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Autism Perceptual – Behavioural Precision Scale

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Abstract:

The Perceptual-Cognitive-Behavioural Diagnostic Precision Scale for Autism Spectrum Disorder allows to complement the analysis of the autism diagnosis through the measurement of variables the neuropsychological processing of human information to avoid high errors over ASD diagnosis currently existing, derived from unilateral analysis of the behaviour criteria component of the actual Scales. The empirical scoring of the Scale has been verified to N= 75, being 38 participants belonging to the TEA-1 level, 24 to TEA-2 and 13 to TEA-3, has allowed find a statistical reliability of Cronbach's Alpha average greater to .91 in the ten dimensions of the Scale: 1) comprehension, 2) significant, 3) categories, 4) intercategorical 5) relationships-neural-nodes, 6) semantic recovery, 7) social interaction, 8) social communication, 9) stereotyped behaviours, and 10) restrictive behaviours. These ten dimensions have been statistically grouped around three great categories to analysis: 1) perceptual-cognitive processing, 2) social interaction, and 3) behaviour. The conclusive statistical analyses indicate that perceptual-cognitive process category explains 88.52% of total accumulated explicative variance, social category: 10.19% and behaviour: 1.28%; which shows the importance of the perceptual-cognitive dimensional factor analysis, in order to conclude with the mean percentiles of the diagnostic conclusion regarding each ASD´ level, according to International Classification of the American Psychiatric Association DSM-5 (APA, 2023).

Keywords: *Autism Spectrum Disorder. Diagnosis. Perception- Cognition. Neural- Nodes. Semantic Comprehension.*

Introduction

The conceptual review over the 5th International Classification (DSM-5) by the American Psychiatric Association [APA] (2013) categorize the diagnostic group of people with autism spectrum disorder (ASD) as a multilevel disorder, adjusting to a compound of clinical behavioural symptoms and behaviours regarding the presence on the interaction, social communication and stereotyped and restrictive behaviours. The diagnostic specificity rest in the hierarchy over the 3 intensity levels, in terms of types of human & technological necessities, that these individuals require to receive a psychoeducational proposal adapted to their particularities, which covers from the presence of lesser needs (level 1) up to specific needs that required a much more human/technical help (level 3). However, this does not mean that the intensity levels regarding grades and help types respond to a precise tag, but on the contraire, the three severity levels combine with each other along the multiple intensity sequences in one or the other dimension, or inclusive among all of them, comprise the ASD´ diagnostic group.

The presence of this limitations, conceptually explained as specific permanent necessities and the human and/or technological help required, do not present in a unilateral form, but at the same time, they are interrelate with the set of other basic psychological parameters that

comprise the human cognitive process, which conceptual description is based on structural deficits, found around the comprehension, codification and recovery of information, meaning, in the process of the semantic comprehension that comprise the model or type of the perceptive-cognitive information process particular in individuals with ASD, in which both, clinical consequences and conduct & behavioural, on one side, and the type or model of cognitive process, on the other, mutually influence to form a characteristic clinical frame and highly specific diagnosis for individuals with ASD (Cain & Oakhill, 2007).

In this regard, the prosecution or functioning perceptive-cognitive human processual, in general, is structure based on the functioning that starts with the reception over the stimulus, continues with the process for the cognitive codification, which implies the analysis of the conceptual contents received, throughout the integrated sequence of establish neural relations with concepts or categories previously learned, already existing in the permanent memory or long-term memory. Throughout this codification process, exert influence, logically, all the emotional and motivational processes that interrelate directly with the cognitive processual frame, as well as with the perceptive principles of the Theory of the Mind, which means, the stimulus is influenced in its initial analysis in accordance with the perceptive-cognitive attribution made by individuals with ASD from the perspective of the context or the interlocutor. And as well these particularities take part in any of the three levels of the disorder, in various severity grades, in accordance with the specific levels of the classification, resulting in a highly heterogenous group of continues diagnostic categories, for which, the phyco-educative and social intervention proposals must take into consideration each particular specificity, as well as the concrete analysis of each personal and relational situation.

The complexity over these dimensional interactions among the three levels of ASD progressively exert a substantial incidence in the functionality of conducts, responses and daily actions that might disrupt interrelated different cognitive domains, which facilitate the individual adaptability to social context and the environment in which they live, both in relation to the conceptual domain, as well as to the social domain and, finally, fundamentally affect the practical domain.

