

DYNAMIC INTERACTIVE APPROACH IN ASSESSING AND ENHANCING COGNITIVE FUNCTIONING IN CHILDREN WITH SEVERE LANGUAGE DISORDERS

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Abstract: In 2000 the Centre for Cognitive Development of the Diego Portales University (Santiago de Chile) started with a clinical service for children and adolescents with developmental disorders. Since then we have worked with about 180 children with a diagnosis of genetic disorders (e.g. Down syndrome), children with autistic spectrum disorders, learning disabilities, and attention-deficit/hyperactivity disorder (ADHD) varying in age range from 4-18. In many cases the etiological diagnosis is unclear and they can be described by various cognitive, affective, motivational, linguistic and motor dysfunctions. One of the reasons for consulting is certainly an increasing level of frustration/and expectations of the children's families, with regard to potential of development and learning.

The present work introduces some preliminary outcomes of current research which main goal is to analyze the relationship between quality of mediated interaction and enhancement of communication and self-regulation abilities in children with a severe language disorder, using a variety of interventions.

The perspective used in this research has been the theory of Structural Cognitive Modifiability and Mediated Learning Experience developed by Reuven Feuerstein. The present study is a qualitative single case study systematizing a large group of interactions between mediators in charge of the intervention program and two children with Down syndrome and autism spectrum diagnosis.

Interventions are based on three universal criteria of mediation: intentionality and reciprocity, transcendence and meaning. We observed many significant changes in the development of communications skills and its impact on self-regulation processes, which have been prompted by these three parameters.

The results suggest the possibility of significant modifiability of development of communication systems in children with serious language and communicational disorders through a consistent mediation. However, an aspect that remains to be studied is the internalisation of the learnt communicating strategies, their autonomous using in similar contexts and transfer to other, different contexts.

Keywords: Cognitive development, language disorders, self regulation, structural cognitive modifiability, mediated learning experience, learning propensity, mediation criteria.

Introduction

From a general overview on development, where individual and contextual factors must be considered, the human being undergoes an evolution ac-

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according to his/her structure, capacities and functioning, adapting to the context and social-cultural environment, so that each person has the propensity to change and makes progress in his/her development. When capacities show deficiencies and abilities are impaired, there is nevertheless a unique development process in which any achievement will be significant and particular to every individual and his/her history or context.

When we meet a child with a developmental disorder, differences between him/her and others may seem obvious, even if he is younger. This happens with the development of functions of social – communication processes in individuals with severe language problems. Although they can show pre-verbal behaviours, the interest of sharing attention and their own experiences with others is not as obvious as in typically developing children.

The development of intentionality and the motivation for sharing with others mainly depends on the quality of interaction between adult and child. This is often offered in a deficient way, due to incapacity to pass on the meaning of objects and events, which are around the child and a failing attention process between adult and child together.

A pattern often observed in clinical work with children, who present an important cognitive developmental impairment, is the necessity to be able to shorten the existing barrier between parents' expectations and the children's possibilities towards short term changes. The severity of learning and/or communicative disorders, associated to diagnoses such as autistic spectrum disorder, Down syndrome or pervasive developmental disorders requires that the evaluation of the potential of change formulates a clearest as possible intervention project with respect to the type of mediation required to produce greater benefit developing that potential. It also should indicate where mediation must be directed, so that its impact on the cognitive structure allows triggering a stable and more and more independent process as compared to the original conditions in which the mediation was offered.

When some causes have been determined, assumed or are not viewed as being amenable to change, and if a condition is severe, with extreme degrees of damage or impairment, then the expectation of change is minimized or abandoned. Many children with Down syndrome or autistic spectrum have been early diagnosed declaring that their condition is considered as immutable and fixed, so any effort to enhance their learning will not produce development. Parents many times receive implicit messages that hardly anything can be done to modify the course of life. Even in the case of a child with autistic spectrum disorder, it may lead toward an exacerbation of the symptoms,

which may have been transient, making it a pervasive phenomenon. These conventional theory and practice lead to one conclusion: a passive acceptance of conditions of disability, dysfunction, and limited potential for adaptation.

