

The importance of a personalized approach in autism spectrum disorder: from neuropsychological assessment to intervention

Abstract

This case study presents the analysis of a clinical case of Autism Spectrum Disorder (ASD). The investigation included a developmental assessment, a cognitive and behavioral profile, as well as an analysis of social and linguistic skills. The intervention was based on methods such as ABA (Applied Behavior Analysis) and TEACCH, aimed at promoting self-regulation, social and communication skills. Adaptations were made to the school environment and support was given to the family, with significant progress observed in the subject's behavior and social integration. This study illustrates the importance of an interdisciplinary and personalized approach to the effective monitoring of children with ASD.

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Stefanie Gomes Matos
University of Coimbra, Portugal

Correspondence: Stefanie Gomes Matos, University of Coimbra, Coimbra, Portugal, Tel +351926078141

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Introduction

The case study presented below explores the case of S. who has an Autism Spectrum Disorder (ASD) said, "*Autism Spectrum Disorder is a Global Developmental Disorder that affects most areas of a child's normal development. It is a chronic illness that requires lifelong monitoring. Although the prognosis is highly variable within the autistic population and behavioral characteristics change throughout life, most individuals maintain some kind of need in the areas of autonomy, employment and social relationships*".¹

ASD results from developmental disorders that impact on different social, behavioral and linguistic levels and in different magnitudes said,² it can be argued that one is born autistic. However, prenatal diagnosis is not possible, nor is it manifested by any physical traits at birth. To date, we don't know the cause of ASD. However, it is known that all diseases result from the influence of environmental factors that act on genetic predispositions. In autism spectrum disorders, it seems that genetic factors are crucial and environmental factors are less significant.² In most cases, it cannot be diagnosed in the first few months of life. As with most developmental disorders, the diagnosis of ASD is clinical and is based on a clinical interview, developmental assessment and behavioral assessment.³ Clinical assessments should be based on empirical and scientific evidence and on the use of clear criteria that are appropriately adapted to each specific population.³ In the case of ASD, the assessor must pay attention to the areas of communication, behavior and social interaction. In this way, the assessor will be able to provide good support for defining the diagnosis and functioning profile, as well as for achieving appropriate intervention strategies and goals. Currently, there are no laboratory tests (genetic, biochemical, electrophysiological, imaging or other) that make it possible to diagnose ASD,³ medical or non-medical intervention is known to resolve the core disorders of autism, notably difficulties non-verbal communication and interpretation, generalization and concept association. It is likely that ASD has no cure. However, the absence of a cure does not mean that hope is lost, nor does it mean that we should not intervene vigorously to help minimize the difficulties of people with ASD. The central aim of medication in ASD is to control symptoms.³

The main difficulties presented by individuals with ASD are difficulty in social interaction, difficulty in verbal and non-verbal communication, difficulty in creating empathy, fixation on certain themes, games or objects, gestures, sounds or repetitive activities,

cognitive rigidity, hypersensitivity to sensory stimuli (smells, sounds, lights or textures), marked anxiety in the face of the unexpected or circumstances that they cannot control and motor clumsiness.²

"The DSM-V defines ASD as persistent deficits in communication and social interaction, across multiple contexts, together with restrictive and repetitive patterns of behavior, interests or activities. Symptoms must be present early on, although difficulties may only become apparent when the complexity of the social skills required of the adolescent or adult exceeds the tools they have to deal with this situation."²

The DSM 5 mentions the possibility of comorbidities, so the presence of intellectual or language deficits or other neurodevelopmental disorders does not rule out a diagnosis of ASD.²

Psychological assessment in ASD begins with observing the child's behavior in the waiting room. Repetitive gestures and sounds, body swaying, rigidity in the expression of body mimicry, peculiarities of verbal and non-verbal communication, unusual body postures, peculiarities of gait and the way they greet each other are all signs that can give us clues from the very first contact with the child.³ Clinical assessment in ASD should begin with the child's developmental history, through a structured interview, paying special attention to the development of communicative prerequisites such as looking, responding to sounds, imitating, pointing, making their first jokes and dancing. At the behavioral level, typical questions should be asked about the child's behavior, such as mannerisms, rigidity, sensory sensitivities and interests and games.² Next, the child's cognitive level is assessed, which provides us with relevant information about the subject's strong and weak areas of functioning. It is therefore an informative and advantageous area of assessment when monitoring and/or referring a person, but it is not fundamental to a diagnosis of ASD. The behavioral assessment of well-being allows us to explore the presence of possible comorbidities, helps to promote quality of life and, if necessary, allows us to align very specific intervention strategies. Finally, the specific clinical assessment in ASD is carried out by direct behavioral observation, using the Autism Diagnostic Observation Schedule (ADOSE) (Lord et al 2012).⁴ Specific parental or personal questionnaires can also be used.

