

# Evolução da criança autista a partir da resposta materna ao *autism behavior checklist*\*\*\*\*

## Development of autistic children based on maternal responses to the autism behavior checklist

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### Abstract

Background: language and speech-language intervention. Aim: to evaluate the development process of autistic children, in a direct and indirect intervention context based on the responses of mothers to the Autism Behavior Checklist. Method: the research sample consisted of 11 mothers of children diagnosed, according to the criteria established by the DSM IVtr (APA, 2002), with autism (six) and with Asperger Syndrome (five) and who were seen at the Investigation Laboratory of Global Developmental Disorders of the Federal University of São Paulo. These children were randomly divided into two groups: Six were receiving both direct and indirect intervention (TG), and five were receiving indirect intervention exclusively (OG). The Autism Behavior Checklist (Krug et al., 1993) was used, adapted to the Portuguese language by Marteleto (2003). This behavior checklist (57 items) allows the detailed description of non-adaptable characteristics regarding the following areas: sensory, use of the body and object, Language, Psycho-social and Relational. The questionnaire was filled in during an interview on three occasions: at the beginning of intervention, after six months and at the end of 12 months. Results: after statistical analysis it was observed that there was a greater development in the total scores and in the areas of language, psycho-social and relational for the TG. This suggests a greater development pattern during the studied period for this group. Conclusion: the mothers of both groups observed behavioral changes. The better scores observed for the TG is probably related to the effectiveness of direct intervention, and not to the lack of attention of parents in the OG in recognizing behavioral changes in their children.


**Key Words:** Autism; Asperger Syndrome; Language.

### Resumo

Tema: intervenção terapêutica fonoaudiológica. Objetivo: avaliar o processo evolutivo da criança autista em contexto de intervenção direta e indireta a partir das respostas das mães ao *Autism Behavior Checklist*. Método: a amostra constituiu-se de 11 mães de crianças diagnosticadas com autismo infantil (seis) e com síndrome de asperger (cinco), de acordo com os critérios do DSM IVtr (APA,2002) e atendidas no Laboratório de Investigação Fonoaudiológica nos Transtornos Globais do Desenvolvimento da Universidade Federal de São Paulo. Essas crianças encontravam-se divididas aleatoriamente em dois grupos: seis crianças em atendimento terapêutico direto e indireto (GT) e cinco apenas em atendimento indireto (GO). Foi utilizado o *Autism Behavior Checklist* (ABC/ICA) proposto por Krug et al., 1993, traduzido para Língua Portuguesa por Marteleto (2003). Trata-se de uma listagem de comportamentos (57), que permite a descrição detalhada das características não adaptativas nas áreas: sensorial, uso do corpo e objeto, Linguagem, Pessoal-social e Relacional. O questionário foi preenchido sob forma de entrevista para minimizar os efeitos da escolaridade dos pais, em três momentos: início de intervenção, após seis meses e ao final de 12 meses. Resultados: após a análise estatística observou-se que houve uma evolução mais acentuada nos escores total e nas áreas de linguagem, pessoal-social e relacional do grupo GT, sugerindo padrão evolutivo maior durante todo o período do estudo. Conclusão: em ambos os grupos as mães observaram mudanças de comportamentos. A tendência de escores melhores do GT deveu-se, provavelmente a eficácia da intervenção direta e não à falta de atenção dos pais do GO em reconhecer diferenças comportamentais em suas crianças.

**Palavras-Chave:** Autismo Infantil; Síndrome de Asperger; Linguagem.

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## Introduction

Conditions that make up the Autism Spectrum Disorders are characterized by severe chronic impediments to social interaction, communication and interests.(1,2) Although there are numerous clinical manifestations of these disorders, we judge it important to highlight the difficulties in both verbal and non-verbal communication, as these have a significant impact on the social and cultural inclusion of individuals affected by these clinical conditions.

