International Journal of Innovation and Applied Studies
ISSN 2028-9324 Vol. 38 No. 3 Jan. 2023, pp. 656-681

http://www.ijias.issr-journals.org/

Combination of psychomotricity and behavioral approaches especially Applied Behavior Analysis (ABA)

Kawtar Charaf-Eddine[1], Othmane Boutchich[2], Redouane Oumoulylte[3], Ouafae Moumen[4], Alexandra Lecestre[5], and Ghizlane Benjelloun[6]

[1]Department: Clinical Neurosciences and Mental Health, Hassan 2 University of Casablanca, Faculty of Medicine and Pharmacy, Center of Doctoral Studies in Health Sciences, Casablanca, Morocco

[2]Consultation Service, regional hospital center, Beni Mellal, Morocco

[3]Rehabilitation department, regional hospital center, Errachidia, Morocco

[4]Department: Clinical Neurosciences and Mental Health, Pedopsychiatry Department, University Hospital Center Ibno Rochd, Casablanca, Morocco

[5]Psychology-Humanities and Social Sciences Department, Lille3 Charles de Gaulle University Villeneuve d'Ascq 59-north, France

[6]Department: Clinical Neurosciences and Mental Health, Pedopsychiatry Department, University Hospital Center Ibno Rochd, Casablanca, Morocco

ABSTRACT: During my studies as well as my work with children with Autism Spectrum Disorder ASD, I have heard a lot about ABA, the behavioral approach several times, especially during my basic psychomotor training.
As a result, this thesis work is in line with the psychomotor management of children with ASD through the ABA approach, using ABA procedures. ABA, Applied Behavior Analysis, has for objective: to improve the conditions of life of the person. To achieve this objective, three axes are considered: Increase adapted behaviors, decrease maladaptive behaviors, learn new adapted behaviors. This approach has proven its effectiveness in ASD, geriatrics, sports, business and education... In psychomotricity, it is still very little used, despite the fact that psychomotricity is a profession that uses several tools and mediations. This work presents two cases in which ABA procedures were used to maintain psychomotor skills. The combination of psychomotricity and the ABA approach, through the use of its principles (reinforcement, punishment, extinction, error-free teaching,...) contributed to an improvement of the target behaviors, which shows the interest of using the ABA approach in psychomotor care.

KEYWORDS: ABA, behavior, psychomotor management, reinforcement, Autism Spectrum Disorder, psychomotrician, applied behavioral analysis science, rehabilitation.

1 INTRODUCTION

During my training in psychomotricity as well as my work as a psychomotrician with children with ASD, I have always heard that ABA is one of the approaches recommended by the High Authority for Health (HAS, 2012) given its proven effectiveness.

It is an approach that aims to analyze behavior and promote the increase or decrease or even the disappearance of one or more behaviors in a person (Miltenberger, 2022; Green, 2006), in addition, it includes detailed procedures and tools based on a scientific approach (Tardif et al., 2010; Leaf et al., 2010), its results are concrete and relevant.

Corresponding Author: Kawtar Charaf-Eddine

During our course, ABA is not studied, for this reason, it was important to study it, so I was able to benefit from training in the National Qualification Program for Professionals in the care of people with Autism, RAAFIQ program, organized by the Ministry of Solidarity, Social Integration and Family, and implemented by the International University of Rabat in Morocco.

This program aims to provide Morocco with national expertise in the training of trainers and professionals in the care of people with ASD. It works to build a pool of reference trainers trained in behavioral sciences (ABA) and able to take care of people with ASD and to increase the training of local trainers, made up of practitioners and families.

ABA was not mentioned much in psychomotricity so we thought of integrating its principles in the psychomotor care of two children with ASD and even with other disorders. It gave this job.

Our study is based on three main axes. The first presents the theoretical foundations concerning ASD, ABA and psychomotricity. For ASD, we will present, among other things, the diagnostic criteria through the different classifications as well as the HAS recommendations regarding treatment. We will then explain the various notions underpinned by ABA. Then, we will focus on psychomotricity by detailing its functions, the particularities observed in subjects with ASD and its role in social integration. Our study is based on the evaluation then the re-education of target behaviors deemed to be a priority within the framework of psychomotor care, coupled with ABA, and finally, on the analysis of the evolution of these behaviors in order to objectify any progress. The second axis relates our practical experience with patients with ASD. The discussion, remarks and difficulties encountered during the study are presented in the last axis, followed by two surveys intended for psychomotor therapists and parents of children with ASD.

2 SUBJECTS, MATERIALS AND METHOD

2.1 CURRENT STATUS OF MY DATA IN ABA

The ABA having been briefly presented in my course; it sharpened our curiosity. As a result, when we agreed on the theme of the research, I and my thesis director mainly documented myself on this approach. This being based on a set of new concepts for me, it seemed essential to me to participate in training to illuminate these gray areas.

As a result, I was able to benefit from several training courses on ABA provided by ABA psychologists on the theoretical foundations of this approach. I had the chance and the possibility at first, to follow the theoretical training phase of a volume of 294 hours for two months each day plus Saturday morning from 9 am to 1 pm, by attending major courses (slide, videos, etc.) and tutorials (role games, group work) provided by experts in ABA, French and Canadian BCBA and ABA psychologists, in a second step, to ensure the interventions myself through taking ABA care of two children diagnosed with Autism Spectrum Disorder over an 8-week period for 4 hours a day, applying the techniques and principles of the ABA approach, and by practicing the theoretical knowledge and sensitizing the parents, under the supervision of a French ABA psychologist and a BCBA psychologist, which made it possible to consolidate the notions already acquired in theoretical training. The theoretical concepts already discussed were tested through various practical workshops or situations with these children. This training therefore constituted for me, a first background allowing me to begin the care of my patients with ASD. In addition, being accompanied by expert professionals trained in this field has optimized my chances of providing quality work.

2.2 METHODOLOGY

2.2.1 ASSESSMENT TOOLS

2.2.1.1 PSYCHOMOTOR ASSESSMENT TOOLS

2.2.1.1.1 WELCOME INTERVIEW

I relied on the reception interview in order to develop the anamnesis (pregnancy, childbirth, psychomotor development, cleanliness, language, integration at school, school acquisitions, integration with peers, food, sleep, homework, centers interest, autonomy, family relationships, motor acquisitions, care and assessments carried out)

The interview is presented as follows: This is the time for a first meeting, first exchanges, to define the request and the needs of the patient.

It aims to retrace the history, the course (school, professional, family, health) and the psychomotor development of the person, in his points of strength as in his fragilities.

If a psychomotor assessment is indicated, the psychomotor interview will then make it possible to orient the choice of the tests used or the observation carried out.

Sometimes anxiety-provoking for some children, it must be accompanied by at least one of the two parents or legal representative, and if possible, without the presence of brothers and sisters who, if necessary, are invited to wait in the waiting room if their age permits.

For teenagers, the first part of the interview takes place with the young person, to allow him to invest a space of expression which is specific to him. The second part of the interview is planned with the parents so that everyone can express themselves differently but also simultaneously about the reason for the request.

The child is invited to express himself on his tastes, his games, his hobbies... then he is informed, reassured if necessary, of what is to come... namely the psychomotor evaluation.

2.2.1.1.2 ASSESSMENT, OBSERVATION AND PSYCHOMOTOR EVALUATION OF CHILDREN WITH ASD

The psychomotor assessment consists of an in-depth examination of the person's difficulties and capacities according to two main lines of investigation, oriented according to the reason for consultation and the patient's age:

There is **the motor axis***:* examination of motor organization and expression.

And **the psychological axis***:* anamnesis and symbolic expression.

The objective of the assessment or psychomotor observation is to collect clinical elements on a motor and psychological level (knowing that for the psychomotor therapist there is a constant interaction between the two) allowing a diagnosis to be made and an understanding of the psychomotor disorder to be established.

The conclusions of the assessment will then make it possible to propose, if necessary, appropriate care, in psychomotricity or (and) oriented towards other therapeutic approaches or complementary examinations.

Because of the disorders, the standard psychomotor assessment could not be carried out, hitherto considered impossible by the behavioral disorders, the refusal of contact of the two children with ASD. It was therefore only possible to make an observation of skills and difficulties.

In our study, the two children did not pass a psychomotor assessment on the side, but I was able to make a spontaneous psychomotor observation during the interviews where they were present with their mothers and other sessions scheduled individually thereafter.

The psychomotor observation of these ASD children allowed me to assess their development, the difficulties and the capacities they present while taking into account the suffering related to their states.

My psychomotor observation is centered on the skills of these children with a particular observation of the intensity and quality of the exchanges.

During this observation I was able to explore the different areas:

- The presentation and attitude of the child
- The child's spontaneous attitude to the object
- Imitation games
- The tone
- Dynamic coordination (clinical observation on the course) and hand-eye coordination
- The function of the gaze
- Hearing and language
- The body-schema, the experience and the representation of the body and the integration of the body axis
- Space and time
- At the level of lateral dominance
- At the level of cognitive functions
- Relationship to oneself to the other
- At the perceptual level (object sorting game), pairing objects together
- At the level of visual construction
- At the imitation level
- Visual structuring

2.2.1.2 ABA ASSESSMENT TOOLS

2.2.1.2.1 RATING OF PREFERENCES

For the evaluation of the preferences, we worked with the method by trial-pair of Stimuli which consists in proposing to the child two preferences he chooses one and we withdraw the other, we note the chosen one and we leave it to manipulate it approximately 20 seconds

After identifying the preferences of the two children through the profile of potential reinforcers (**Appendix 3 and 6)**, I prepared the material, I made it available to me and away from the child I started the evaluation as I explained before, and afterwards I filled out the evaluation grid and I calculated the percentage of trials where the items were chosen which gives us an idea of the power of the reinforcers

