

Comparing the use of the Childhood Autism Rating Scale and the Autism Behavior Checklist protocols to identify and characterize autistic individuals

Comparaç o dos instrumentos Childhood Autism Rating Scale e Autism Behavior Checklist na identificaç o e caracterizaç o de indiv duos com dist rbios do espectro aut stico

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ABSTRACT

Purpose: To compare the results obtained in the Autism Behavior Checklist with those obtained in the Childhood Autism Rating Scale to identify and characterize children with Autism Spectrum Disorders. **Methods:** Participants were 28 children with psychiatric diagnosis within the autism spectrum that were enrolled in language therapy in a specialized service. These children were assessed according to the Autism Behavior Checklist and Childhood Autism Rating Scale criteria, based on information obtained with parents and therapists, respectively. Data were statistically analyzed regarding the agreement between responses. Results indicating high or moderate probability of autism in the Autism Behavior Checklist were considered concordant with the results indicating mild-to-moderate or severe autism in the Childhood Autism Rating Scale. Results indicating low probability of autism in the Autism Behavior Checklist and without autism in the Childhood Autism Rating Scale were also considered concordant. **Results:** There was agreement on most of the responses. Cases in which there was disagreement between results obtained on both protocols corroborate literature data, showing that the instruments may not be sufficient, if applied alone, to define the diagnosis. **Conclusion:** The Childhood Autism Rating Scale may not effectively diagnose autistic children, while the Autism Behavior Checklist may result in over-diagnosis, including within the autism spectrum children with other disorders. Therefore, the associated use of both protocols is recommended.

RESUMO

Objetivo: Comparar as respostas dos instrumentos *Childhood Autism Rating Scale* e *Autism Behavior Checklist* na identificaç o e caracterizaç o de indiv duos com Dist rbios do Espectro Aut stico. **M todos:** Participaram 28 indiv duos que estavam em atendimento fonoaudiol gico e possu am diagn sticos inseridos no Espectro do Autismo. Todos foram avaliados por meio dos instrumentos *Autism Behavior Checklist* e *Childhood Autism Rating Scale* a partir de informaç es obtidas, respectivamente, com pais e terapeutas. Os dados foram analisados estatisticamente em relaç o   concord ncia das respostas obtidas. Foram considerados concordantes os resultados de alta ou moderada probabilidade para autismo no *Autism Behavior Checklist* e com autismo leve-moderado ou grave na *Childhood Autism Rating Scale*, e respostas de baixa probabilidade no *Autism Behavior Checklist* e sem autismo na *Childhood Autism Rating Scale*. **Resultados:** Houve concord ncia na maior parte das respostas obtidas. Casos em que houve discord ncia entre os resultados obtidos a partir dos protocolos corroboram dados da literatura, evidenciando que os instrumentos podem n o ser suficientes, quando aplicados isoladamente para a definiç o do diagn stico. **Conclus o:** Enquanto a *Childhood Autism Rating Scale* pode n o diagnosticar crianç as efetivamente autistas, o *Autism Behavior Checklist* pode incluir como autistas, crianç as com outros dist rbios. Portanto, recomenda-se o uso complementar dos dois instrumentos.

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INTRODUCTION

The Autism Spectrum Disorders (ASD) are identified by impairments in the areas of social interaction, language and cognition⁽¹⁾. Several different tools are used to identify and describe autistic children.

The Autism Behavior Checklist (ABC) is a list of non-adaptive behaviors⁽²⁾ that results in the detailed description of the atypical behavioral characteristics of each individual. The ABC is a questionnaire about the 5 areas of development with a balanced score (1 to 4) according to the occurrence in ASD. Based on the sum of the scores it is possible to determine a behavioral profile that allows the analysis of the severity. Scores between 47 and 53 indicate low probability, scores between 54 and 67 indicate moderate probability and over 68, high probability. These values, however, are considered too high, tending to exclude an important proportion of children from the autism diagnosis⁽³⁾.