In recent decades, language and speech intervention has been emphasized as a method for social adaptations of communicative behavior, enabling better inclusion of autistic children in their social environment. The delineation of language therapy should take the participation and involvement of the family into account. It is important for parents to be able to detect atypical manifestations in development and establish communicative contexts in which the child has an effective participation.(3-10) A number of authors have described intervention programs in which the active participation of parents is assessed.(11-14) Active care on the part of parents provides them with precise information on the development of the child, clarifying questions and understanding requests, and invites them to participate as agents in the language process, which is fundamental to the language and speech therapy of the child.

With the belief that the identification of deviations in the development of children with autism spectrum disorders and the involvement of the family are fundamental steps in the phonological therapeutic intervention, the aim of the present study was to assess the progress of children with autism in the context of direct and indirect intervention based on the responses of mothers to the Autism Behavior Checklist (ABC).

## Method

### Study design

This was a clinical pilot trial, approved by the Research Ethics Committee of the Universidade Federal de São Paulo, under process n 1570/05. All parents/guardians of the children signed terms of informed consent.

### Sample

The sample was made up of 11 mothers of children diagnosed by a multidisciplinary team with

childhood autism (6) and Asperger's syndrome (5) based on the criteria of the DSM-IV-TR (APA, 2002) and under care at the Language and Speech Laboratory for Autism Spectrum Disorders of the Universidade Federal de São Paulo.

All the children were male, between four and 10 years of age, with an intelligence quotient indicating mild to moderate degrees of mental retardation and a social quotient classified in the categories normal/mild-moderate or severe-profound impairment.(15,16) Neurological and hearing development was determined based on normality parameters. Three children were considered non-verbal, presenting vocalizations as the predominant means of communication at the beginning of the study. Eight children were classified as verbal, as they produced verbal emissions that involving at least 75% of the phonemes in the Portuguese language, according to the criteria proposed by Fernandes (1996). All the children were regularly enrolled in public schools - six in preschools and five in elementary schools, the latter group attended special education classes.

Inclusion criteria were a multidisciplinary diagnosis of autism spectrum disorder, enrollment in an educational institution and the adherence of at least 70% of the parents and children to the study. The exclusion criteria were co-morbidities involving motor, seeing, hearing and/or physical impairment. The children were randomly divided into two groups: six children in direct and indirect care (TG) and five children in indirect care alone (OG).

The mothers had a mean age of 33 years, a mean of ten years of schooling and pertained to socioeconomic class C [Brazilian socioeconomic classification from A (highest) to E (lowest)]. During the 12 months of the study, the mothers in the TG participated in 48 care sessions and received instructions as to language stimulation in quotidian situations in approximately 15 sessions, without the presence of the children. The mothers in the OG participated in encounters held every two weeks with the researcher and without the presence of the children, totaling 15 orientation sessions.

### Procedures

To measure the children's progress as assessed through the mothers' observations, the Autism Behavior Checklist (ABC) was employed. The ABC was proposed by Krug et al. and translated into Portuguese by Marteleto.(17,18) It contains a list of 57 different behaviors that allows a detailed description of the non-adaptive characteristics in the following areas: Sensory (9); Body and Object Use (12); Language (13); Social Self Help (11); and

Relating (12). It incorporates balanced scores from 1 to 4 points that vary according to the occurrence of each behavior. A behavioral profile is outlined from the overall score, which allows the evaluator to analyze the severity of the pathology of each individual and keep track of his/her development. A score of 68 is considered a high probability of childhood autism. Scores between 67 and 54 points indicate a moderate probability and scores between 53 and 47 points indicate a low probability.

The questionnaire may be filled out by parents, teachers or clinical professionals involved in the child's care. In the present study, the ABC was administered to mothers in interview form by the speech therapist in charge of the therapy process in order to minimize the possible effects of the mothers' schooling. Three occasions were considered: the beginning of the intervention (T0); after six months (T1) and at the end of 12 months (T2). The mothers' observations regarding the progress of the children in both groups were analyzed considering the overall ABC score and each of its components.

