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Traumatic Experiences and Dyslexia



PETER LANG

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Edgar Galindo

Teaching Academic, Social and Independence Skills to Slum Children

Abstract: This paper explains the work done with children growing up in slums in Mexico and Portugal. Some introductory considerations about factors determining psychological development are made. Development is a function of external and internal factors. Internal factors include a healthy body and external factors an environment with minimal well-being conditions, like a functioning family, a health and educational system, and social peace. Variations in internal and/or external factors can produce a developmental deviation and then developmental problems and/or disorders like intellectual disability, learning disorders, ADHD, etc. Simple, cheap, efficient and scientifically based intervention programs are urgently needed. The author applied the Applied Behavior Analysis techniques to train independence, social & academic skills to slum children with intellectual, physical or sensorial disabilities in Mexico. Similar procedures were applied to train children with school failure problems in a slum-like community in Portugal. Some results are presented regarding behavioral objectives attained by individual children in different training programs. Some cases of children with blindness, intellectual disability or school failure problems are briefly analyzed. Behavioral intervention programs were successful independently of the case, age or problem treated.

Keywords: Applied Behavior Analysis, children at risk, SEN children, school failure

1 Introduction

This paper explains the work done with children growing up in slums in Mexico and Portugal. Two types of cases are analyzed, namely, children born with a deficiency and children with relatively normal development, but having problems at school for different (sometimes unknown) reasons. Intervention procedures will be briefly explained, and some illustrative cases will be shown. Initially, some primary considerations about factors determining psychological development are necessary.

Psychological development is usually a process characterized by an increasing acquisition of diverse skills in the first years of life. If we look at the development of a newborn child, it is evident that he shows every day more complex behaviors enabling him to master new situations. Cognitive and emotional processes correlated with neurobiological transformations are at work to produce new behavioral repertoires, i.e., new skills allowing the child to solve problems and move around with independence. Growing means acquiring skills to cope with new environmental challenges. This process is especially accelerated in infancy, but it seems to

proceed the whole life long, until a moment of decline, somewhere in an elderly age (see Baltes, Staudinger, & Lindenberger, 1999). Being a result of the dialectical interaction of numerous factors, psychological development is not a linear process, but it is characterized by different speeds, by different qualities and even by returns to early stages. Nevertheless, it is clear that a developing person has to master new and more complex tasks during his/her life. We can even say there are specific developmental tasks to be solved in different more or less good defined stages of human life (Mash & Wolfe, 2016). For instance, a 6-7-years-old child is expected to speak clearly, play properly with other children, go alone to the toilet, keep himself clean, control his/her emotions and move at home & school without help. If the child is not able to do so, he/she cannot go to school, and the existence of a problem is taken for granted; a psychological intervention is usually recommended. Similar observations can be done, regarding a 20, 30 or 50 years old person, only developmental tasks are different.

Now, psychological development is a result of the interaction between internal and external factors (Bijou, 1963). Internal factors are biological properties of the newborn organism, like a nervous & muscular system, a genetic endowment, senses and probably inherited vulnerabilities and reaction properties. External factors refer to the physical & social environment. A harmonic development ("normal" is probably not the right word) requires a relatively healthy body. Biological properties of the body can vary, but they must remain within certain limits to allow a sound development. The same is true for physical and social factors: They can vary, and in fact, they do vary widely from a person to other, but variations must remain within certain limits to permit a sound psychological development. This means some changes in internal and/or external factors can have negative consequences: Extreme variations in organic anomalies or/and in external conditions can limit the psychological development. Blindness, deafness, a cerebral lesion, a genetic variation, a lack of a hand, can disturb development.

