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BEHAVIOR MODIFICATION IN AUTISM

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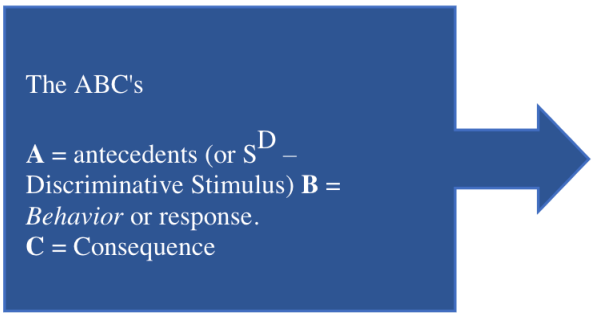
Abstract: Modification of undesirable behavior or positive reinforcement of desirable behavior is achieved by differential reinforcement in operant conditioning. It is from Frederic Burrhus Skinner's studies on behaviorism that we obtain the principles to employ this conditioning. Most human behavior is modelable. These operant behaviors are positively or negatively reinforced, increasing the probability of their occurrence in the future. Functioning problems have a functional relationship with antecedents and their consequences. Information gathering as a process is recorded in the functional assessment. It was from Skinner's studies (1957) that the term operant conditioning began to be used with reference to environmental events, because functional relationships occur both between adaptive and maladaptive behaviors. In the case of Autism, the hyperexcitation of the brain results in an excess of stimuli corresponding, consequently, to the need to discharge tension through the motor escape called stereotypes or repetitive and ritualized movements. For Cantavella (1992), stereotypy is, in essence, a compulsive defense. In the DSM-5 (2013), Diagnostic and Statistical Manual of Mental Disorders, 5th edition, the diagnostic criterion B1, of Autism Spectrum Disorder (F84.00/299.00), has its descriptor consisting of motor movements, use of objects of inappropriate form, stereotyped or repetitive speech, echolalia and idiosyncratic phrases, and simple motor stereotypy, aligning toys or rotating objects. Furthermore, it is a symptomatic hypo- or hyper-reactive behavior (diagnostic criterion B4), with occasional visual fascination with lights or movement. Stereotypies are, therefore, motor behaviors with a repetitive character, apparently impulsive and without reason (B criteria), and, generally, they are rhythmic of the head, hands or body, with contingent absence of apparently adaptive function (DSM 5/2013). Going beyond a merely topographical analysis, the function of these movements is related to self-organization, reassurance (calmness), sensorial and sensations search and a multimodality of reinforcers. Contrary to popular belief, this behavior is very common. The search for sensory regulation, relief from everyday anxiety and the reduction of stress and irritability is also a neurotypical behavior, differing in its domain and, consequently, in its frequency, duration and intensity. Thus, the Applied Behavior Analysis (ABA) aims to improve behaviors, through the development of a well-adapted curriculum that allows intervention, with a substitutive view and micromanagement based on behavioral techniques such as: modeling, sensory integration, imitation, scripts and speech stimulation with differential reinforcement of other behavior, alternative behavior or incompatible behavior, both to guarantee the physical integrity of the learner and to ensure their self-regulation and learning.
Keywords: Autism. Stereotypies. DSM-5. Applied Behavior Analysis. Management.

INTRODUCTION

Modifying undesirable behavior or positively reinforcing desirable behavior is achieved through operant conditioning. It is from the studies on behaviorism by *Frederic Burrhus Skinner (1957)* that we obtain the principles to apply this conditioning. Most human behavior is modelable. These operant behaviors are positively or negatively reinforced, increasing the probability of their occurrence in the future.

So, the science of behavior stems from deterministic studies. The control condition and the experimental conditions are the analyst's permanent action mechanisms so that the experimental design takes place under



A behavior followed by a reinforcing stimulus results in an increased likelihood of that behavior being repeated in the future. (LEAR, K; 2004).

The doorbell rings (**antecedent**), you answer (**behavior**), and the *lost* merchant asks you to direct him to an address he doesn't know. This response results in delay in your household chores (**consequence**).

the necessary conditions for the observation, analysis and explanation of the association between environment, human behavior and learning.

LITERATURE REVIEW

The management of stereotypies is the follow-up and guidance for an intervention that makes it possible to replace a motor behavior with another that is desired or socially accepted. The term stereotypy comes from the Greek *steros,* which means solid, *typos,* model.

> Stereotypy is, in essence, a compulsive defense" (Cantavella et al., 1992)

Orientation and management for an intervention in stereotyped behavior are sophisticated and require dexterity, because of the sensitive nature of the situation involving the child with Autistic Spectrum Disorder - ASD/Autism and, respectively, their specific forms of self-regulation, through of these movements and the way these children act for sensory search and tension discharge, through motor escape.

Repetition, insistence and perseverance in verbal and motor behavior must not be blocked, but replaced with an action that also has the same regulatory result, but without social harm, that is, more acceptable and that does not incur any type of harmful physical impact to the child (self-injury). Still, it is necessary to analyze the attention deficit resulting from *flapping* or *rocking,* or another form of self-stimulation.

Manual or foot hyperkinesis is part of circumscribed and perseverative behavior and is a good methodology to release tension and control stress and anxiety, however attention and focus are impaired. The structured planning of activities by a Sequential Action Plan – Curriculum has a good contingency for reducing stereotyped, perseverative, repetitive and circumscribed movements. Motor escape is a form of self-control and regulation, in addition to sensory seeking, relief and pleasure.

According to Sanger (2010), the duration of stereotypy is variable and can occur for seconds, minutes and even hours, if the child is not guided to another activity. The reduction of attention, whether voluntary in which the voluntary desire to fixate on something is present, or spontaneous, with other stimuli standing out over attention, making the child hypotenacious, is a harmful factor in the operationalization of knowledge in the occurrence of stereotypies.

The understanding of relationships and socio-emotional reciprocity added to communicative behavior are clinical criteria for psychopathological diagnosis in Autism Spectrum Disorder - ASD/Autism, which may also suffer damage to a greater or lesser extent depending on their initial symptomatic behavior repertoire. In these criteria called A (A1, A2 and A3), the initial social approach is impoverished and, also, there are significant deficits in non-verbal behavior and adequacy to social contexts, as well as limitation in imaginary games and interests by peers.

