FAMILY LIFE INFLUENCE ON THE COMMUNICATIVE PERFORMANCE OF CHILDREN WITH DOWN SYNDROME

Influência do entorno familiar no desempenho comunicativo de crianças com síndrome de Down

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ABSTRACT

Purpose: to investigate aspects of family life that may influence the communicative performance of children with *Down* syndrome. **Methods:** "features of the Family Environment" questionnaire application and pragmatic analysis of children with *Down* syndrome communication. 30 children from five to 10 years, both sexes took part of this research. Applied the *Spearman*'s rank correlation. The analyses were performed using the SPSS' 10.0 version, and in all of them a significance level of 5% was adopted. **Results:** a correlation between items of the questionnaire and pragmatic analysis results referring to communicative means and function was found. **Conclusion:** it is necessary to consider the family life aspects that influence the communicative performance of children with *Down* syndrome.

KEYWORDS: Child Language; Down Syndrome; Environment; Family Relations; Child Development

INTRODUCTION

The extra genetic material characteristic of *Down* syndrome (DS) causes loss of cell function equilibrium, singularizing individuals in their acquisitions throughout life. In the bibliography studied, information about the correlation between cognitive performance of children who have DS was found to exist, along with evidence about intellectual imparity and its association with of the genetic condition manifestation [1-3].

Both language acquisition and development in DS cases are compromised. One can infer that the neurological conditions and intellectual disabilities result in a slower than average pace for language acquisition and development which, however, follows a pattern. In more severe cases there might be full impediment of certain linguistic abilities[4,5].

The diagnosis of the syndrome alone does not determine physical features or the level of intellectual efficiency. The individual's capacity to respond, according to epigenetic contributions, is influenced by the opportunities the surroundings provide. In order to acquire and master linguistic abilities, the individual's experience influences in the construction and improvement of linguistic abilities[2,4,6].

The contrasting development of children with DS might be significantly influenced by education, as well as the environment where they are brought up since the first years of their lives. Their surroundings play a mediator role in child acquisition and learning processes, aiming at an ideal level of development[1,4,7].

Children learn and acquire language through experience. The mastering of language is developed through social interaction, demands from the surroundings and the organization of experience. Therefore, the individual is enabled to build new knowledge and gradually improve mental activity content elaboration [8-10].

The act of playing has considerable social and emotional implications in an individual's life. Moreover, it presents aspects of cognitive performance. Games are the source children have to explore, manipulate, understand and modify their surroundings. There have been authors who have posited that children perfect their development through sensorial-motor exploration and symbolic

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behavior enabled by playing. This allows children to express the impressions lived during their interaction with the others in both family and school environments, while also broadening knowledge and abilities [7,11].

Due to the considerable relevance of a individual's surroundings in their development, whenever any type of intervention for a child with DS is considered, it is critical to consider family as a therapeutic strategy. Therefore, in family environment, the child be provided with the first acquisitions and receive important influences that will determine prevalent individual characteristics throughout life. [4,12,13].

The present study aims to investigate which resources from family life may influence the communicative performance of children with Down syndrome.

METHODS

A cross sectional analytical study was performed, in order to carry out the present study, where family life resources that may influence the communicative performance of children with DS were analyzed. This project was approved by the committee of ethics in research (Comitê de Ética em Pesquisa – COEP) of the university where it was initiated, under the technical opinion number 602/09. A family resource questionnaire was then given to the mothers of DS children in order to investigate the mother-child relationship and ultimately carry out this study. All families that have taken part in the process have signed the Written Informed Consent (TCLE).

Participants

A sample of 30 families that have children of both genders with Down syndrome has partaken this research. They were randomly selected amongst the ones who are supported by APAE (Association of Parents and Friends of Exceptional Children), in the city of Belo Horizonte (MG).

In order to form the group the following inclusion criteria was utilized: families that had children from five to 10 years and 11 months old, who were accompanied by their mothers in their appointments and accepted the invitation to take part in the research and families of children who did not present a comorbidity clinical history.

The average age and level of school education the mothers had, as well as the socioeconomic situation of the families were not taken into consideration. Nevertheless, it is known that families assisted by APAE are usually lower class and learn about the institution through SUS (Public Healthcare System).