Starting from a perspective of modifiability, on the other hand, an active approach is adopted as towards the possibilities of change, in which functional limitations are not considered as absolute limits. In recent decades increasing evidence has become available of the plasticity of the brain, which functional and microanatomical organisation is not finished at birth, but is largely dependent on experience and activation (Lebeer, 1998) In this view it is crucial that a significant other, whether parents or other educators, provide opportunities for mediated learning experiences and interactions that allow the child to develop its potential and gradually build psychological tools which are needed for higher cognitive development and learning (Kozulin, 1998)

Feuerstein e.a. (2002) state that a more dynamic *approach* is needed than the static traditional diagnosis, which do not ask if children can or cannot learn, but *how* learning processes should be elicited. Haywood & Lidz (2006), present a dynamic approach in evaluation as a valid option that provides unique information about modifiability of the learner in terms of its strengths and weaknesses. At the same time, it has the potential to establish more effective bridges to daily learning situations than static traditional procedures, being more concerned about *how* than *what*. Although the traditional thought prioritizes product over processes, observing a final product (*a child's actual response*) gives only limited information about how that learning was produced. Feuerstein's approach called LPAD (Learning Propensity Assessment Device) is a systematic dynamic method that supplies extensive information, necessary for a deeper understanding of the learning process, even more in children with special needs.

The purpose of our work is to look at our own practice in order to see the type, frequency and amount of mediation that is needed to provoke structural changes in those cognitive functions responsible of the quality of learning process. Using the LPAD to assess the learning propensity and creating conditions for modifiability -enhancing environments and interactions, we have shaped an intervention program which is being applied in our clinical area. We present now two case studies of children with language disorders associated to a PDD and Down syndrome diagnosis. Our purpose is to have a clearer and more valid view on potential and to get samples of the nature of inter-

| Environmental influences on Human development: Mediated Learning Experience

Mediated Learning Experience (MLE) describes a special quality of interaction between the child and an individual, called the *mediator*. It is considered as the *proximal factor* of human modifiability, which can moderate the influence and impact of such *distal factors* as genetic predisposition, organic impairment, or educational deprivation (Feuerstein & Rand, 1975).

To distinguish MLE interactions, Feuerstein proposes twelve criteria, of which the first three - intentionality and reciprocity, meaning, and transcendence - must be present for a learning experience to qualify as a mediated learning experience. They are called *universal criteria of mediation*.

Intentionality and reciprocity

Intentionality transforms any interactive situation from accidental into purposeful. Reciprocity refers to the mediator's willingness to see the students at the "same level" and to be attentive to their responses. By constantly focusing on the child's state of attention, problem solving strategies, mistakes, and insights, the adult infuses the learning situation with a sense of purpose and intentionality.

Meaning

The mediation of meaning represents the energetic, affective, emotional power that will make it possible for the mediational interaction to overcome resistance on the part of the learner and thereby ensure that the otherwise "neutral" stimuli acquire additional emotional, social and cultural value, which will be experienced better by the learner (Feuerstein, 1988). In accordance with these important conditions of learning, Greenspan e.a. (1997) found that an initial affective caregiver-child relationship is the basis of cognitive development and communication.

Transcendence

An interaction that provides mediated learning must transcend the immediate needs or concerns of the learner going beyond the here and now, in

space and time. Transcendence as a mediating criterion provides not only for the anticipated widening of cognitive factors in the information under question, but assumes the constant enlargement of the learner's own need system and his/her dynamic, continuous change.

| Pre requisite of thinking: Cognitive functions

Cognitive functions are described as the mental prerequisites of thinking operations and any other behavioural function (Feuerstein e.a., 2006). They underlay those mental and psychological behaviours responsible for the learning process, divided into the phases of the mental act. They reflect the quality of the process of input (feeding data into the cognitive system), elaboration (establishing relationships between the pieces of information) and output (issuing the conclusions reached). These conditions must be universal i.e. they underlay any operation, irrespective of its content. They also must be accessible to be detected, described and controlled operationally to enable the individual to observe and intervene in a focused and systematic manner. Thus, they then represent the *target of mediation* and the clearest focus of cognitive modifiability.