The conceptual domain characteristic in individuals with ASD makes reference to the assimilation and codification of conceptual categories and concepts received initially, which are perceived as perceptive units isolated centred in the details, with limitations to immediately carry out meaningful attribution of the incoming concept. By doing it like this, it increases the difficulty on the development of autonomous relations of those concepts with other contents previously learned, and, in consequence limit the integral semantic comprehension, relating directly with an own mode of processing the perceptive – comprehensive of the stimulation from the environment, the cognitive interpretation that is made of it and the attribution of its meaning, which facilitates its storage in terms of semantic contents.

The social domain refers to the way of carrying out social interactions adapted to the context in which individuals with ASD participate, as well as it also refers to the quality of reciprocal interrelated social communication during the interaction and the level of complementary emotional expression associated with the communication. In this domain the principal characteristic of individuals with ASD is the tendency to stablish a particular interactive relationship, in which fundamentally act from their own perspective of their self and stablishing very little relation with the point of view or comprehension over the mental state of the other person, that justifies the theorical presupposition of the mind. However, this doesn't mean that individuals with ASD are not aware that their interlocutor has a mind or that they ignore it, much less that they do not want to interact with it, but rather that the particular deficits in the attributional processes are manifested in the cognitive plane to understand the personal perspective of the other in its

contextual meaning (Serafini, Engel-Yeger, Vazquez, Pompili & Amore, 2017).

Finally, the practical domain already refers to the abilities that are proper to develop the personal autonomy of life and the actions of daily life, as well as the orientation and insertion to social – labour environment, substantially limiting the full transition to adult and active life. Logically, this domain is significantly influenced by the two previous domains, but also, the exercise of the practical domain, if it is mediated by the conceptual and social process, positively relapses into the other two domains, globally improving personal and social development. Thus, an active practice developed on the reciprocal social and interactional domain significantly improves the conceptual domain, in a way that in this domain, the conceptual, will increase the concepts and categories of the attributed meanings, which, in turn, allows for gradual progress in the processes of generalization of learning to contexts and as consequence, the adequacy of applied behavioural responses in the practical domain. In addition, by increasing the processes intrinsic to the conceptual domain, it will now be possible to carry out new, more complex learning, without the cognitive cycle having to start each time as if it were the first. Therefore, to the extent that conceptual and categorical units increase, there will be a greater tendency to make a global attribution of the initially perceived stimuli.

Then, the criteria related to the perceptual-cognitive elements become fundamental factors of the specific diagnostic picture of ASD, which complement the objectifiable criterial groups of behavioural and behavioural evolutionary development.

Now, McQuaid et al. (2021) affirm that the knowledge and training of the diagnostician about evolutionary functioning is a fundamental facet for the validity and reliability of the diagnosis, since the degree of the levels of functional adaptability of the personal perceptual-cognitive system to the environment and the evolutionary development of basic human abilities is what, in general, allows to initially define a differential diagnostic process. The referent skills correspond, both with the skills of daily life, as well as with the interpersonal and communication skills, so that, any alteration in one or several areas, initially facilitates the detection of potential indices of a differential diagnostic process, in terms of statistical probability, which must then be corroborated by analysis in the set.

In this sense, the successive changes, sometimes very subtle, that imply the differential demands of the contextual environment to carry out an adapted behaviour or response, supposes that the levels of functional adaptability of people with ASD to different contexts, derived from these demands of social interaction, they generate significant limitations to adjust an adequate functional response (Bölte et al., 2019; Chatham et al., 2018; Dellapiazza et al., 2018; Nevill, Hedley, Uljarević, Butter & Mulick, 2017; Williams et al., 2018).

In this sense, there is an important link between the evolutionary or developmental process with the characteristics of the process of adaptation to the specific contextual environment in relation to people with ASD, which already begins in early childhood. These limitations are specifically focused on the processes of re-elaboration, generalization and application of learning to the adapted environment, which persist and continue throughout adolescence and adulthood (Pugliese et al., 2015).

The successive scientific investigations that have emerged from the publication of the 5th edition (APA, 2013, *ob. cit.*) have evolved the concept of ASD towards broader criterial charts than those simply based on behavioural elements, so that the triad The general basic behavioural framework, collected by Wing & Gould (1979), is surpassed, not only by the strictly behavioural-objective level, but also by the incorporation of new units or diagnostic criteria, whose base is based on the psychological functioning. neurology of information processing.

But, for this reason, the incorporation of the new dynamic diagnostic criteria should not and cannot dispense at a 100% level of the manifest behavioural and behavioural aspects, if a certain scientific rigor is to be maintained (National

Institute for Health and Care Excellence, 2013), as shown by research by Frazier, Youngstrom, Kubu, Sinclair & Rezai (2008), Lecavalier et al. (2006) and also Snow, Lecavalier & Houts (2009), carried out through factorial analysis of behavioural groups of the diagnosis, through which they conclude that socialization behaviours, reciprocal social communication and the presence of restrictive and stereotyped behaviours constitute a fundamental general basis for the specific recognition of the specific differential diagnosis of the diagnosis.