Rather than establishing a categorical diagnosis for all situations, it is significant to identify the presence of an ASD whenever it is displayed and to identify, as best as possible, the subject's areas of competence and disability, with the aim of optimizing a therapeutic

intervention plan and enhancing each person’s autonomy and competences.³

Appropriate follow-up after diagnosis should offer skills training, family support and psychological and psychiatric support, all of which are important in helping people with ASD to make the best use of their time and better coexist with their disabilities.³

Bearing in mind the above description, Clinical Psychology is the most integral area of activity to follow, using methods and techniques that allow us to get to know the child’s mental and behavioral reality and, with a methodized intervention that can be carried out, promote behavioral changes, with the aim of promoting the mental health and well-being of both the child and those around them.

Case presentation

Case description

Summary of the child’s/adolescent’s medical history; reason for consultation

S. was referred by Dr. X, a Neuro pediatrician, for a screening assessment for an Autism Spectrum Disorder (ASD). The main aim of the assessment was to analyze his current profile, his characteristics, difficulties and skills, with a view to determining the need for therapeutic intervention, as well as aspects of his previous development that are relevant to understanding his current situation.

S. is currently 6 years old. She lives her parents and a younger brother. From his clinical and developmental history, it should be noted that this was an ectopic pregnancy, the gestation period of which was within the normative parameters, and the birth took place at 38 weeks of gestation. S was born weighing 2800 g, 48 cm long and with a head circumference of 33.5 cm. The Apgar score at the first minute was 9 and at the fifth minute it was 10. There were no complications during the neonatal period. Regarding psychomotor development, there were no significant changes in the acquisition of the main skills, such as sitting, walking, sphincter control and autonomy. The presence of tics as well as cleaning and counting rituals stands out. Language emerged as a weak area from an early age. The first words appeared at the age of 2 and the first phrases appeared later, at 3 years and 6 months. There are no known feeding difficulties related to accepting a diverse range of foods. S sleeps with his brother in separate beds. Regarding his educational and therapeutic path, S. was integrated into kindergarten at the of 3, with a rather difficult adaptation described by his parents as follows as “traumatic”. He is currently medicated with methylphenidate and benefits from individualized support from speech therapy and ABA therapy, with positive progress.

Identification and description of the child’s/adolescent’s/parent’s current problems/symptoms/disturbance

S. has never been a communicative child, and currently still has a

limited vocabulary, verbal errors, stuttering, difficulties in producing sentences and articulatory errors. These difficulties are not associated with hearing problems. The stuttering doesn’t always remain constant over time, as the parents report that there are days when S. doesn’t stutter. There is a high level of motor agitation, which often makes it impossible for S. to remain seated at the table. His entry into kindergarten was described by his parents as “traumatic”. At the moment, S. has great difficulty in starting or maintaining friendships with children of the same age and in understanding/contextualizing everyday situations, such as adapting to new situations. With regard to sleep, nightmares and night terrors stand out, accompanied by abrupt awakenings with screams and crying.

Impact

S.’s problem has a negative impact on his family, on S. himself and on his relationships with others. The family suffers enormous physical and mental distress as a result of S.’s symptoms. S. is unable to establish positive relationships with his peers and is therefore isolated most of the time at school.

Characteristics of the child and their level of development

As S.’s parents point out, he has never been a communicative child and currently still has a limited vocabulary, stuttering, verbal errors, articulation errors and difficulties in producing sentences compared to his supposed level of development.

Protective factors: description of the resources and skills of the child, the family and the context

S.’s family, despite being very worn out at the consultation, is a family in which their love for S. is notorious. They have always been very concerned about him and have always sought help from their extended family, as his mother says: “*Sometimes just the fact that my mother made me dinner or organized my clothes was a huge help, because I could dedicate myself more to S.*”. Since S.’s “traumatic” entry into kindergarten, the family immediately sought medical help and S. is currently medicated with methylphenidate and benefits from individualized support from speech therapy and ABA therapy, with positive progress.