It must be considered that in childhood acquisition and development of cognitive structures, learning and socialization skills occurs simultaneously with maturation of the neurophysiological structures.

Research population

In working with children and young people with complex developmental disturbances, in many occasions the first *challenge* consists in overcoming confusion and frustration that families carry. Frequently they have done a long route in looking for clues to understand and guide their children's learning. Negativistic prognostic *labels* imposed by standard diagnosis usually have left recognizable traces in their expectations and in the way they interact with the child, hindering expression of potential. At present, about two hundred children have been assessed by the professional team and a group of them has benefitted from an intervention program. Within the large and varied number of clinical diagnosis there are two increasing ones –PDD and Down syndrome.

Cognitive dysfunctions in children with autistic spectrum diagnosis

The term "autism" raised by Bleuler originally, was reintroduced by Kanner and Asperger referring to children with a kind of schizophrenia who tended to isolate of the social world to dive into themselves interacting to their own fantasies and thoughts and with severe difficulties to establish social relationships (Frith, 1996)

Nowadays it is more customary to talk about "autistic spectrum" (DSM-IV manual). However, this definition is rather broad and hence nowadays children are included in this diagnostic category who vary widely in levels of functioning. This has created some confusion, addressing parents and educators in not a few occasions towards treatment programs.

According to Feuerstein, a child with autism usually grows up with a resistance to mediation and therefore a lack of mediated learning experience shaped mainly by his/her biological system (Feuerstein, Falik and Rand 2002). Therapy should therefore be directed at mediating deficient cognitive functions. Ruffman, Garnham and Rideout (2001), in a study about the relationship between social understanding and the influence of glance fixing in self perceptive control processes, found that children with autism have difficulties to fix glance, which does not allow them to make certain perceptions at unconscious level that are critical for a good comprehension of the social communication process. A hypothesis is therefore that a perceptual deficiency in the *input* phase of the mental act is going to disturb the organization of social information as well as communication, cognitive and emotional processes of the child. This is sometimes referred to as the Theory-of-Mind model, which states that the child has difficulty in understanding the viewpoints of others (Hill & Fritt, 2003).

| Cognitive dysfunctions in a child with Down syndrome

Speech and language are complex and present many challenges to the child with Down syndrome that need to be addressed through a comprehensive approach to speech and language treatment. Communication skills are important and contribute to inclusion and integration. Communication includes not only speech, but also facial expressions, smiles, gestures, pointing,

high five signs, and alternative systems such as sign language and computer-based systems. Children and adults are more likely to interact when they can understand and be understood. At home, in school, and in the community, a functional understandable communication system facilitates relationships. Although there are common speech and language problems, there is no single pattern of speech and language common to all children with Down syndrome. Many children with Down syndrome have more difficulty with expressive language than they do with understanding speech and language, that is, receptive language skills are usually more advanced than expressive language skills. Certain linguistic areas, such as vocabulary, are usually easier for children with Down syndrome than other areas, such as grammar. Sequencing of sounds and of words may be difficult for many children. Many children have difficulties with intelligibility of speech and articulation. Some children have fluency problems. Some children use short phrases, while others have long conversations. All of the speech and language problems that children with Down syndrome demonstrate are faced by other children as well. "Children with Down syndrome have a range of specific learning difficulties that, combined together, make learning to speak in sentences very hard to achieve. Although their expressive language difficulties are greater than their comprehension difficulties, they do have delays in developing comprehension that may be made worse by hearing loss" (Buckley & Bird 1994). Children with Down syndrome may also have processing difficulties that affect their perception of words, even if they do not have a hearing loss. They typically have auditory short-term memory deficits that impact their ability to remember what they hear. This can effect all areas of instruction including language development, reading, math, etc. "Language supported by symbolic movements, such as sign, gesture or finger spelling, and by visual methods, such as pictures, symbols, words, and sentences (multisensory methods) will help the children to remember information." (1994).