NB: Always reassess the child's preferences because they change over time

2.2.1.2.2 THE PAIRING PHASE

- Pairing is associating a reinforcing item with a neutral item so that the latter acquires a reinforcing power in turn. It is a very important step to start taking care of the child, if the pairing is not successful. you can't go to the next steps
- Pairing is done throughout the treatment, you must always start with pairing
- After identifying the child's reinforcers, I began the pairing phase; I put the objects out of the child's reach and each time I take an item and I start to create motivation with it to have behaviors to approach the child and I give no instructions, and gradually as I count approach and avoidance behaviors
- At first, I found it difficult, for example, to observe approach behaviors and count them at the same time and also to count certain gestures (smiles, looks, touches, etc.) as approach behaviors, but after the first supervision I 've been able to correct my mistakes and improve my way of working and it's getting easier and easier

2.2.1.2.3 INSTRUCTIONAL CONTROL PHASE

- Following the pairing at the start of the intervention, we move on to instructional control, which is a procedure allowing the gradual establishment of cooperation and which allows the person to be taught the cause and effect link between response and reinforcer and to follow basic instructions which will be useful in teaching situations
- For this phase i tried to offer the children activities that are related to their reinforcers i alternated it with pairing, 80% pairing and 20% instructional control, I prepared the material and I tidy the room so that I can control access to items, and when I ask the child an instruction and he responds correctly I reinforce him immediately and when he does not respond I guide him and I give neutral feedback afterwards without forgetting to go after all my instructions

2.2.1.2.4 VB-MAPP ASSESSMENT

- The VB-Mapp is a developmental skills assessment tool for children up to 12 years old, based on Applied Behavior Analysis
- It consists of **3** parts
    - ✓ milestones (170)
    - ✓ barriers 24
    - ✓ possibility of orientation towards the ordinary environment 18
- After having a successful pairing and an instructional control installed, I passed to the evaluation by the **VB-Mapp** and before starting the evaluation I prepared the necessary material for the evaluation and the handover sheets which contain boxes for the milestones, the material, the delivery methods, the discriminative stimulus Sd and a box for the notes and afterwards I tried to alternate between the milestones of different domains

2.2.1.2.4.1 VB-MAPP RATING FROM VIDEOS

The VB-MAPP is an important assessment tool in the ABA approach. It allows the evaluation of various skills (mand, tact, listener responses, spontaneous vocal behaviors, intraverbal, linguistic structure, visual perception, matching, motor imitation, echoics, listener

responses on functions, characteristics and categories, school routines and group skills). We did not focus on these skills (or milestones) insofar as their analysis completed our psychomotor observation.

So, the (VB-MAPP) seeks more to give a benchmark as to the age of development. This extends from 0 to 48 months. Although this age group is limited, it still seemed interesting to us to score this assessment for our patients in order to get an idea of their skills in each area. We relied on the videos of the sessions to carry out this work. From our observations, we were able to fill in the grids for each child. Thus, for each milestone, we had to assign a score of 0 (not acquired), 0.5 (emerging) or 1 (acquired) to each item. It should be noted that there are five items per domain, for each level of development (0-18 months; 18-30 months and 30-48 months) (**Appendix 5 and 6)**. On the other hand, with regard to obstacles to learning, these are rated from 0 (absence of negative behaviours) to 4 (severe negative behaviours).

Moreover, the interest of the VB-MAPP resides in the consideration of obstacles to learning. These are scored from 0 to 4; 4 representatives a major obstacle (**Annex 7 and 8)**. The videos were, once again, the support of this rating and allowed us to identify the priority obstacles of our two patients.

2.2.1.2.5 FUNCTIONAL ASSESSMENT OF PROBLEM BEHAVIORS

2.2.1.2.5.1 DEFINITIONS OF CHILD PROBLEM BEHAVIORS

The functional evaluation I did with the two children **IZ** and **AK.**

Define the child's problem behaviors in an observable, measurable and specific way.

2.2.1.2.5.2 FUNCTIONAL ASSESSMENT

To carry out the functional evaluation of the problem behaviors of the child I used as a tool: the FAST; indirect functional assessment questionnaire, it gives us an idea of the function of the behavioral disorder, I filled it out with the mother also I worked with the ABC grid which is a direct functional assessment in the form of a written description from the antecedent, behavior and consequences, it also allows you to identify the function of the TC behavior disorder.

2.2.1.2.6 DEFINITION AND PROGRAMMING OF THE INTERVENTION

2.2.1.2.7 CHOICE OF PRIORITY OBJECTIVES

Since we cannot work on all the areas at the same time, I have aimed for objectives that are functional such as: communication, behavior and I have favored learning objectives in greater quantity in the "weak" areas as well I based myself on the results of the VB-Mapp evaluation and the psychomotor observation, I tried to homogenize the profile by taking into consideration the expectations of the mothers who had concerns about communication for the two children

2.3 PRESENTATION OF REHABILITATION

2.3.1 FREQUENCY AND DURATION OF SESSIONS

Our support was carried out over a period of 2 years, at a rate of two hours daily at the beginning for the realization of the principles of ABA for 40 days, and after two weekly sessions. It should be specified that they take place in the presence of the child's educator and that they last 2 hours at the CNMH and one hour at the rehabilitation department.

In addition, we have chosen to visit each child's association on a regular basis, with the aim of observing any generalization of the behaviors worked on in the sessions.

2.3.2 MATERIAL

Throughout our research, we tried to film each session, especially when carrying out the principles of ABA. The purpose of these videos is diverse. Apart from their use for the psychomotor observation of children's skills and difficulties as well as some ABA procedures (pairing, criterion for acquiring a target behavior, filling in the rating grids, etc.), they also gave us rehabilitation information. In fact, they ensure if it is difficult to score the target behavior during the session.

We also use reinforcers in our sessions, which must be prepared before the session begins. They can be food (chocolate for example), tangible (favorite activities, items: bubbles, ball…). They are always associated with social reinforcers ("bravo", "great",…). They are specific to each patient.

Regarding the rehabilitation itself, we use psychomotricity equipment (balls, hoops, weighted bags, trampoline, gym ball, games, etc.) to acquire the different target behaviors.

We must, moreover, equip ourselves with grids that allow us during treatment to rate each trial for behaviors in the learning phase, and also the frequency of appearance of problem behaviors (**Appendix 9 and 10)**.

2.3.3 POPULATION

2.3.3.1 RECRUITMENT CRITERIA

When our project was created, our inclusion criteria were: children with ASD and children between 4 and 10 years old. After having recruited our population via a speech therapist and a psychomotrician from the CNMH, we decided to exclude all subjects with very severe behavioral disorders.

2.3.3.2 SUBJECT PRESENTATION

2.3.3.2.1 IZ

In annex n° 1: Written consent of the family for the participation of their child **IZ** in an individualized follow-up based on the ABA approach (a consent and a communication questionnaire)

2.4 ASSESSMENT AND MANAGEMENT

2.4.1 IZ

2.4.1.1 SUMMARY OF BALANCE SHEETS

The assessment was carried out on sessions that last 120 minutes daily for 40 days and after 60 minutes twice a week.

2.4.1.1.1 GENERAL ATTITUDE

IZ presents an absence of language. He is a passive child with shifty gaze, who mechanically uses the hand of others to grab the objects around him.

He emphasizes that **IZ** still presents a significant delay in oral language with the presence of sounds. However, he has a real desire to communicate and does not use non-verbal means such as pointing or using visual systems to compensate for language difficulties.

IZ freezes, he does not speak, as soon as he enters the room, he goes to the equipment of the room.

Several times during the session, **IZ** stares at me fairly intensely while remaining motionless, as if frozen, for a moment that lasts for long minutes, and when I try to approach him, it leads to the appearance of a behavior problem (punches against his head, and hits me). At this moment, I have the impression that **IZ** tries to escape my presence.

IZ has an intolerance to frustration, as soon as something does not go as he wishes, he gets angry, cries, whines and shouts, hits himself and others.

However, he has good memory skills. He encounters difficulties in terms of communication, interacts very little with other children and remains in avoidance in the face of the bond with the other. **IZ** has in parallel a speech therapy follow-up.

As soon as he arrives at the room, **IZ** immediately seems at ease, as he arrives in a little-known environment. He takes off shoes and socks and immediately goes to explore the material that is out of his reach in the room, without any worries. **IZ** is not in action and it's easy for him to sit down for the start and end of the session.

Throughout the session, he does a lot of experimenting, more in his own corner. He explores the material next to him, while he rarely moves, especially if he is seated at the table.

2.4.1.1.2 BEHAVIORAL OBSERVATIONS

After the first observation of the children:

Child 1: IZ is a child of 4 years and 9 months who presents:

- Lack of verbal communication
- Lack of social interaction
- Difficulty staying attentive and focused
- Behavioral problems (biting, scratching; shouting loudly; lying on the ground crying, hitting himself and others)

2.4.1.1.3 RATING OF PREFERENCES

For the child (1) **IZ:** the reinforcers were classified as follows

1) Doll 2) pop-it 3) Ring 4) Pipe cleaner

NB: Always reassess the child's preferences because they change over time.

2.4.1.1.4 PAIRING

After carrying out the evaluation of preferences which allowed us to identify the child's reinforcers, we moved on to pairing, starting with:

- The arrangement of the environment and the control of reinforcers which are inaccessible to the child,
- Create motivation: by making it visible to the child and playing with it
- Waiting for an approach behavior to be able to deliver the reinforcer to the child by naming it and socially reinforcing it
- Count approach and avoidance behaviors as you go along, do not give instructions to the child
- At the slightest satiety, we change the reinforcer

For the IZ child:

Difficulties were found at the level of pairing which required a longer time due to the presence of avoidance behaviors and the absence of approach behavior, after having carried out the first supervision and by applying the advice provided by the supervisor. which are the following:

-Stay away from the child; present the items 1 by 1; gradually decrease the distance and try to gradually obtain a greater time and number of glances. We were able to reach the acquisition criterion 80%, percentage of pairing calculation **(approach behavior / (approach behavior** + **avoidance behavior) x100)** on **3** consecutive days even this took several weeks, so I was able to have a successful pairing.

2.4.1.1.5 INSTRUCTIONAL CONTROL

The IZ child: The stage of instructional control like that of pairing took a long time to be installed in the **IZ child** given his limited attention span and the presence of behavioral problems in relation to instructions. At the beginning we found difficulties in installing the instructional control, but with the acquisition of the pairing which was successful, we managed to reach 80% over 3 consecutive days.