Multimodal standardized formal assessment

In addition to the clinical interview with the parents, this assessment included the collection of information about S.’s educational context and the application of various assessment instruments, making it possible to evaluate behavior and development. The results of the questionnaires and other tests do not in themselves allow a diagnosis to be determined, and must be framed and interpreted in conjunction with other relevant information. Below is a description and summary of the results obtained in the different assessment instruments in the form of a Table 1:

Table 1 Assessment instruments used for standardized multimodal formal evaluation

Evaluation tools	Description of the evaluation instrument	Results obtained in the evaluation instruments
Interviews Semi-structured clinical interview - ADI-R - Autism Diagnostic Interview Revised; ⁴	The ADI-R is a semi- structured interview conducted with caregivers, used to screen for an Autism Spectrum Disorder. It assesses areas such as Communication, Social development, Play/Imagination, Interests and Patterns of restrictive, repetitive and stereotyped behaviors.	The results obtained in the interview indicate values above the cut-off point in the Interaction scales Social (15 Cutoff Value 10), Communication (Score 12 Cutoff Value 8), Behaviors and Interests (Score 3 Cutoff Value 3) and Developmental changes (Score 5 Cutoff Value 1).
WISC III - Wechsler Intelligence Scale for Children, Third Edition; ⁶	This scale consists of 13 subtests that assess different aspects of the intellectual functioning of people between the ages of 6 and 16.	The results obtained using the WISC-III instrument point to the presence of a homogeneous cognitive profile. The indicator we want to estimate the S’s overall intellectual functioning, IQ Full Scale (QIEC), shows a value considered Medium (QIEC= 102; 90% Confidence Interval = 94 - 109) by compared to children the same age in the population. Based on the results obtained, it is estimated that S. has a level of global intellectual functioning equal to or higher than that of approximately 55% of his peers of the same chronological age.

Table I Continued.....

<p>Conners Scale - Revised Version - Complete Form for Parents and Teachers;⁷</p>	<p>These scales are made up of 27 and 28 items, respectively, and assess behaviors and symptoms typical of inattention and hyperactivity, as well as other behaviors and symptoms, generally associated with this disorder.</p>	<p>The mother's record identified: Clinically significant values in the scales of: E- Behavior Perfectionism; The father's record identified: Clinically significant values in the scales: C - Excessive motor activity; E - Perfectionism behavior Perfectionism; F - Social Relationship M - DSM - IV symptoms - Excessive Motor Activity/Impulsivity; And some values in the borderline range on the scales: I - Conner's Global Index; N - DSM Symptoms - IV - Global. The teacher's record identified: Clinically significant values on the scales: E - Perfectionist Perfectionism; E some Values in the borderline range on the scales of: D - Anxiety behavior; F - Social Relationship Difficulties.</p>
<p>Inventory of Child Behavior for Parents and Teachers;^{8,9}</p>	<p>These inventories assess the skills and emotional and behavioral problems of children and young people in a family and school context, based on information provided by parents and teachers. These inventories assess factors such as: aggression, hyperactivity and attention problems, socialization problems, social isolation, obsessive behaviour, anxiety, opposition, depression and somatic complaints. Based on these factors, an indicative profile can be drawn up of the distribution of emotional skills and problems and behavioral problems in the various areas and contexts.</p>	<p>The results obtained show that there is agreement between the family and school contexts regarding the areas identified as problematic. Of particular note is the impact of the difficulties reported in terms of Anxiety, Isolation, Social Problems and Thinking Problems, associated with an internalizing functioning profile.</p>
<p>ADOS 2 - Autism Diagnostic Observation Schedule - Second Edition⁴</p>	<p>The ADOS-2 is a semi- structured assessment tool, based observing the quality of Communication, Social Interaction and Play, through standardized tasks. The assessment carried out on S took place using Module 3 of the ADOS-2, which is aimed children from the end of pre- school age onwards school, to teenagers up to the age of 15 who have fluent language skills.</p>	<p>According to the results obtained, there are significant changes in the area of Socio-Affective (SA = 9) and Restrictive and Repetitive Behaviors (CRR= 1)</p> <p>According to the results, there are significant alterations in the area of Social Interaction and Communication (Socio-Affective) that are above the threshold clinically significant for a Autism Spectrum Disorder (ASD ≥ 7), reflecting gaps that interfere with the impact on these areas of functioning.</p>
<p>Asperger's Syndrome Inventory (ISA) - Prepared by Inês Leitão and Nuno Lobo Antunes²</p>	<p>The application of the Asperger's Syndrome Inventory to parents and caregivers makes it possible to identify characteristics and typical problems in Asperger's Syndrome in different areas of functionality.</p>	<p>The caregivers and teacher describe a positive score (mild, moderate or severe) in around 89% of the questionnaire items.</p>

S. has shown specific characteristics and difficulties that have led to the need to identify the developmental changes that best explain them and also allow for the definition of appropriate support and intervention plans. After analyzing and integrating all the evaluation results, the following conclusions can be drawn:

The cognitive assessment led to the conclusion that S. has a homogeneous intellectual functioning profile, i.e. a profile whose verbal intellectual abilities are developed at a relatively similar level to his non-verbal intellectual abilities, an aspect that can be seen in the absence of significant discrepancies between Verbal IQ and Achievement IQ. As there are no significant differences between these two domains, S's overall intellectual functioning can be characterized with some certainty by the Full Scale IQ, where there is a result that is at an Average level, compared to the results of children of the same age in the population. In summary, the presence of a Medium level of verbal intellectual functioning and non-verbal intellectual functioning at a level considered Medium in comparison with children of the same age stands out. Also noteworthy is the presence of a level of Processing Speed considered to be Upper Medium.