Feuerstein et al. point out that the most important aspect of working with a child with Down syndrome is not only to provide him/her with models for imitation, but also equip the child with the necessary verbal, motor and conceptual tools for learning (Feuerstein, Falik and Rand, 2002). This means that is it important to lead his thinking to the internal processes involved in his /her own cognitive functioning (*insight*). Goals are oriented to 1) establish an autonomous schema to understand not only the activity but the context, inhibiting the tendency to behave by repetition or imitation, and to 2) overcome the isolated perception of reality where each event is considered without a

frame of reference. Mediation must be addressed to this target and it should be accompanied with a clear interaction that provides what is needed to differentiate the own process to the others. From this perspective, it is possible to hypothesize that mediation of deficient cognitive functions in the three phases of the mental act –*unsystematic and impulsive exploring, lack of spontaneous comparing behavior, episodic grasp of reality, and egocentric communication modality* it will enable the child to have more clues to understand the context, and what is expected of him in order to reach a goal and how to regulate his own behavior

Methods: the intervention program

We start with an intensive interactive assessment of the child, based on the principles and instruments of the Learning Propensity Assessment Device (LPAD) (Feuerstein e.a., 2002). Direct observation and analysis of the process and its cognitive components used at solving problems allow us to identify those cognitive functions that can be modified, the type of intervention that is required to obtain such modification, and how much mediation is needed to extend the change to new situations. This battery is especially indicated to evaluate learning processes in three groups of populations: (1) students that still have not developed some cognitive functions, but for whom development is presented as accessible with a systematic mediation; (2) individuals in whom cognitive functions have been severely affected by internal or external conditions; (3) individuals at risk of never reaching an adequate functioning because they present with severe dysfunctions impeding development.

Others instruments have been taken from Feuerstein's Instrumental Enrichment Basic program (Feuerstein e.a., 2006) and we also have used some educational non-structured games worked through the dynamic assessment principles

The principles basically are first to collect information on basic ways of functioning (the "pre-test"), then to mediate in order to teach principles or behaviours ("learning phase"), followed by again an assessment of modifications (the "post-test"). In many cases there is not a linear application of these three phases, but a continuous cycle.

Once the analysis, conclusions and orientations are discussed with the family and the school team, a period of systematic intervention takes place. In both phases, the program includes two 1 ½ h sessions a week. Two examiners

lead all the sessions using the mirror room, which allows professionals and parents to observe the intervention from the other side without interfering in the process. This condition enables parents to get some samples of mediation and to encourage them to look at micro changes in order to recognize them in their child and to value them. All the sessions are filmed in order to have a clear and complete register of the interventions. Once a week the professional team has a working meeting in order to analyze the quality of the mediation offered, to register changes that have been possible to observe, redefine targets, and to find new ways to increase the impact of the mediation process. For this purpose the Profiles of Modifiability and its parameters are used (Feuerstein e.a., 2002) for the organization, description and a deeper analysis of observations and remarks which have been done in the different sessions. The school observations and the register of parents' meetings are included in its analysis and interpretation. Once a month two separate working meetings are organized with the parents and with the school, in order to share our preliminary conclusion and suggestions and to permit the transfer to the environments, creating or developing an active attitude towards the child.

Case studies

| V., a child with a pervasive developmental disorder

V. was referred to us at the age of 4 years and 5 months. He had been diagnosed with a severe communication disorder within the autistic spectrum associated with congenital heart disease (Ventricular Septal Defect -VSD) that required surgical repair at the age of two months; auricular deformities and vision impairment. So far no genetic precise etiology has been confirmed. He was attending a regular pre-school and he was receiving at the same time a speech therapy support twice a week. However, both experiences were not seen as successful as it was expected by the family. It seemed that they had not enough insight in how learning processes occur in a child with that diagnosis. Nevertheless, his parents felt that he was making some progress, although it was hidden or not expressed because of the communicational barriers.

V.'s communication skills, at the onset of the assessment, consisted in about ten words he could recognize in a familiar set of pictures. He had

learned to associate them and to use for expressing himself through a unique sound –“*ta*”, independently of the various intentions he could have. During the first interview, we realized that the mother has invested a great effort in order to increase V.'s potential, creating a wider system of needs. That was oriented to enrich his verbal repertoire and also to integrate him into interactive games and social situations. There was neither a formal and complete test battery application nor scores, although V. was encouraged to work on some item taken from the Peabody test (PDMS-2, subtest: stationary, grasping, visual-motor integration) and a pragmatic protocol based on Prutting and Kirchner (1987) was used.