Adherence and fixity, which manifest as insistence on sameness, inflexible adherence to routines, ritualized patterns of verbal behavior, rigid thought patterns and fixed and restricted interests, abnormality and intensity and focus, attachment to unusual objects, circumscribed and perseverative interests also these are criteria resulting from ASD/Autism. Routine predictability and the use of previously presented and explained rules with short commands, space with a structured environment and sequential and standardized activities contribute to self-regulation and overcoming weaknesses.

> Prevented from appealing to language and lacking an imaginary articulation that would allow them to perceive things in the world in the same way as their peers, they produce symptoms with their bodies (gestural stereotypies, "rocking", "flapyng", and other ritual and repetitive movements) in an attempt to, through repetition, structure a minimum of organization for their lives. (Sibemberg, 1998, p. 65).

Regulatory actions are also part of neurotypical behaviors. That is, physiologically it can be part of language acquisition and also psychomotor skill in rhythm and gait, however it loses its strength in the first months of life and tends to disappear by 3 (three) years of age (chronological development milestone neurotypical), leaving a few behaviors in search of physical sensation (sensory regulation), in the school years.

According to Fernandez-Alvarez (2003), self-stimulatory behaviors tend to decrease after six months of age and according to Thelen (1979), they disappear at three years of age. So, it can be said that turning objects, curling your hair or even continuously swinging your legs are behaviors that we usually perform in our daily lives, with the aim of alleviating our anxiety, reducing stress and releasing tension, thus obtaining a feeling of relief.

Management of Stereotypies			
Item	**stereotypes**	**Symptoms**	**Intervention**
1	echolalia	Repetition	Script/modeling technique
2	flapping	Upper limb movement	Replacement with desirable and socially accepted activities
3	rocking	Balancing/turning itself/fixation on circular/ spinning objects	Micromanagement and substitutive behaviors (sports)

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Stereotypies are, therefore, motor behaviors with a repetitive character, apparently impulsive and without reason in their topography (Criterion B), and, generally, they are rhythms of the head, hands or body without an apparent adaptive function (DSM 5/2013). Just as finger snapping reduces tension build-up, stereotyped movements or repetitive motor behaviors (DSM 5) are part of self-regulation and physical sensation seeking in autism spectrum disorder/ Autism and are linked to multimodality and contextual discriminative stimuli.

Multimodality is the occurrence of integration between semioses within scenes of joint attention, and involves components beyond speech, such as gaze and gestures. The function of these movements is related to the organization, tranquilization (calm) and reorganization and multimodality of reinforcers. Reinforcers are also the effective intervention in shaping so that the disruptive behavior is replaced (modified) by a socially accepted one. It is important to highlight that the immature brain of the person with ASD/ autism has a predominance of motor and sensory stereotypes passing to a higher order by the insistence on sameness.

Contrary to popular belief, this behavior is more common than it seems. The search for sensory regulation, relief from everyday anxiety and the reduction of stress, not to mention irritability, is also a neurotypical behavior that can arise from an everyday environmental stimulus or traffic at peak hours. What would be the difference between this stereotyped behavior for the child with ASD/Autism and the typical one? The answer would be in the domain: frequency, duration and intensity of these behaviors, as well as in the level of commitment in the social, family, school and professional fields.

The fact that the child performs these movements without an apparently specific purpose (he moves because he feels the physical need to perform them) means that the focus is not on the exclusion of stereotypy, but on its replacement for a more desirable and socially accepted behavior. Self-stimulation has topography and functions (ABA principles), functions of self-regulation, search for sensations or relief. The impairment in the child's attention (hypoprosexia or hypotenacity) extends to the five developmental skills: playing, personal or functional care, psychomotor, language and social.

Distractibility in ASD/autism is, therefore, a result of the demand for self-regulation and sensory search, which also makes it possible to analyze that your best form of intervention is in this incursion of physical sensation. Recent studies at the University of Utah (USA) have shown that brain connections remain synchronized for up to 20 seconds, a more dynamic and accelerated process in neurotypicals or people without this condition. Due to this data delay in the alternation between processes incurring stress and anxiety, symptomatic behaviors that result in motor and sensory stereotypies.

For intervention in stereotyped behavior, the branch of science called Behavior Analysis called Applied Behavior Analysis - ABA has in its academic and developmental skills to be developed (personal/personal care, playing, language, motor and social) an important set of actions carried out in the sequential plan of action. The development of a well-adapted curriculum enables intervention, with a substitutive and micromanagement view.

Behavioral techniques of modeling and sensory integration combined with imitation programs and scripts for teaching speech are individualized qualitative interventions for teaching new skills. The multimodal space consists of stimuli that provoke responses in the organism ($S^1 \rightarrow R^1$) and

the use of discriminative stimuli and deltas is a safe reference in the application of an interventional project of behavioral modification via discrimination and generalization.

Thus, the environment can also be conceived in a multimodal way, in a set of verbal and non-verbal activities that exceed the child's reception capacity, causing an overload of sensations and feelings in this excessive apprehension. The discharge of tension results in stereotyped and repetitive movements, being an escape from this accumulation of sensations, in the search for sensory regulation. There is also the hypersensitivity of some children who are restricted to colors, shapes, textures, foods, sounds, fabrics and, as a symptomatic evolution, the avoidant diet.

Sensory seeking is behavior that insists on diverse sensory experiences (sniffing, spinning, biting, fixation on lights, circular and rotating objects). Fixation on these experiential experiences and objects results in discharge of self-pleasure and self-regulation. The child integrates this pattern as a repertoire of fixation, insistence and perseveration in a rite corresponding to synchronized symptomatic behavior. What behavioral science is most efficient at is undoing this repertoire of fixation, integrating and reintegrating behaviors that are desirable, strengthening socio-emotional reciprocity and understanding relationships.

The Sequential Action Plan (PSA) has an adapted and semi-structured or structured curriculum and its functionality is the elaboration and execution of activities and tasks of social interaction, providing new experiences and diversified spaces to develop the repertoire of specific knowledge for its generalization and replacement of undesirable and harmful stereotyped behaviors to the child. Intervention activities must be sequenced and detailed (TTD). Blocking the behavior has the effect and impact of increasing the FDI of the domain – Frequency, Duration and Intensity.

Ritualized actions are also called repetitive and correspond to motor movements and sensory stereotypes. Self-regulatory movements in ASD/Autism have a function of reorganizing and processing and seeking physical sensations. This sensory regulation is, in addition to a discharge of self-pleasure, relief from excess stimuli, reducing stress and

Management of Stereotypies			
Restricted and repetitive patterns			
Item	**background**	**Symptoms**	**Narrative**
1	non-verbal	rocking	Rotation itself (own axis).
2	Visual	fixed interests	Visual fascination with lights and rotating moving objects.
3	non-verbal	flapping	Movement of upper limbs and repetitive motor acts with the hands.