In this sense, Bauminger-Zviely & Shefer (2021) affirm that during childhood, social play develops gradually, in which boys and girls participate in parallel activities, later social play emerges, which involves direct participation in the interaction with peers, giving rise to interactive play and complementary activity with peers, where mutual reciprocal processes take place, which are the facilitators of intrinsic individual growth; however, in people with ASD, observe very little progress in this progressive developmental process, allowing a reliable differential diagnosis (Eggum-Wilkens et al., 2014; Howes & Matheson, 1992).

The specificity of perceptual-cognitive processing is significantly associated with the genetic phenotypic complexity of this specific disorder, which significantly affects the interactive synaptic process, in relation to the processual flow of incoming information, especially based on the interrelationship of information. new incoming with previously learned stimuli and learning. The latter, the previous stimuli, have possibly already had limitations to make attributions with meaning or of a semantic nature for their encoded transfer to permanent memory; but, without a doubt, the greatest difficulty lies in the ability of people with ASD to autonomously create significant nodes or relationships between concepts and information categories, which are the ones that, in the end, will serve as neural fluid to facilitate communication. retrieval of information from permanent memory, without which, the new incoming information will find many obstacles for its semantic attribution and, consequently, allow its comprehension and consequent coding (Mayer, 2017).

Indeed, perceptual-cognitive processing is supported on the basis of semantic understanding of information, which is developed from conceptual information encoded and stored in long-term memory or permanent memory, so that limitations Functional synoptics' in this process alters the perceptual-cognitive system in a particularly important way, whose general characteristics are specified in people with ASD in the existence of partial disconnections in this dynamic process that produces limitations to link the information necessary to elaborate an adapted response (Harris, 2017).

However, despite the importance of the criteria that make up this cognitive dimension and the empirical evidence of the importance of the perceptual-cognitive dimensions as highly significant factors of diagnosis, they are not properly specified in the existing diagnostic instruments of ASD. Therefore, it is essential to delve into the empirical evidence of the technical instruments at the service of the analysis of pragmatic-semantic processes, in order to place with validity and reliability the diagnosis of the level of ASD, as well as, consequently, facilitate the basic objectives for an intervention integrated psycho-educational and social, as facilitated through the Bishop's ALICC (2000; 2013), which relate and significantly associate skills and social communication, restrictive behaviours and perceptual-cognitive processing (Adams, Lloyd, Aldrede & Baxendale, 2006). The study concludes with a series of recommendations for future research in the area of ASD, among which it is worth highlighting: 1) the need to develop instruments to comprehensively measure pragmatic and semantic skills. 2) develop skills programs for the development of pragmatic practices of integrated social language, and 3) encourage the active participation of families and professionals during the diagnostic processes and consequent intervention.

According to these theoretical hypotheses, in this study, the fundamental general objective is

to elaborate this Scale, in order to evaluate the specific concretion of the perceptual-cognitive factors, duly weighted, in relation to the criterial dimensions of the DSM-5 classification.

Statistical Analysis

A total of 75 students with a previous diagnosis of ASD were participated in this study, with different ASD´ levels (1-2-3) and from different year-old range groups (see Table 1). Data has been found along the 7 years, located between 2014 and 2021.

Table 1. Study Participants (N: 75)

	3-6.9	7-10.9	11-13.9	14-17.9	>18	Total
ASD-1	5	19	8	4	2	38
ASD-2	6	8	4	4	2	24
ASD-3	4	2	5	2	0	13
TOTAL	15	29	17	10	4	**75**

The Scale has been applied to 3 ASD´ levels, from 3 years- old, of which, 15 are between 3 and 6.9 years, 29 between 7 and 10.9 years, 17 between 11 and 13.9, 10 between 14 and 17.9 years old and 4 participants over 18 years old. Likewise, there´re 38 participants with level 1-ASD, 24 of 2- ASD and 13 of level 3-ASD.

The Scale is made up of 2 fixed variables (group and age) and 10 dynamic variables.

The 10 dynamic variables are consistent with the 10 dimensions of Scale (see Table 2).