Difficulties encountered and solutions found: During the instructional control phase, I encountered some difficulties in terms of repeating instructions twice sometimes which is a kind of guidance according to the advice of the BCBA

2.4.1.1.6 OVERALL ASSESSMENT OF OPERATION (VB-MAPP)

2.4.1.1.6.1 VB-MAPP EVALUATION

The overall evaluation report was as follows:

IZ child:

- Heterogeneous profile
- **Areas of strength:** visual perception-matching / game
- **domains:** mands, tact, echoics, motor imitation, vocal behavior, listener response
- **There are emergences:** at **level 1:** milestone 2 for visual perception and pairing and independent play, milestone 3 for vocal

- **Level 2:** milestone 3 for play, milestone 4 for motor imitation, and milestone 2 for play
- In parallel, **the obstacles** that had a very high score are: instructional control, defective mand and tact repertoire, defective motor imitation, defective echoic repertoire, defective listener repertoire, defective intraverbal repertoire, defective social skills, dependence guidance, scrolling, obsessive-compulsive behaviors, faulty articulation and faulty scanning

We can conclude that the results of the milestones and the obstacles are coherent.

In appendix 4 and 5: VB-Mapp grids filled in for this child.

2.4.1.1.7 FUNCTIONAL ASSESSMENT OF PROBLEM BEHAVIORS

2.4.1.1.7.1 DEFINITIONS OF CHILD PROBLEM BEHAVIORS

The functional assessment I did with the two children IZ and AK.

The problem behavior in the IZ child is: He hits himself or he hits me by punching himself or kicking me

Define the child's problem behaviors in an observable, measurable and specific way.

2.4.1.1.7.2 FUNCTIONAL ASSESSMENT

For the child (1) IZ:

According to FAST, the functions of behavioral disorder are:

1) Social reinforcement (access to items/activities (5)
2) Social reinforcement (attention) (4)
3) Social reinforcement (exhaust) (4)

And after the ABC grid, the functions of the behavior disorder are: to obtain something, object or activity and to escape the interaction with others and also the instruction (**APPENDIX n°** 6).

In Appendices 7 and 8: Child's FAST **IZ** completed and a completed ABC grid.

2.4.1.1.8 DEFINITION AND PROGRAMMING OF THE INTERVENTION

2.4.1.1.8.1 CHOICE OF PRIORITY OBJECTIVES

For the child (1) **IZ,** his mother asks him to communicate and make requests to ensure his safety and the safety of those around him.

2.4.1.1.8.2 WRITING OF THE PERSONALIZED PROJECT (CURRICULUM)

So, the five validated target behaviors on which the care of the child will be based (1) are**:**

Communication:

- **Mands: IZ** doesn't communicate verbally and from mom's concern that her son doesn't make any requests, I also noted that from early sessions with **IZ,** that he doesn't ask for his favorite items from in an adapted way, then to facilitate his inclusion in his ordinary environment the development of his skills in Mand was chosen among the objectives of my curriculum, so the target behavior was that he asks for 4 reinforcers by image exchange
- **Listener response:** this skill at **IZ** is weak compared to his age, which is why I prioritized working on receptive language, so the objective is for him to select the requested object from a group 2 for 5 different objects, following the instruction "where is…" By pointing without guidance and without TC and in all contexts
- **Social:** Runs after his peers in a game twice, without TC, without guidance since it is a deficit area at IZ
- **Motor imitation**: according to the results of **IZ 's VB-Mapp,** there is a weakness at this level, I chose this area given its important role in social learning as well as in language, so the objective was to imitate **4** gross motor movements without help and without behavioral problems the first time without error, after 3 seconds from the announcement of the instruction

- **Replacement** behavior: the behavior of "hitting oneself and hitting others and shouting" is a priority for **IZ** because it is the most frequent and presents a barrier to inclusion in his ordinary environment. He makes an appropriate request using a "stop" pictogram when social interaction disturbs him and/or when he wants to be alone
- **Cleanliness:** autonomy is a priority in our goals, the target behavior is for **IZ** to be clean, he urinates and defecates on the WC, independently, without TC, without guidance, without wearing a diaper, without accident and in all contexts with different people, in different places and wcs

In appendix no. 9: An IZ child curriculum

2.4.1.1.8.3 WRITING EDUCATIONAL PROGRAMS

With the help of my supervisors and their remarks, I was able to write educational programs that are individualized for children **IZ** and **AK** with whom I specified the types of guidance provided according to the target behavior, I also specified the material that will be used for teaching, the consequences brought following the response for example if: at the beginning of learning, the guided response is reinforced with a tangible reinforcer, if Correct answer: I give a tangible reinforcer and I reinforce socially very important, if incorrect answer: I guide immediately with neutral feedback, we talk about maintenance, once the criterion is reached, we will move on to continuous then variable reinforcement and without forgetting the success criterion, we have chosen to work with the scoring grid by trials (success criterion; 80% successful trials over 3 consecutive days)

2.4.1.1.8.4 WRITING A BEHAVIORAL INTERVENTION PLAN (BIP)

After identifying the main and most frequent function of the behavior disorder for each child which is for IZ "escape" and "get something" (**Appendix n°6)**, I wrote a BIP for **IZ,** where I mentioned the behavioral disorder, its context, its function, what to do and what to avoid and I identified 3 strategies using the BCBA Alexandra LECESTRE:

For the child (1), here are the 3 strategies that I have put in place:

Proactive strategy: Use a timer to indicate the duration of the interaction (sharing game, pairing, etc.), visual timetable for the predictability of activities with an "activity with a peer" "individual activity" icon, add pairing to do with me: to maintain by adapting the pairing to the child.

Replacement strategy: Teach to ask to stop the interaction or instructions in an appropriate way, using a pictogram.

Reactive strategy: Extinction of the behavior: do not pay attention to it, do not stop the interaction, then in a stable state guide towards a request to stop the interaction or the instruction.

The reinforcement of the stop request will be less if a TC appeared just before (short stop time before resuming the interaction and immediately guiding the request)

In appendix n° 10: BIP of child IZ

2.4.1.1.9 INTERVENTION AND EVALUATION OF THE INTERVENTION

2.4.1.1.9.1 EDUCATION

Child 1:

Mand: In the DTT work sessions with **IZ,** I work for him to learn to ask for his reinforcers by exchanging images to develop his communication. **IZ** must give me the picto by going spontaneously to his communication binder and selecting the correct image in his workbook and swapping it with me, without guidance, without presenting TC, on the first try without error, I created the motivation with the food reinforcer at the beginning I make it visible but inaccessible by **IZ,** once I observe **IZ** does an approach behavior for example comes towards me, he reaches for the food, I can judge his interest in the reinforcer in question and I deliver immediately afterwards after physically guiding **IZ** towards the icon of the reinforcer and also guide him so that he gives it to me in my hand

- If correct answer and without guidance or with guidance: immediately offer the reinforcer by naming it + an important social reinforcement
- If incorrect answer: Immediately offer the reinforcer by naming it + neutral feedback
- Maintenance: once the criterion is reached, we will move on to continuous and then variable reinforcement

Response to listener: it is a question of Selecting the requested object in a group of 2 for 5 different objects, following the instruction "where is..." by pointing without guidance and without TC and in all contexts.

- The material used: different objects, flashcards, reinforcers, rating grid
- I put 2 objects on the table and I give the instructions "where is + name of the object" to **IZ**

Guidance used:

- Total, immediate physical guidance: I accompany the movement of **IZ** ("hand on hand") to lead it towards the pointing of the requested object
- Partial physical guidance: I partially guide **IZ 's hand** to point to the appropriate object
- Imitative guidance: I give him a model to point to the object in question
- Gesture guidance: I make a gesture to give a hint to point or show the correct object
- If the response is guided, it is reinforced with tangible AR
- If Correct answer: tangible reinforcement associated with significant social reinforcement
- If incorrect answer: I guide immediately with neutral feedback
- The acquisition criterion is 80% successful attempts over 3 consecutive days

The social: it's about teaching **IZ** to run after his peers in a game 2 times, without TC, without guidance

- The guidance used to achieve this target behavior: total physical guidance, partial after I fade the guidance by the time delay
- consequences and success criteria are identical to those of the previous target behaviors

Motor imitation: The target behavior is to reproduce a gross motor movement according to a model, without guidance, without behavioral problems, clapping, raising your arms, hitting the table, jumping. To work on the imitation of these movements of gross motor skills, I aim to first obtain his attention then I give him the instruction "do the same", followed by the gesture to imitate associated with an immediate total physical guidance at the beginning of the learning then I blur my guidance gradually.

If **IZ** answers with guidance or correctly without guidance I deliver the AR immediately associated with significant social reinforcement, in case of incorrect answer I guide and I give neutral feedback.

Consequences and success criteria are identical to those of the previous target behaviors.

Behaviour: Make an appropriate request using a "stop" pictogram when social interaction bothers him and/or when he wants to be alone, without TC, without Guidance.

Cleanliness: The behavior is that **IZ** is clean, he urinates and defecates on the WC, independently, without TC, without guidance, without wearing a diaper, without accident and in all contexts with different people, in different places and WCs, so we start by pairing with the place of the toilets, once IZ agrees to go into the toilets, we take him at regular intervals by giving him something to drink every hour in order to increase his urge to urinate / defecate.

At the beginning, he is offered total physical guidance to take him to the WC, with verbal guidance: "you pee".During learning (fading of guidance): Gestural, visual guidance.If his answer is correct guided or without guidance: I reinforce socially and I give him his favorite sweets. Acquisition criterion is 5/7 consecutive days without accident.

In appendix n°11: educational programs written during the internship of the child IZ (the one having received the authorization of application by the supervisor)

2.4.1.1.9.2 INTERVENTION ON PROBLEM BEHAVIORS

I started the application of the BIP which was corrected at the first supervision for the child (1) **IZ,** I applied it with its three strategies, we noticed a reduction in the behavioral disorder, **IZ** started to ask for the interaction to stop by giving me a "stop" symbol when he needs to play on his own, he understood that thanks to an appropriate request, he gets more reinforcement and that this replacement behavior requires not a big effort compared to the behavior problem.