Regarding physical and social factors, the absence of a minimal set of living conditions can disturb development, even in the body is healthy. Bronfenbrenner (2004) contributed to the understanding of the concept social environment: parents, family, school, friends, ethnic group, nation, social & political structures, culture are determining factors of psychological development. A child needs peaceful, stable conditions to develop properly. That is to say, child maltreatment, unstable families, violent relations, marginalisation, poverty, malnutrition, war, social violence and the lack of educational and/or medical services can disturb development. Vygotsky (see Rieber & Carton, 1993) added a critical remark: An abnormal factor (organic or environmental) affecting psychological development multiplies its adverse effects, i.e., a primary defect will give rise to secondary defects, producing tertiary defects and so on. A therapeutic intervention ("creating social bridges" says Vygotsky) is therefore essential to eliminate or at least reduce the effects of a negative factor.

On the other hand, research on development has shown an intimate dialectic relationship between internal (organic) and external factors (environmental). Since

many years ago, it is taken for granted that psychological development relays on a neurological maturation process. Presently, we know the influence between environment and organism is mutual: learning requires a neural basis, but experience also influences the brain and other nervous structures (Knudsen, 2004). Moreover, the effects of experience on the nervous system are particularly strong during a limited period in child development, i.e., there are sensitive (or critical) periods in which experience seems to instruct neural structures a way of processing information. It seems that experience during a sensitive period modifies neural architecture in fundamental ways. This knowledge has dramatic consequences for our understanding of child development. On the one hand, some skills are better learned in some developmental periods, for instance, language capacities. On the other hand, good or bad experiences in a sensitive period have enduring consequences for the human being. It means injury, illness, neglect, malnutrition, maltreatment or other negative factors occurring in a sensitive period can make it difficult for a child to acquire the necessary skills to accomplish his/her developmental tasks. When this happens, the child will have more difficulties to gain those skills. It is a controversial question if it is possible that children who do not get the proper stimulation during these periods will ever gain the skills they should have gained, even if they receive a proper education or training. The same is true for bad experiences occurring in sensitive periods, is it possible to revert the negative effects through therapy? Nevertheless, it is a fact these children need help: special education, treatment, therapy or training.

2 Problems and Disorders

The most obvious consequence of such a deviation of development is often a disorder: autism, intellectual disability, specific learning disorders, attention deficit hyperactivity disorder (ADHD), emotional & behavior disorders. Sometimes it is not a disorder "stricto sensu", but an organic state, which under given circumstances can limit development, giving rise to a further problem, like blindness, deafness, and some childhood diseases. Scientists have created a term to refer to children, who have a higher probability of suffering mental health problems due to their organic state at birth or to their living conditions: children at risk. They are children from disadvantaged families and neighbourhoods, from abusive or neglectful families, infants receiving inadequate child care, born with very low weight, or born to parents with mental illness or substance abuse problems (Mash & Wolfe, 2016).

Other cases should be added to this list, namely, children born with sensorial deficiencies, like blindness or/and deafness, with physical disabilities and/or health impairments, like cerebral palsy, and born with genetic disorders, like Down Syndrome. These are the "exceptional children" (Heward, 2017), also called "children with special educational needs" (SEN) (Frederickson & Cline, 2015) to emphasise the pedagogical side of their problem. Last but not least, we have to add to this list those children who have a relatively "normal" development, but have difficulties in responding to school requirements, i.e., the so-called "students at risk for academic

failure" (Darensbourg & Blake, 2013), or "students at risk for school failure" (Hamre & Pianta, 2005) or "children at risk for early academic problems" (McClelland, Morrison, & Holmes, 2000) or "students academically at-risk" (Sapp, 1996):

Academically at-risk students are those who are one or more years behind their cohort group. This is particularly problematic in the areas of reading and mathematical skills. Moreover, becoming a parent, being adjudicated a delinquent, or falling behind in the number of credits earned can place a student in the at-risk category for academic failure (...). In summary, any factors that place a student at risk for school failure connote being "at-risk" (Sapp, 1996, p. 124).