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Item	Repetitive or ritualistic actions
1	Spin Around – Rotate objects or spin around their axis
2	Fixation on objects that rotate or are luminous
3	Upper limb balance – hands and arms and forearms
4	Movement of hands in front of face or eyes
5	Continuous repetition of sounds or parts of words
6	Body rocking back and forth
7	Moving from one side to the other without contingency
8	Restlessness in lower limbs – feet and legs (crossing)
9	Walking on tiptoe or heel off the surface
10	Jumping, running, and jumping with apparent frequency, intensity, and duration
11	Cracking fingers or even cracking other joint parts of the body

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anxiety, which is why it contributes at the moment when it calms, reorganizes and self-regulates.

PSA AND FUNCTIONAL ASSESSMENT

Stereotypy, then, can be functionally a discharge of tension, self-regulation and search for physical sensations, however it is important to emphasize that a constant frequency of self-stimulation causes aprosexia and global hypotenacity, impairing focus and attention. The persevering insistence on repetitive and ritualized actions corresponds exclusively to internal stimuli, resulting in loss of interest in their peers, a deficit both in social contact and in the enhancement of these relationships.

The most effective intervention is in the PSA/Curriculum, which enhances academic skills and also acts on stereotypes, replacing maladaptive stimulatory behaviors with desired and socially accepted behaviors. When extrapolating the topography of behavior, the structure of the PSA must contemplate practical social functions and aspects of sensory regulation: *calm down, regulate and reorganize*. The Sequential Action Plan (PSA) consists of a behavioral curriculum and its objectives and goals, in a sequential, pre-structured and structured way.

The PSA/Curriculum has in the functional assessment a procedure for collecting contingency data to analyze the determination of the occurrence of a behavior. The functional assessment methods (indirect assessment, direct observation and experimental manipulations) provide a significant systematization of monitoring the management of stereotypes with periodic information, anticipated occurrence (prediction) of the problem behavior, description of the target behavior and subsequent occurrence of the behavior (consequence).

When filling it out, in the *Behavior space,* the target behaviors and the barrier will be described, and the *Background* must contain hypothetical antecedents, with knowledge gaps (spaces for adding findings). Substitutive behaviors must correspond to the physical sensorial search and the social function of the activity proposed in the curriculum. The program consists of elaborate scripts and micromanagement to introduce daily activities. The Differential Reinforcement Procedure (PRD) has in its contingency the positive reinforcements, containing function, characteristic and varied classes and in multimodal environments.

Disruptive behavior impairs concentration and, in very specific cases of self-injurious stereotypies, is still a risk to the child's physical integrity. The sports activities adapted and planned in the ABA propose a substitute behavior for the perseverative and circumscribed interests that demand stereotypes. Changes in shifts or activity segments of the developed circuit or even the proposed task must take into account diagnostic criteria B2 and B3, which are insistence on sameness and fixed interests (DSM-5, 2013), which include restricted interests, abnormality and intensity and focus, as well as inflexible adherence and ritualized routines and patterns of verbal behavior.

The B4 diagnostic criteria (DSM 5, 2013), for ASD/Autism, discriminate between hyper- or hypo-reactivity to sensory stimuli or unusual interest in sensory aspects and contrary reaction to sounds or textures. These behaviors are related to inaccuracy in decoding sensory stimuli. Functional assessment is the collection of information for planning the desensitization or sensory integration and regulation of the organism. Several activities can be presented with different stimuli so that the record of failures and gaps in imprecision can be collected, which must later be a reference for the elaboration of a program, activities and intervention tasks in desensitization and sensorial integration.

The functional assessment of sensory stimuli (desensitization and sensory integration) must analyze the level of responsiveness and expansiveness of primary and secondary responses of children with ASD/Autism. The primary responses are in charge of seeking physical sensations after the acceptability of the sensory stimulus. Secondary responses refer to signs of calm and relaxation or more hyperarousal (agitation and vigilance) for the experimental design of the intervention to be carried out.

The category of sensory stimulus that results in repetitive or ritualistic actions that lead to a discharge of self-pleasure is the occurrence of a stimulus that the body needs to calm down, regulate itself and reorganize itself. Finally, the activities guided by the PSA/Curriculum, in the ABA, have in the applicator the command inserted in the response behavior for interference in disruptive (undesirable) behaviors, that is, the internal demands of need for sensory stimulation will be faded by the external commands of the applicator (activities or tasks).

Texture components make it possible to discourage *stimming*. Among them are the shoes that are produced with specific materials against aversive stimuli and also blankets that have a double texture of stimulation and relaxants. The selection of materials must take into account the specifics: age, body mass, size and aversive control. There are several materials adapted to ASD, such as pillows, gloves, caps, socks and bracelets that are indicated for this sensory function. It is important to point out that the analysis of these inputs and stimuli must correspond to the causes of sensory alteration and not the extinction of stereotypes.

Management of Stereotypies			
Motor movements: use of objects inappropriately; stereotyped or repetitive speech, echolalia, and idiosyncratic phrases; simple motor stereotypy, aligning toys or rotating objects – Diagnostic Criteria B1 – DSM 5(2013).			
Causes			
Item	**background**	**Nature**	**Intervention/substitutive behaviors**
1	Altered sensory stimulation – Diagnostic Criteria B4 – DSM 5 (2013).	Hyper or hyporeactivity - Deficit of a physiological nature that makes it impossible to receive, decode, receive and express sensory stimuli. Sensory stimuli of unusual interest in sensory aspects; apparent indifference to pain/temperature; reaction against sounds or textures and visual fascination with lights or movement.	Script, Micromanagement (desensitization) and substitutive behaviors.
2	Restriction in the child's repertoire (socio-emotional reciprocity; communicative behavior and understanding of relationships.). Diagnostic criteria A1 and A2 and A3 - DSM 5 (2013)	Abnormal social approach, impaired social responses, reduced sharing of interests and affections, impaired verbal communication, variation in the deficit of verbal and non-verbal communication that is poorly integrated with the abnormality.	Substitution for desirable and socially accepted activities – diversified and interdisciplinary games between verbal, non-verbal and paraverbal (self-knowledge).
3	Ritualized patterns of repetitive behaviors (insistence on sameness and fixed interests - Diagnostic criteria B2 and B3 - DSM 5 (2013).	Inflexible adherence to routines; ritualized patterns of verbal behavior; rigid thinking patterns and eating the same foods every day; restricted interests, abnormality, and intensity and focus; attachment to unusual objects, circumscribed and persevering interests.	Micromanagement and substitutive behaviors (sports) – games.