Table 2. Variables

Variables	μ	σ
Group		
Age		
Comprehension	3.38	1.99
Significant	3.41	1.79
Categories	3.46	1.81
Intercategorical	3.57	1.71
Nodes	3.89	2.05
Recovery	3.89	1.99
Social interaction	3.57	1.77
Social communication	3.49	1.94
Stereotypical behaviour	3.44	1.84
Restrictive behaviour	3.20	1.85

The 10 dynamic dimensions have been statistically reduced to 3 dimensional categories: 1) processing (Σμ: comprehension, significant, categories, intercategorical, nodes and recovery), 2) social (Σμ: social and communication social), and 3) behaviour (Σμ: stereotypical and restrictive behaviour). Descriptive data can be seen in the Table 3.

Table 3. Dimensional Categories

Dimensions	μ	σ
Processing	18.38	9.29
Social	5.32	2.72
Behaviour	5.04	2.61

The reliability analysis to check the empirical validity of all dimensions has been calculated through the Cronbach's Alpha Test (α), which allows observe that consistency of data is significantly high in all the dimensions of the Scale (see Table 4).

Likewise, the reliability analysis has found out for dimensional categories, which allows to conclude that Scale has been obtained a significant level statistical validity (see Table 5).

The explicative variance of the dimensional categories has been found through factorial analysis. Data indicate that processing explains most of the diagnosis variance (88.52%), regarding to social category (10.19%) and behavioural category (1.28%) (see Table 6).

Table 4. Cronbach´s Alpha for Dimensions

Variables	μ	σ^2	α
Group	65.52	960.62	**.92**
Age	64.74	1013.01	**.93**
Comprehension	62.80	890.11	**.91**
Significant	62.78	900.98	**.91**
Categories	62.72	900.09	**.91**
Intercategorical	62.62	903.63	**.91**
Nodes	62.30	884.61	**.91**
Recovery	62.30	884.79	**.91**
Social interaction	62.62	897.79	**.91**
Social communication	62.70	888.84	**.91**
Stereotypical behaviour	62.75	906.72	**.91**
Restrictive behaviour	62.99	929.23	**.92**

Table 5. Cronbach´s Alpha for Dimensional Categories

Dimensional	μ	σ^2	α
PROCESSING	47.81	512.69	**.96**
SOCIAL	60.87	842.67	**.91**
BEHAVIOUR	61.15	871.16	**.91**

Table 6. Total Explicative Variance*

Components	Initial eigenvalues			Sum of squared saturations		
	Total	% Variance	% Accumulated	Total	% Variance	% Accumulated
1	2.65	88.52	88.52	2.65	88.52	88.52
2	.30	10.19	98.71			
3	.03	1.28	100.00			

Note: *Method: Factorial Análisis.

Perceptual-Cognitive Diagnostic Precision Scale

The Scale begins an individual clinical history, carried out through a highly structured interview, regarding to clinical criteria, evolutive and developmental data.

The Scale develops an observational analysis regarding to the study of five vectors: I) perception, II) information coding, III) elaboration of nodes, IV) semantic recovery, and V) creativity, fiction and imagination, in order to encoding the ten perceptive- cognitive and behavioural dimensions (Ojea, 2023a).

Estimated time of application: one hour.

Scale Vectors

Perception

Aim main: To analyze the ability to understand the individual stimuli received and set of stimuli.

Materials: Several helium balloons of assorted colours. Water-based paints of assorted colours and a brush. A mobile or camera to take pictures.

Activity 1.1: "Hello! What is your name? I am... Look what I have, there are several balloons to play between you and me, I choose this balloon, you can do the same. First, we're going to inflate a balloon of each colour between the two, one for each, and now we tie a knot, so the balloons don't deflate."

1.1. Observe and note on the right the highlights related to the following items:

Understanding the task.	
Directionality of the gaze.	
Direct observation towards the balloons.	
Selection of a different coloured balloon to the evaluator.	
Capacity and movements for balloon inflation: flexibility and/or motor rigidity	
Motor fastening of the balloon once inflated.	
Are you able to tie the knot to the balloon without or with help?	
Ask for help inflating the balloon and/or holding it?	
Do you feel satisfaction with the task?	
Do you play with the balloon?	
Does the game improvise beyond those requested in the task?	
Do you make verbalizations or comments during the completion of the task? (Note which ones).	
Shows emotions of joy or satisfaction during the execution of the activity?	
Actively participate during the activity or simply follow the action of the evaluator?	
It has no verbalization, but uses gestures or an alternative language?	
Doesn´t have communicative language?	

