THE EFFICACY OF THE SPEECH AND LANGUAGE THERAPY IN AUTISM SPECTRUM DISORDER

A eficácia da intervenção terapêutica fonoaudiológica nos distúrbios do espectro do autismo

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ABSTRACT

Purpose: to evaluate the efficacy of the speech and language therapy for Autistic Spectrum Disorders. **Methods:** the sample was composed of 11 children. These children were randomly divided into two groups: Six were receiving both direct and indirect intervention (TG group), and five were receiving exclusively indirect intervention (OG Group). We used the following parts of ASIEP-2: Autism Behavior Checklist, Interaction Assessment and Sample of Vocal Behavior on three occasions: at the beginning, six months later and 12 months later. **Results:** we observed there was greater evolution of Therapy Group-TG in the Autism Behavior Checklist, Interaction Assessment and Sample of Vocal Behavior. The mothers and the Speech Language Pathologist perceived behavioral changes. **Conclusions:** the tendency of better performance of the children attended in direct and indirect intervention showed that this association was fundamental.

KEYWORDS: Speech language hearing sciences; Language; Communication; Autism; Children

◼ INTRODUCTION

The autism spectrum disorders are characterized by chronic and severe impediments in the triad of social interaction, interests and verbal and non-verbal communication[1,2].

Several studies have discussed the need to provide more efficient communication opportunities to individuals inflicted by these conditions[3-7]. For this, it is necessary that interlocutors be attentive to the specific characteristics of these subjects and utilize strategies which make most of, and amplify, every sign of communication observed, whether verbal or non-verbal.

Over the last few decades, speech and language therapy, in particular the direct intervention type – the characteristic of which is the treatment directed to the abilities and inabilities of each child –, has been emphasized as a means of social adjustment of communicational behavior. It has also been observed that, when direct intervention is complemented by indirect intervention – in other words, when the therapeutic context and scenario are amplified by guiding the family and school, the process of evolution shows greater speed and extension.

The outlining of therapeutic conducts of language must consider the participation and the involvement of the family. It is important that parents are able to detect the atypical manifestations in development and create communicational contexts in which the child has effective participation[3-7].

Being caring when dealing with parents, at times providing them with precise information on the child's development, taking in doubts and understanding requests, and, at other times, inviting them to participate as agents of the language process, is an essential task in the child's speech and language therapy.

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Taking as a fact that the direct intervention of speech and language therapy, when combined with its indirect intervention, allows for a greater evolutionary pattern of children with autism spectrum disorders – if compared to the implementation of only indirect intervention –, the aim of this study was to verify the efficacy of speech and language therapy in children with autism spectrum disorders.

■ METHODS

Design of study

This is a pilot clinical trial study approved by the Ethics Committee (CEP) of the Federal University of São Paulo (UNIFESP), No. 1570/05. All those involved were aware of the methodological procedures and signed an informed consent form.

Sample

The sample consisted of 11 boys, between the ages of four and ten, diagnosed by a multidisciplinary team as having Autism Spectrum Disorders[1,2] in clinic-school.

All showed Mental Retardation of a mild to moderate degree, according to the application of the Stanford-Binet Intelligence Scale[8,9].

Neurological and audiological development were verified according to the parameters of normality.

Three children were considered non-verbal, for they showed vocalizations as the predominant means of communication in the initial period of the study, and eight were classified as verbal, for they produced verbal emissions which involved at least 75% of phonemes of the Portuguese Language[10].

All the children were properly enrolled in public schools, six of which were in pre-school education and five in elementary school. Of the latter group, two children were in special classes.

The following were considered as criteria for inclusion in the sample: the multidisciplinary diagnosis, the child's link to educational institutions and the family's availability to participate in the guiding sessions and in the speech and language therapy sessions, for at least twelve months. This guaranteed the participation of at least 70% of parents and children in the study.

The criteria for exclusion from the sample were constituted by the presence of comorbidities involving deficiencies of motor, visual, auditory and/ or physical nature.

Procedures

The children were divided randomly into two groups: six children underwent direct and indirect therapeutic intervention (Therapy Group – TG) and five were assisted solely through indirect intervention (Orientation Group – OG).