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Management of Stereotypies and Modeling
Excitement Stimulation or Inhibition Behaviors
Self-Stimulating Behavior (Automatic Reinforcement) – Self-stimulating behaviors can be either calming or excitatory. Excitatory stimuli can be harmful if they interfere with learning or interaction. Ex: ASD has some symptomatic behaviors that range from shaking hands and feet, in the case of circular shaking of hands (flapping) and queuing objects, handling inappropriately (different function), fixation on lights and bright and circular objects, humming, verbal repetition, even the spin itself. **Intervention:** **1. Replacement of self-stimulatory behavior by pairing or replacement by another more appropriate one. Ex: clap your hands – beat the drum (auditory) / clap your hands – clay or modeling clay (tactile).** **2. Verbal echoes or repetitions. Ex: if there is a value for repeating a sentence, enter another word. If humming, add another melody or rhythm.** **3. The occupation with other tasks can be the methodology for reducing self-stimulatory behavior ("stim"). The important thing is to guide/instruct and have commands that lead to participation.** **Proximal Intervention Level – Exclusion, inhibition or replacement of self-stimulatory or perseverative behaviors.** a.) Anticipation and targeting of self-stimulatory behaviors. b) The child is painting and starts lining up the paints. What to do? The applicator steps in to paint a line or make a drawing. **Semi-structured Intervention Level – Exercise with intervals and insertions.** a) Anticipation and targeting of self-stimulatory behaviors with observation but no intervention. b) The child is drawing and lines up the pencils. The applicator watches, but starts to do another activity humming or with another intervention sound. **Free Intervention Level – Exercise with intervals and with insertions of the opposite.** a). Anticipation and direction of self-stimulatory behaviors with observation and with other inclusion activities (music/sounds, objects and surfaces). b). The child is in hands spinning and twirling. The applicator watches and makes gestures and twirls in reverse (inversions). **Negative reinforcement is the child's effort and attempt to decrease, remove or exclude an aversive stimulus.**

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Item	Textures	Sensory stimuli
1	Compression	Lycra, towel, hydrotherapy cap, vest, vest strap, compression shirt.
2	Asperity	Sandpaper, sponge and polish, rough texture of a wall or a rope and sea shells.
3	Softness	Soft fabric, cotton, blanket, plush, doll hair.
4	Brightness	Luminous toys, lamps, chandeliers, lanterns, traffic lights.
5	Jellies	Play dough, gelatinous stickers, gelatinous cube, *slime*.
6	Bristles	Brush, toothbrush, brush, feather, mop, mat with bristles.
7	Proprioceptive	Trampoline, inflatable proprioceptive disk, proprioceptive ball, ball pool, rice, beans, pasta. Activities involving position and application. Multimodality activities.

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Item	Stimulus	Intervention
1	Stereotyped or repetitive speech, echolalia and idiosyncratic phrases – Diagnostic criteria B1 - Echolalia.	Replacement of stereotyped and repetitive speech behavior by micromanagement and script. Singing simple songs and increasing the level of complexity, seeking to expand the child's linguistic repertoire.
2	Simple motor stereotypy – Diagnostic criteria B1- align toys	Replacement of the pairing behavior by stacking – The most oriented technique is the gradual and successive approximation.

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FUNCTIONAL ASSESSMENT

Maladaptive or undesirable behaviors have a functional relationship with antecedents and their respective consequences. The behavior produces a consequence, and this consequence controls the probability and frequency of the behavior occurring in the future. The informational collection (process) is obtained by the functional evaluation and corresponds to the determination of the occurrence of the behavior. It was from Skinner's studies that this term began to be used with reference to environmental events, because functional relationships occur both between adaptive and maladaptive behaviors.

Functional assessment is planning to determine the occurrence of a behavior. The design of this evaluation corresponds to the environmental stimuli and their respective source of control that produce a magnitude of response in the organism. It is necessary to fill in information regarding contingencies, for example: at what time, which people are involved, their frequency and what happens before (antecedent) and after the behavior occurs (consequent).

REINFORCEMENT

The learner's life history is the history of behavioral reinforcements that he has had throughout his life. According to Lear (2004), the science of behavior aims to change the conditions under which the behavior occurs, or changing the consequences of a behavior to effect a change in behavior. Thus, the consequence of the behavior will shape your future behavior. If the behavior is positively reinforced, chances are it will be frequent. If it is negatively reinforced, the tendency is to prevent it from occurring.

Reinforcers then have the function of rewarding the execution of a desired behavior. Reinforcement can be positive or negative. Negative reinforcement occurs when something unpleasant is removed by planning the desired behavior to occur. Reinforcement is the process by which the frequency of the behavior is increased. It is through the procedure of differential reinforcement that there is the containment of stimuli for the target behavior and the reinforcement of stimuli for the desirable behavior.

Reinforcers can be of natural or arbitrary origin. The first is carried out from the performance/action of the organism in the environment of social coexistence. Some behaviors are reinforced by the action itself. A practical example of this reinforcement would be performing a mime or a drawing.

In its counterpoint, arbitrary reinforcement has its nature indirectly. "Congratulations on the mime! Do you know another?" This would be an arbitrary reinforcer model for the child to continue and persist in this behavior, that is, he would probably repeat this behavior on another occasion. Another type of arbitrary reinforcement would be if people say that the child's drawing is beautiful, make an expression of astonishment to confirm the ability to produce strokes and clap their hands, this consequential arbitrary reinforcer is capable of increasing the frequency of the desired behavior.

Negative reinforcement can be of two types: escape or avoidance. Escape reinforcement is one in which the so-called aversive (unpleasant) stimulus is already inserted when the response is emitted. Both escape and avoidance behavior is the organism generating behaviors with the purpose of eliminating or reducing stimuli that are called aversive/unpleasant. This behavior arises when the consequence is a negative reinforcer, the escape behavior being the exclusion of an aversive stimulus.

Methods for Conducting Functional Assessments		
Indirect Assessment	**Direct Observation**	**Experimental Manipulations**
Interview with teachers, parents, friends and caregivers (scales with structured and semi-structured or free questions).	Observation of behavior (called target behavior). Identification of the most frequent moment that the child produces more problem behaviors. The same behaviors can bring different functions.	Research activities and verification of results and practices of behavior analysis.