With regard to screening for an Autism Spectrum Disorder (ASD), S's current characteristics and entire developmental history to date indicate that he displays characteristics compatible with this clinical diagnosis. The characteristics of Autism Spectrum Disorder, associated with a profile of average cognitive ability, lead us to a

clinical picture compatible with a mild Autism Spectrum Disorder - level 1 (Asperger's Syndrome), as the one that best explains the behavioral changes observed in S.

Precipitants: situations that aggravated the difficulties

S. doesn't like to take part in activities and has trouble making friends, showing some difficulty in relating to other children. This leads to his isolation. S. also shows some shyness and only speaks if asked and if he already trusts the other person. He speaks with certain coherence, but due to his language difficulties - articulation of words - he often avoids dialoguing, especially in large groups, which once again promotes his isolation. In the classroom, he has difficulty being attentive without medication and any change to his routines, in the classroom or in the playground, makes him more agitated and nervous, thus making it difficult for him integrate into the group.

Origins of the mechanisms: risk factors more distant or closer to the child/adolescent, family, context

Throughout the assessment, several particularities were described and identified in terms of communication and social interaction which could contribute to possible difficulties in his psychosocial functioning. Indeed, the cognitive inflexibility characteristic of ASD may lead S. to show resistance to getting involved in tasks that don't interest him or in which he recognizes difficulty, and these behaviors may evolve into impulsive avoidance/escape responses or emotional/behavioral dysregulation. This response can also be exacerbated by the presence of restricted or repetitive interests, hypersensitivities or

ritualized behaviours which, when not identified in good time by the adults in charge, can precipitate events of emotional and behavioural dysregulation.

Factors that can make intervention difficult: the child's level of development, more practical obstacles, level of preparation for change

The factors that can make intervention difficult are undoubtedly the social, behavioral, linguistic and attention difficulties that S presented during the assessment.

Operationalization of problems that will be the target of intervention/objectives of the intervention: centered on the child/adolescent and/or the parents

In view of the results obtained during the evaluation of S, the following recommendations are suggested:

It is recommended that S. benefits from a global intervention plan whose goals should include:

- 1) The promotion of behavioral and emotional self-regulation skills, social and communication skills;
 - 2) Development of attentional self-regulation skills.
 - 3) Targeted support for the family and the school environment, in order to promote the implementation of strategies that facilitate the generalization of skills.
 - 4) It is recommended that all members of the therapeutic and educational team accompanying S. work together to coordinate strategies and define intervention objectives and methodologies together with the family;
 - 5) Taking into account the results obtained, it is recommended that the educational measures provided for in the Legal Framework for Inclusive Education established by Decree-Law No. 54/2018 of July 6 be maintained, justified by their specific permanent difficulties and needs;
 - 6) Maintaining Neuropediatric consultations - The suggested therapeutic project must be known to the doctor responsible for referring the patient.
- S. for the present evaluation process, in order to obtain his opinion and so that he can possibly enhance it with some suggestion of medical responsibility;
- 7) Psychological reassessment, within 12 months, in order to monitor their progress and respond to their needs in good time.

Treatment plan

Given the confirmation of a diagnosis of mild Autism Spectrum Disorder - level

1. (Asperger's Syndrome), the choice of the best intervention requires careful consideration. The phases of the therapy must be well structured, since people with ASD favor routines. It is therefore essential to confirm the dates of the sessions and the periods of absence, in order to reduce surprises and keep the therapeutic context constant. At the beginning of the session, we determine with the individual what will be done during the session. As a rule, sessions should last between 50 and 60 minutes. If the subject has difficulties staying focused, it may be useful to plan shorter sessions or longer sessions with breaks.² When planning any intervention, it is always advisable to take the following aspects into consideration:

- (i) Degree of the disorder (level of relationship skills, isolation and level of communication and presence or absence of disabling behaviors;
- (ii) Level of development, taking into account the level of cognitive and psychomotor development and the level of comprehension;
- (iii) The purpose of planned tasks, i.e. what effect they have on people's lives and their different contexts.