The Childhood Autism Rating Scale (CARS)⁽⁴⁾ is a seven-item scale that helps in the identification of children with autism separating them from the other developmental disorders and differentiating the different degrees of autism⁽⁵⁾. The CARS considers aspects observed by the therapists and information reported by the parents. The examiner determines in which degree the behavior deviates from the expected from a normal child of the same age⁽⁶⁾. The cutoff score for autism is 30. Scores between 30 and 36 indicates mild to moderate autism and over 37, severe autism⁽⁴⁾.

Comparing diagnostic tools that use different information sources may provide important elements to the decision about the best protocols to the diagnostic process and more details about the characteristic of each of them. Therefore, the purpose of this study was to compare the results of the ABC and CARS in the identification and characterization of individuals with ASD.

METHODS

This research was approved by the Research Ethics Commission of the School of Medicine – Universidade de São Paulo (FMUSP) with number 1155/06. All caretakers signed the consent form.

Participants were 28 individuals, ages between 4 and 17, attending language therapy in a specialized service. Inclusion criteria were: ASD psychiatric diagnosis; attending language therapy for at least 6 months and for no more than 1 year and signed consent form.

The questionnaires were applied by one of the authors. The CARS was applied with the therapists. The ABC was applied, around the same period, with the parents, during an interview with focus on the subject's present behavior.

To compare the questionnaires and the medical diagnosis data were statistically analyzed by the Student's t test. The results of high or moderate probability of autism in the ABC and severe autism in CARS and low probability in the ABC and without autism in CARS were considered concordant.

RESULTS

The result of “non-autistic” was attributed to 50% of the subjects by the CARS, with significant difference to the other possible results (Table 1). Analyzing the medical diagnosis attributed to the same subjects, 57% were diagnosed with High Functioning Autism (HFA), Asperger Syndrome (AS) or Semantic-Pragmatic Syndrome (SPS).

Table 1. Autism diagnosis according to the CARS

Diagnosis	n	%	p-value
Non-autistic	14	50*	0.002*
Mild-moderate autism	6	21	0.15
Severe autism	8	29	0.17

* Significant values (p<0.05) – Student's t test

The results of the ABC had similar distribution with significant difference only to “high probability” and “moderate probability” (Table 2).

Table 2. Probability of autism according to the ABC

Probability of autism	n	%	p-value
Low probability	9	32	0.31
Moderate probability	8	29	0.17
High probability	11	39*	0.04*

* Significant values (p<0.05) – Student's t test

Subjects classified as “non-autistic” in the CARS (50%) in the ABC obtained “high” (33%) or “moderate” (67%) probability of autism. In the comparison of both protocols, 54% of the responses were agreeing (Table 3). In the cases where CARS indicated “slight-moderate autism” and ABC indicated low probability for autism represent 30% of the agreements and there is more agreement in the cases with some degree of autism or probability of autism. There was no difference in this comparison highlighting the different perspectives of both protocols and the importance of their combined use.

Table 3. Agreement relationship between responses in both questionnaires

Agreement	n	%
Agreement	15	54
Disagreement	13	46
p-value	0.08	

* Student's t test (p<0.05)

Only 27% of the subjects with “high probability of autism” in the ABC were not diagnosed with autism by the CARS. It suggests that the CARS is more sensible to subjects with more characteristic behaviors. There were agreement between CARS, ABC and the medical diagnosis in 35% of the subjects, although the information was obtained from different groups (parents and therapists, as suggested by the protocols).

DISCUSSION

These results agree with a prior research⁽³⁾ that suggested that the CARS is sensible to identify Autism by its cutoff score, but not to identify AS and Non-Specified Pervasive Developmental Disorders. In the CARS the verbal abilities may mask the severity of autism. Verbal individuals, regardless of their functional performance, usually have higher scores in the Language domain of the ABC, although some authors⁽⁷⁾ report that the verbal production may result in higher scores but do not interfere in the general result.

Although there is little agreement regarding the degree, all the subjects with “severe autism” had similar results in the ABC. This data suggest that both protocols may fail to agree to all cases but their convergence increases with the severity of the cases.

CONCLUSION

While the *Childhood Autism Rating Scale* may fail to diagnose children that are effectively autistic, the *Autism Behavior Checklist* may include children with other disorders in the

autism spectrum. Therefore it is considered that both protocols should complement each other.

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