#### Statistical analysis

The data on the sample were summarized by constructing tables. In the inferential analysis, analysis of variance (ANOVA) for repeated measurements was employed to determine the effect of group, social quotient and time on the mean scores. Due to the small sample size, only two social quotient categories were established in this part of the analysis: Category 1, formed by normal/mild-moderate impairment; and Category 2 formed by severe-profound impairment. When ANOVA revealed significant effects, the Bonferroni criterion was used to locate the differences between the means involved. A p-value of 0.05 was adopted for the effect of the interaction between group and time.

#### Results

The descriptive statistics on the overall ABC score and the score of each of its components, obtained through observations by the mothers, are displayed in the tables below for both groups and the three assessment occasions.

In the inferential analysis, the mean ABC score in the severe-profound impairment scale was higher ( $p=0.000$ ), regardless of the group ( $p=0.542$ ) or time ( $p=0.610$ ), meaning there were no interaction effects between social quotient and group or social

quotient and time. The means of both groups exhibited different behavior over time ( $p=0.003$ ), indicating a group/time interaction. Using the Bonferroni criterion, the mean value at T0 for the TG was higher than that at T1 ( $p=0.000$ ), which, in turn, was higher than that at T2 ( $p=0.049$ ). In the OG, there was a difference between mean values at T1 and T2 ( $p=0.004$ ). There was only a difference between the means of the two groups at T0 ( $p=0.000$ ), with higher values in the TG.

On the Sensory and Body and Object Use components, the mean values in the severe-profound impairment category were higher in both groups ( $p=0.046$  and  $0.005$ , respectively). No differences were detected between groups ( $p=0.431$  and  $0.388$ ). The Bonferroni criterion revealed a significant difference between mean values at T0 and T1 ( $p=0.010$ ) in the Sensory component. Mean values in the Body and Object Use component were higher at T1 than T2 ( $p=0.004$ ).

In the Language component, an interaction effect was detected between time and social quotient ( $p=0.014$ ). Comparing mean values for the different assessment occasions within the each social quotient category and considering time, there was a decrease from T1 to T2 ( $p=0.015$ ) in the normal/mild-moderate impairment category. There was a difference between the mean value in the two social quotient categories only at T2 ( $p=0.015$ ), with a higher mean in the severe-profound impairment category.

An interaction effect was only detected between time and social quotient ( $p=0.035$ ) in the Social Self Help component. In the severe-profound impairment category, there was a significant decrease in the mean value from T0 to T1 ( $p=0.041$ ). At T0, the mean value in the normal/mild-moderate impairment category was lower.

In the Relating component, an interaction effect was detected between group and social quotient ( $p=0.006$ ) as well as between assessment occasions ( $p=0.011$ ). The interaction effect between group and social quotient signified that the difference between mean values in the two categories was different in the two groups. At T0, the mean value in the normal/mild-moderate impairment category was lower ( $p=0.000$ ) and the mean value of the TG was higher in this category. At T1, a significant difference was only detected between the mean value in the OG ( $p=0.019$ ), with a higher mean value in the severe-profound impairment category. Similar conclusions were reached at T2 ( $p=0.029$ ). The Bonferroni criterion revealed a decrease in the mean value in the Relational component between T0 and T1 ( $p=0.010$ ).

TABLE 1. Descriptive statistics of the ABC 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

TABLE 2. Descriptive statistics for the scores in the Sensory and Body and Object Use components of the ABC per group on the three assessment occasions.

Occasion (months)	Group	N	Sensory Mean	SD	BodyObject Use Mean	SD
T0 (0)	TG	6	22.3	2.6	24.3	14.7
	OG	5	17.6	8.1	27.4	14.8
T1 (6)	TG	6	16.0	4.9	20.3	11.9
	OG	5	15.4	7.6	25.2	14.0
T2 (12)	TG	6	13.7	5.6	16.5	11.2
	OG	5	12.6	5.6	17.2	10.8

TABLE 3. Descriptive statistics for the scores on the Language, Social Self Help and Relating components of the ABC per group on the three assessment occasions.