Possible difficulties encountered:

With the child **(1)** it was not possible to work on all the functions presented by the problem behavior which complicated the smooth running of the teaching, it was only after the internship that we were able to intervene on the other function: obtain something with strategies already validated by the BCBA supervisor

2.4.1.1.9.3 CONTINUITY, GENERALIZATION AND MAINTENANCE

For the first child (**IZ)**: I was able to set up a curriculum and 6 educational programs that are validated by the BCBA, I was able to transmit these programs to his aunt, and I gave him appointments after the internship twice a week for work continuity. I also made visits to the association he frequents for the generalization of educational programs

2.4.1.1.9.4 PSYCHOMOTOR ASSESSMENT

2.4.1.1.9.4.1 THE IZ CHILD

2.4.1.1.9.4.1.1 EVALUATION

IZ did not pass a psychomotor assessment on the side, but I was able to do a spontaneous psychomotor observation, I find that he does not relate easily. He cannot interact with us, he regularly needs to stay in his bubble, then look away and place his back to us to play on his own. I also noticed that it was difficult for him to integrate several instructions, **IZ** has no problem with the separation with his aunt who is at the same time his educator, and the ease with which he left the WAITING ROOM.

It is only after the implementation of the principles of ABA (pairing) that **IZ** comes to the balance sheet without opposition, is attentive and he agrees to carry out some directed games on imitation as long as he alternates them with paring times, the latter being preceded by an evaluation of preferences.

IZ had some motor inhibition. He needed a lot of support, solicitations to try to move. He is a calm child, who exhibits very little fussiness, who can lean over the table at times and accepts being cradled on the big ball. **IZ** is still curious and goes to discover the equipment, the room.

IZ rarely explores his environment outside of what he knows. Moreover, there seem to be few links between his sensations, his perceptions and the bodily representations he has of them. This results in **a** poorly integrated body image. It does not seem well perceived, collides with objects.

We find in **IZ** a bad investment of the image of the body with the expression on his face of a certain strangeness when he looks at himself in the mirror. Imitation is not possible face to face, and in immediate response since his attention is very labile

For **gross motor skills,** he is able to throw a ball in the air, but it is still difficult for him to organize his body in space to catch it. **IZ** can also let himself swing in ventral decubitus on the physioball and he prepares his hands forward to catch himself, balance himself (this demonstrates a good integration of the parachute reflex). The unipodal balance is not possible either dynamically or statically, whereas he can jump with both feet.

IZ is very slow in carrying out his movements, he lands on the ground either in a seated position with support behind his back, or on his side. These positions relax him. His sitting posture at the table is of good quality.

At the level of **fine motor skills,** bimanual coordination is scarce. **IZ** performs all manipulations rarely with both hands. His oculo-manual skills are ineffective. He _ fails to cork and uncork an e-bottle, but builds a tower with cubes. It's more complicated for him in terms of fine motor skills to put junction clamps on the poles.

Graphically, **IZ can hold** a pencil in his right hand, at the end of the pen, but his tone is not strong. He scribbles dynamically, but he doesn't seem to be interested in it. He doesn't know how to reproduce a line, or draw a circle, but he likes to use scissors. **The laterality** does not seem to be fixed yet.

On the sensory level, he is very interested in visual stimuli such as shadows, reflections in the glass or in the mirror. He is interested in his specular image.

At the auditory level, **IZ** would rather present a hypersensitivity, he closes his ears and goes away (sometimes hits me) when I speak aloud and he generally tries to avoid these auditory stimuli. He prefers calm environments. **IZ** then sometimes needs to isolate himself and/or spends time observing what is happening in the room. He is interested in symbolic games, and he finds an interest in playing with objects.

From a spatial point of view, IZ is aware of the delimitation of the space around him and identifies himself in the room, nevertheless, he has deficiencies in time tracking.

IZ is not very autonomous but manages to carry out some actions of daily life. In particular, he can eat alone, take off his shoes, but he still can't put on his shirt or wear his panties on his own and he is not clean day or night.

He has difficulty with transitions between activities. At these times, he becomes disorganized, gets excited, can show aggression by throwing objects, and shouts to show his frustration.

Emotional management is difficult to regulate with moments of great anger and opposition, which cannot suddenly disappear, which no longer leaves room for pleasure and effective participation in the activities offered.

CONCLUSION

The implementation of a psychomotor intervention is programmed, to support him in his psychomotor development and to work on his attentional capacities.

The objectives of **IZ 's care** are therefore to improve its means of communication, to promote verbal and non-verbal interactions. But also, to optimize their learning capacities, using a structured, defined and secure framework, to increase their attentional capacities and thus support their development (cognitive, sensory-motor, communicational, relational).

A body work bringing into play the sensoriality, could be carrying to structure the image of the body of IZ. We believe that a better structuring of the body schema will promote spatio-temporal representation and may limit **IZ 's anxieties in** the face of the unexpected. Discovering the solidity and unity of his body will allow IZ to situate himself as a subject in the relationship.

IZ 's mother is in agreement with this project and seems invested in taking care of their son.

2.4.1.1.9.5 SUMMARIES AND DEVELOPMENT OF THE PERSONALIZED THERAPEUTIC PROJECT

Following these different evaluations, a summary meeting bringing together the results of the two psychomotor and VB-MAPP assessments allowed us to know the strengths and weaknesses of **IZ.**

Thus, the interventions which were decided: sessions supervised by myself psychomotrician and instructor using the principles of the ABA, to apply the ABA at the beginning of the assumption of responsibility daily 2 hours per day during 40 days, to give to **IZ** a functional means of communicating with those around him, by learning the PECS (**Appendix n°21),** and thus helping him to manage his frustrations. The sessions are structured so that he can better identify himself in daily activities and thus better manage behavioral problems and acquire cleanliness. A daily visual plan with pictograms is set up at home, at the association he attends and also during the sessions.

A psychomotor intervention is also programmed, to support him in his psychomotor development and to work on his attentional capacities, always based on the principles of ABA.

Educational interventions are planned at the association and at home, to help generalize the techniques used in the session and provide additional leads in the face of **IZ 's problem behaviors** (He hits himself and/or he hits me by kicking himself punching me or kicking me). Support in speech therapy is maintained to allow **IZ** to set up understanding and a means of communication appropriate to him and his entourage in order to allow him to communicate and better understand the people around him.

2.4.1.1.9.6 INDIVIDUAL PSYCHOMOTRICITY CARE

A- Objectives and areas of work

The management **of IZ** in psychomotricity has several objectives, determined following the analysis of the psychomotor observation.

The objectives aim to enable **IZ** to be able to mobilize its attention in learning situations, by increasing its ability to concentrate, on the activities proposed at the table in particular; But also, to soften his behavioral rigidities and his emotional lability, which hinder communication and the relationship with others. Psychomotricity sessions also aim to promote dual interactions, and also to support the development of general coordination.

The psychomotor care is part of the respect of the global intervention project of **IZ,** and proposes a structured framework, using the principles of the **ABA,** so throughout our care we evaluate the preferences **of IZ** followed by pairing.

During the sessions, different elements are worked on to achieve the achievement of the established objectives, or at least to approach them.

So, to allow **IZ** to better channel its attention on the activities that are offered to it, several things are put in place and in particular the structuring of the sessions.

The space is organized using a tool for structuring the environment of the TEACCH type considered among the techniques and tools for intervening in ABA, each place corresponds to a type of activity proposed: the small table, facing the blackboard, isolated from stimulation that can be sources of inattention, for graphic activities, manual manipulation, and small cognitive games, the mat in front of the mirror (hidden by curtains), for motor courses, hoops for ball exchanges, or imitation exercises... This structuring of the space, in addition to allowing him to better mobilize his attentional capacities, allows **IZ** to find his bearings and identify the different times of the session.

In addition, other elements are put in place to reinforce the predictability of the session, the understanding of the progress of the sessions and materialize the notion of time. A visual schedule (Technique used in ABA) (**Appendix N°22)**, made up of different images representing the activities planned during the session, is available to **IZ.**

The sequence of activities at the table is also highlighted by the use of boxes, each containing an activity to facilitate transitions between activities.

In addition, the use of the Time-Timer (**Appendix n°22)** allows a better understanding of the time of the activity, in particular in the activities where his attention is very mobilized, we started with short sequences (a few seconds, a few minutes, etc.) and we set up the usual teaching procedures in ABA: repetitions, guidance, blurring of guidance, and reinforcement, etc., to go afterwards to more and more natural tools (timer watch, analog watch, etc.)

In addition, interactions are favored by the establishment of a social scenario to develop their social skills: by explaining to **IZ** a given social situation (with its social rules and the expected cpt) using pictograms, they are told in the 1st person, we did a role play with **IZ** following the presentation of the scenario, we based ourselves on the usual teaching techniques in ABA:

- Reinforcement
- Guidance and blurring of guidance
- Chainings
- Shaping
- Generalization in the natural environment and maintenance

And make-believe games, especially in manual productions (modeling clay, slime, drawings, cutting, etc.). Requests for objects are also worked on in parallel by exchanging images, to support the meaning of the word, but also by repeating situations where the request is necessary to continue the activity (for example asking for the piece to make shapes with modeling clay, ask for a scribbler pen).

B- Conduct of psychomotricity sessions

We present here an example of a session related to the target behaviors. Before starting, we make the schedule of the session with **IZ** by putting "work" pictograms and "reinforcement" pictograms that the child chooses (**Appendix n°22)** and we prepare our rating grid.