The direct therapeutic intervention in TG consisted in the planning and execution of strategies focused on the abilities and inabilities of each child, as proposed by the speech and language therapist. Individual sessions were carried out (48), always with the participation of the parents, who sometimes observed and at other times acted together with the child and the therapist. The average duration of each session was of 45 minutes. The objectives outlined have referred, in general, the adequacy of social interaction skills (maintaining eye contact, joint attention, engagement in interpersonal relationships), verbal and nonverbal communication and expansion of the repertoire of interess and activities. In all sessions we used toys, books and objects of interest of children and /or physical stimulation activities, such as tickling. For some children, we selected album with pictures of familiar people and objects, as an alternative strategy for communication.

Every child was treated by the same therapist during the entire study, for the reliability of the execution of the therapeutic procedures and especially to guarantee an interpersonal bond, which is essential for children of the autistic spectrum.

The indirect therapeutic intervention, on the other hand, consisted of strategies planned by the speech and language therapist, but executed by the families. During 15 orientation sessions, without the presence of the children, the parents of both groups were guided and encouraged to expose their doubts and carry out strategies for the resolution of routine problems. Families were also seen to by the same therapist, for the guarantee of attachment and reliability in the execution of the procedures. After twelve months of indirect therapeutic intervention, the children of OG group were included in the direct intervention program and their parents continued in the regular guidelines.

In order to measure the evolutionary process of the groups, and also with a diagnostic purpose, parts of the ASIEP-2[11] were used in three different moments: beginning of intervention (time 0), after six months (time 1) and at the end of 12 months (time 2).

Part 1: *Autism Behavior Checklist* (ABC), translated and pre-validated to the Portuguese Language, is a list of non-adaptive behaviors (57) divided into the following areas: Sensory, Body and Object Use, Language, Relating, Social and Self-Help. It was applied by the speech and language therapist in the form of an interview, in order to minimize the eventual effects of the level of academic education of the responsible adults.

Part 2: Sample Vocal Behavior (SVB) analyzes verbal and pre-verbal communication by the following parameters: Average length, Autistic speech

characteristics (number of atypical emissions) and Language age raw score (typical emissions).

Part 3: Interaction Assessment (IA) takes into account social responses of the child towards the adult in the following situations: Autistic Interaction Score, Interaction; Constructive independent play; No response and Aggressive negative

The data of the re-evaluations was analyzed by two blind observers, in other words, by two speech and language therapists with clinical experience on the treatment of children of the autistic spectrum and who did not know the group each child belonged to. And for coherence between measurements, the Intraclass Correlation Coefficient was used.

For the analysis of the results, the maternal perception on the evolutionary process of the child was considered, registered by way of the application of the ABC. The ABC registers were analyzed in their total value and in each of the areas which compose it, in both groups and in all three moments. The extension and speed of the evolutionary process of the groups were also compared in the areas of communication and social interaction, through the items of the SVB and the IA.

In this study, the term "extension" is considered as the entire gain obtained during the evolutionary process of the child, measuring comparatively, with the instruments mentioned above. Meanwhile, "speed" refers to the gain in the evolutionary process taking into consideration the extension along the period (12 months).

Statistical method

For the descriptive analysis, tables were elaborated containing descriptive statistics between group and time. For the inferential analysis, a level of significance of 5% was established. ANOVA was adopted with the objective of verifying the effect of the groups and of time. When ANOVA pointed out a significant effect, the Method of Bonferroni was used.

■ RESULTS

In Tables 1 and 2, we can observe the descriptive statistics of the total scores and of each area of the ABC.

Table 1 – Descriptive statistics of the ABC total per group on the three assessment occasions

Occasion (months)	Group	N	Mean	SD	Minimum	Median	Maximum
T0 (0)	TG	6	124,67	21,62	93	132	146
	OG	5	101,8	31,9	54	115	134
T1 (6)	TG	6	95,67	23,67	60	104,5	118
	OG	5	94,2	30,4	52	104	132
T2 (12)	TG	6	86,0	22,31	54	88,5	113
	OG	5	79,0	28,3	42	86	114

Legend: TG= therapy group; OG=orientation group

In the inferential analysis there was a significant decrease between the three times (p=0,000 between times 0 and 1, and p=0,049 between times 1 and 2) in TG. In OG, only between times 1 and 2 (p=0,004). Differences between the groups were only noted in time 0 (p=0,000), the average being bigger in TG.

In analysis by means of ANOVA there was significant difference in the Sensory, Social and Self Help and Relating areas between times 0 and 1.

In Table 3, there are the descriptive statistics for the items which compose the Interaction

Assessment and, in Table 4, the items of the Sample Vocal Behavior.