This is a special group of children, due to the fact that they hardly fall into the category of SEN children, but they do have psychological problems, which must be urgently solved in order to avoid further psychosocial deviations, like behavior problems, drug abuse, delinquency, unemployment and psychiatric disorders (Catalano, Loeber, & MacKinney, 1999; Martin, Del Barrio, Montero, Fernandez, Gutierrez, & Ochaíta, 2003). This group of children seems to be very numerous. School failure has been a topic of discussion and research in the most developed countries since many years ago (Organization for Economic Co-operation and Development [OECD], 1998) and many corrective measures have been applied in Europe by educational agencies, focusing on social, educational, political and economic factors contributing to the problem. But school failure still exists as a huge challenge not only in the rich OECD countries but much more in the developing world (Mendoza, 2012). The problem is aggravated by the fact that very little applied research on the concrete needs of these children has been made because many authors prefer to describe the situation instead of looking for solutions (Wood, Frank, & Wacker, 1998). In consequence, children with school failure difficulties once identified, are often taught with the same methods that did not work in the past.

The problems of children growing up in slums must be understood in this context. Living in poverty conditions is a risk factor. Research on children in poverty in the United States shows they are more than other children exposed to factors that may impair brain development, affecting psychological development (Huffman, Mehlinger, & Kerivan, 2000; Mather, & Adams, 2006; Proctor, Semega, & Kollar, 2016), like environmental toxins, malnutrition, family with mental health disorders, neglect, maltreatment and abuse, violent crime, divorce and decreased stimulation. Consequently, these kids are more likely to have poor health and school failure problems. Poverty in childhood is often associated with physical and mental health problems and a higher risk for poorer academic outcomes, lower school attendance, and early school dropout. These data are dramatic, taking into account that in the USA, 4 in 10 children can be considered poor for 1 or more years and more than 1 in 10 are poor for half of their life (Ratcliffe, 2015). The situation of children growing up in poverty in developing countries is still worse. They are often not only victims of poor social conditions, but also of war, structural violence and disasters. There are millions of children living in slums all over the world,

mostly in developing countries of Africa, Asia and Latin-America, but also in marginal neighbourhoods, inhabited mainly by immigrants, in UE countries and the USA. This is a complex socio-political problem, whose solution is not in the hands of Psychologists. Nevertheless, Psychology can answer some urgent questions, like for instance, searching for simple, cheap, efficient, scientifically based evaluation and intervention techniques able to help these children.

Consequently, the primary goal of the current work has been to develop Applied Behavior Analysis (ABA) diagnostic and training techniques to help children with a lack of skills, i.e., mainly social & independence skills in the case of SEN children, and mostly academic skills in the case of school failure problems. The publication of handbooks for teachers and parents with simple, cheap, efficient evaluation and training techniques for children is an essential part of this work.

3 Theoretical Foundations

The theoretical foundation of this work is ABA, also called Behavior Modification (Miltenberger, 2016). ABA techniques have been used for many years by numerous Psychologists to solve a broad range of psychological problems. Solving problems of persons with intellectual disability has been traditionally the main field of research and application. A great amount of information is currently available about training basic skills like instructions following, imitation, self-care and eating, as well as language and social behavior and academic skills like reading, spelling, arithmetic and using computers (Jerome, Frantino, & Sturme, 2007). The same techniques have been applied successfully to teach the same kind of skills to children with hearing and visual impairments, with autism, or with specific learning disorders (Axe & Sainato, 2010; Green, Reid, Rollyson, & Passante, 2005; Levingston, Neef, & Cihon, 2009; Toussaint & Tiger, 2010). In the field of children with school failure problems, Adelman and Taylor (1993) analyzed different aspects of learning at school-related to academic success and failure and proposed using behavioral techniques to improve learning skills. Hallahan, Kauffman and Lloyd (1999) and Wallace, Larsen and Elksnin (1992) identified possible factors of school achievement in the individual and the family: at an individual level, they pointed to the absence of language, social and cognitive prerequisite skills as a source of failure to learn reading, writing and arithmetic. A further development has been the systematization of ABA techniques in the so-called Behavioral Skills Training (BST), that has been used successfully to teach children with autism abduction prevention skills (Johnson et al., 2005) and communication skills (Barnes, Dunning, & Rehfeldt 2011; Gianoumis, Seiverling, & Sturme, 2012). BST is a teaching package consisting of instructions, modelling, rehearsal and feedback (Ward-Horner & Sturme, 2012). It is basically the same set of techniques used in our work to teach children with different problems: First instructions, i.e., explaining how to do a task; then modelling, i.e., demonstrating how to do the task; then rehearsal, i.e., letting the child to do the task, and finally feedback: reinforcing the correct response and correcting the incorrect response. These techniques have proved to be simple,

cheap, efficient and scientific based. The current work will provide more evidence on the matter.