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Name: Date: Age:			
Periodic information	**Background**	**Behavior**	**Consequent**
	Occurrence before behavior - problem.	Description of behavior	Occurrence after the behavior
	When? Where? With whom? Why?		What happened next? Where? When? Why? Frequency? Aversiveness? Avoidant behavior?

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REINFORCERS			
Primary Reinforcers	**Secondary Reinforcers**	**Negative Punishment Time-out/no use in ABA**	**Positive Punishment**
Oxygen Food – Water - Air	Physical: tickling, hugging, kissing, etc. Activities: movies, video games and free time. Tangibles: jewelry, toys, books, etc. Edibles: sweets, fruits, ice cream, etc. Social: compliments, smiles, applause, winks, etc.	The suppression of a behavior by the occurrence of an aversive stimulus, with the withdrawal of a stimulus.	The suppression of a behavior by the occurrence of a termination of a reinforcing stimulus, with addition of a stimulus.

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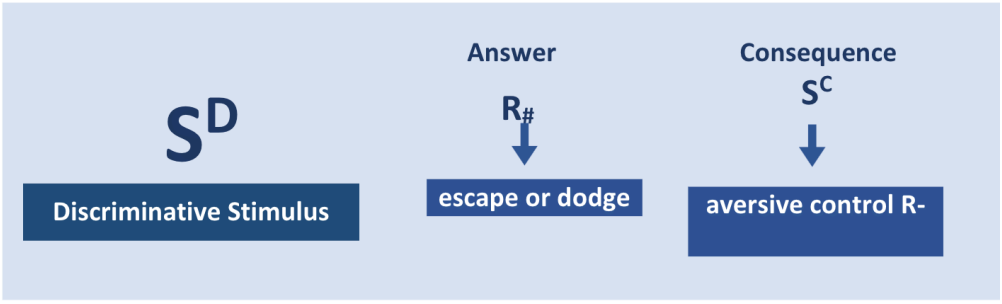

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Teaching a new behavior refers to the beginning of a process of learning a skill for the first time, when a continuous reinforcement scheme is used. It is the Positive Reinforcement resulting from the behavior. The desired behavior is not always reinforced. This scheme is normally used for the continuity and maintenance of behaviors that have been previously acquired. In this type of reinforcement, there is no getting what you want or gaining continuously.

There are four types of intermittent reinforcements: Fixed Ratio (FR), which is the case of predictability and frequency, Variable Ratio (VR), The reinforcer is assigned after a partial average of correct responses. Used in contexts of acquired skills, Fixed Interval (FI), which is a reinforcement granted after a time interval and Variable Interval (VI), which is the verification of inaccurate time intervals, that is, varied, being the reinforcement after an elapsed time interval.

Reinforcement in behavior acts to modify the antecedent and consequent events of an environment under which it occurs. There is a role for those who practice the behavior. It is necessary to identify this function, because the action for the behavior to be modified depends on its function and not on its topography. The functions of reinforcement in behavior are: positive social, negative social, automatic negative, and automatic positive.

In the process of behavior modification, there is an increase in its frequency before the onset of its decrease (fading). This occurrence is called the peak of behavior modification. The time of fading or extinction is relative and can be measured in days, weeks and even months of extinction work, depending on the effectiveness of the intervention, the behavioral technique and the learner's repertoire of symptomatic and initial behavior. The clinical reasoning that punishment produces consequences of fear and anxiety and extinction, frustration is always productive.

METHOD

Selecting how to teach is only the first step in identifying what to teach. The choice of suitable strategies, consolidated instruments and adequate resources for application methodologies is a fundamental task to carry out a PTS – Singular Therapeutic Project, PSA – Sequential Action Plan or PEI – Individualized Educational Plan. It is from the behavioral curriculum that the programs, activities and tasks in ABA are elaborated.

The Incidental Teaching method is learning in a natural environment with effective results in the developmental and academic skills of the population included in ASD/Autism. This naturalistic procedure is based on the attribution of senses and meanings to the child's daily activities in a space that is presented as a motivating factor for the development of skills. A natural element contributes to discrimination and its generalization, therefore it strengthens the transfers simulated in this environment for the children's daily life.

Another method with expressive results in the population included in ASD/Autism is called Teaching by Dynamic Responses (Pivotal). This methodology is partially structured, with natural opportunities, inserting its biggest intervention factor, which is motivation. The areas of attention are from child self-initiation, autonomy, protagonism, self-management and response condition to various mobilizations and, especially, motivation.

Pivotal *Response Training* thus has its most effective occurrence in natural environments, with changes in shifts and activities, exercises and tasks already previously recognized and partially learned. In addition to motivating the

Schedule of Reinforcement		
Continuous Reinforcement - CR	**Intermittent Reinforcement - IR**	**IR types**
The employee receives a salary increase every time he brings in a financial report. The cook whose salary is reduced every time she breaks a plate. Every time the child throws the trash in the basket, he gets a *pat* on the back. An apprentice who receives a comic book every time he completes every task.	The prize of a lottery is awarded at random. Reinforcement by praise after 8 errors, 6 errors, and 4 errors. After 100x input, a prize, then 200x, then 350x, then 400x, a new prize is awarded. For every 5 days of cleaning the pool, the son receives an amount from his father.	Fixed ratio (FR) – This is the case of predictability or even frequency. Example: salary every tenth of the month. Variable Ratio (VR) – O Used in contexts of acquired skills. Fixed Interval (FI) – a mother who checks every 10 min. bath. Variable Interval (VI) – Teacher checking the behavioral response without a fixed interval.

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Functions of Reinforcement in Behavior
Positive social reinforcement – added by a participant 1. Attention 2. Presentation of reinforcing or tangible activities
Negative social reinforcement – mediated by a participant 1. Interruption of an aversive interaction, when noticing some behaviors. 2. After a burst of attention-seeking behavior (tantrum), she escapes from doing the task or activity.
Automatic positive reinforcement – automatic consequence of the behavior itself 1. Carrying out an activity for self-satisfaction. 2. Self-stimulation ("stims") – sensory stimulation: rocking, waving hands and turning on an axis of self (grant something positive).
Automatic negative reinforcement – consequence of reducing or excluding an aversive stimulus. 1. Self-stimulation ("stims") – sensory stimulation: rocking, waving your hands and turning on an axis around you to reduce anxiety (the difference is that this removes something negative). 2. Close the bedroom door when there is a lot of noise. 3. The child who bites his teeth to reduce pain (may have pain in his teeth). Tangible reasons, for example, could be a child who takes off his shoe because he feels compression and pain in his feet.