Activity 1.2: The evaluator says "at the time that the balloons are already inflated, we are going to name it with these paintings, but in each balloon, we will only put one letter to complete the word of the full name: Do you like any names for the balloons? (Wait a while to observe the child's reaction.) If you can't think of a name, then the appraiser says: What do you think if we give it the following name: peace (p-e-a-c-e). But, since there are three letters, we are missing a balloon to inflate, then, if you like, you inflate another balloon to complete the word and then, between the two of us we paint a letter on each balloon: P- E-A-C-E. The evaluator is ready to paint the first letter "p" with the brush and the selection of a colour.

1.2. Observe and note on the right the highlights related to the following items:

Understanding the task at hand.	
Directionality of the gaze towards the evaluator.	
Do you say any name proposals for balloons?	
Wait for the evaluator to take the initiative?	
Is satisfied with the evaluator's decision?	
Are you about to inflate another balloon?	
Give the balloon to the evaluator to inflate him/her?	
Observation directly from the paintings.	
Visual motor capacity for writing the letters on the balloons.	
Ask the evaluator questions about what to do with the balloon?	
Do you make comments and verbalize without referring to the topic at hand?	
Does it verbiage and redirect the gaze to another place?	
Don't have verbalization, but use gestures or an alternative language?	
No communicative language?	
Does it show the essence of verbal echolalia's, or do you show insecurity in the task?	
Selection of a painting.	
Do you ask the evaluator for the painting?	

Do you take the brush autonomously?	
Do you ask the evaluator for a brush and/or point to it from their place?	
Do you start painting the first letter: "p"?	
Do you paint the second letter "a" on the second balloon?	
Hand movements for writing: presence of flexibility, rigidity, tremors.	
Repetitive motor movements.	
Visual-motor coordination during the activity.	
Do you paint the last letter "z" on the third balloon, or do you expect the evaluator to do?	
Do you make comments or verbalizations during the activity? (Note which ones.)	
Does it show expressive-emotional satisfaction during the development of the task?	

Activity 1.3: Very good enough, now we can release the balloons upwards (helium balloons stand alone on the ceiling) (check if the balloons have been placed indicating the full name: "peace" but move them until the word is clearly configured), look, now the whole word looks good, we can take a picture of it. (The photo is of global type and collects the three balloons, so that the three phonemes make up the complete word: "peace").

1.3. Observe and note on the right the most noteworthy aspects related to the following items:

Understanding the task.	
Directionality of the gaze towards the evaluator and observation of the balloons in the air.	
Do you perform the preservation of balloons in the air?	
Do you perform the action of pointing to the balloons?	
Does it show stillness and manifest stereotyped behaviours during the action and point to balloons?	
Does indicate each letter painted on each balloon?	
Does indicate the word "peace" painted on the three balloons?	
Does comment that balloons are right or wrong in relation to the global word they mean?	
Don't have verbalization, but use gestures or an alternative language?	
No communicative language?	
Are you trying to move a balloon to make the word look better?	
Does verbalize feedback on homework? (Indicate which ones).	
Does verbalize decontextualized comments and divert your gaze elsewhere?	
Observation of the presence of echolalic language during verbalization.	
Level of tonicity of language: Does language volume change, is it parsimony or slow?	
Level of enjoyment with the interactive task with the evaluator.	
Does it show emotional emphasis during task execution?	
Does it show emotional expressiveness to the evaluator to share the satisfaction of the action?	
Do you insist on commenting on the presence of the full word: "peace" in the air?	
Does perform actions or complement the task by improvising above what is strictly requested?	

General comments:

Coding

Aim main: To analyse the capacity of analysis of incoming information and attribution of meanings.

Materials: A mobile or *iPad*/tablet.

Activity 2.1: In the absence of prior information on a certain topic, the evaluator says: "Without further ado, I have received a message for both of us, which says: 'We are waiting for you for the game, come soon...'", But, I do not understand this message well, because I do not know who is waiting for us, or what game it refers to: Do you understand this message? You can help me."

2.1. Observe and note on the right the most noteworthy aspects related to the following items:

Understanding the task.	
Does pick up your phone or *iPad* to check what the message says?	
Does ask the evaluator for your mobile or *iPad* to see the message?	
Does carry out an analysis of the elements of the message: Who writes to us, where they wait for us, what do we play...?	
Does analyse the message as a whole? (I don't understand)	
Does make feedback and comments during the process? (Note which ones).	
Don't have verbalization, but use gestures or an alternative language?	
No communicative language?	
Does he show insecurity with the task and manifest motor stillness?	
Does try to give meaning to the message, looking at the above information: "It could be that it was a game that we talked about earlier...?	
Does it show a clear emotional expression regarding disbelief at the message?	
Is it able to include imaginative proposals to the message, assuming fictitious situations: It could be...	
Does it indicate that they should provide more data in order to understand the message?	
Does it specifically point out what is missing for each sentence of the message?	
Does expect for the evaluator to fix the message problem?	
Is it able to increase the action beyond what is requested in the activity, improvising the task?	
Does it show satisfaction with the collaboration with the evaluator during the search for solutions to the problem?	
Does ignore the message and not continue the conversation, redirecting your gaze elsewhere?	
Does entertain himself with another activity ignoring the situation?	