4 Settings

Being born with a deficiency is a difficult challenge for every person. The challenge is still more difficult for SEN children growing up in slums. In the next pages, I will explain the work done with children at risk in two different settings. The first one is devoted to children with intellectual disability and blindness growing up in the slums of Mexico City. In Mexico, in spite of huge governmental efforts, thousands of SEN children do not receive adequate medical and educational support. Most of them live in an affectionate familiar environment, which nevertheless does not allow them the acquisition of social, academic and independence skills, for several reasons. The most common reason is the lack of an adequate educational background by the parents. Some of these children get some medical care for some time, but no education at all. It is not rare to find blind school-age children, who never went to school. More information about this field can be found in Galindo (2009) and Galindo, Galguera, Taracena and Hinojosa (2018).

The second setting is different. The work was done in a slum-like neighbourhood not far away from Lisbon. Poverty, drugs, prostitution, police incursions and violence are common. Inhabitants are mainly immigrants from Brazil, Angola, Mozambique, Cape Verde, Ukraine and Russia. Children receive the necessary medical care and can regularly go to school, but some of them have problems at home and consequently, at school. Some of them do not learn like other children, they repeat twice, maybe three times the first and/or the second school year, they dislike school and constantly get in trouble with schoolmates and teachers. Their problem is called school failure. In spite of impressive advances in the field, school failure remains a main educational challenge in Portugal and other European countries (Eurydice, 2011, p. 35). As usual, the problem is more frequent in poor, isolated and/or marginal strata of the population. More information about this field can be found in Galindo (2015).

5 Evaluation and Intervention Strategies

In general terms, the same evaluation and intervention strategies have been applied in all cases. Each child was evaluated individually, looking for the existing and failing skills, according to the expectations of family or school, taking into account the age of the kid and the everyday developmental tasks associated to that age. Learning aims were defined by Psychologists, together with the parents and/or the teachers. The core of the evaluation is always a behavioral observation of the child, but an analysis of existing medical and education reports is also included, as well as the opinions of parents and teachers. Evaluation proceeded as thick as possible, trying to identify precisely the existing and lacking skills. The diagnosis was a list of problems and failing skills for each child. On this basis, a hierarchy of

intervention objectives was made, and an individually tailored behavioral training program for each skill was designed.

Each behavioral training program has roughly the same structure (see Tables 1-3): 1) a general objective, 2) skills defined in terms of specific objectives (a set of correct responses to be given by the child), 3) a definition of the previous skills necessary to learn the new skill (recurrent), 4) a pre-test (% of attained objectives/correct responses), 5) a training package based on instructions, modeling, rehearsal, and feedback, 6) a post-test (% of attained objectives/correct responses), and 7) an estimate of motivational aspects. A set of program models has been developed for each type of children, but users were encouraged to create their programs, according to the developmental needs of the child and the expectations of his/her community (family or school). Evaluation of the efficacy of the program was carried out by comparing the percentage of attained objectives before (pre-test) and after training (post-test).

In the training phase, behavioral programs were applied during at least 2 hours a week for at least one semester (15 weeks) on an individual basis (1 tutor x 1 child). Tutors were specially trained Psychology students. A token economy was introduced to motivate children (Ayllon & Azrin, 1968). The level of success of each training program was evaluated regarding a) percentage of attained objectives (or correct responses), and b) training time. A child had to attain at least 80% of objectives in a program to be considered successful. As a result of this individualised strategies, the nature of the program, the number and quality of trained skills, the duration of training and the number of trained programs greatly varied from child to child.