Role Play			
Antecedents	**Behavior**	**Consequence**	**Behavior Function**
A child is playing with friends. The father calls the boy to help him wash the car.	The child starts screaming and rolling on the floor.	Dad tells him to resume playing	negative social reinforcement

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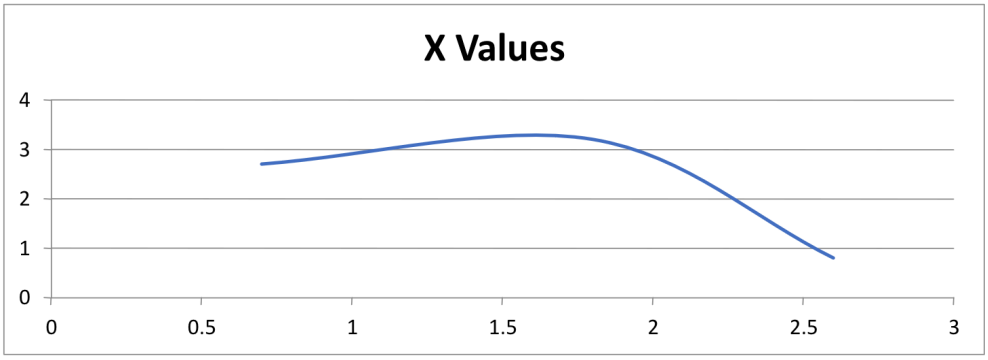

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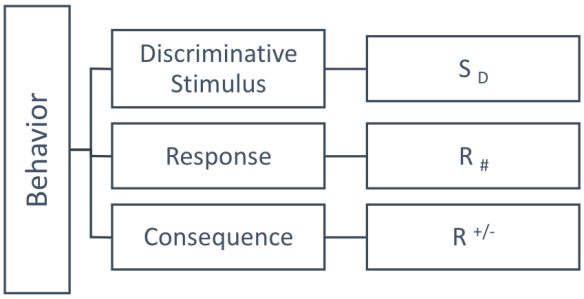
child through the natural environment, it is essential that an interview be conducted with parents or caregivers to map the daily activities and the levels of difficulty and impairment in the child's behavior and responsiveness in the face of situations.



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The identification of methods (Teaching by Discrete Trials, TTD, Verbal Behavior, CV, Teaching by Dynamic Responses, TRD and Incidental Teaching, EI) will depend on the family's demand and the particularities of the population included in ASD/Autism. It is important to emphasize that the recognition of the ten methodological strategies is fundamental for the elaboration of a behavioral curriculum, with programs, activities, tasks and support skill that correspond to the system of tracking of abilities and to the baseline and to the operant level of the learner.

Teaching in a Natural Environment – NET is carried out in spaces that allow the development of naturalistic activities related to the learner's daily life. In this approach, there is no table or a sequence of objects, equipment or adapted space that is structured for learning to occur. This does not mean that there is no planning, however it is flexible and changeable. The discriminative stimulus starts from the selection of a reinforcing environment in a natural and spontaneous way so that skills are developed in the classes/play sessions.

In the NET curriculum, there is an orientation that activities must be as structured as possible, in order to present interactions that the child must recognize in other contexts, being natural and reinforcing. There are two elementary strategies, in which the first is called advance planning, that is, really knowing what the child likes and the other is the security of a space that he feels comfortable and safe. The context can be a park, a football field, a walking track, or even a square.

Robert Koegel (2006) presented in his works a method that would work later as an intervention, through teaching and learning skills in natural situations: the *Pivotal Response Treatment* or Training of Pivotal Responses/Treatment of Dynamic Responses. This intervention (*Pivotal Response Treatment* or Training of Pivotal Responses/Treatment of Dynamic Responses) is naturalistic, because it relates to the dynamic environment without a very fixed structure. Activities are learned based on opportunities and consequences, observing the gradual and exponential increase in motivation, with tasks, intercalation and choices.

The discussion between historical approaches of psychoanalytic or behavioral studies on autism is not the purpose of this work. It is important to consider a place of speech, in this territory, if there is a spatial demarcation in this profuse universe. An analysis of the existential outline of this population is more productive than a structural discussion or a specific classic strictly nosological or nosographic framework. Thus, the analysis of the person with autism is a challenge from a methodological point of view. The definition as a psychic structure already raises a series of clinical structural questions, with characteristics identified as neurotic and, historically, psychotic.

TAB PROGRAM		
CURRICULUM		
ACTIVITY	**APPLICATOR COMMAND**	**STIMULUS**
Imitation	Imitate animal sounds	Image of cat, dog and cow.
Imitation 2	Imitate hand movements	Palms, circular, fingers crossed.
ACTIVITY	**APPLICATOR COMMAND**	**STIMULUS**
Visual performance	Pair color figures	6 pairs of figures: 2 yellow, 2 green and 2 red.
Performance look 2	pair objects	Cups, saucers and glasses.
ACTIVITY	**APPLICATOR COMMAND**	**STIMULUS**
Receptive language 1	touch different objects	Pencil, eraser, pen and notebook.
Receptive language 2	Indicate a generic item of the place.	Lamp, table, chair or door.
ACTIVITY	**APPLICATOR COMMAND**	**STIMULUS**
Intraverbal	Complete known sentences.	"My name is..." "My mother's eye color is..."
Intraverbal 2	Complete words from children's songs.	"The carnation fought with the.. (rose)" "The frog doesn't wash his foot; he doesn't wash it because he doesn't....

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Therefore, methodological classicism is limited to the composition of a design based on a characteristic scenario with samples for data collection and intervention and subsequent measurability and behavioral analysis (from the topographic to the functional level). This classic dynamic of investigation would allow relating the object of study/research to a specific place of social coexistence, which would not be limited to a tangential physical space, but to a community of social insertion (culture). The objective of science is to seek relationships of regularity and constancy between non-environmental events.

Intervention methods for modifying symptomatic behavior or replacing stereotyped, circumscribed, ritualized and repetitive behavior would be delineated from the initial repertoire and the skills tracking system, taking into account the operant level and the line of thought. base. Reinforcement history is the initial process of correspondence between DSM-5 diagnostic criteria and the operant level and baseline for the experimental design of interventions.