In the Autistic interaction Score, there was a decrease in the averages with the passing of time (p=0,058). In the Interaction item, the average at time 1 was greater than at time 0 (p=0,030). In the Constructive independent play item, a significant decrease of the averages between the times of 0 and 1 in TG was detected. In the items of No response and Aggressive negative, no effects were detected in terms of group (p=0,365) and time (p=0,215).

Table 2 – Descriptive statistics of the ABC areas per group on the three assessment occasions

Occasion (months)	Group	N	Mean SE	SD	Mean OB	SD	Mean LG	SD	Mean SH	SD	Mean RE	SD
T0 (0)	TG	6	22,3	2,6	24,3	14,7	22,5	6,4	19,8	5,0	35,2	3,4
	OG	5	17,6	8,1	27,4	14,8	17,0	6,4	16,8	5,3	25,0	13,7
T1 (6)	TG	6	16,0	4,9	20,3	11,9	21,5	7,0	15,2	4,7	22,7	6,6
	OG	5	15,4	7,6	25,2	14,0	15,4	5,1	16,6	3,8	24,0	12,9
T2 (12)	TG	6	13,7	5,6	16,5	11,2	17,8	8,8	15,3	3,3	22,7	9,6
	OG	5	12,6	5,6	17,2	10,8	14,0	6,0	15,6	5,2	22,0	15,7

Legend: TG=therapy group; OG=orientation group; SE= Sensorial; CO= Object and Body Use; LG=Language; SH=Social Self Help RE=Relating

Table 3 – Descriptive statistics of the Interaction Assessment per group on the three assessment occasions

Occasion (months)	Group	N	Mean AIS	SD	Mean INT	SD	Mean CIP	SD	Mean NR	SD	Mean AG	SD
0	TG	6	37,2	28,3	20,5	17,9	17,5	10,7	9,70	11,9	0,3	0,80
	OG	5	47,6	32,0	16,6	18,3	9,00	11,1	16,2	16,3	6,2	12,8
1	TG	6	20,5	25,4	33,7	16,6	8,20	9,40	6,20	9,5	0,0	0,0
	OG	5	41,2	30,5	20,6	17,1	11,0	12,8	13,8	16,4	2,4	5,4
2	TG	6	16,3	19,3	35,2	15,5	8,30	10,4	3,50	4,20	1,0	2,50
	OG	5	38,8	25,2	20,4	16,2	10,4	8,60	11,2	9,60	6,0	10,8

Legend: TG=therapy group; OG=orientation group; AIS= Autistic Interaction Score; INT=Interaction item; CIP= Constructive Independent Play; NR= No Response; AN=Aggressive negative

In the application of ANOVA to the data of the Language Age Raw Score and of the Autistic Speech Characteristic, there was no detection of effects of group and time, along with their interactions. In the Average Length analysis, an effect of time was detected (p=0,002). By Bonferroni's method, the average at time 1 was greater than at time 0 (p=0,026) and the average at time 2 was greater than at time 1 (p=0,030).

Table 4 – Descriptive statistics of the Sample Vocal Behavior per group on the three assessment occasions

Occasion (months)	Group	N	Mean LS	SD	Mean AS	SD	Mean AL	SD
0	TG	6	1,8	1,0	38,5	21,12	85	49,5
	OG	5	0,9	1,3	7	8,43	56,6	74,8
1	TG	6	1,9	1,1	20,5	16,68	111,3	49,1
	OG	5	1,0	1,3	17,6	22,5	68	74,2
2	TG	6	1,8	0,8	35,8	60,4	119,7	47,3
	OG	5	1,0	1,3	22,4	30,9	73,8	69,2

Legend: TG=therapy group; OG=orientation group; LS= Language Age Raw Score; AS= Autistic Speech Characteristic; AL= Average Lenght

■ DISCUSSION

In the analysis of the total values of the ABC, if we consider only the averages, it can be noted that there was the tendency of a better performance in the TG over the three periods of time. In other words, the evolutionary pattern of this group presented greater speed and extension during the entire process of intervention. The inferential analysis confirmed these findings. In the OG, there was the detection of a difference between the averages only in the last semester of intervention. There was a difference between the averages obtained by both groups solely at time zero, when these were greater in the TG.

Although a difference was observed between the comparative performances of the groups only at time zero of the study, it was registered that Group TG showed an evolutionary pattern which was significantly more accentuated, given that there was a fall in the general score of the ABC between the three moments of evaluation. In Group OG, as mentioned before, there were differences only between times 1 and 2.