5.1 Training Children with Intellectual Disability

Participants were 4-12 years old children referred by families because of developmental problems, the absence of social and language skills. The intervention was carried out by trained tutors in training centres created in the slums of Mexico City and supported mainly by parents and relatives of the children (see Galindo et al., 2018). Every child was evaluated individually to define his/her existing or non-existing skills. On the basis of behavioral evaluations and additionally records and reports of parents, a hierarchy of problems was elaborated, taking into account the developmental needs of the child and the developmental tasks to be mastered by a child of similar age and circumstances. Then, a behavioral training program for each skill was elaborated. The following programs have been developed as a basis for further adaptation to each case: 1) Basic Behavior: Attention, Imitation, Following Instructions, Self-care (washing hands & face, brushing teeth, etc.), Motor Coordination, Discrimination of Forms & Colors, Temporal & Spatial Relationships. 2) Social and Adaptation Skills (language, playing & social norms) 3) Academic Behavior (writing, spelling, arithmetic). Attention, imitation and instruction following are considered as main basic skills that enabling the child to participate in further training

Table 1. Program to train attention

- Objective – The child must a) establish eye-to-eye contact with the tutor, b) look at a determined object in the room, every time he/she is requested to do so, in no more than 5 seconds.
- Definition – Attention is defined regarding the behavior of establishing visual contact with persons and objects at different distances.
- Pre-currents – The child must be able to remain sitting at least 15 minutes. Physical handicaps must be checked.
- Materials – Color cards and toys.
- Setting – Room.
- Phases – 1) pre-evaluation (pre-test), 2) training eye-to-eye contact, 3) training attention to near objects in the room, 4) training attention to objects at different distances, 5) final evaluation (post-test)

programs. Every program was designed to solve a specific problem (articulation, washing hands, writing, etc.). An example of such a program is shown in Table 1. Nevertheless, tutors were instructed to adopt a program to the specific needs and aims of the child. Behavioral Training was applied for two hours a day (10 hours x 1 week) during a semester (15 weeks). An intervention might last a few weeks or several years, depending on the children's needs. A post-test was carried out following the training.

5.2 Training Blind Children

Participants were 4–14 blind children referred by families because of the lack of independence and academic skills. Training was carried out by trained tutors in a training centre situated at the university campus in Mexico City (see Galindo, 2009). This centre was organized as a school for blind children, with a special curriculum divided into four intervention areas: Basic Autonomy (BA), Mobility and Orientation (M&O), Social Behavior (SB) and Academic Behavior (AB). This curriculum was created with the specific objective of preparing blind children to be integrated into the regular school. A set of behavioral training programs was applied in each area, to train specific skills. For instance, programs applied in the M&O area went from displacing alone in a closed room to travelling by bus and underground; programs in the BA area went from recognising objects through sound, smell our touch to preparing breakfast; programs in the AB area prepared the child for subject matters at school.

Every child was evaluated individually to define his/her existing or non-existing skills regarding the existing programs, in the same way already explained. By the hierarchy of non-existing skills, behavioral training programs were elaborated and applied. An example of such a program is shown in Table 2. As usual, tutors were

Table 2. Program to train displacement with a cane

General objective: The child must be able to walk, at least 1½ km, in less than 1 hour, in different streets of his/her neighbourhood, using the cane.
Pre-currents: Programs of BA level I, M&O level 1 and SB level 1, and social norms.

Specific objectives	Steps
To hold the cane according to rules a, b, c	a), b), c)
To walk 20 meters in 7minutes on an even floor.	a), b), c)
To walk 50 meters with obstacles.	a), b)
To displace downstairs and upstairs.	a), b), c)
To walk along the street with the cane, using the walls as a point of reference.	a), b), c)
To cross five different streets, with help.	a), b), c)
To displace from the training centre to bus stop, using the cane, without help.	a), b), c)

instructed to adopt every program to the specific needs and aims of the child. Behavioral training was applied for two hours a day (10 hours x 1 week) during a semester (15 weeks). A child was considered ready for school when he had attained successfully all skills defined by the curriculum. A post-test was carried out following the training.