If **IZ** answers correctly, we score **1** on our observation grid. If, on the other hand, he does not respond or repeats the instructions given, for example, we present him with the “psychomotor course? » and « do the same » and we give him the instruction. If it is successful, we score 1 but we specify with imitative guidance; if it is still a failure, we offer physical guidance. Generally, this physical guidance proves to be a good help for **IZ,** however, as seen in the theoretical part, any guidance must be blurred so gradually, it will be necessary to take care to reduce the aids until **IZ** can, at the instruction "Do the course?”, to answer, alone: « he makes the course ». The sessions take place daily, presented to **IZ** for one hour. Once in the psychomotricity room, he sits down at the table. In general, three different activities are proposed to him on this table, in a defined order, for a duration of about twenty minutes (increasing the time gradually). Indeed, on this table he finds a chronological frieze presenting the planned activities. He is asked to look at this frieze and reinforced. He begins by doing the activity presented first in the visual schedule using physical guidance and a reinforcer. When the activity is finished, he puts the elements of this activity in a box and he removes the corresponding image on the frieze which is then stored in a pocket at the bottom where it is written "end", to learn each step, we guide and we reinforce with a food that is chocolate colored lentils (positive reinforcement) and then we fade the guidance and the reinforcement once the acquisition criterion has been reached for 80% for three consecutive sessions.

The activity is over, he can move on to the next one. The proposed tasks are varied, alternating between small cognitive games (puzzles, memory, association of images with manual exploration (modeling clay, construction game of cubes or Lego, etc.) The Time-Timer is used to define the duration visually), to play together, graphics, manipulation and coordination of each activity (less than five minutes) at first, then only for the most difficult activities for **IZ** especially agree to play together. During these activities **IZ** may be asked to make requests (of material in particular) by the use of image exchange.

Then a time of motor activities is proposed to him. They are often organized in the form of a course, where **IZ** climbs on the mosses, jumps in the hoops, climbs on the bench, climbs the espalier... The beginning and the end of the course are indicated by hoops. The course is built with the participation of **IZ.** During the sessions, the course will already be installed before **IZ** enters the room, to save time. The course is first presented to **IZ** by **an imitative guidance.** Then **he** repeats the course several times, without turns and he is encouraged afterwards.

As the sessions progress, the role is put in place. Other activities can be proposed instead of the course, such as the exchange of the ball (each one sitting on a chair inside a hoop, at first, then standing in the hoop), activities of imitation of coordinations (imitation of animal movements, or simple actions such as turning around, jumping, etc.), relaxation in the hammock... each activity is carried out with guidance and followed by food reinforcement after the guidance is faded and reinforcement once the criterion for acquiring the target behavior has been reached.

Finally, the session ends with the return to calm (lie down in the hammock or give him a little massage on the carpet after guiding him to open the door.

3 RESULTS

3.1 RATING OF RESULTS

Below are the rating grids per trial of the different target behaviors of the child **IZ.**

3.1.1 THE IZ CHILD

First name: **IZ** Date: 27/11/2021

Skill	sd	1	2	3	4	5	6	7	8	9	10	%
Ask for your reinforcers by image	What do you want + "cookie"	_	_	_	_	_	_	_	_	_	_	**0**
	What do you want + "candy"	_	_	_	_	+	_	_	_	_	_	**10**
Imitate arm and hand gestures	do like me + " applaud "	_	_	_	_	+	_	_	_	_	_	**10**
	Do like me + "raise your arms"	_	_	_	_	_	_	_	_	_	_	**0**
Go to the toilet alone.	Take away at regular interval (target). Give the child something to drink every hour. MO: urge to urinate/defecate. Show picto WC **+** says "toilet	_	_	_	_	_	_	_	_	_	_	**0**

(-) guided response (+) answer without guidance

	sd	1	2	3	4	5	6	7	8	9	10	%
Ask for your reinforcers by image	What do you want + "cookie"	+	+	+	+	_	_	_	_	+	+	**60**
	What do you want + "candy"	_	_	_	_	+	+	_	+	+	+	**50**
Imitate arm and hand gestures	do like me + "applause"	_	_	_	_	_	+	_	_	_	_	**10**
	Do like me + "raise your arms"	_	_	_	_	_	_	_	_	_	_	**0**
Go to the toilet alone.	Take away at regular interval (target). Give the child something to drink every hour. MO: urge to urinate/defecate. Show picto WC **+** says "toilet	_	_	_	_	_	_	_	_	_	_	**0**

First name: Ilyas Date: 11/30/2021

Skill	sd	1	2	3	4	5	6	7	8	9	10	%
Ask for your reinforcers by image	What do you want + "cookie"	+	+	+	+	+	+	+	+	+	+	**100**
	What do you want + "candy"	+	+	+	+	+	+	+	+	+	+	**100**
Imitate arm and hand gestures	Do like me + " applaud "	–	–	–	–	–	–	–	–	–	–	**0**
	Do like me + "raise your arms"	–	–	–	–	–	–	–	–	–	–	**0**
Identify objects	"Show the car" among 2 objects	_	_	+	+	_	+	+	_	+	+	**60**
	"Show the doll" among 2 objects	+	_	_	_	_	_	_	_	_	_	**10**
Go to the toilet alone.	Take away at regular interval (target). Give the child something to drink every hour. MO: urge to urinate/defecate. Show picto WC + says "toilet	–	–	–	–	–	–	–	–	–	–	**0**

First name: Ilyas Date: 01/12/2021

Skill	sd	1	2	3	4	5	6	7	8	9	10	%
Ask for your reinforcers by image	What do you want + "cookie"	+	+	+	+	+	+	+	+	+	+	**100**
	What do you want + "candy"	+	+	+	+	+	+	+	+	+	+	**100**
Imitate arm and hand gestures	do like me + "applaud"	+	–	–	–	+	+	–	–	–	+	**40**
	Do like me + "raise your arms"	–	–	–	–	–	+	–	+	+	–	**30**
Identify objects	"Show the car" among 2 objects	_	_	_	+	_	_	_	_	_	+	**20**
	"Show the doll" among 2 objects	+	_	_	_	+	_	_	+	_	_	**30**
Go to the toilet alone.	Take away at regular interval (target). Give the child something to drink every hour. MO: urge to urinate/defecate. Show picto WC + says "toilet	–	–	–	–	–	–	–	–	+	+	**20**

First name: Ilyas Date: 24/11/2021

Skill	sd	1	2	3	4	5	6	7	8	9	10	%
Request the end of the interaction	Sharing game	–	–	–	–	–	–	–	–	–	–	**0**

(-) guided response (+) answer without guidance

First name: Ilyas Date: 26/11/2021

Skill	sd	1	2	3	4	5	6	7	8	9	10	%
Request the end of the interaction	Sharing game	–	–	–	–	–	–	–	–	+	–	**10**

First name: Ilyas Date: 27/11/2021

Skill	sd	1	2	3	4	5	6	7	8	9	10	%
Request the end of the interaction	Sharing game	_	+	+	_	_	_	_	_	_	+	**30**

First name: Ilyas Date: 29/11/2021

Skill	sd	1	2	3	4	5	6	7	8	9	10	%
Request the end of the interaction	Sharing game	+	+	+	+	+	_	+	_	_	_	**60**

First name: Ilyas Date: 30/11/2021

Skill	sd	1	2	3	4	5	6	7	8	9	10	%
Request the end of the interaction	Sharing game	+	+	_	_	+	+	+	+	+	+	**80**

First name: Ilyas Date: 1/12/2021

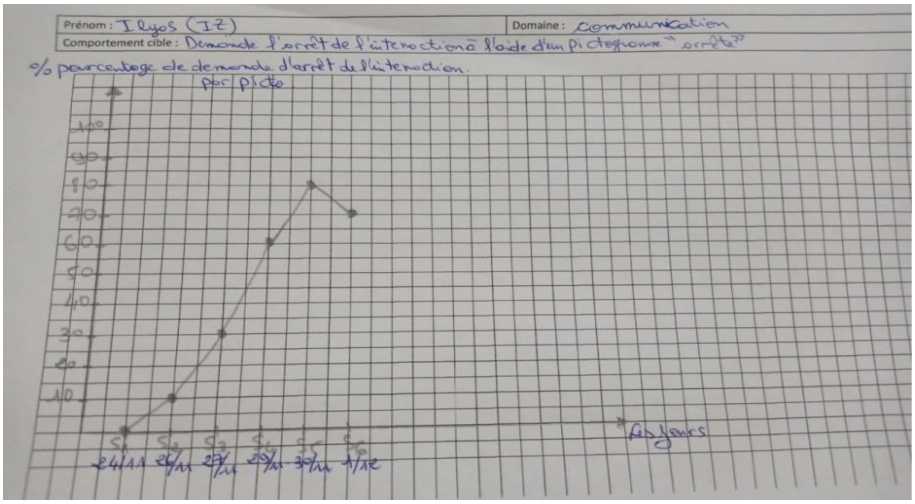
Skill	sd	1	2	3	4	5	6	7	8	9	10	%
Request the end of the interaction	Sharing game	_	+	+	+	+	+	_	_	+	+	**70**

3.2 GRAPHICS OVERVIEW

The results are illustrated in the form of graphs which show the evolution after the intervention, the latter grouping together the different sessions during which we used the ABA procedures.

3.2.1 THE IZ CHILD

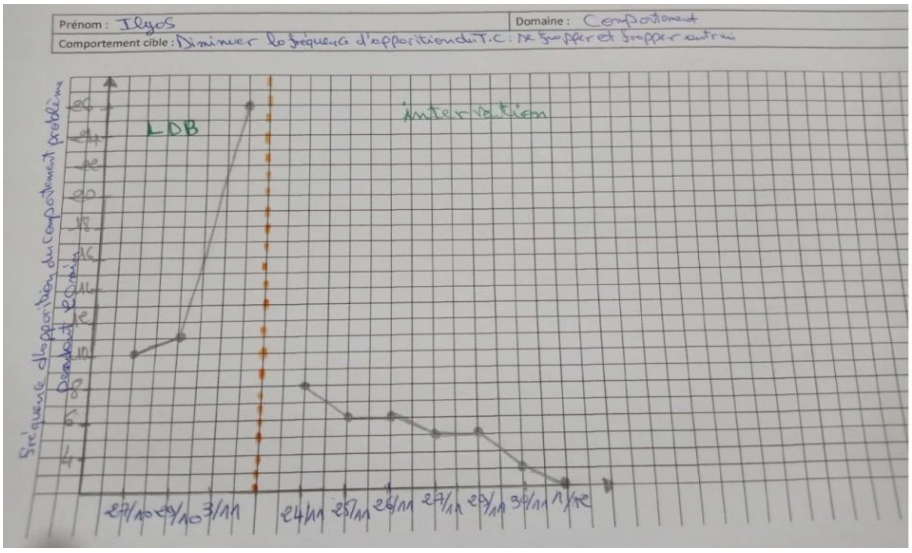
3.2.1.1 TARGET BEHAVIOR 1



Graph 1: Occurrence of a request to stop the interaction using a "stop" pictogram.

