spans from the first conjugation up to the identification of a pattern that can be applied to new situations\(^9\). In this course, irregular verbs are subject to conjugation mistakes more frequently, given that the conjugation of irregular verbs depends on an individual’s exposure to a given verb\(^{20}\); these mistakes function as predictors of the stage of verb conjugation acquisition\(^{10}\).

Another finding regarding the group with 4-year-olds is that the highest rate of correct answers was obtained with first-conjugation verbs. The literature available on verbs and verb conjugations does not provide any information about different verb conjugations in the process of verb conjugation acquisition or about the frequency of all conjugations in BP or another language.

Therefore, a study conducted with 3-year-old children could provide interesting information on this matter, given that we verified in this study that 4-year-olds have not yet mastered the ability to conjugate verbs in the past tense, but the mistakes and substitutions that would supposedly indicate the process of acquisition of this ability were not sufficient to enable a study of the acquisition process of verb conjugation based on these mistakes. In children younger than 3 years of age, the detection of these mistakes could provide important information to be used in studies on past-tense verb conjugations.

Another aspect to be highlighted, concerns the contribution of our findings to language diagnoses, especially in young children, as the parameters presented here could aid in diagnoses and precise rehabilitation therapy of this ability, thus filling possible gaps in the process of language assessment.

Obviously, as the purpose of the present study was not to establish development parameters but to analyze the performance of BP-speaking children undergoing NLD in tasks of past-tense conjugation and to gather data referring to the normality of this ability without the intention of creating or elaborating a test, we did not adopt psychometric criteria. Nevertheless, our findings can serve as the basis for future studies that have the purpose of constructing and validating standardized tests.

**CONCLUSION**

The purpose of the present study was to analyze the performance of BP-speaking children undergoing NLD in tasks of past-tense verb conjugation. We verified that the 4-year-old individuals had poorer performances than the 5 and 6-year-olds, as they are still improving the use of verbs in their productions. At 4 years of age, the individuals presented more mistakes of verb tense modification and obtained more correct answers with conjugating regular first-conjugation verbs than irregular verbs. At 5 and 6 years of age, the individuals did not show any differences in performance and had high rates of correct answers, indicating that children master the ability to conjugate verbs in the past tense from their fifth year of life.

\(^{*}\)TIML is the author of the dissertation from which this article originated, also responsible for data collection, tabulation and analysis, and overall elaboration of the paper; DMBL contributed in project elaboration and supervised the aforementioned dissertation and article elaboration.

**REFERENCES**

Appendix 1. Protocol for registering the individuals’ answers

PROTOCOLO DE REGISTRO – MARCAÇÃO DE TEMPO VERBAL

Nome: _______________________________ Data da Avaliação: _________________

D.N.: _______________  Data da Avaliação: ___________________

1. O menino está abraçando sua mãe. Ele a abraça todos os dias quando acorda. Ontem ele _____________ (abraçou) sua mãe.
5. O homem está vendendo balas. Ele vende balas todos os dias. Ontem ele _____________ (vendeu) balas.
7. O bebê está dormindo no berço. Ele dorme no berço todos os dias. Ontem ele _____________ (dormiu) no berço.
11. O garoto está correndo no jardim. Todos os dias ele corre no jardim. Ontem ele _____________ (correu) no jardim.
14. O menino está rezando. Ele reza todas as noites antes de dormir. Ontem ele _____________ (rezou) antes de dormir.
17. A menina está arrumando o quarto. Ela arruma o quarto todos os dias. Ontem ela _____________ (arrumou) o quarto.
20. A criança está escovando os dentes. Ela escova os dentes todos os dias quando acorda. Ontem ela _____________ (escovou) os dentes.
22. A moça está cantando uma música. Ela canta todos os dias. Ontem ela _____________ (cantou) uma música.
26. O menino está bebendo água. Ele bebe água todos os dias quando acorda. Ontem ele _____________ (bebeu) água.
27. O pai está dando brinquedo para o filho. Ele dá brinquedo para o filho todos os dias. Ontem ele _____________ (deu) brinquedo para o filho.