Several authors have emphasized the importance of assistance directed not only to the child, but to the families as well. This has happened due to the severe disorder in the relational dynamics which installs itself as a result of the impairment in the mental and emotional development of the children. This limits the creation and conservation of situations of reciprocity between them and their family members[12-15]. Other studies have also proven that the involvement of the family in the treatment guarantees that the objectives of therapy are amplified to the context of the home, providing greater synchronicity and possibilities of a communicational and social nature between the child and his or her interlocutors [3,12-18].

It was noted that, during the first six months, the extension and speed of the evolutionary process became more evident – especially in Group TG – in the total values of the ABC, as well as in the areas which compose it. This shows that, during the first semester, the orientations and the direct action with the child caused a greater impact, allowing for a more expressive therapeutic gain. In the Sensory and Relating areas, for instance, there was a difference between the values obtained at times 0 and 1, in both groups. Although no significant differences were observed in the areas of Language and Social and Self-Help, there was also favorable performance as time passed.

At the end of the twelve months of the study, the changes in behavior, in both groups, became quite noticeable. This even extended to the area of Body and Object Use, the values of which did not suffer significant changes during the first semester. However, between times 1 and 2, the mothers of both groups started to identify the lessening of non-adaptive behaviors in this area. These findings demonstrate the positive effect of integrated work between the family and the speech and language therapist [16-22].

In the Interaction Assessment, it was verified that the Autistic interaction Score, the value of which should decrease as the child's social performance improves, tended to present better performance by the TG. In the items of Interaction item and Constructive Independent Play, a significant difference was detected between the averages in the first semester, in both groups. A better performance by Group TG was confirmed on all levels, including in No Response and Aggressive Negative, the indices of which should also undergo reduction as times passes, indicating a lessening of isolation behavior and of refusal to participate in activities. This data shows that direct and indirect intervention should always consider the aspects related to promoting interactive situations, as it is from these that it is possible to build a dialogue between the child and the interlocutor.

In the Sample Vocal Behavior, TG showed a tendency towards better performance along the three moments in terms of Language Age Raw Score. In the item of Autistic Speech Characteristics, it was noted that unintelligible echolalic emissions with no functionality tended to decrease, especially in TG. In the area of Language, there was also significant increase in both groups.

Although the SVB considers linguistic productions specifically, it was possible to evaluate the atypical elements of communication by way of the Autistic Speech Characteristics item and, in a complementary way, register the advances by means of the analysis of the Language Age Raw Score and of the Average Length.

The exposure of the children to the different situations, with or without the adult, allowed for a careful observation of the communicational inabilities and abilities of each child [18-22].

It is important to emphasize that the advances, in terms of extension and speed, of the evolutionary process of the children could be identified not only by the mothers, but also by the speech and language therapist. This composition of observers provided complementary information and the deepening of the understanding of the impact that social disorders have in the day-to-day of interpersonal relations, besides a greater reflection on the communicational dynamics of the children of the autistic spectrum assisted in this study [3,5,18-22].

◼ CONCLUSION

By proposing direct and indirect speech and language therapy, we believe in valuing the careful observation by the therapist of the communicational and interactive inabilities of the child, as well the therapist's means of intervention. In a complementary way, parents are granted an active participation in the evolutionary process of their child.

It was possible to identify an evolutionary pattern in both groups, through the perspective of both the mothers and the professionals. However, the association of direct and indirect actions was more effective in comparison with the implementation of only indirect actions.

RESUMO

Objetivo: avaliar a eficácia da intervenção terapêutica fonoaudiológica para crianças com Distúrbios do Espectro do Autismo. **Métodos**: a amostra foi composta por 11 crianças. Essas crianças foram divididas aleatoriamente em dois grupos: Seis estavam recebendo intervenção direta e indireta (GT) e cinco apenas atendimento exclusivamente indireto (GO). Foram utilizadas as seguintes partes do teste ASIEP-2: Autism Behavior Checklist, Avaliação de Interação e Amostra do Comportamento Vocal em três ocasiões: no início, seis meses depois, e após 12 meses. **Resultados:** observou-se maior evolução do GT no Autism Behavior Checklist, Avaliação Interação e na Amostra de comportamento vocal. Tanto as mães quanto a fonoaudióloga perceberam mudanças comportamentais. **Conclusões**: a tendência de melhor desempenho das crianças atendidas na intervenção direta e indireta mostrou que esta associação foi fundamental.

DESCRITORES: Fonoaudiologia; Linguagem; Comunicação; Autismo; Criança

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