Regarding replacement behavior; the graph (corrected and validated by the BCBA) shows us the evolution of this skill since we had no skill at the beginning.

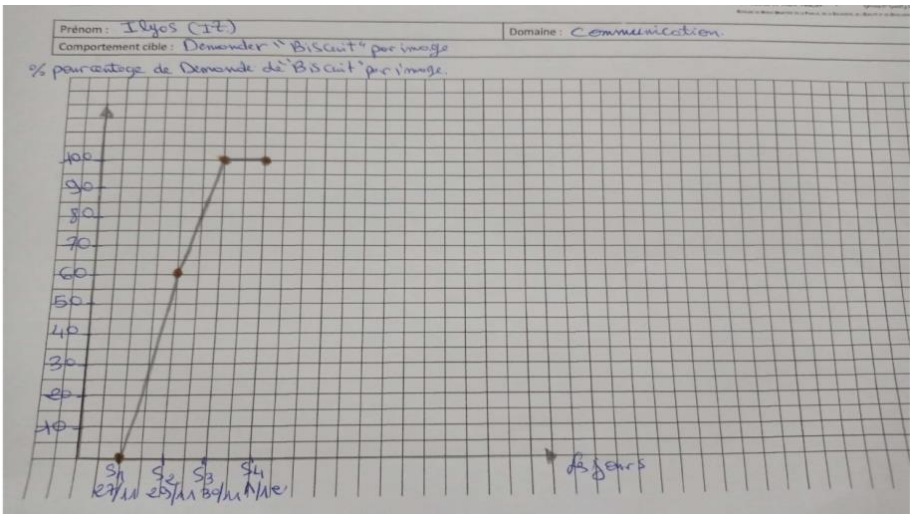
I applied the BIP with its three strategies, after validation by the supervisors, we noticed a reduction in the behavioral problem, **IZ** began to ask for the interaction to be stopped by giving me a "stop" picto when he need to play alone, he understood that thanks to an adapted request, he obtains more reinforcement and that this replacement behavior does not require a great effort compared to the behavior problem.



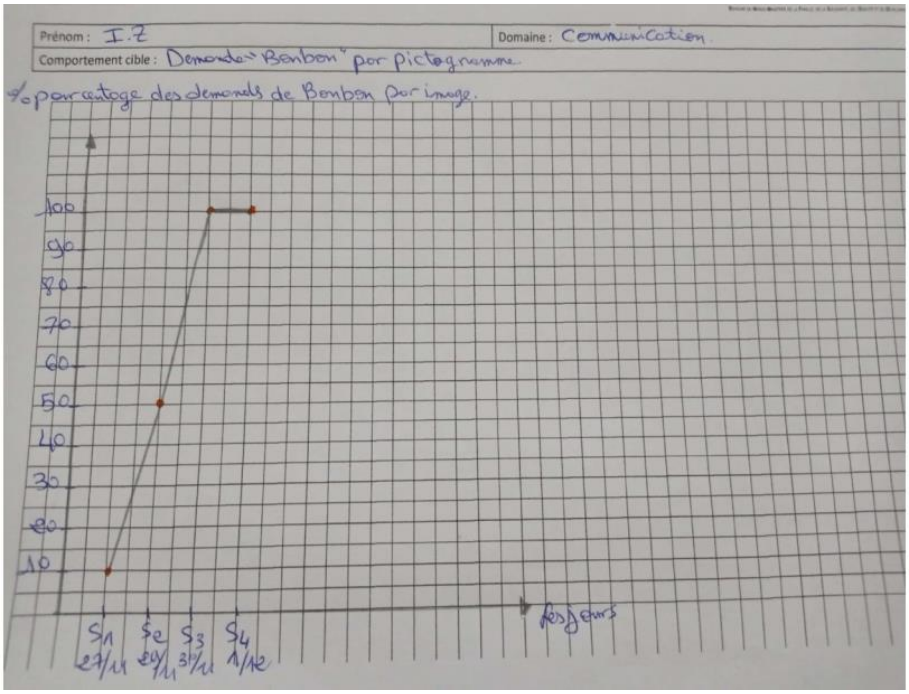
Graph 1: frequency of occurrence of problem behavior over 20 min.

Between the initial session where we counted the frequency of appearance of the problem behavior for 20 min before intervention, what is called the "LDB" baseline, we find that the problem behavior is very high, nevertheless as soon as we have applied the intervention, we notice that the occurrence of the problem behavior decreases significantly, from the first session.

3.2.1.2 TARGET BEHAVIOR 2



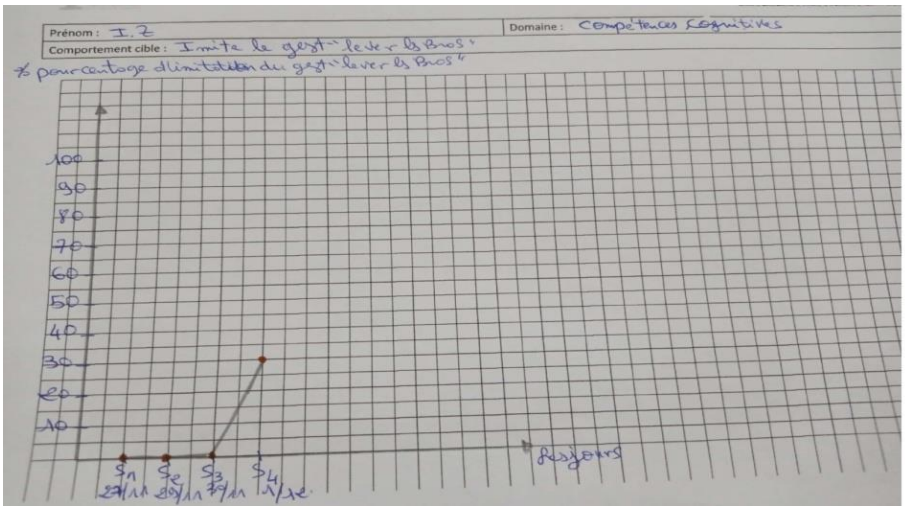
Graph 3: percentage of "Biscuit" request per image after intervention.



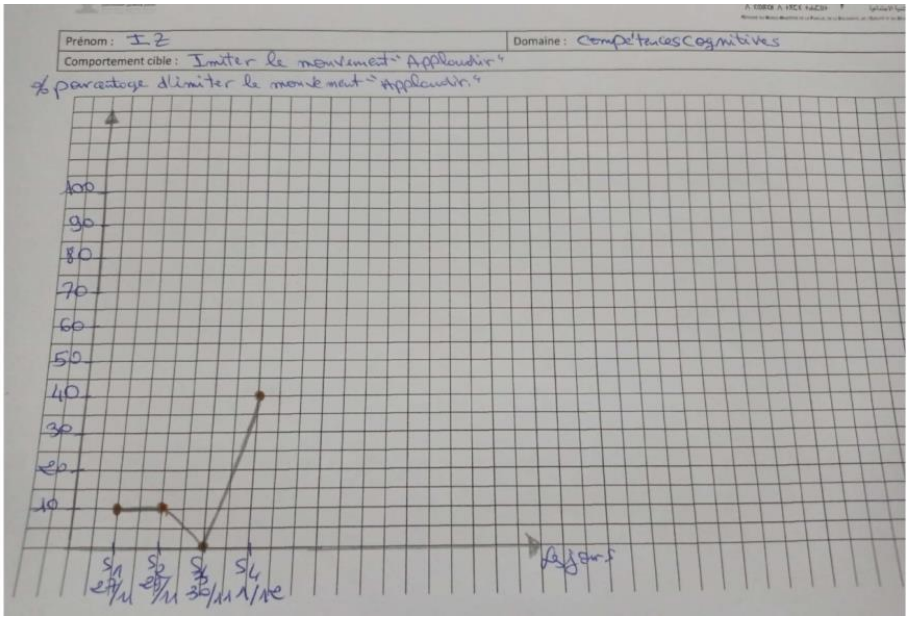
Graph 4: Occurrence of "candy" request by image after intervention.

The occurrence of target behavior **2** increases during treatment for both graphs 3 and 4 from the intervention.

3.2.1.3 TARGET BEHAVIOR 3



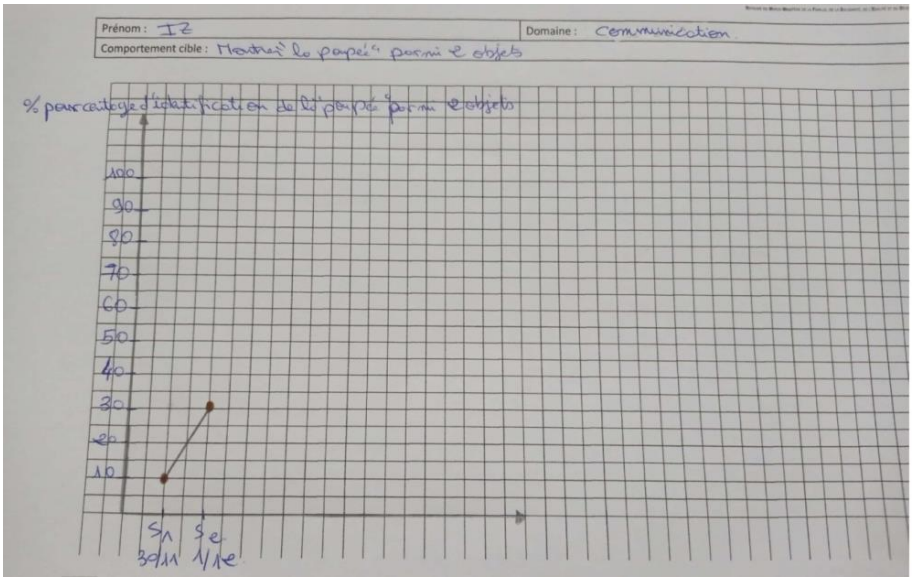
Graph 5: percentage of imitation of the "raise arms" gesture after intervention.