V. was initially observed and assessed for ten hours in four working sessions. From the first contact, we observed some behaviors that show us his desire to communicate and make contact, but using a limited repertoire of skills to do so. In fact, he rarely made intentional visual contacts with the assessor in the course of the first two sessions. However he did so with his mother using gestures and his own *sound word*. He also produced some voice inflections and repetitions depending on his interests. Speech was constant and repetitive; some times he interrupted it, keeping silent and abandoning any toy or concrete material which had been given to him. He was usually making stereotype movements with his body or hands. It was not easy to take him out of that kind of absence, nevertheless at the moment something was mentioned relating to his mother or grandmother, he immediately turned back to us or to the material he was touching.

| | | | | | |
|----------------------------------|-------------------------|---------------|------------------------|---|---------------------|
| Perception | General knowledge | Quantitative | Following instructions | Perceptual and functional relationships | Perceptual tracking |
| Identification of simple figures | Part-Whole Progressions | Counting Dots | Spatial orientation | Part-Whole Functional Part-Whole | Labyrinth |

Table 1. Areas of cognition assessed by LPAD-Basic instruments used with V., a child with autistic spectrum disorder

The assessment started to explore those conditions which would permit to establish an effective and longer contact and basic interaction with the child. For this purpose, we used some LPAD-Basic instruments in order to assess both his level of functioning and modalities of operations and problem solving behavior, in the areas of perception, general knowledge, quantitative, fol-

lowing instructions, perceptual and functional relationships, perceptual tracking.

These instruments allowed us to assess the accuracy, clarity and consistency of the perceptual process; basic knowledge and quantitative concepts, evaluation of spatial orientation through following directions; perceptual Gestalt, classifying and categorizing, the recognition of geometrical figures, ordering and sequencing through the modality of pictures and puzzles; perceptual tracking and motor planning; grasping and reacting to incompatibilities and absurdity.

Mediation of intentionality and meaning were the way to initially create eye contact with the mediator. Telling stories in which his mother or grandmother were the protagonist, were the way to establish communication, because he was so enthusiastic about them that V. started to address them to us. Increasing attention span and ability to focus attention unhindered by peripheral distractions were our principal goals of mediation in order to enable him to increase the period of time attending a task. The ability to distinguish critical stimuli from the background was also mediated. The required mediated intervention was strongly concrete in those situations where he had to manipulate more than two objects. The mediation process was then oriented to explore the presence of mental tools that would enable him to understand simple instructions and to follow them. We started using most meaningful stimuli, i.e. pictures of his parents, grandparents, younger sister and/or mediators' faces and gestures. The content consisted of different emotions he had to identify on its specific and proper features according to close experiences and context. Later on, we kept the same instructions but moving further away to events and people not related to his own and restricted system of needs.

| Mediation process | | |
|--------------------------------|---|---|
| Criteria | Moment | Strategies |
| Intentionality and reciprocity | Before letting him to be involved in the task | Physical control of his head, affective contact, holding |
| Meaning | Before and during the learning process. | Telling stories related to V.'s family and connected to the situation |
| Regulation of behavior | Before and during the learning process. | Increasing inflexion and intensity of the mediator's voice |

| M., a child with Down syndrome

M. was referred at the age of five years and eleven months. He is the second of three children. He was attending a regular pre-school kindergarten. He also attends to a Down syndrome foundation for a supporting program in speech therapy and preschool programme three times a week.

In the first session M. presented to us as a child with rather good speech and a great capacity to define the problem in different tasks by his own. He was able to be concentrated the first minutes of the activity. Nevertheless the path of his functioning was perceptual and led by his own motivations, giving evidences of a strong lack of self control and planning behavior and constantly manipulating the adults who were around him.