RA AND SENSORY STEREOTYPY AND INSISTENCE ON THE SAME

The history of AR reinforcements involves a successful series of developmental skills and a social withdrawal that began around three months of life, as early as the first year. Significant impairments increased considerably, mainly in social relationships and understanding of relationships between peers and family, resulting in a series of motor and sensory stereotypes.

Even with the limitations in the initial repertoire, there was a positive evolution in their playing and psychomotor skills. But it was not always so. His mother, who applied ABA early on at RA's early age, played a decisive role in strengthening the child's bonds of social belonging, leading him with affection and security to spaces of interaction and cultural life. It can be said, then, that the mother was her main mediator in this course of early intervention. This follow-up was decisive in self-regulation, sensory search and relief, functions of maladaptive behaviors, including motor and sensory stereotypies.

According to maternal report:

> From an early age, RA presented hypersensitivity in the head region. He had difficulty cutting hair and other personal care that required touching this region, as it was extremely sensitive for him. This topographic behavior was not analyzed to identify the function. As he liked to play puzzles, on one occasion the fitting game was placed on his head, starting to accept the game and, after this event, he started to put plastic pots and pans on his head. After some time, my brother presented him with a hat that became his trademark, he never takes it off. And he placed it on objects, in a very unusual way.
>
> So, the insistence on the sameness in relation to the hat, arose from so much RA always putting the vessels on the head. He got my brother's hat and then started wearing it.
>
> I remember well a reinforcement in which one day in equine therapy he saw the boy who drives the horses wearing a hat, and from then on he wanted to wear it more often, too.
>
> Today this issue in relation to the hat has diminished a lot, but I realize that there was discrimination, after the generalization. Because today he also wears a cap.
>
> Some other stereotypes still remain, such as: the stereotyped movement he has always had, which is to revolve around himself. Others are non-articulated vocalizations: "Iaaa"
>
> He said that a lot when he was a baby, and we thought he called the pacifier ia, but it was already an echolalia. Even today he says "ia", sometimes. Some time ago I put my hands over my ears. Everyone thought it was pain in the ear. Until one day I found out it wasn't. I found out that it wasn't pain in the ear, one day he put his hands on his ear at the clinic, and he had the flu, we left because I was really afraid it was, when he got home, he went to jump on the bed and wanted to eat. And totally changed the face (feature). Then again I noticed that when I asked him to do something he didn't want to do, he covered his ears too. I think RA doesn't have strong stereotypes, now. He does it for a while, we apply the differential reinforcement procedure: DRO, DRA or DRI and it doesn't happen anymore.

DISCUSSION

RA, since childhood, around one and a half and two years old, already used objects in a dysfunctional way, for example, plastic bowls and other objects were taken to the mouth, with a change in focus and intensity, with sensory stimuli or interests unusual for sensory aspects. The professional accompanying the child advised that a functionality be added to the inputs or objects used in playing.

From this sensorial alteration, there was always hypersensitivity (reaction contrary to textures, or even search for sensation, relief and self-regulation) in the head, at which time it was reported by the mother that the objects (plastic containers) were placed on the head, in a simple act of everyday individual play. This more intense sensitivity caused an escape from demand, or even an avoidance of performing functional activities or personal care, such as cutting hair or another task that required a better structured (elaborated) tactile skill.

As much as the mother insisted on the inclusion of toys and games related to this hyper-reactivity, RA continued to renounce any type of tactile desensitization initiative. The change occurred from the moment that the maternal uncle, according to the mother's report, presented him with a hat, the uncle's hat. The inauguration of this trait, after strengthening the bonds of social belonging with the family, enabled an identification. According to the mother's report: "don't take this hat off for nothing".

The literature that presents the psychopathology of the child with autism, has in its diagnostic criterion (DSM 5/2013), characterized by B, a series of behaviors that appear as motor movements, insistence on sameness, fixed and circumscribed and perseverative interests, with alteration, abnormality, intensity and focus, with attachments to unusual objects, with circumscribed or persevering interests, and also hypo-reactivity and hyper-reactivity, with sensory stimuli or unusual interest in sensory aspects and contrary reactions to textures.

Family celebrations, community activities and academic skills in less restrictive spaces were always a challenge for the parents, family and friends who participated, becoming a tense situation and resulting in a series of stereotypes, both in speech (echolalia, and in *flapping* and *rocking* behaviors). There lay a desire (expressed in the absence) of the parents for closer family relationships with the other children, just like the father, who also socially related in a punctual and unique way, according to the mother's report. The application of differential reinforcement procedures was decisive in modifying AR behavior and replacing undesirable behaviors (target) with socially accepted ones.

FINAL CONSIDERATIONS

The DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, 5th edition) has the diagnostic criterion B1, of Autism Spectrum Disorder (F84.00/299.00), its descriptor consisting of motor movements, inappropriate use of objects, stereotyped or repetitive speech, echolalia and idiosyncratic sentences, and simple motor stereotypy and aligning toys or rotating objects. Furthermore, aversiveness is a symptomatic behavior resulting from hyporeactivity or hyperreactivity (diagnostic criterion B4), also including visual fascination with lights or movement. Stereotypies are, therefore, motor behaviors with a repetitive character, apparently impulsive and with functional motivation (B criteria), and, generally, they are rhythms of the head, hands or body (DSM 5/2013).

The hat is above the head and for the child with autism, who has an impoverished body image, the mental configuration of his body, and in the body scheme, the representation of his physical (biological) body, he infers his own body status and own body. This incursion into the universe of corporeity and its relationship with the spatial and existential identifies and becomes a mark similar to the trait of partial secondary identification, as occurred with the subject RA

Interventions must be precocious and the behavioral curriculum (programs, activities and tasks), of substitution and micromanagement and based on behavioral techniques such as: modeling, sensory integration, imitation, scripts and speech stimulation with differential reinforcements from other behavior, from alternative behavior or incompatible behavior, both to guarantee the learner's physical integrity and to ensure their self-regulation, as well as for relief and sensorial search. Stereotypies are motor escapes for tension and must be

replaced by desirable and socially accepted behaviors through differential reinforcement procedures.

REFERENCES

American Psychiatric Association (2013). Diagnostic and statistical manual of mental disorders (5 ed.). Washington, DC: American Psychiatric Publishing.

CATANIA, A. C. (1999). *Aprendizagem: comportamento, linguagem e cognição.* (4ed). *Porto Alegre: Artes Médicas.*

CANTAVELLA, Francesc; LEONHARDT, Merce; ESTEBAN, M. Angels et al. Introducción al estúdio de las estereotipias em el niño ciego. Barcelona: Masson, ONCE, 1992. 140 P.