Graph 6: Percentage of imitation of the "Applause" gesture after intervention.

For the two graphs **5** and **6,** at the start, we observe a very low rate of motor imitation; over the course of the treatment, the percentage of this behavior increases.

3.2.1.4 TARGET BEHAVIOR 4

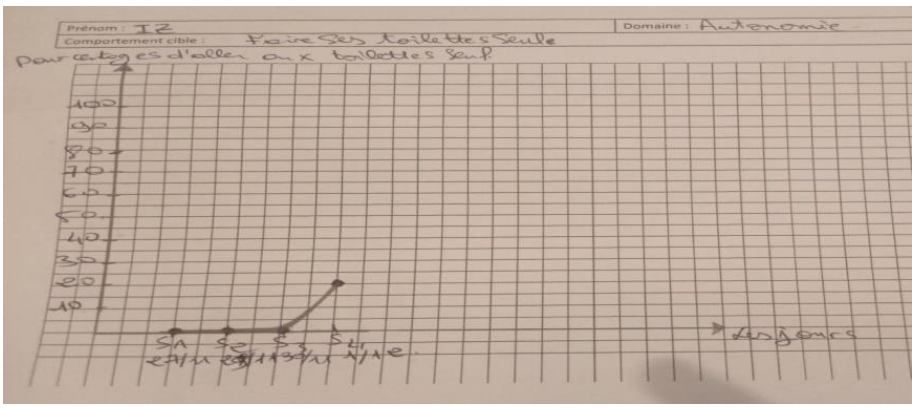


Graph 7: Percentage of identification of "the doll" among two objects.

Graph 8: Percentage of identification of "the car" among two objects.

For graph 7, we see an increase in identification of the doll, while graph 8 shows a decrease in the percentage of identification of the car.

3.2.1.5 TARGET BEHAVIOR 5



Graph 9: Percentages of toileting alone.

Being autonomous is a priority, especially cleanliness. We notice that at the beginning of the apprenticeship **IZ** is always dependent on the adult it is only around the 4th day that we note 20% successful trials.

3.2.1.6 EVOLUTION

3.2.1.6.1 FROM IZ

Retest:

The reassessment **of IZ** was carried out around August. The purpose of this reassessment was to provide additional information on **IZ 's skills** in the field of psychomotricity. Two reassessment sessions were carried out, carried out at the rehabilitation center in the hospital.

Moreover, during these sessions, **IZ 's participation** in the various tests was satisfactory. He accepted most of the proposed situations.

Engine development:

General dynamic coordination, static and dynamic balance:

IZ passes all the items except the last one which is to stand five seconds on one foot without help. But **IZ** manages to hold only 3 seconds on his right foot and 2 seconds on his left foot. Moreover, he has little difficulty in stabilizing his balance in this situation. His upper body

oscillates very little, the movements of his arms are adapted, the lifted leg is kept in flexion for a few seconds. The supporting foot is also poorly stabilized (few co-contraction movements).

MABC dynamic balance tests in a non-standardized situation (addressed in the form of a course): His balance seems more mastered since we observe that **IZ** is able to jump in the middle of a hoop with both feet at the same time. He can also walk heels / toes, but he does not respect the instruction to walk on the rope.

Clinical observations: It is noted that **IZ** is able to jump in place on one foot, from a height, forward, and to jump with feet together (from one hoop to another), But his achievements still require be reinforced. Walking on a narrow beam, on the different foams, going up and down the wall bars, rolling and moving on the ground (crawling) seems acquired. He manages to better control his body, he moves delicately when the course gets complicated (less haste, and better estimation of the dangers) and he is able to ask for help when faced with his difficulties. However, its participation and performance remain satisfactory. He seems less parasitized by his emotional state, we observe that after our intervention using the strategies proposed in ABA, his problem behavior is unremarkable which ensured the smooth running of the evolution assessment thus night cleanliness is almost acquired in asking with a pictogram to go to the toilet.

4 DISCUSSION

4.1 REMINDERS OF RESULTS AND ANALYZES

It is important to specify that in ABA, a behavior is said to be acquired when it is successful, without guidance in at least 80% of cases in three consecutive sessions, and generalized to different contexts and interlocutors.

4.1.1 PATIENTS

4.1.1.1 THE IZ CHILD

4.1.1.1.1 TARGET BEHAVIOR 1

The target behavior is that **IZ** asks for the interaction to stop by giving me a “stop” symbol when he needs to play alone; the graph shows us the evolution of this skill since we had no skill at the beginning and also we could notice a decrease in the behavioral problem, At the final session, **IZ** obtains a score of 7/10, We can therefore say that target behavior 1 is in the process of being acquired.

4.1.1.1.2 TARGET BEHAVIOR 2

For requests for image reinforcers, we note an improvement in occurrences between the beginning and the end of the intervention. The graph mainly highlights successful trials without using guidance. For the last two sessions, this behavior is increasing, we have reached 100%.

4.1.1.1.3 TARGET BEHAVIOR 3

For this target behavior, we note that at the start **IZ** was unable to imitate the movements, we observe a slight increase in this behavior thereafter, at the end of the intervention, nevertheless we cannot speak of acquisition because unguided successes remain below 80%.

4.1.1.1.4 TARGET BEHAVIOR 4

The occurrence of the target behavior seems to indicate an increase during the treatment for the identification of "the doll" while **IZ** still needs guidance (in particular physical for the pointing of the object "doll" and " car ").

4.1.1.1.5 TARGET BEHAVIOR 5

Acquiring cleanliness is a complex learning process for children with ASD, suddenly, it took a long time to settle in, we noted at the beginning the ability to wash on its own in two trials thereafter this behavior has increased during the sessions with the significant involvement of his family and the use of powerful reinforcing agents.

4.2 DISCUSSION

This study speaks of the meeting of ABA and psychomotricity. The first three parts are centered on a presentation of the autism spectrum disorder ASD, psychomotricity and ABA as well as its importance in the management of ASD and of course on the relationship between ABA and psychomotricity which will be treated in the 4th part.

The last part evokes the practical part or one presents two studies a study which exposes the application of the principles of the ABA in psychomotricity near two children reached of ASD. That is to say, to see how psychomotricity would fit into this approach which is still not very widespread in Morocco.

Followed by two surveys: one with psychomotors caring for patients with ASD, and another for parents, the objective was to assess their knowledge and practices in ABA. This would, among other things, make it possible to know the different existing training courses, the opinion of psychomotor therapists on ABA (contributions and limits), and the techniques actually implemented in their clinical practice: guidance, rating, teaching techniques,...

In addition, the practical part illustrates the use that can be made of the different techniques presented in the theoretical part during a psychomotricity session. The programs offered to the two children presented are based on the involvement of elements, principles and strategies borrowed from ABA.

The psychomotor rehabilitation took into consideration the particularity of each child. **IZ** and **AK** showing different profiles. They are not the same age, nor the same aptitudes. The facilities put in place to be able to establish a psychomotor rehabilitation, take into account their needs, their skills, as well as the priority objectives of the parents.

In this way, **IZ is offered** support focused on areas such as: autonomy, in particular cleanliness, sociability: work independently on small tasks, work at the table because it bothers him a lot movement and play at out loud (he moves very little and closes his ears), activities with peers, the reduction of behavioral problems by adopting the strategies proposed in the BIP, and through pairing and also a structured environment (developments of TEACCH type), communication as long as he has no means of communication and he no longer oralizes so he was offered communication using the exchange by image as an alternative means, which facilitated the psychomotor intervention by the following, aimed at supporting him in his psychomotor development and working on his attentional capacities, the integration of the body image, the temporal and spatial structuring.

While the therapeutic **project** of AK is based on increasing their motivation to learn, in a more natural environment given its hyperatctity, favoring interactions, relationship and communication, the latter which is present but it is altered by the erroneous use of images and also the incorrect articulation of some letters suddenly we have again proposed communication by image exchange as an augmentative tool, as a result, psychomotor support was provided in order to consolidate his general dynamic motor skills, perceive the body diagram, provide new sensorimotor stimulation and thus better understand his environment, reduce hyperactivity and work on bimanual and hand-eye coordination.

The management of **IZ** seems to have settled in well, he participates and evolves from session to session. For **AK** it seems more difficult. Suspicion of a comorbidity with attention deficit hyperactivity disorder, could explain its limited results.

The psychomotor management based on the principles of ABA shows that this population is specific since the accommodations are important in the intervention with patients with ASD. Indeed, the management of this population is characterized by the use of guidance, the request for a break and help during the session, giving reinforcers. Also, the challenge for psychomotor therapists working with these patients is to try to limit the behavioral problems that can create an obstacle for the implementation of the objectives of the therapeutic project of psychomotor therapists.

In addition, relying on pictograms/image/or photos facilitates verbal comprehension in case of difficulty. These different aspects thus reflect the particularity of the management of patients with ASD.

4.2.1 INTERESTS AND LIMITS OF OUR RESEARCH

4.2.1.1 INTERESTS

Thanks to this thesis, I acquired a lot of practical experience with this population, which presents an important asset in the exercise of my profession: as a psychomotrician.

On the one hand, the various trainings in which I participated as well as the professional experience of 12 years with this population allowed me to enrich my knowledge both on the specific cognitive functioning of these children with ASD and on the science of ABA. So I decided to better explore this behavioral approach.

We had to combine flexibility and discipline with these children throughout the treatment. Indeed, if we had been too strict at the beginning, always giving instructions related to the psychomotor assessment or the anamnesis, the child would not have been able to consider us a source of something pleasant.

However, it is an essential aspect in the management of children with ASD by ABA, because without the "pairing", no work can be neither considered nor successful. Also, do not adopt a few strategies such as: stopping the task in progress with a child who cries and rolls on the floor in session; we must first specify the function of this maladaptive behavior (is it self-stimulation? is it because it is trying to obtain something or, on the contrary, because it is trying to escape it?), so, once the function is identified, it is necessary to provide the consequence that best corresponds to the behavior. On the other hand, it is possible in ABA for example to give breaks in the activity, so that the care is effective.

