EVALUATION OF THE SEMANTIC ASPECTS OF LANGUAGE IN CEREBRAL PARALYTICS

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ABSTRACT

The objective of this study was to verify the rate of semantic recognition in subjects who are bearers of different types of cerebral paralysis (experimental group) with a chronological age ranging from 2 to 7 years and eleven months, and who were gauged (control group) as to sex and age. The results showed that, the control group proved to be superior in all age groups suggesting some delay in the acquisition of semantic language, which would characterize language delays in the subjects from the experimental group. The quadriplegic cerebral paralytics obtained the lowest rates of semantic recognition, followed by the diplegic and the hemiplegic.

KEY WORDS*: cerebral palsy; semantic performance*

INTRODUCTION

Children acquires knowledge by exploring the environment, by manipulating objects, by repetition of actions, by mastering his/her own body scheme and by the relations they establish in the situations they experience, needing not only the motor maturational control of the nervous system, which is limited in case of cerebral palsy, but also of the development of the interactions with the environment (CAULEY et al. 1989; BLACKLIN, 1991; JOHNSTON, 1993; TRAUNER, 1993; LIEVEN et al. 1997; BADAWI et al. 1998).

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The individual with cerebral palsy has the potential to develop, in the course of his life, problems of expression and reception

of sounds (HUNTER et al. 1991; LIMONGI, 1992; JOHNSTON, 1993; TRAUNER, 1993; LOEB, 1998; LUCE E LYON, 1999).

Failures in the reception process may have influence in the quality of understanding of information and in the global performance of communication regardless of its ability to express their thoughts through speech. According to their clinical situation they can miss a concrete opportunity to make viable the use of their language repertoire leading to a difficult in the process of acquisition of language and taking more time than the average to understand and store information (RAUSCHECKER, 1999).

Sappington et al. (1989) have elaborated a procedure to evaluate the content of messages of quadriplegic individuals with cerebral palsy. Results revealed that quadriplegic individuals without verbal communication are able to retain and transmit, with precision, verbal messages. Moreover, the authors noted that the accuracy of the message retransmitted by these individuals decreases as the degree of complexity of the content increases.

Lieven et al. (1997) conducted analyzes of the lexical relations that may explain the structure of various primitive words used by children. Samples of spontaneous speech of 11 children with age raging from two to three years indicated that specific lexical index might provide a focus for development for a period highly superior to the first stages of articulation.

Sanclemente (2001) stated that 60 to 80% of children with cerebral palsy shows some speech alteration and the frequency of disturbs is variable according to the type of cerebral palsy. He also reported that the first words tends to appear when the child, in a psychomotor level, can seat alone, sustain well its head, shows inhibited oral reflex, altogether with a social and cognitive development in accordance with this stage.

Therefore, the aim of this study was to evaluate the language of individuals with cerebral palsy focusing in the recognition of the semantical aspect of the language.

MATERIAL AND METHODS

The present study was conducted in the Clinic of Phono Audiology of the School of Dentistry at Bauru – University of Sao Paulo. The sample included 60 individuals of both sexes with chronological age ranging from 2 to 7 years. The experimental group had 30 individuals and the control group other 30. The experimental group was constituted by children with spastic hemiplegic, diple-

gic or quadiplegic cerebral palsy with a varied degree of motor compromise (mild, moderate or severe). The age range selected for the present study had the objective to assess the influence of the retard in the motor development as a factor to interfere in the ability of communication in which the semantic recognition takes part.

The control group was paired to the experimental group according to sex and age range.

Criteria for inclusion in the experimental group included: a confirmed diagnosis of cerebral palsy by a doctor; to be in the age rage of 2 years to 7 years and eleven months; do not present other associated clinical conditions such as auditory or visual deficiency that may interfere in the communication process.

Children of the control group were selected at random, keeping in mind the adequate age range, sex and the absence of language alteration and motor compromise.

In the first meeting with parents the objective and the clinical procedures were explained to them. All the ethical procedures were followed to the execution of the study starting with request to parents to read the project and sign a free and consent information form. Prior to the start of the study, the project was submitted to the Ethical Committee on Research with Human Beings of the School of Dentistry that approved the project.

Parents of children of the control and experimental groups answered an anamnestic protocol containing information on the life story of the participant that was used to confirm the criteria for inclusion in the above mentioned groups.

Semantic aspects were evaluated by means of figures as proposed by Yavas et al. (1992). The instrument consisted of five thematic figures (which received titles according to the focused subject: vehicles, room, bathroom, kitchen and bathroom) in which was asked the identification of the 125 items of the list. The figures represented a varied vocabulary including objects of the daily life such as glass, spoon, ball and some words that do not pertain to this category such as track, cloud, forest, tractor, road, etc.

Participant children should name and/or identify the presented figure. In case of inability of verbal communication the participant should point the figure correspondent to the tag asked by the evaluator by means of oral language.

Equipments used during the evaluation were: film camera, videotapes, toys and protocol of evaluation. After the evaluation the tapes were transcribed into data records and revised by two evaluators aiming to obtain accuracy of data. In the analysis it was considered adequate when the index of accuracy was above 90%.