DIAS, E. O. (2000) *Winnicott: agressividade e teoria do amadurecimento In: Natureza Humana: Revista internacional de Filosofia e práticas psicoterápicas*. Vol. 2, no. 1, pp. 9-48.

_____(2003)A Teoria do Amadurecimento de D. W. Winnicott. Rio de Janeiro, Imago Editora.

GÓES, Maria Cecília Rafael de. Linguagem, surdez e educação. 2. ed. Campinas: Editora autores associados, 1999.

LEAR, K. (2004). *Help Us Learn: A Self-Paced Training Program for ABA*. (2ED). Toronto. Retirado de: http://www.autismo.psicologiaeciencia.com.br/wp- content/uploads/2012/07/Autismo-ajude-nos-a-aprender.pdf

NOVAES, J. de V. (2010). Com que corpo eu vou? Rio de Janeiro: PUC.

SOUSA, C. C. (2020). Psicopatologia Psicanalítica: o estudo do homem pela determinação dos seus desejos e conflitos inconscientes. Novas Edições Acadêmicas (International Book Market Service Ltd., member of OmniScriptum Publishing Group), Mauritius.

SKINNER, B. F. (1957). Verbal Behavior. Englewood Cliffs, NJ: Prentice-Hall.

WINNICOTT, D. W. (org) (1989) *Explorações Psicanalíticas: D.W. Winnicott*. Porto Alegre: Artes Médicas Sul, 1994.

WINNICOTT, D. W. (1999). *Conversando com os pais* (2a ed., A. Cabral, Trad.). São Paulo, SP: Martins Fontes.

WINNICOTT, D. W. (1984) Introdução. In: Winnicott, (1984) *Privação e Delinquência*. São Paulo: Martins Fontes, 1999, pp. XI-XVI. 281.

_____ (1945c) *Por que Choram os Bebês?* In: Winnicott, (1957) A Criança e o seu Mundo. Rio de Janeiro: Zahar Ed. 1977, pp.60-75.

_____ (1946a) *Que Entendemos por uma Criança Normal?* In: Winnicott, (1957) A Criança e o seu Mundo. Rio de Janeiro: Zahar Ed. 1977, p.140-147.

Fig. 1 – Independent play and the development of body schema psychomotor skills and body mental configuration.

Fig. 2 – Ability oculus-manual and social play with the mother.

Fig. 3 – R.A and its social interactions in less restrictive spaces.

Fig. 4 – R.A and the use of the hat on inanimate objects of interest to you.

Fig. 5 – The use of the hat in a dysfunctional way and its visual perception.

Fig. 6 – The relationships between subject, object and spaces.

Fig. 7 – The symbolic universe of identification of R.A.

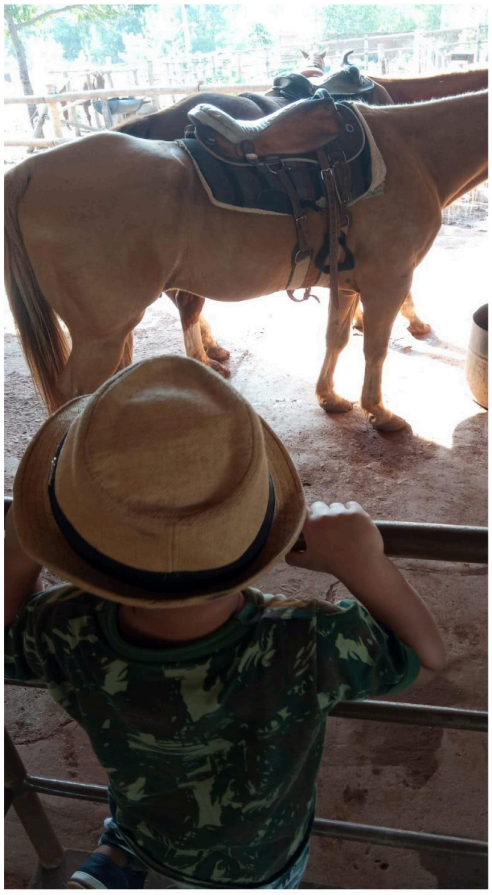

Fig. 8 – The identification mechanism by repetition (imitation).

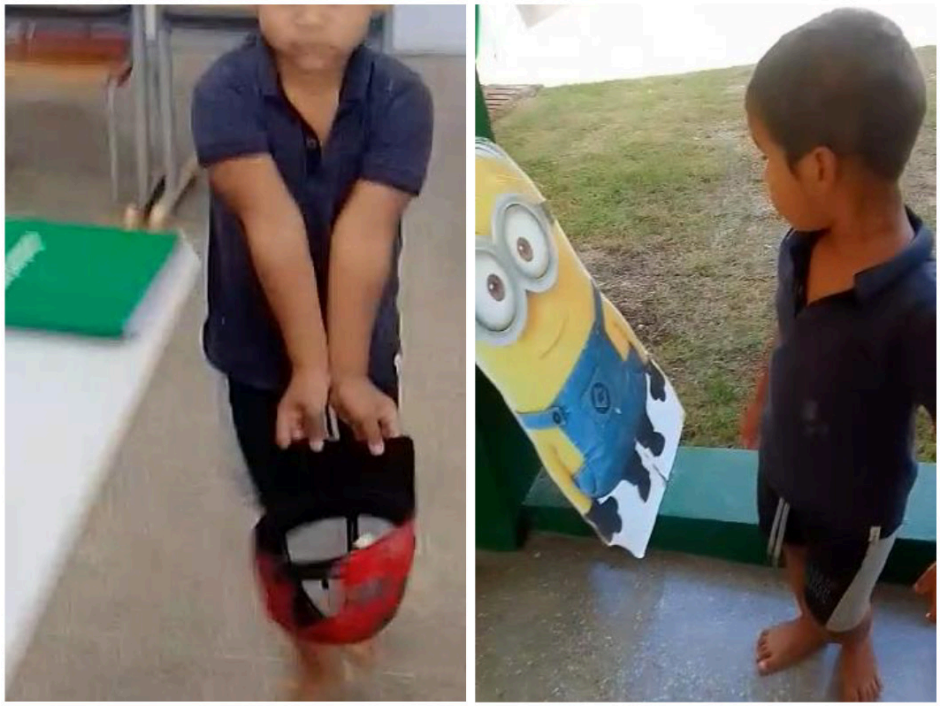

Fig. 9 – Identification and generalization in the insistence on sameness.