He refused to be involved in activities which were not in his need system, inserting a strong barrier between him and the examiner. He showed himself as a skilful performer but he was extremely used to act by repeating conducts without understanding. We used some tasks taken from LPAD Basic instruments in order to assess a variety of cognitive functions and mental operations in different modalities and with an increasing level of complexity and abstraction.

| Percep- tion | General knowledge | Quanti- tative | Following instruc- tions | Percep- tual and functional relation- ships | Seriation | Memory |
|---|---|------------------------------|--------------------------------|---|---------------------------------|---|
| Basic Complex Figure Drawing test | Part- Whole Progres- sions | Organiza- tion of Dots | Spatial orientation | Part- Whole Functional Part- Whole | Progres- sion of Pictures | Func- tional associa- tive recall |

Table 2. Areas of cognition assessed by LPAD-Basic instruments used with M., a child with Down syndrome

Mediation was initially addressed to the following cognitive functions: attention span; restraining superfluous conversation; ongoing improvement in temporal orientation and understanding and estimation of the passing of time; sequencing events in terms of a logical or time progression; spontaneously comparing behavior; planning behavior.

| Mediation process | | |
|--------------------------------|---|---|
| Criteria | Moment | Strategies |
| Intentionality and reciprocity | Before letting him to be involved in the task | Make a written plan and check list |
| Transcendence | Before and during the learning process | Discussing other situations it would possible to be applied |
| Regulation of behavior | Before and during the learning process | Role playing |

Results

In this first year of intervention it has been possible to recognize dramatic changes in V.'s behavior, which are mostly in the input cognitive functions domain and the motivational and affective area. At the present moment, V. has increased his verbal repertoire using three or four meaningful and appropriate words in those situations when he wants to be involved in or when he does not, establishing an objective and effective connection with the other through visual and/or tactile contact, transforming the primitive "ta" in a different code to communicate himself, his wishes and basic emotions, showing himself warmly, indifferent or angry. The attention span increased, enabling him to follow a same activity much longer than the beginning of the treatment and increasing the tolerance to frustration. He also has learned during a directed task to restrain superfluous and non-pertinent conversation. These changes have impacted his functional structure remaining stable in time and resisting to the variation of original conditions where the first learning took place. In this sense, V. knows now to whom to address his looking and greetings, deciding to do so from the consideration whether a person belongs to his familiar system or not. The role of the adult has been changed in a certain way, passing from the constant concern for taking the initiative investing energy, time and different means to establish an interaction with V., to the one who has to pay attention to his desires and attempts for communicating his emotions. The way to reach all these outcomes was always the same: to invest a great mediation before allowing him to act, being explicit in communicating one's intentionality and especially giving a personal meaning to each activity, task or situation where V. must be involved, focusing his attention to the me-

diator's face or to the relevant part in concrete stimuli. The mediator must emphasize the tone curve of the voice, even using music to do so, according to the proper communicative intention or specific emotion that he/she wants to transmit. In our opinion there are meaningful samples of changes suggesting that the modifiability has been deep and structural, and has created a few new behaviors and learning in others fields of V.'s functioning.

| Features of manifest level of functioning | Samples of changes |
|---|--|
| Limited repertoire of skills to express himself | Verbal repertoire was increased (No, right, Mom, Dad). He decide to whom address his attention |
| No one meaningful word ("ta") | Using a unique sound - word ("ta") with different intentions according to his current emotions |
| Need of using an alternative communication system | Using words in appropriate context |
| Repetitive speech | Restraining superfluous and non pertinent conversation |
| No visual contact | Visual and physical contact to communicate with others |
| No focusing, 2' Attention span | Attention span rises up to 10-15 minutes |
| High distractibility | Increasing tolerance to frustration |

Table 3. Sample of meaningful changes in V., a child with autistic spectrum disorder

After ten months working with M., it is possible to state a relevant sample of changes, enhancing cognitive functioning prerequisites and self regulation of behavior abilities (table 4). This may offer the possibility to go ahead in his learning process, which was very interfered because of his high distractibility tendency and a low level of reasoning in his performances. M. has been enhanced with a larger repertoire of cognitive strategies and principles to understand a problem or a given situation, which enable him to establish a plan before acting.