TABLE 1 - Shows the distribution of participants of the experimental group by age and sex.

Age	Sex	N (%)
2 years	Male	8 (89 %)
2 years	Female	1 (11%)
3 years	Male	4 (57%)
3 years	Female	3 (43%)
4 years	Male	1 (33%)
4 years	Female	2 (67%)
5 years	Male	3 (75%)
5 years	Female	1 (25%)
6 years	Male	1 (100%)
7 years	Male	2 (33%)
7 years	Female	4 (67%)

TABLE 2 - Describes the experimental group according to sex, age and clinical condition of each case.

N	Sex	Age in years	Condition
1	Male	2	Quadriplegia
2	Male	2	Diplegia
3	Female	2	Diplegia
4	Male	2	Diplegia
5	Male	2	Diplegia
6	Male	2	Diplegia
7	Male	2	Hemiplegia
8	Male	2	Diplegia
9	Male	2	Hemiplegia
10	Male	3	Diplegia
11	Female	3	Diplegia
12	Male	3	Hemiplegia
13	Female	3	Diplegia
14	Female	3	Diplegia
15	Male	3	Diplegia
16	Male	3	Hemiplegia
17	Female	4	Diplegia
18	Female	4	Hemiplegia
19	Male	4	Hemiplegia
20	Female	5	Diplegia
21	Male	5	Hemiplegia
22	Male	5	Hemiplegia
23	Male	5	Hemiplegia
24	Male	6	Diplegia
25	Male	7	Diplegia
26	Female	7	Diplegia
27	Male	7	Diplegia
28	Female	7	Diplegia
29	Female	7	Diplegia
30	Male	7	Quadriplegia

RESULTS

In the test for recognition of figures and nomination, aiming the analysis of the semantical aspects of language, patients of the experimental groups showed an inferior performance as compared to those of the control group. TABLE 3 shows the minimal, maximal and mean percentage score regarding the number of correct answers in the test for semantic recognition.

TABLE 3 – Minimal, maximal and mean perceptual score in the test for seman tic recognition in the control group (cg) and in the experimental group (eg)

Chronological age	Minimal score		Maximal score		Mean	
	G. C.	G. E.	G. C.	G. E.	G. C.	G. E.
2 years	0%	0%	89%	69%	57%	36%
3 years	55%	27%	84%	82%	75%	46%
4 years	82%	45%	93%	79%	89%	67%
5 years	90%	49%	97%	88%	95%	70%
6 years	*	*	*	*	100%	76%
7 years	98%	34%	100%	82%	100%	60%

* It was not possible to evaluate the different scores in the age range of 6 years provided just one patient was included in this range in both groups.

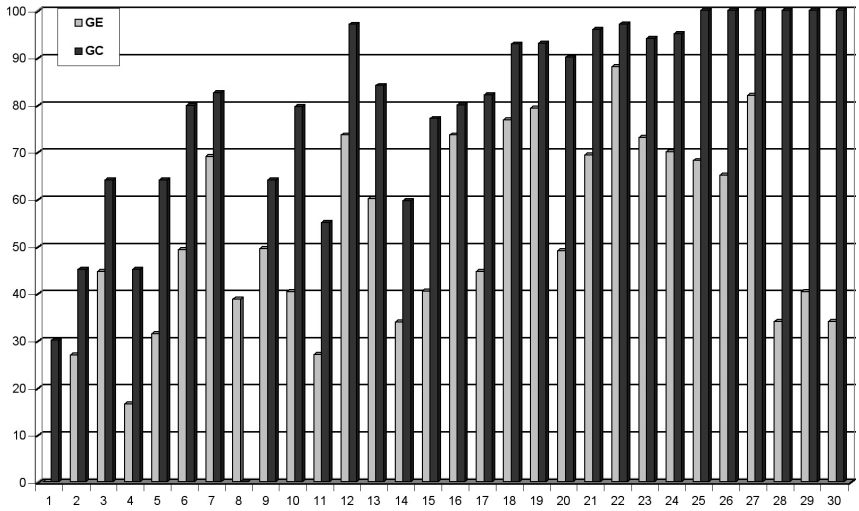

FIGURE 1 - Index of correct answers for each individual in the test for semantic recognition in the control and experimental groups paired by sex and chronological age.

FIGURES 1 and 2 shows the index of correct answers in the test for semantic recognition of each participant in the control and experimental group paired by sex and chronological age.