5.3 Training Children with Problems of School Failure

Participants were 6–12 school children referred by teachers because of problems of school failure. The intervention was carried on in a primary school (ISCED 1) situated in a slum-like neighbourhood in Lisbon (see Galindo, 2015). School success was defined regarding a set of skills proposed by teachers. School failure was then understood as a lack of one or more of these skills. Consequently, the specific objectives of these interventions are 1) to develop intervention techniques based on school defined skills for ISCED 1, 2) to apply systematically training programs to attain those skills, and 3) to publish a handbook containing the techniques.

Before the intervention, the existing and non-existing skills, as well as the possible aims of the training were defined together with the teacher. All information was used to elaborate a hierarchy of problems. On this basis, an intervention strategy was designed, elaborating specific training programs for the child. The following programs have been developed as a basis for further adaptation to each case: 1) Basic behavior (pre-currents): Self-care, motor coordination, discrimination of forms & colors, pre-reading, pre-writing, verbal behavior, temporal and spatial relationships, 2) Academic behavior (first, second, and third school years): Reading,

Table 4. Case 1 of male, eight years old with intellectual disability. Trained skills and obtained results in evaluations before and after training; one session = two hours.

Skill	1st Test	Training	2nd Test
Sitting 30 minutes	33	12 sessions	100
Attention	100	---	---
Following Instructions	25	33 sessions	90-100
Imitation	20	No	No
Motor coordination	80	---	---
Verbal imitation	0	No	No
Recognition objects	0	No	No
Answer questions	0	No	No

Some illustrative cases of these children will be presented in the following pages, to give a better picture of the procedures and techniques used during evaluation and training.

Case 1 (see Table 4) is an 8-years-old boy with an intellectual disability. The family lived in very poor conditions, and the child had never received any special medical care nor education. Parents informed he was "hyperactive", dependent and did not show any self-care skills, but some disruptive behaviors, like tantrums. Behavioral observations, devoted mainly to basic skills, showed he had attention (100%) but deficiencies in instructions following (25%), and imitation (20%). His motor coordination was good enough (80%), but he had huge language problems: Verbal imitation (0%), recognition of objects (0%), and answering questions (0%). Concerning hyperactivity, sitting quietly in a chair for 30 minutes was defined as a good behavioral objective. A first evaluation showed he was able to sit only 10 minutes (33%). A hierarchy of problems was defined. The first objective was to attain was "sitting quietly for 30 minutes"; it was attained in 12 one-hour sessions. The next step was training skills for following instructions; the child learned to follow 90-100% of given instructions in 33 one-hour sessions. This child illustrates the strategy applied to train difficult cases: The first step is always training attention, imitation and following instructions. Here, a previous step was necessary, namely, to get the child in a chair for 30 minutes. The next step should be the training of imitation and language skills.

Case 2 (see Table 5) is a 7-years-old boy with an intellectual disability. He had received no education, but some psychiatric attention. According to the family, treatment showed no results and controlling the child was increasing difficult. Behavioral observations showed he had low attention (65%) but no deficiencies in instructions following (100%) nor imitation (100%). His motor coordination was good enough (95%), but he had language problems. Further evaluation of language and social behavior showed verbal imitation was good (100%), and functional

Table 3. Program to recognise letters

General objective: The child must be able to recognise all letters of the Portuguese alphabet.

Specific objectives: The child must be able to identify and reproduce the sound of all alphabet letters, 1) handwritten, lowercase letter, 2) handwritten, capital letters, 3) print, lower case letters and print, capital letters

Definition: A response is correct if the child a) identifies a letter presented by the tutor, and 2) reproduces the sound of a letter presented by the tutor.

Pre-currents: Basic repertoires and language without articulation problems.