Currently I have a great adaptability; Essential characteristic for my job, I was able to test different principles of ABA, so that they can then be reused and certainly generalized to other pathologies (ADHD, ASD...).

On the other hand, the fact of filming made it possible to analyze in a more reliable way the course of the sessions to identify more details or to take a step back from the situation.

Thanks to the videos, we were able to rate the milestones of the VB-MAP, the obstacles, fill in the rating grids per trial, the pairing rating grid, also fill in the ABC diagrams to find the function of the problem behavior, also share these videos with supervisors to validate educational programs, BIPs, etc.,

Videos then seemed necessary. They have made our work more effective.

Another advantage of my research is that ABA allowed me to prioritize the objectives of my therapeutic project, among them autonomy, in particular cleanliness, providing the child with a means of communication and reducing the appearance of maladaptive behaviors which will really facilitate the implementation of my intervention as a psychomotor therapist to rehabilitate the various psychomotor disorders that this population presents.

By using ABA, we respect the sequence of steps without succeeding in the previous step, we cannot go to the next one, that is to say reach an acquisition criterion, everything is analyzed and recorded in ABA. In addition, there is an important concept in ABA called “interobserver agreement”: it corresponds to the fact that two or more people can observe and measure the same behavior from the same video. This is also very important for the credibility of the results. Indeed, we took advantage of the outside view of an ABA professional (inter-observer agreement) to rate the videos, so I was able to benefit from critical feedback on my work.

4.2.1.2 LIMITS

In Morocco, the improvement of the diagnosis of ASD before 2 years is still rare, the waiting times between the first contact and the first consultations then between the implementation of a diagnostic approach and the multidisciplinary evaluation are still too long. In addition, there are also waiting times before support is established.

In addition, few existing psychomotor assessment tests are suitable for patients with ASD, the objective of which is to have quantitative data, since it is essential, for this population, to obtain qualitative benchmarks. However, it is more relevant for us to find the difficulties and the skills.

Regarding the care, we encountered several difficulties. First of all, note that the preparation of the sessions, although necessary, can take a lot of time. Consequently, it was not enough to bring only the material for the daily activities, it was also necessary to bring reinforcers, rating grids which seemed to us difficult to set up at the same time as the proposed activity or the instruction, flashcards which contain the instructions and areas also to each child. Also, problem behaviors prevent learning and constitute a real obstacle to the child’s development.

The majority of ABA references are in English, so I found it difficult to fully understand some ABA concepts, sometimes I had to translate the articles into French.

In this regard, we can highlight another limitation in our study:

Otherwise, the generalization of the target behaviors to other interlocutors or other contexts was difficult to put in place since neither the association that these children frequent uses ABA nor the parents proves an availability to apply the educational programs

The frequency of support also poses a difficulty. Indeed, at the rate of a two-hour session every day for 40 days and after the course it was one hour twice a week; because it is true that ABA is an intensive approach (about forty hours per week), However, in addition to our sessions, we visited the child’s school environment to put ourselves in the position of observer and also of active partner, suggesting ways to facilitate the generalization of the skills worked on in the sessions.

Unfortunately, neither at home nor at the association, those working with ASD children adopt the principles of ABA or practice the educational programs shared with them given the absence of educators/AVS who are trained in ABA, so its application is not very complicated and long, on the other hand the interveners did not adopt the same strategies for example to make extinction in the face of a behavioral disorder, in addition, awareness is very low on the effectiveness of this approach with people affected of TSA.

4.3 PERSPECTIVES AFTER RESEARCH

I will make presentations to sensitize psychomotor therapists in Morocco working with children with ASD, exposing our research and its results. Our goal will be to prioritize target behaviors for each child such as: cleanliness, communication and behavioral problems. We will take this opportunity to explain the procedures used and their interests in the psychomotor care of these children. Indeed, it is essential to master the principles of ABA such as the evaluation of preferences, pairing, instructional control, guidance and reinforcement, and rating which can be used in the management of this population and also for other disorders, so it is important to create networks especially for this population, to coordinate between the different interventions for the coherence of the work and to allow the generalization of the target behaviors, to continue my studies in this direction to deepen my experience especially in level of reduction in behavioral disorders which remains a priority in my psychomotor intervention.

5 CONCLUSION

Disorders and abnormalities in the psychomotor development of young children with autism are evident, we note the presence of a multitude of deficits: developmental delays in cognition and communication, functional particularities, sensory-motor abnormalities, where comes the importance of establishing an adapted psychomotor therapeutic project. Certainly the strategies used must take into consideration the symptomology of ASD, the unique profile of each child and the global project of this child.

Following the results of the psychomotor examination or the analysis of the observations on the functioning of the child, we identify our objectives, and we then propose psychomotor rehabilitation which is a direct intervention, it is proposed individually or in groups to through the setting in perceptive-motor situations, within playful but at the same time pleasant and motivating activities, the game which is an essential tool in rehabilitation, it promotes exchanges and interactions with the child and also keeps his motivation.

However, I still had obstacles concerning communication, autonomy and behavioral disorders which block the realization of my therapeutic project, several approaches and methods are recommended in the care of this population by the High Authority of Health (HAS, 2012) and the National Agency for the Evaluation of the Social and Medico-Social Sector (ANESM, 2012): TEACCH, DENVER, ABA, our study focused more mainly on ABA, which aims to increase behavior adaptive behaviors, decrease maladaptive behaviors and learn new adaptive behaviors through behavior modification and reinforcement. We have attempted to apply certain principles of ABA to this population, by coupling them to psychomotor clinical practice. In fact, we have identified the target behaviors considered to be priorities according to the results of the VB-Mapp and observations.

People with ASD need the individual program with consistency between the different stakeholders with this population given the diversity of symptoms, in addition it is necessary to think about the means and strategies that we will use, to implement the therapeutic project., in order to increase the occurrence of behaviors in the learning phase or to reduce the frequency of appearance of problem behaviors.

Regarding the objectives that we had set ourselves, we see an improvement at all levels, especially priority areas such as autonomy, communication: currently the two children use a means of communication, and a reduction in behavioral problems, which has facilitated the implementation of the objectives of the therapeutic project in psychomotricity.

This study has been enriching on all sides, because we have acquired new knowledge and skills that will be useful in my professional practice, and at the same time give the child the opportunity to develop thanks to the multidisciplinary support.

Through this study, it would be interesting to develop it on a larger scale. For this, it was relevant to propose questionnaires, one to psychomotor therapists caring for ASD patients and the other to the parents of children with ASD. The objective would be to evaluate their knowledge in particular in ABA and their practices.

APPENDICES

Ring with strings

REFERENCES

[1] Bakken, J., Miltenberger, R., & Schauss, S. (1993). Teaching parents with mental retardation: Knowledge versus skills. American Journal on Mental Retardation, 97 (4), 405–417.

[2] Ernsperger & Stegen-Hanson «Just take a bite». Future Horizons Inc.

[3] Tomkiewicz, T., Vivet, P. et al. 1991, To love badly, to punish well. Investigations into violence in institutions for children and adolescents, Seuil.

[4] Fantuzzo, Rohrbeck, Hightower, & Work 1991. «Child Reinforcement Survey.».

[5] Holmes, Cautela, Simpson, Motes, & Gold, 1998 «School Reinforcement Survey Schedule».

[6] Fisher, Piazza, Bowman, & Almari, 1996 «Reinforcement Assessment for Individuals with Severe Disabilities».

[7] Green & al., Journal of Applied Behavior Analysis, 1988, «Identifying reinforcers for persons with profound handicaps: Staff opinion versus systematic assessment of preferences», vol.21, pp.31-43.

[8] Mary Lynch Barbera, 2007 «The verbal behavior approach». the Picture Exchange Communication System in Children with Autism. Journal of Developmental and Physical Disabilities, 24, 539–558.

[9] Chaabane, D., Alber-Morgan, S., & DeBar, R. (2009). The effects of parent-implemented PECS® training on improvisation of mands by children with autism. Journal of Applied Behavior Analysis, 42, 671-677.

[10] Howlin, P., Gordon, RK, Pasco, G., Wade, G., & Charman, T. (2007). The effectiveness of Picture Exchange Communication System (PECS®) training for teachers of children with autism: A pragmatic, group randomized controlled trial. Journal of Child Psychology & Psychiatry, 48, 473-481.

[11] Here, KC. (2008). Effectiveness of the Picture Exchange Communication System as a functional communication intervention for individuals with Autism Spectrum Disorders: A practice-based research synthesis. Education and Training in Developmental Disabilities, 43, 61-76.

[12] Bondy, A. & Frost, L. (2001). The Picture Exchange Communication System. Behavior Modification, 25, 725-744.

[13] Tincani, M. (2004). Comparing the Picture Exchange Communication System and sign.

[14] language training for children with autism. Focus on Autism and Other Developmental Studies, 19, 152-163.

[15] Fisher, Wayne & Greer, Brian & Fuhrman, Ashley & Saini, Valdeep & Simmons, Christina. (2018). Minimizing Resurgence of Destructive Behavior Using Behavioral Momentum Theory. Journal of Applied Behavior Analysis.

[16] Horner, RH, & Day, HM (1991). The effects of response efficiency on functionally equivalent competing behaviors. Journal of applied behavior analysis, 24 (4), 719-32.

[17] S. Freeman, L. Dake, S. Davis, ML. Miginiac (2000). Teach Me Language: A Language Learning Handbook for Children with Autism, Asperger's Syndrome and Other Developmental Disabilities. SKF Books.

[18] Catherine Potel-Baranes (2010). Book «Being a psychomotrician».

[19] Miltenberger, R. (2022). Behavior modification (H. Abdelnour, Trad., 6th ed.). ABA editions.

[20] Jean-Michel Albaret, Philippe Scialom and Françoise Giromini (2018). Psychomotricity teaching manual Volume 5: Psychomotor examination and tests September.

[21] Riviere, V. (2015). Functional analysis of behavior: the principles. In J. Cottraux (dir.), *Behavioral and cognitive management of autism spectrum disorder* (pp. 59-70). Elsevier Masson.