An individualized intervention for individuals with ASD may require the fusion of different methods throughout the therapeutic process.² These methods fall into two groups, focused and comprehensive treatments. Comprehensive models aim to improve a broad set of skills. They last for years and are usually intensive, such as the TEACCH (Treatment and Education of Autistic and related Communication Handicapped Children) method, which has emerged as a distinctive educational model for children with ASD and their families, as it uses these children's strong areas and tries to promote mainly organizational, communication and sharing skills. The ABA (Applied Behavior Analysis) method is the most effective applied intervention supported by scientific evidence,¹⁰ which consists of an "approach to modifying socially relevant behaviors based on scientifically proven learning principles".¹¹ Shaping behaviors using behavioral approaches, with operant conditioning techniques (in which the desired behaviors are solidified using positive reinforcement and the despised ones extinguished by punishment), repetition of tasks of increasing complexity, through simple orders, systematically training appropriate alternative behaviors, carefully planning the objectives and constantly controlling the steps taken is a method that has been proposed.³

This intervention is based on the ABC model, "taken" from Skinner's theory in: A stands for antecedent, the stimulus that occurs before the behavior; B for behavior, everything the subject does after the antecedent; C for consequence, what occurs after the behavior. Antecedents are detected by the senses and can be neutral, indicate reinforcement or punishment. The behavior is what is intended to be changed, either to increase or decrease. The consequence is immediate to the behavior; if it is regular, it has an effect on the frequency of occurrence.¹²

Focused treatment models, on the other hand, target the development of a specific skill and the intervention time is usually shorter. For example, step-by-step learning trials (Discrete Trial Teaching or DTT), modeling, videos or social stories. Targeted treatment models focus particular on the core symptoms of ASD, such as restrictive behaviors and interests and communication and social difficulties.²

Mindfulness techniques can be useful for individuals with ASD by attenuating ruminative thoughts or reinforcing adaptive strategies. These techniques can also reduce anxiety and mood fluctuations.²

Intervention methodologies focused on relationships and play are equally relevant to intervention with people with ASD, since they assume that play activities and meaningful relationships must be present at all stages of the development of the person with ASD and are seen as indispensable to the good quality of the development and learning of a person with ASD. Examples include the floor time and son-rise methodologies.

The aim of all therapeutic intervention models is to bring the individual with ASD to us, and to reach out to individuals with ASD order to achieve their full integration into the society in which they

live.³ In short, the different intervention models suggest reducing unwanted behaviors, specifically those of a social nature.

Considering the, and bearing in mind the intervention objectives mentioned above, in S.'s case, an individualized intervention was structured that required a combination of different methods throughout the therapeutic process.² In order to help minimize S. and his family's difficulties, minimize S.'s unwanted behaviors, and bring S. to us, and reach S., with the aim of integrating him into the society (family, school, context) in which he lives.

The first focus was on comprehensive models, such as ABA methodologies. In the first phase of the intervention, a Functional Analysis of Disruptive Behavior, ABC Model,³ was carried out by filling in behavioral record tables. Once the behaviours have been prioritized by S.'s mother and teacher, they were monitored in the ABC model record in the various contexts in which S. is inserted. Once the antecedents and consequents that reinforced the behaviors identified were identified, strategies were adapted to reduce disruptive behaviors and increase appropriate behaviors.

For example (Table 2):

Table 2 Table of behavior records

S. Disruptive behavior	Background	Consequences	Strategies for reducing disruptive behavior and increasing appropriate behavior
Screaming and intense crying on the car journey with her mother from home to school or from school to home.	Whenever S.'s mother has to stop the car on the way from home to school or school to home, because of a traffic light.	S.'s extreme irritation, which ends unnerving his mother, who is consequently afraid to do these things. These travel with S.	- Training stops (first in a neutral context - in the office through roll-play of the situation and then, as S. manages to achieve the expected behaviors, it is essential to apply it in a more natural context) with the presentation of traffic signs by setting a pause timer and explaining to S. what is going to happen.

In S.'s case, in order to change his behavior, it was also necessary to promote his social skills. Social skills training included:

- (iv) Behavioral training - a combination of testing the social behaviors to be performed and the desired consequences. Various situations and the desired consequences can be trained through psychotherapeutic games, roll-play and social stories.

As an example (Table 3):

Table 3 Behavioral training

Situation 1	Situation 2	Situation 3
Saying hello to your classmates when you arrive at school.	Understanding and accepting no.	Request with "please" when you want something.
Desired consequence 1	Desired consequence 2	Desired consequence 3
The colleagues also say hello.	Avoid conflicts and tantrums.	Avoid conflicts.

- (v) Transfer training - as S. achieves the expected social behaviors, it is important to apply it in a more natural context.
- (vi) Relaxation training - by learning relaxation strategies (e.g. progressive muscle relaxation or PMR), this technique is used to calm people down in situations of anxiety or frustration.¹¹

In the individual sessions, concrete problem-solving situations were worked on. Once again, using psychotherapeutic games, roll-play and social stories, it was possible to predict some everyday events and develop ways of adapting behavior to what is typically expected.