Activity 2.2: According to your point of view, says the evaluator, what information do you think would be necessary to understand this message because no matter how much I think about it, I cannot understand it? (The evaluator makes highly expressive emotional gestures during conversation.)

2.2. Observe and note on the right the most noteworthy aspects related to the following items:

Does smile at the evaluator?	
Does verbalize and comment on action? (Note which ones.)	
Do not have verbalization, but use gestures or an alternative language?	

No communicative language?	
Does show insecurity about the question and perform echolactic verbalizations? (Indicate which ones).	
Does perform motor movements of body stillness?	
Are hand or neck stereotypies observed?	
Does wait for the evaluator to indicate some missing element, solving the same question?	
Does it point out that the following items are missing (indicate each item in isolation): - Who sends the message, - where are we, - what do we play?	
When performing the previous action: Forgot any items?	
Does respond jointly, stating that the message should indicate who you are to call you and know what it may be?	
Can improvise any more elements, e.g., "when will that be agreed, maybe I won't remember"?	
Does it clearly express this satisfaction emotionally?	
Does show satisfaction with the development of the interaction with the evaluator during the activity?	
Does it find a solution to the problem posed?	
Does ignore the request and entertain yourself with another complementary action?	
Does constantly look elsewhere, partially redirecting your gaze to the activity and/or the evaluator?	
Does the evaluator need to redirect the gaze towards action continuously?	

Activity 2.3: The evaluator says: "Look, I´ve received another message on my mobile that says: "Sorry, I'm Lucia, the educator, it's that before I haven't explained myself well, because of the heat, we have agreed at the last minute to go to the water park to play outdoors, we are in the playground and I am writing to you in case you also want to come to the playground ..."

2.3. Observe and note on the right the most noteworthy aspects related to the following items:

Does it show social smile to the evaluator? .	
Emotional expression of verbalization and/or comments (indicate which ones).	
Does it indicate and comment that the message is now understood?	
Don't have verbalization, but use gestures or an alternative language?	
No communicative language?	
Does it look at the evaluator waiting for a response and/or clarification to the new message?	
Does perform an analysis of the elements of the message: -says who it is, - where we are, - what we play, -why does it send the message (because it is hot)?	
Does perform an overall analysis of the message: "Now understand the reason and the message"?	
Is satisfied with the message solution?	
Does it express your satisfaction expressively to the evaluator?	
Does perform an improvisation beyond what is indicated in the message, e.g. "It must be a lot of fun to be in the water park"?	
Does comment on a certain time when you went to the water park?	
Does show an affirmative answer to go to the water park?	
Does understand that it is an imagined question of an imaginary message and does not allude to going to the water park?	

Does make verbalizations or comments on the topic? (Indicate which ones).	
Does it show signs of understanding the fiction of the proposed activity?	
Does show signs of imagination to respond to a simulated message?	
Can be creative during the development of the task?	

Semantic integration:

Indicate and respond to the elements that allow the text to be understandable following a related order, retrieving all the previous information: -Who sends it, -what is the objective, -where the activity is carried out, -with whom, -why.

General comments:

Relations-Nodes

Aim main: To analyse the processes of creating relationships or neural nodes between informative contents referring to the incoming stimuli in relation to the previous knowledge acquired.

Materials: A bonsai tree seed plant and another royal princess plant. Finger painting. A pot, water. Finger paintings and a cardboard. Several vignettes with different trees (see Table 7).

Activity 3.1: The evaluator shows the above images or, if possible, a natural pot with these or other tree seeds and says: "What beautiful flowers, it is possible that they sprout so beautiful, because they feed on all the trunks to which they are attached, and the trunks, in turn, feed on the water and the stems of nature, so if any of these elements are missing: water, root, trunk, branches, flowers could not exist. Now, we will check it directly, we are going to plant some seeds in this pot so that they take root and can grow and sprout."