Material

The materials utilized were a Sony Cyber Shot DSC-W510 camcorder, the Communicative Profile (Perfil Comunicativo) protocol elaborated by Fernandes 2004[14] for the transcription of pragmatic analysis and the questionnaire of Family Environment Resource (RAF)[15].

In order to create a spontaneous situation where mother and child would play together, specific toys were used: miniatures of farm and jungle animals, miniatures of means of transportation, a doll, some hair accessories and bracelets, a shape sorting game, miniatures of food and kitchen utensils, colored pencils, crayons and a blank sheet of paper.

Procedures

A film of the interaction between mother and child was recorded for 30 non-stop minutes, in the same place where the children had their appointments, playing with the toys that were previously selected. The first 15 minutes of interaction of mother and child were analyzed. After the footage, the mothers were given the Family Resource Environment (RAF)

The pragmatic analysis[14] utilized aims at investigating the functional aspects of communication related to the children's abilities to use language with communicative functions.

The questionnaire about Resources of Family Environment [15] consists of 10 topics that pertain to the following fields:

- what the child does when away from school;
- the hangouts of the last 12 months;
- activities programmed to be done regularly;
- activities done with their parents at home;
- variety of toys available;
- existence of newspapers and magazines at home;
- variety of books available;
- person responsible for assisting the child in the homework;
- daily routines with pre-set time;
- time of the day and the week the family gets together.

The combination of those topics resulted in a range of family environment resources that promote development of functional aspects of communication. The questionnaire was applied as a semi-structured interview.

Result Analysis

After filmed, all data was transcribed to the specific protocols and analyzed with the aid of the procedures described in the protocol of communicative profile about pragmatic analysis [14] and the RAF[15] questionnaire.

The correlation method was chosen, since the aim was to verify the probable association between the information obtained with the protocols utilized. The *Spearman*'s rank order correlation enabled to measure the level of intensity of data association. There analyses were made with 10.0 version of the program SPSS and in all of them the significance level adopted was 5%.

RESULTS

Figure 1 illustrates all items of RAF questionnaire and the items of pragmatic analysis, from which the correlation between variables was obtained. The p-values (statistic significance) obtained in the chart are related to the correlation coefficient test of *Spearman* applied to the data.

		Verbal	Gestural	Comment	Request for action	Game	Narrative	Performative	Protest
Diversity of free time activities	Coef. Correlation	-0.045	0.223	-0.347	-0.096	-0.154	0.044	.382(*)	0.041
	Significance	0.814	0.236	0.060	0.615	0.417	0.818	0.037	0.831
	N	30	30	30	30	30	30	30	30
Number of hang outs in the last 12 months	Coef. Correlation	0.142	-0.071	-0.066	-0.054	0.091	0.163	0.287	0.167
	Significance	0.455	0.708	0.730	0.779	0.633	0.390	0.124	0.379
	N	30	30	30	30	30	30	30	30
Routinely activities programmed for the child	Coef. Correlation	.396(*)	0.072	0.166	.408(*)	-0.021	.516(**)	0.056	0.096
	Significance	0.030	0.706	0.380	0.025	0.911	0.004	0.767	0.613
	N	30	30	30	30	30	30	30	30
Activities done at home with the parents	Coef. Correlation	-0.135	0.098	-0.095	0.009	-0.203	0.045	0.261	0.022
	Significance	0.476	0.608	0.618	0.961	0.282	0.812	0.164	0.908
	N	30	30	30	30	30	30	30	30
Toys and other materials	Coef. Correlation	0.355	0.108	0.048	0.157	-0.337	0.097	0.240	0.288
	Significance	0.054	0.570	0.799	0.406	0.068	0.611	0.201	0.122
	N	30	30	30	30	30	30	30	30
Variety of newspapers and magazines	Coef. Correlation	0.275	-0.025	0.192	0.093	-.487(**)	.397(*)	0.012	0.074
	Significance	0.141	0.895	0.311	0.626	0.006	0.030	0.950	0.699
	N	30	30	30	30	30	30	30	30
Varieties of books	Coef. Correlation	0.116	-0.027	0.134	-0.161	-.362(*)	-0.051	0.177	0.016
	Significance	0.541	0.886	0.480	0.397	0.049	0.790	0.349	0.932
	N	30	30	30	30	30	30	30	30
Homework supervision	Coef. Correlation	.376(*)	.410(*)	0.070	0.139	-0.015	-0.013	0.153	0.359
	Significance	0.041	0.025	0.715	0.465	0.938	0.945	0.419	0.052
	N	30	30	30	30	30	30	30	30
Daily routine with pre set time	Coef. Correlation	.585(**)	-0.010	.369(*)	.373(*)	-0.097	0.232	0.011	0.226
	Significance	0.001	0.960	0.045	0.042	0.609	0.217	0.954	0.230
	N	30	30	30	30	30	30	30	30
Moments when the family is gathered	Coef. Correlation	0.142	0.042	0.041	0.136	-0.010	0.220	0.104	-0.099
	Significance	0.454	0.824	0.829	0.475	0.957	0.243	0.585	0.603
	N	30	30	30	30	30	30	30	30
Family environment resources – Total	Coef. Correlation	0.229	-0.041	0.104	0.036	-0.350	0.281	0.219	-0.013
	Significance	0.224	0.830	0.585	0.851	0.058	0.133	0.245	0.946
	N	30	30	30	30	30	30	30	30