For example (Table 4):

Table 4 Problem solving

Problem 1	Problem 2	Problem 3
"Nobody wants play with me."	Understanding and accepting no.	"My classmates don't give me toys when I want them."
Troubleshooting	Troubleshooting	Troubleshooting
Ask a colleague if you can play with them too.	Accept that people have the right to their own opinion, just like S.	Learning that we have to ask "please" when we want a toy that a classmate has in their hands and they can say yes or no, and that we have to know how to wait our turn.

This intervention, using various materials involved in the tasks mentioned above, focuses on training social skills, promoting social and communication competence. In order to increase S.'s effectiveness as a conversation partner, understanding basic social rules of coexistence, empathy, respect, emotional control, among others. On the other hand, some moments of frustration were tried out in order to put into practice the self-regulation techniques previously learned (Relaxation Training).

Group situations were also developed in order to understand S.'s reaction to her peers. It turned out that in a controlled context and with prior training, she was able to establish appropriate interactions and maintain self-control, even when her behavior was provoked. An afternoon at a friend's house was also promoted, but the result was not as expected. S. continued to play with the cars he had brought and the interactions he had with his peers were always encouraged by his mother.

On the other hand, and taking into account the context in which S. is inserted, it is necessary to include a support plan aimed at the family and the school environment. The TEACCH method has emerged as a distinctive educational model for children with ASD, their families and schools. It uses these children's strengths and tries to promote their organizational, communication and sharing skills and psychoeducation in order to promote the implementation of strategies that facilitate the generalization of skills.

As an example (Table 5):

Table 5 Support plan aimed at the family and school environment through the TEACCH method

Visual organization - **Individual timetables**

Individual timetables help S. to understand which activities he is going to do and in what sequence.

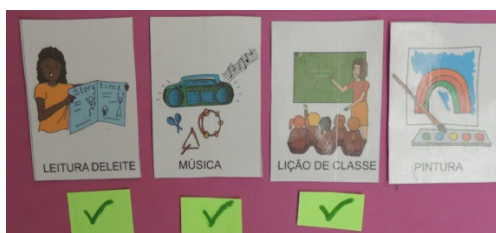
Example: "My day at school - Monday."



Work plan

The work plan tells S. what to do in different areas such as at school or at home without support or supervision. This work plan helps S. to understand what is expected of him, to organize his work and to finish his activities. It lets him know in advance how many tasks he has to complete and when they will be finished.

Example: "Activities to be carried out on Tuesday morning."



A meeting was also held with S.'s class teacher, the special education teacher and the operational assistants who mostly accompany him during break time. Together with the multidisciplinary team, preventive and reactive strategies were outlined that can be applied when disruptive behavior occurs.

Alongside the intervention with S., parental support sessions were also held for S.'s mother and father, in which strategies were outlined to be applied at home. A Token System was introduced in order to adjust behavior in tasks where S. shows some difficulty (tantrums, controlling time for lunch, household chores and doing academic work).

Throughout the therapeutic process, S. has shown a great effort to

comply with the proposed tasks, with a visible decrease in disruptive behavior, such as resistance to doing homework or changing tasks that were previously set. In the school context, he benefits from universal and selective measures, according to Decree-Law No. 54/2018, of July 6, amended by Law No. 116/2019, of September 13, as well as adaptations in the assessment process (Article 28, Decree-Law). At the moment, S is medicated with methylphenidate and benefits from individualized support from speech therapy and ABA therapy, with positive progress. Bearing in mind the context in which S. is inserted, it is important to maintain the triad work between the psychology service, family and school.

And finally, the therapeutic plan for the month of June 2024, based on ABA methodologies, with its objectives and progress (Table 6).

Table 6 The therapeutic plan for June 2024, based on ABA methodologies, with objectives and progress

Program	Criteria	Prompt (Help)	Comments	Acquisition criteria
Visual perception	Objective current Size:			Next goals: Quantity, Order, Color Gradation, Full Figure

Table 6 Continued...