Table 7. Several Bonsais

	
Bonsai seed	Royal princess seed

Source: Own elaboration

3.1. Observe and note on the right the most noteworthy aspects related to the following items:

Understanding the task.	
Make a direct observation of the images?	
Does ask questions or comment to the evaluator about his explanations?	
Do not have verbalization, but use gestures or an alternative language?	
No communicative language?	
manipulate the images of the flowers, touch or point to the image repeatedly?	
perform with the finger an analysis of the process from the trunk upwards, until it reaches the flowers?	
verbalize and/or comment on it? (Indicate which ones)	
Does it show echolactic verbalization?	
Does it show stillness or stereotyped motor movements?	

directly take the materials to carry out the planting in the pot?	
ask the evaluator for the items to perform the task?	
Shows satisfaction with performing the task?	
Express to the evaluator your satisfaction in an expressive way?	
When performing the activity, improvise on the activity?	
Increase the action with activities beyond what is requested in the task, generating an invention or imagination about its development?	
Are the assessments he makes realistic stating that it will still take time to produce the flowers?	
Is it able to show imaginative aspects about the imagined growth of flowers?	
Is creative during the development of the activity?	
Does constantly ask the evaluator for help to conduct the planting task?	
Does stay away from performing the task, waiting for the evaluator to perform the process?	
Redirect his/her gaze and attention elsewhere and keep busy with another task of his/her own?	

Activity 3.2: The evaluator places the finger paint on the table and a cardboard and asks the evaluator to draw a picture with a process similar to the previous one: The growth of a flower tree from the root, the evaluator begins by drawing with his finger a tree trunk and says: "Now, you can follow and paint the branches of the tree, the flowers or any other element you can think of". Subsequently, the evaluator paints the water to feed the tree and says: "On time, if you like, you can paint a sun." Finally, between the two, they paint flowers of different colors on the branches of the tree.

3.2. Observe and note on the right the most noteworthy aspects related to the following items:

Understanding the task.	
Directionality of the gaze towards the evaluator.	
Observation of the representative vignettes of the flowering tree.	
Does make related comments or verbalizations? (Indicate which ones).	
Does take the paintings on your own on your own?	
Does point out and ask the evaluator for the paintings?	
Does continues the drawing that the evaluator started in a coherent line?	
Don't have verbalization, but use gestures or an alternative language?	
No communicative language?	
Does start a drawing outside the one made by the evaluator?	
Does correct or rectify the evaluator's drawing?	
Does the drawing stay within the coherence of the growth process of the flowers of a tree?	
Is his drawing not related to the developmental capacity of the flowers of a tree?	
When the drawing, does ask questions or comments to the evaluator?	
Does show an autonomous and spontaneous attitude towards the realization of the drawing?	
Does show doubts or stillness during the process?	
Do anxious manifestations occur and demands the attention of the evaluator with the gaze?	

Are stereotyped movements in fingers, hands, or movements in the middle of the body observed?	
How is the visuomotor expression of the stroke: flexible or rigid?	
How is the visual coordination of the stroke?	
Does shows insecurity during the activity?	
Does show satisfaction with the interaction with the evaluator during the task?	
Does it manifest an emotional expression to share satisfaction with the task?	
Does persist apathetic and passive during the action?	
Does constantly redirect attention elsewhere?	
Does look away from the activity and entertain yourself with something else on the table?	
Does the evaluator need to constantly redirect you throughout the task?	
Is active during the activity?	
Does comment on the meaning of the activity?	
Does show signs of understanding the fictional or symbolic meaning of the drawing?	
Does make imaginative comments about drawing?	
Does it show own creative elements that he´s adding to the drawing?	

Activity 3.3: "Well, we have already represented a tree with its flowers, we can play to insert two types of seeds on this pot, then two trees would be born that would produce different flowers, if it seems good to you, I will insert the flower of the bonsai tree, you can insert the flower of the royal princess flower tree ..."

3.3. Observe and note on the right the most noteworthy aspects related to the following items:

Understanding the task.	
Makes comments or verbalizations. (Indicate which ones).	
Ask questions about how the exercise is done?	
Don't have verbalization, but use gestures or an alternative language?	
No communicative language?	
Does comment on how long it may take for the tree to grow?	
Does make observations that won't see results anytime soon?	
Does show signs of imagination about the growth of the tree in the future?	
Psychomotor coordination on the insertion of the plant in the pot is adequate?	
Does it have stiffness during the process?	
Is he/she appearing insecure?	
Does it indicate anxiety traits during planting?	
Does constantly redirect attention elsewhere?	
Does the evaluator direct attention very frequently?	
Does it adequately respond to the questions posed by the evaluator?	
Does it increase your actions regarding the process of insertion and growth of the tree above what is strictly requested?	
Does it feel comfortable during the interactive process with the evaluator?	
Are expressive-emotional signs of the feeling of comfort observed during the session?	