Legend: Spearman correlation test, significance level of 0.05 (5%)

Figure 1 – Main Correlations

Table 1 – Correlation between the results of the ABFW and the Family Environment Questionnaire

	Verbal	Gestural	ro	c	pa	j	na	pe
Variety of free time activities	-0.045	0.223	0.205	-0.347	-0.096	-0.154	0.044	**0.382**
Routinely activities programmed for the child	**0.396**	0.072	-0.083	0.166	**0.408**	-0.021	**0.516**	0.056
Variety of magazines of newspapers	0.275	-0.025	-0.067	0.192	0.093	**-0.487**	**0.397**	0.012
Varieties of books	0.116	-0.027	0.108	0.134	-0.161	**-0.362**	-0.051	0.177
Homework Supervision	**0.376**	**0.41**	**0.392**	0.07	0.139	-0.015	-0.013	0.153
Daily routines with pre set time	**0.585**	-0.01	0.001	**0.369**	**0.373**	-0.097	0.232	0.011

Legend: *Spearman* correlation test 0.05 (5%)

Communicative functions: **ro** – acknowledgement of the other; **c** – comment; **pa** – Request for action; **j** – game; **na** – narrative; **pe** – performative.

Table 1 features the result of the test carried out with only items where correlation was found. The numbers in bold indicate whether two variables are correlated to the statistic point of view or not.

The analysis of data has proven the existence of a correlation between the item that relates the diversity of free time activities done with the child and the prevalence of the "performative" communication function.

It has also been verified that there is a correlation between the amount of scheduled activities performed by children with family incentive and a more frequent usage of the "verbal" communicative means. Additionally, it has been observed that as the amount of scheduled activities performed by the child increases, the usage of the functions "request for action" and "narrative" increases.

From the data obtained, it was possible to notice that a broader variety of newspapers and magazines in the family environment is inversely proportional to the use of the communicative function "game" and directly proportional to the function "narrative".

As for the item that discusses the existence of a more frequent supervision of an adult in the school tasks the child performs, more prevalent uses of the "verbal" and "gestural" means by children were found, as well as the use of the "acknowledgement of the other" communicative function.

It has been noticed that a more well-organized family environment, with daily routines and a pre-set schedule, increases the use of the "verbal" communicative means and the "comment" and "request for action" communicative functions.

DISCUSSION

The pragmatic analysis is based on functional aspects of communication. In order to enable such verification, communicative acts were investigated, along with the reason why they had been carried out, "gestural", "vocal" or "verbal", and the communicative function of the act during a spontaneous moment of interaction between mother and child. As regards the RAF questionnaire, it aims to list the aspects of family environment that favor child development.