Serialization	Face to face at the table, after the therapist's instruction "Put it in order" and the handing over or presentation on the table of a set of cards to sort, S. must sort them according to size, from smallest to largest.	Verbal + Model	Use at least 4 different sets of cards for each attribute/criterion worked on. Start application with only 3 cards set and gradually increase the number of cards up to sort the complete set.	After two consecutive sessions with at least 85% success or one session with 100% success, increase the number of cards used for each set. After two consecutive sessions with at least 85% success or one session with 100% success in sorting the complete sets, start a new attribute.
Recipe language	Objective current above:			Next goals: Below, Inside, Outside, Behind, In front, In the middle/Between, Beside
Prepositions - Put	Face to face, after the therapist's instruction "Put it on top of X" and the delivery of an item, S. must place the item delivered in the place indicated by the therapist.	Model	Start at the table and with objects available on the table (for example, having a box on the table and handing S. an item with the indication to place it on top of the box) e gradually apply to the space outside the table (for example, ask to S. to place the item on a chair or other table).	After two consecutive sessions with at least 85% success or one session with 100% success in identifying the of the preposition, start a new preposition.
Prepositions - select	Front a with representative images of prepositions available on the table, after the therapist's the instruction "Give me what's on top", S. must select the image representing the preposition requested.	Aim	The different images representing the prepositions must be similar and differ only in the location of a given item in relation to another object present in the image.	
Expressive language	Objective current above:			Next goals: Below, Inside, Outside, Behind, In front, In the middle/Between, Beside
Prepositions - naming	Face to face, after the therapist's instruction "Where is X?" about an item on top of another, S. must name the correct preposition	Model	Start at the table and with objects available on the table (for example, having a box on the table, place an item on top of the box and ask S. where that item) and gradually apply to the space outside the table (for example, ask S. where is find items previously placed on chairs, other tables, etc.).	After two consecutive sessions with at least 85% success or one session with 100% success in naming the of the preposition, start a new preposition.
Gross motor imitation	Current Goal: Sequence of 2 actions with objects			Next objectives: Sequence of 3 actions with objects (up to 4 distractors on the table)
Movement sequences	Face to face, after the verbal instruction "Do it like this" and the demonstration by the instructor of a sequence of 2 actions with objects, S. must and imitate a sequence of actions, with the same objects and in the same order.	Delay/ overlap	Vary the context of according to the success shown. Start by applying it while sitting at the table and then move on to applying it away from the table, standing or sitting on the floor, indoors and outdoors.	After two consecutive sessions with at least 85% success or one session with 100% success in imitating a sequence of 2 actions with objects, start a sequence of 3 actions with objects.
FFC intraverbal	Objective current: Home appliances			Next goals: Furniture, Musical Instruments, Toys, Tools

Table 6 Continued...

Categories	Front a face- to-face, after the instruction "What is X?" and simultaneous presentation of this item in image or 3D, the child must name a category a that item belongs.	Verbal/ visual	During the of the item, vary items from the trial category to trial. During the specimen naming phase, expose a different specimens belonging category, from mode a get a wider variety of responses.	After two consecutive sessions with at least 85% success or one session with 100% success in naming the category of the item presented, stop presenting the item at the same time as the instruction. After two consecutive sessions with at least 85% success or one session with 100% success in naming the category without the item present, start training an exemplar of the category. After two consecutive sessions with at least 85% success or one session with 100% success in naming an exemplar, start requiring between 2 and 5 exemplars.
FFC intraverbal	Objective current: Cooking			Next goals: Dressing, Sleeping, Playing, Putting on shoes, Cleaning, Playing music, Playing, Reading
Functions	Face to face, after the instruction "What is X for?" e simultaneous presentation of this item in image or 3D, S. must name the function of this item.	Verbal/ visual	During the item function naming phase, vary items from trial function to trial. During the specimen naming phase, expose a different example of this function during the PM in order to a get a wider variety of responses. During the PM, other operants (receptive identification e sorting) and maintain the items already acquired.	After two consecutive sessions with at least 85% success or one session with 100% success in naming the function of the item presented, stop presenting the item at the same time as the instruction. After two consecutive sessions with at least 85% success or one session with 100% success in naming the function without the item present, start training an example of the function. After two consecutive sessions with at least 85% success or one session with 100% success in naming an exemplar, start requiring between 2 and 5 exemplars.
FFC intraverbal	Objective current: Paws			Next objectives: Feathers, spots, stripes, buttons, Beak, Fins, Crest, Trunk, Scales
Attributes	Front a face to face, after the instruction "What's X?" and simultaneous presentation of that item in image or 3D, the child must name a attribute of that item.	Verbal/ visual	During the item attribute naming phase, vary attribute items from trial to trial. During the specimen naming phase, expose a different example of this attribute during the PM in order to a get a wider variety of responses. During the PM, other operants (receptive identification e sorting) and maintain the items already acquired.	After two consecutive sessions with at least 85% success or one session with 100% success in naming the attribute of the item presented, stop presenting the item at the same time as the instruction. After two consecutive sessions with at least 85% success rate success or a session with 100% success in naming the attribute without the item present, start training one exemplar of the attribute. After two consecutive sessions with at least 85% success or one session with 100% success in naming an exemplar, start requiring between 2 and 5 exemplars.
Academic skills	Objective current: Vertical, horizontal, diagonal straight line, curved line, numbers, letters, name			
Tracing	Front a face to face, sitting at the table, with o material available, after the "Complete the line", o S. should take the pencil/pen, holding it with an appropriate grip, and draw a line above the dotted line, without deviating deviate from it, starting and ending in the right place.	Physical/ visual	Use full physical prompt and if necessary visual prompt, marking the beginning and end of the line with a ball. Each dotted line is recorded as a trial.	After two consecutive sessions with at least 85% success or one session with 100% success in tracing, start copying these figures (lines, letters, numbers).
Group	Objective current: group of 2 pairs			Next objectives: group of 3 pairs

Table 6 Continued...