Materials: Cards with letters (see table 3)

Place: A working room or classroom

Procedure:

- 1) Pre-test: All letters are presented.
- 2) Training: A package of instructions, modelling, rehearsal, and feedback.
 - a) Handwritten, lower case letters.
 - b) Handwritten, capital letters.
 - c) Print, lower case letters.
 - d) Print, capital letters.

The child must be able to respond correctly, without help, to the same question in five successive trials.

- 3) Post-test: All letters are presented.

Training has been successful if the child attains at least 80% of correct responses.

Writing, Environment, Mathematics, and Portuguese, and 3) Social behavior. Every program was designed to solve a specific problem (writing, spelling, articulation, etc.). An example of such a program is shown in table 3. Behavioral Training was applied for two hours a week (2 sessions x 1 hour) during a semester (15 weeks). The intervention was carried on by tutors in different rooms at school. An intervention might last a few weeks or the whole semester, depending on the children's needs. A post-test was carried out following the training.

6 Results

Hundreds of children with problems of intellectual disability, blindness, deafness, physical deficiencies, language disorders, ADHD, specific learning disorders, and autism have been taught in the training centres of Mexico City (see Galindo et al., 2018), as well children with problems of school failure in Portugal (see Galindo, 2015).

Table 5. Case 2 of male, seven years old with intellectual disability. Trained skills and obtained results in evaluations before and after training; one session = two hours.

Area	Program	1st Evaluation (%Attained Objectives)	2nd Evaluation (%Attained Objectives)
Basic autonomy	Tactile discrimination	56.7	100
	Washing hands/face	65	100
	Brushing teeth	68	100
	Put on shoes	45	100
	Cleaning shoes	0	100
	No data		
Socialisation	Space-temporal skills	25	100
	Recognising objects	14.5	100
	Displace no guide	0	100
	Displacement guide	0	100
	Displacement cane	0	100
	Bus & subway	0	100
Academic Behavior	Community services	0	100
	15 School subjects	100	100
		33	33
		0	0
		0	0
		0	0
		100	100
		0	100
		0	100
		0	100
		0	0
		100	100
		33	33
		100	100
		0	0

language was a relative good established, but there were clear deficiencies in the articulation of /s/ (40%) and /r/ (0%). On the other hand, he was constantly out of his chair. It was decided to solve articulation problems and apply for a training program in recognising forms (0%), to start the establishment of cognitive pre-academic skills. At the same time, a program to train "sitting in his chair for 30 minutes" was applied. Table 5 shows the child could attain 100% of attention skills in 5 one-hour sessions. Articulation problems of /s/ was reasonably solved (86%) in 11 one-hour-sessions and a good advance was obtained in the articulation of /r/ (45%) in 7 sessions. Additionally, the child learned recognising forms (100%) in 35 sessions. This child illustrates the strategy applied in a persistent case, namely children with middle difficulties, concentrated mainly in language and social interaction.

Case 3 (see table 6) is a blind 8-years-old girl, who lost her vision in the early infancy due to a disease. The family gave the child an affectionate environment and good medical care, but no schooling, due to financial problems. The girl showed a relatively good social, emotional & cognitive development, but social isolation and no independence nor self-care skills. Training in the above-described centre for blind children proceeded during two years. The first year was devoted to an intensive socialisation training (no quantitative data are available). An evaluation made at the beginning of the second year (table 6, first evaluation) showed the following deficiencies:

- Basic Autonomy: tactile discrimination (56.7%), washing hands and face (65%), brushing teeth (68%), put on shoes (45%), cleaning shoes (0%).
- Mobility and Orientation: space-temporal relations (25%), recognizing objects (14.5%), displacement without a guide (0%), displacement with guide (0%), displacement with cane (0%), displacement with bus and subway (0%), using community services (0%).
- Academic Behavior, i.e., school subjects of ICED 1 (reading, spelling, natural sciences, mathematics): Four items with 100%, two items with 33 %, nine items with 0%.