In order to perform data collection, a 30-minute footage of spontaneous interaction between child and mother was made. It was noticed that the mothers were tired of playing with their children after 30 minutes had passed since the beginning of the interaction. Many of them complained to the researcher about the excessive time of observation. A possible hypothesis, resulted from observation and clinical experience, is that this type of attitude is probably replicated in the family environment. Nowadays, due to the more active role women play in their families, the need to go to work and also take care of family issues reduces the amount of free time dedicated to their children, especially when it comes to situations that according to social culture are not exactly relevant, e.g., "playing".

It is important to point out that 15 minutes of interaction between mother and child in a spontaneous situation of playing were analyzed. In other articles where the same pragmatic analysis methodology was used with children with down syndrome no reference to significant difference in regards to how long the footage the samples under analysis was has been found. Bearing that in mind, a decision was made to watch the first 15 minutes of the footage, not losing track of both the quality and reliability of the answers provided[16].

One should remember that neither age, nor school level of the mothers was taken into consideration. Moreover, the socioeconomic conditions of the families were not assessed either. Bearing in mind the importance of environment in language development, one may infer that children from underprivileged families may present inferior linguistic performance parameters in comparison to other children of the same age group. However, due to the fact that this is a scientific study, the group has been kept as equal as possible.

It has been verified that the amount free time activities done with the child and use of the "performative" function of communication increase side-by-side. The "performative" function teaches about symbolic behavior applied to objects and events. Symbolism, aside from its ludic nature, anticipates the cognitive development of the individual, and is regarded as a primordial aspect of language development. The symbolic behavior that takes place when playing demonstrates some individual characteristics of the child, as well as his or her needs and interests. Some authors consider the symbolic function as the capacity to represent, which favors the surging of linguistic abilities, including verbal. The more diversified the experiences children are put in contact with, the more linguistic possibilities they are provided with. Therefore, they may present better and more thorough linguistic performance. Children's actions are based on the world around them and context they are surrounded by must provide them with opportunities to behave in this environment[17].

An existing correlation between the habitual practice of activities, including therapeutic intervention, sports or even music initiation, is related to a more frequent "verbal" communicative means and the use of the communicative functions "request for action" and "narrative". The "narrative" function proves itself to be constructive playing, involving the mastery of symbolic, semantic and pragmatic abilities. Those children's "request for action" function shows that not only did they respond, but they also proposed activities and recreational tasks. All children who have partaken this study have had therapeutic intervention for an average of 6 years of assistance. One may infer, therefore, that the more frequent use of the "verbal" communicative means is coherent, since incentivizing oral production is one of the goals in children with DS's speech therapy. It may also be argued that additionally to school, it is important for children to do other activities, such as: occupational therapy, psychological therapy, swimming, group work and even music lessons, which affect language acquisition positively. Such tasks have been some of the examples mentioned by the mothers who have partaken this experiment. Speech therapy has shown itself to be an enabling factor for oral language. It is important to highlight that the genetic condition has already been established by the syndrome, hence therapists working on the child's surroundings in order to assure that the intervention favors development[4,11,15].

The family environment where magazines and newspapers are found encourages children to use the "narrative" communicative function, which, as mentioned prior, is oriented to the mastery of linguistic abilities that are important for better linguistic performance. It is very likely that reading and being in touch with that sort of graphic material provides children with exposure to broad vocabulary and prevalence of the correct models for oral speech structuring, with adequate morphological and syntactic aspects. Such a resource encourages children verbalize more often when describing real or imaginary facts during interaction moments. Authors have posited that the linguistic manifestations are related to prior experience, which constitute and create knowledge of the world. The understanding and appropriation of language are intertwined with global knowledge, and with the way specific aspects are selected according to the demands of a given situation. [8-9,17].

A reduction of the communicative function "game" has been noticed when newspapers, magazines and books are found in the household. The availability of graphic and reading resources in the family environment allows children to handle books, magazines and newspapers, counting with the company of others during exploration process in certain occasions. The existence of those resources favors social interaction and reduces the use of communicative functions that do not include others in their process, such as "games"[1,2].