Small group - direct instructions	During a performing a play activity, sitting in a group of 2 pairs, after receptive, expressive instruction or intraverbal of the therapist addressed to S. (his name should be indicated in the instruction), related to the activity activity, he must respond correctly, with a latency of 2 seconds.	Model pair	Carry out a fun activity with the group that may involve explore a book, exploring a box with various items, singing a song and performing the gestures, etc. As a prompt, in situations where S. does not respond or responds incorrectly, the therapist should repeat the same instruction for one of the pairs to respond and then repeat it again for S.	After two consecutive sessions with 4 successes or one session with 5 successes in the 5 first trials, increase the size of the group.
Small group - instructions to the group	During a performing a play activity, sitting in a group of 2 pairs, after a receptive, expressive instruction or intraverbal of the therapist directed group, related to the activity in progress, S. must respond correctly, accompanying the group.	Facilitating operator	Carry out a playful activity with the group which could involve exploring a book, exploring a box with various items, singing a song and making gestures, etc. As a prompt, in situations where S doesn't respond with the group, a therapist should give the same instruction to S and after res pond, repeat the instruction to the group.	After two consecutive sessions with 4 successes or one session with 5 successes in the first 5 trials, increase the size of the group.
Motivation	Current objective: 10 stars			Next goals: 12 stars
Stars	Award a star to S. for each correct response to an objective instruction during training. When you accumulate X stars, S. must exchange the stars for the corresponding reinforcement chosen beforehand	NA	Record a few a few times per session (e.g. 5 times) how long it takes get the number of stars stipulated in the criteria.	Increase 2 stars every 2 days from 10 stars.

Discussion

To date, “no medical or non-medical intervention is known to solve the core disorders of autism”.³ It is even very likely that ASD has no cure. However, it is important to emphasize that the absence of a cure does not mean the absence of hope, much less does it imply that there is no need to intervene efficiently in order to help alleviate the difficulties faced by individuals with ASD and their families.³ “Recognition and acceptance of ASD is the first step towards remaking a life and mobilizing the resources that will enable people to live differently, promoting the abilities of people with disabilities and helping them to overcome the difficulties they may always have”,³ there are different approaches to intervening with people with ASD. However, it should be noted that the best results come from programs with a behavioral approach, aimed at improving social and communication skills.³

In S.’s case, he was referred by Dr. X., a Neuro pediatrician, for an evaluation to detect an Autism Spectrum Disorder (ASD). This assessment included, in addition to the clinical interview with the parents, the collection of information about S.’s educational context, the application of various assessment instruments, making it possible to evaluate behavior and development. The results of the questionnaires and other tests alone do not make it possible to determine an diagnosis, and were framed and interpreted in conjunction with other relevant

information that culminated in the confirmation of the diagnosis of a mild Autism Spectrum Disorder - level 1 (Asperger’s Syndrome).

In view of the confirmation of S.’s diagnosis, an individualized intervention plan was drawn up, which required a combination of different methods throughout the therapeutic process. In order to help minimize the difficulties of S. and his family, reduce S.’s unwanted behavior, and bring S. to us, and reach out to S., with the aim of achieving his integration into the society (family, school, context) in which he is included.

Over the course of the therapeutic process, S. has shown great effort to comply with the proposed tasks, resulting in a reduction in the disruptive behaviors S. displayed at the beginning of the therapeutic process. In the school context, he benefits from universal and selective measures, according to Decree-Law No. 54/2018, of July 6, amended by Law No. 116/2019, of September 13, as well as adaptations in the assessment process (Art. 28, Decree-Law).

S. is currently medicated with methylphenidate and benefits from individualized support from speech therapy and ABA therapy, with positive progress. Given the context in which S. is inserted, it is essential to maintain the triad work between the psychology service, the family and the school. In order to maintain S.’s positive development and help him to make the best use of his skills and to better coexist with his disabilities.

I believe that the therapeutic space was essential and contributed positively to S.'s development, as well as to my enrichment as a psychologist. In order to promote the application of the strategies worked on in session, and facilitate their generalization. My coordination with all those involved in his therapeutic process was crucial, always from a psychosocial point of view, in addition to all the theoretical enrichment from which I benefited during the monitoring of this case and the preparation of this case study.^{13,14}

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Conflicts of interest

The authors declare that there are no conflicts of interest.

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