Occasion (months)	Group	N	Sensory Mean	SD	BodyObject Use Mean	SD
T0 (0)	TG	6	22.3	2.6	24.3	14.7
	OG	5	17.6	8.1	27.4	14.8
T1 (6)	TG	6	16.0	4.9	20.3	11.9
	OG	5	15.4	7.6	25.2	14.0
T2 (12)	TG	6	13.7	5.6	16.5	11.2
	OG	5	12.6	5.6	17.2	10.8

## Discussion

In the analysis of the total ABC scores considering the means obtained from the reports of the mothers (Table 1), there was an evolutionary pattern in both groups, with a better performance in the TG (direct and indirect therapy). In the inferential analysis, a greater extension and velocity of progress was detected in the TG, as the mean values underwent a significant decrease over time. In the OG, a statistically significant difference between mean values was only detected in the last semester of the study. There was a difference in mean values between groups only at

T0 ( $p=0.000$ ), with the mean of the TG higher than that of the OG.

Analyzing the components of the ABC considering the means obtained per group on the three assessment occasions, there was, once again, a tendency toward a better performance of the TG in the Sensory (Table 2), Language, Social Self Help and Relating (Table 3) components. In the Body and Object Use component, the mothers reported no significant changes in behavior among the children (Table 2).

Although there was a tendency toward a more accentuated progress in the TG, as analyzed by the overall ABC score and the scores on its components, the evolutional pattern in both groups reveals the mothers in the OG and TG alike were sensitive in recognizing behavioral changes in their children. It should be stressed that the evidence of greater extension and velocity in the evolutional pattern observed by the mothers of the children in the TG must be the result of the effectiveness of direct intervention associated to indirect interventions (counseling) rather than any lack of perception on the part of the mothers in the OG in recognizing behavioral changes in their children.(6-7,9-10,12-13)

The reports of non-adaptive behavior mentioned by the mothers and classified as severe-profound impairment (social quotient) were generally higher. The inferential analysis confirmed this finding, as the social quotient affected the performance of the groups in practically all the ABC components. The importance of obtaining adaptive function indexes has been mentioned by a number of authors in the study of children with autism spectrum disorders. Together with an assessment of intellectual level, the social quotient more accurately describes the social abilities and disabilities of individuals.(19-22)

We also noticed that the extension and velocity of the evolutional process were generally more evident in the first six months, especially in the TG. It is during the first semester that the orientations and the direct intervention with the children had the largest impact, thereby allowing the identification of a more expressive therapeutic gain on the part of the mothers. Furthermore, at the end of the 12-month study, the behavioral changes in both groups had become quite notable. Even in the Body and Object Use component (the values of which did not undergo significant

changes in the first semester), the mothers in both groups identified a reduction in non-adaptive behavior between T1 and T2. Thus, the ABC proved to be a useful tool in recognizing non-adaptive behavior(17-18,22) and efficient in assessing mothers' observations regarding the evolutional process of their children.

It is important to give value to the indirect actions produced in the present study, as the mothers in the OG proved attentive to disabilities and the identification of qualitative differences in their children's performance. This likely occurred because these mothers were sensitized to observe atypical patterns as well as establish greater communicative harmony with their children. These findings confirm the need to stress not only direct therapeutic action, but also indirect actions, the principal aim of which is to ensure assistance to the parents and broaden the social and communication contexts of children with Autism Spectrum Disorders.

## Conclusion

Both groups of mothers were sensitive in observing behavioral changes. The tendency toward better scores in the TG for both the overall ABC score and the scores on each of its components was likely due to the effectiveness of the direct intervention associated to the indirect interventions rather than any lack of attention on the part of the parents in the OG in recognizing behavioral differences in their children. The evolutional pattern was more evident to mothers whose children had a social quotient categorized as normal/mild-moderate impairment. It was possible for the mothers to identify significant behavioral changes in the first six months of intervention.

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