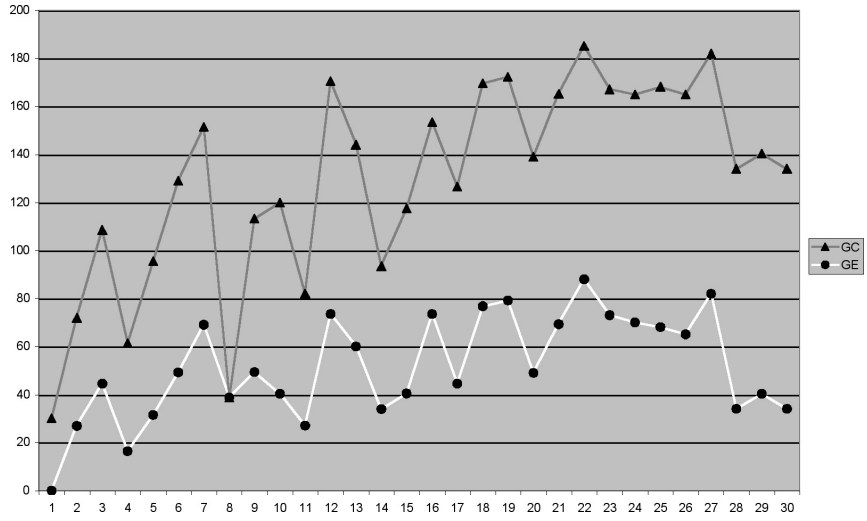

FIGURE 2 – Total Index of corect answers in the test for semantic recognition in the control and experimental GROUPS PAIRED BY sex and chro nological age.

DISCUSSION

In the semantic evaluation it was possible to observe a superior performance in the control group for the recognition of figures. Moreover, it seems that some influence of the severity of the motor compromise is important, that is, quadriplegic children showed a inferior performance as compared to diplegic and hemiplegic children, which is supported by studies of Sappington (1998) and Sanclemente (2001). Among children with cerebral palsy, hemiplegic ones showed the best score for recognition. In analyzing the presented pictures, those related to daily life had a better recognition. Examples of that are sofas, TV set, dish, spoon, toothbrush, etc. It is possible to infer that due to the motor difficulties those children would loose the possibility to experience ambient that could stimulate the compression of these figures as reported by Cauley et al. (1989), Blacklin (1991), Johnston (1993), Trauner (1993), Lieven et al. (1997), Badawi et al. (1998) and Rauschecker (1999).

To obtain a better characterization of the phono audiologic diagnosis the global evaluation of language should involve syntactic, pragmatic, phonetic and phonologic aspects.

CONCLUSIONS

The performance of the control group was superior to the experimental one as regard the semantic aspect. In the experimental group hemiplegic children showed superior performance, followed by diplegic. Quadriplegic children showed the lowest scores.

The percentual delay presented in individuals with cerebral palsy as regards the analyzed aspects suggest a delay in the semantic acquisition in language what could characterize a retard in the development of language in these individuals.

BIBLIOGRAPHIC REFERENCES

1. BADAWI, N. et al. What Constitutes Cerebral Palsy? *Development Medicine & Child Neurology,* v. 40, p. 520-527, 1998.
2. BLACKLIN, J. S. Your child's development. In: GERALIS, E. *Children with cerebral palsy: A parent's guide. Woodbine House,* 1991. p.175-208.
3. CAULEY, K. M. et al. Revealing Hidden Competencies: A New Meted of Studying Language Comprensión in Children with Motor Impairments. *American Journal on Mental Retardation*, v. 94, n. 1, p. 53-63, 1989.
4. HUNTER, L. et al. The use of strategies to increase speech intelligibility in cerebral palsy: An experimental evaluation. *British Journal of Disorders of Communication*, v. 26, p. 163-174, 1991.
5. JOHNSTON, J. R. Conversations with children who are language impaired: asking questions. *Journal of Speech and Hearing Research,* v. 36, p. 973-978, 1993.
6. LIEVEN, E. V. M. et al. Lexically-based learning and early grammatical development. *Journal of Child Language,* v. 24, n. 1, p.187-219, 1997.
7. LIMONGI, S. C. O. Estudo sobre ação, construção de relações e comunicação na paralisia cerebral dentro do processo terapêutico em linguagem. *Pró-Fono Revista de atualização científica,* v. 4, n. 1, p. 1992.
8. LOEB, D. F. et al. Causative Alternations of Children with Specific Language Impairment. *Journal of Speech, Language and Hearing Research*, v. 41. n. 5, p. 1103-1114, 1998.
9. LUCE, P.A., LYONS, E. A. Processing Lexically Embedded Spoken Words. *Journal of Experimental Psychology Human Perception and Performance*, v. 25, p. 174-183, 1999.
10. RAUSCHECKER, J. P. Auditory cortical plasticity: a comparison with other sensory systems. *Trends Neurosci*, v. 22, n. 2, p. 74-80, 1999.
11. SANCLEMENTE, P. M. Problemas de Linguagem na Paralisia cere-

bral: Diagnóstico e Tratamento In: SANCLEMENTE, P. M. et al. *A Fonoaudiologia na paralisia cerebral: Diagnóstico e Tratamento*. Santos, 2001. Cap. 2; p. 17-82.

12. SAPPINGTON, J. et al. Validity of Messages from Quadriplegic Persons with Cerebral Palsy. *American Journal on Mental Retardation*, v. 94, n. 1, p. 49-52, 1989.
13. TRAUNER, D. A. Comprehension and Expression of Affect in Language-Impaired Children. *Journal of Psycholinguistic Research*, v. 22, n. 4, p. 445-452, 1993.
13. YAVAS, M. et al. *Avaliação fonológica da criança: Reeducação e terapia*. Porto Alegre: Artes Médicas, 1992. 148p.