The child was trained one year, 10 hours a week, first in Basic Autonomy, secondly in M&O and then in Academic Behavior. Table 6 shows the results. The child advanced to 100% in all programs of Basic Autonomy and M&O. She attained 100% skills in some school subjects but remained by 0% in others (mainly mathematics) and by 33% in one. The child had learned a great amount of independence, but she was not still prepared to attend the regular school. Additionally, tutors observed the girl was still shy and nervous in some social situations. Consequently, it was decided to go on with training one more semester.

Case 4 (see table 7) is a 10-years-old girl attending the second school year, referred by the teacher because of academic and behavior problems. The girl showed a relatively good social, emotional & cognitive development, but clear signs of physical neglect, like dirty clothes and unwashed hands, face and hair. The mother lived from prostitution and used to send the girl to school with an

Table 6. Case 3 of female, eight years old. Training programs and obtained results in evaluations before and after training.

Area	Program	1st Evaluation (%attained objectives)	2nd Evaluation (%attained objectives)
Basic autonomy	Tactile discrimination	56.7	100
	Washing hands/face	65	100
	Brushing teeth	68	100
	Put on shoes	45	100
	Cleaning shoes	0	100
Socialisation	No data		
	Space-temporal skills	25	100
Mobility & orientation	Recognising objects	14.5	100
	Displace no guide	0	100
	Displacement guide	0	100
	Displacement cane	0	100
	Bus & subway	0	100
Academic Behavior	Community services	0	100
	15 School subjects	100	100
		33	33
		0	0
		0	0
		0	0
		100	100
		0	100
		0	100
		0	100
	100	100	
	33	33	
	100	100	
	0	0	

Table 7. Case 4 of female, ten years old, 2nd year of school. Training programs and obtained results in evaluations before and after training.

Program	Pre-test (January)	Post-test (July)
Self-care	70%	85%
Forms discrimination	50%	100%
Verbal comprehension	40%	100%
Spatial-temporal skills	70%	100%

older brother. According to the teacher, she had repeated three times the first school year; she had no interest in academic activities, she was aggressive and was avoided by schoolmates. Behavioral observations showed she had deficiencies in reading, spelling and mathematics. A more precise evaluation showed a lack of pre-academic skills: Discrimination of forms (50%), verbal comprehension (40%) and spatial-temporal relationships (70%). A hierarchy of problems was made, with self-care skills on the top, and then pre-academic skills. She was trained during one semester, 4 hours a week. Table 7 shows the results. The girl advanced from 70% to 85% of self-care skills and attained 100% of objectives in discrimination of forms, verbal comprehension and spatial-temporal relationships. According to the teacher, after training the child showed much better social behavior, but only small improvements were evident in academic behavior. This case illustrates the evaluation and intervention strategies applied to children with problems of school failure, and also a common situation: Unfortunately, the advances of a child are not always immediately evident for the teacher. For instance, training social and pre-academic skills has no immediate consequences on academic behavior.

7 Conclusion

Results show an improvement of trained behavior in all cases, as a consequence of intervention. Similar results have been reported by authors, applying ABA techniques in training and rehabilitation of SEN children (Axe & Sainato, 2010; Barnes, et al., 2011; Gianoumis et al., 2012; Green et al., 2005; Jerome et al., 2007; Levingston et al., 2009; Toussaint & Tiger, 2010) or children with school failure problems (Adelman & Taylor, 1993; Hallahan et al., 1999; and Wallace et al., 1992). Parent and teachers sometimes complained a child behaved better, although he still had problems. This is assumed because rehabilitation is a process for the whole life. Training independence skills open new development possibilities to a child, and consequently creates new training challenges: now it is necessary to learn skills to master school tasks. Nevertheless, these results seem to show applied programs are successful in training a set of skills, whose absence may cause

further development problems. Probably, the most important result of this work has been the publication of handbooks for psychologists, teachers and parents, containing evaluation & intervention techniques for SEN children and children with school failures problems (Galindo, 2009; 2015; Galindo et al., 2018). Notwithstanding, more research is needed with other children, skills, ages, settings, etc., to contribute to the solution of the problems of SEN children and children with school failure at an individual level.

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