The increase in the communicative function "acknowledgement of the other" appears when supervision of schoolwork by adults is verified to happen more frequently. Children who count on constant assistance of their parents in tasks and activities tend to more often request and acknowledge the others in the environment where they are. As a consequence of that, the others are more frequently included in the moments of playing and interaction[12,18].

The use of "verbal" and "gestural" means of communication have also been noticed to take place more frequently used when the child's surroundings facilitate the execution of tasks. Due to the fact that "verbal" is the most common communicative means used by adults when explaining and assisting in activities, children who are more exposed to this tend to use it more frequently, since they listen to and observe such models constantly. Children with DS use the communicative means "gestural" more frequently than children with typical development. Because they are not fully able to express themselves verbally in a satisfactory way, they use isolated gestures or combine them with emissions in order to learn and express concepts and ideas. The bibliography used in this paper reinforces that gestures also facilitate oral language, since they too evoke the productions of adults in reference to the object or the child's attention focus, offering them

the model of spoken words and how to express your desires through "verbal" means"[13,16,19-21].

It has been noticed that the surroundings that provide a daily routine with a pre-set schedule have caused children to use the communicative functions "comment" and "request for action" less frequently. Establishing a routine with a preset schedule is important for the organization of family environment and sometimes may reflect in the process of doing homework. However, this has proven itself to have reduced the interaction between children and family members. The reduction of both interactive and dialogue-oriented functions has shown itself to have taken place. This might be a consequence of a possible imposition of daily tasks in an authoritarian manner, with parents forcing children to behave in a certain way, which has kept the children who have partaken this research to solicit the adults. An increase in the "verbal" means has been observed whatsoever, when there is a preset schedule in the family environment. So, they provide models of oral language to children, therefore allowing them to replicate what is offered to them[12,13,16].

The interactions established between family systems are the ones that enable the most meaningful considerations for child development. The way information is transmitted to children with Down syndrome influences in their development of verbal communication abilities. Such findings reinforce more and more that the importance of active intervention of family in the process of learning and cognizance of children with Down syndrome, focusing in the use of oral language[22-24].

CONCLUSION

The tools used in the present study have enabled data collection in a natural spontaneous way, guaranteeing reliable results. The pragmatic analysis carried out enabled a communicative channel that favored a more accurate evaluation of the communicative and interactional performance of the children and their mothers. The RAF questionnaire is practical and easy to be applied. Its results enable a broader analysis of family environment characteristics.

The data presented in this research point to the comprehensive variety of events and resources that contribute to favor the acquisition and development of linguistic abilities in children with Down syndrome. It has also been verified that there certain types of behavior in family environment inhibit the manifestation of certain linguistic functions on behalf of the children.

Once the relationship between environmental resources that influence linguistic development in children with Down syndrome was confirmed, the importance of the role played by the surroundings of children with Down syndrome in linguistic acquisition and development in such population. Since Down syndrome determines a pre-established genetic condition, family and health professionals that deal Down syndrome participate in the evolutionary process of children as a tool that interferes, modifies, perfects and contributes to improve the child's performance. It is important to bear in mind the importance of family surroundings in the improvement of quality of life for children with Down syndrome.

RESUMO

Objetivo: investigar os aspectos da vida familiar que influenciam o desempenho linguístico de crianças com síndrome de *Down*. **Métodos:** aplicação do questionário Recursos do Ambiente Familiar e análise pragmática da comunicação de crianças com síndrome de *Down*. Participaram do estudo 30 crianças com SD, de cinco a 10 anos de idade e de ambos os sexos. Aplicou-se o teste de correlação de postos de *Spearman*. As análises foram feitas pelo programa SPSS versão 10.0 e, em todas elas, adotou-se um nível de significância de 5%. **Resultados:** verificou-se correlação entre itens do questionário e os resultados referentes ao meio comunicativo e função comunicativa da análise pragmática utilizadas pelas crianças. **Conclusão:** é preciso considerar os aspectos do meio familiar que apresentam influência com o desempenho comunicativo de crianças com Sindrome de *Down*.

DESCRITORES: Linguagem Infantil; Síndrome de Down; Meio Ambiente; Relações Familiares; Desenvolvimento Infantil

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