Mediation also enabled M. to be more attentive and willing to be open to an analytic process, investing more time to observe and gather information. It is important to point out that mediation was given from a concrete and physi-

cal manner in the first sessions towards a more abstract verbal mediation in the last period of treatment. Mediation of intentionality and transcendence before initiating an activity was the *key* to get reciprocity from him and to create those conditions to work for a longer period of time, accepting other proposals and making conscious efforts to keep his behavior under his own control.

| Features of manifest level of functioning | Samples of changes |
|--|--|
| High distractibility | Increased attention span |
| Loquacity and non pertinent conversation | Restrain superfluous conversation during the activity by himself |
| Used to act by repeating and without understanding | Invests time to understand the different steps of the activity |
| Lack of self control | Makes a plan before acting |
| Non planning behavior | Follows the sequence a working session |
| Low tolerance to frustration | Increased tolerance to frustration |
| Restricted motivation system | Enhanced internal motivation |

Table 4. Examples of meaningful changes in M., a child with Down syndrome

Discussion

With the help of a dynamic interactive assessment, based on Feuerstein's LPAD, it has been able to show significant samples of learning propensity in children with severe language, communication and cognitive dysfunctions. The LPAD, is a set of tools and mediational intervention strategies to assess the propensity to acquire a richer cognitive repertoire, searching for those conditions needed to provoke critical changes in different dimensions of human functioning. Its dynamic, interactive, systematic, yet flexible approach not only permits to observe the learning process directly, but also to create opportunities to activate and mediate the use of psychological tools not yet available in the cognitive repertoire. The two learners that we have referred to, have benefited from these mediational processes to modify behaviors that previously had been assumed to be permanently deficient. Classic functional assessment, using standardized scales, merely focuses on deficiencies and often concludes too hastily that absence of function means permanent loss. It is

often based on a static, deterministic model of development. But the absence of a learning phase in classic assessment precludes possibilities to look for possible changes. There is never enough time to look for them. On the other hand, mediated learning experience for children who have not yet acquired cognitive functions demands more attentive and systematic interaction. It is necessary to work at eliciting and evidentiating micro changes in order to make children, parents and educators enough aware to appreciate the long course of structural modifiability. Certainly, in the limited time of assessment (altogether 15 hours in the first phase, plus twice weekly sessions of 1 ½ h) changes are still not stable because of the strong and numerous deficiencies they have. Despite this, the outcomes obtained at the present time suggest that dynamic assessment and intervention point to the capacity of human modifiability and can offer a concrete and hopeful way to overcome the obstacles and resistances in families and educational institutions.. This yields much more relevant information for parents and teachers, whereas classic assessment often ends with superficial information and negativistic prognosis.

Mediation of intentionality and reciprocity, meaning and transcendence, establishes a reciprocal interaction with the child, stimulates motivation, enlarges its needs' system and generates new habits and behaviors in children whose parents and teachers often do not expect.

One of the difficulties is to know whether and how these new behaviors may be transferred to other contexts, and become a structural cognitive change, so that they are used independently by the child; and how to make them more resistant to the transformation of original learning situation where they have been mediated.

Another difficulty is the qualitative nature of the whole process, in data gathering and reporting. The whole is entirely dependent on the quality of the mediational interaction process, thus on the examiner. This may be a strong as well as a weak point. The strong point is that excellent mediators may bring about significant changes. The weak point is the lack of objectifiable quantified operationalization of test results and mediation. Case studies have little value when it comes to an evidence-based approach. Because of the very relational character of the cause of change – i.e. mediation – it is not reproducible in a deterministic way, as one would apply any technique. However, the evidence base could be enlarged when research is done with more single case control studies like the ones presented. Moreover, because of the very educational qualitative and flexible nature of the mediated learning process, flexibility of procedures and reporting are inherent and essential. Quantifiable

operationalisation or standardization risk to bypass these essential characteristics, which may harm the process.

It seems to us that through dynamic mediated assessment a way is given – besides offering a better mediated learning experience - for a more coherent interaction with family and educational system. So far, our target to elaborate mediated guidelines to parents and teachers, so that environments and interactions can be enriched; and through the movement from passive to active attitude, it is possible to change the pessimistic view of development towards a stronger belief system in human modifiability.

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