Activity 3.4: Suddenly, the evaluator accidentally throws the pot on the floor and all the work is damaged and then, the evaluator says: "Wow, sorry! I have fallen the pot to the floor, what a shame, tell me what can we do now? Do you have a solution? (The evaluator is emotionally upset)."

3.4. Observe and note on the right the most noteworthy aspects related to the following items:

In the situation, does show restrictive behaviour, e.g., do you cover your ears?	
Does show an emotional reaction of bewilderment to the unexpected situation?	
Does it show a noticeable elevation of anxiety?	
Does a behavioural reaction of irritability occur?	
Does it show constant repetitive verbalizations?	
Is it necessary to reassure/calm him during the unexpected session?	
Does look at the evaluator and remain thoughtful, showing no reaction?	
Does expect the evaluator to solve the problem?	
Asks the evaluator to pick up what has fallen?	
Does tell the evaluator how to fix the problem?	
Is he/she ready to pick up what has fallen?	
Does it begin spontaneously and individually to recompose the situation, helping in the task of reconstruction?	
As he/she do so, do you verbalize everything that needs to be done to bring the situation back to square one?	
Is he/she participative and active in fixing the problem?	
Does need help and guidance to perform the actions of recovering the pot?	
Does it add comments beyond what is strictly necessary, e.g., does it indicate that something was broken and that can no longer be fixed?	
Don't have verbalization, but use gestures or an alternative language?	
No communicative language?	

Semantic:

According to the previous activity, it is necessary to reconstruct each step that has been followed during the process on a cardboard, by means of a scheme or drawing: -plant the seeds, -trunk of the tree, -branches of the tree, -water with water, -exposure to the sun, -the flowers are born.

General comments:

Semantic Recovery

Aim main: To analyze the necessary steps to make the sweet of chocolate.

Materials: Images- vignettes about the cocoa making process, finger paints, *gomets* of different shapes, pencils, or wax paints. A natural chocolate barra (it is necessary to be careful in case there is any type of food allergy or similar) (see Table 8).

Table 8. Chocolate Type

	
Cocoa bean.	Chocolate.

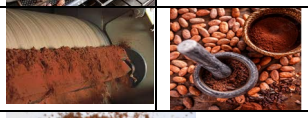
Source: Own elaboration.

Activity 4.1: This activity is based on the process of making chocolate candy from the cocoa bean.

The evaluator says: "Chocolate is formed over 12 successive steps:

1) Cultivation and harvesting of cocoa fruit, 2) shelling, 3) fermentation, 4) drying, 5) transport, 6) roasting and husking, 7) grinding and pressing, 8) mixing, 9) refining, 10) shelling, 11) tempering, and 12) molding cocoa"(see images below) (the evaluator explains each of the steps in detail). "As you can see (says the evaluator) in the following table the steps are indicated" Then, the evaluated is placed on the first image, in the right margin of the first step and with the finger marks a colour and/or shape related to the first image, pressing lightly with your finger on the box and says: "Now you can follow, making a finger mark of different colours or a different shape for each step depending on what each step suggests (see Table 9)".

Table 9. Steps of Chocolate Making

Steps	Image	Color / shape
1.Cultivation and harvesting of cocoa.		
2.Shelling of cocoa.		
3.Fermentation.		
4.Drying.		
5.Transport of cocoa.		
6.Roasting and husking cocoa.		
7.Ground and pressed.		
8.Mixed.		
9.Cocoa refining.		
10. Cocoa shelling.		
11. Tempered cocoa.		

12. Cocoa molding.		

Source: Own elaboration.

4.1. Observe and note on the right the most noteworthy aspects related to the following items:

Understanding the task.	
While the evaluator explains the steps, does he/she ask related questions?	
Does alternately redirect his gaze to the evaluator and/or the images showing interest in the task?	
Does make comments or verbalizations during the evaluator's explanation? (Indicate which ones).	
Does observe the action of painting with the evaluator's finger and ask him why he chose that colour?	
Does directly dips the finger on the different colour paints making a step?	
Does make finger marks safely?	
Does leave the paint signs very unmarked?	
Does also choose any brands with *gomets* in addition to the type of colour?	
When he/she make the paint marks, does verbalize to himself the explanation of the concept?	
Is the directionality of the gaze towards the image observed and carefully select the colour of the painting?	
Does it seem to randomly select colors?	
Does show any resistance to using finger paint?	
Do you perform echolactic verbalizations during the process?	
Don't have verbalization, but use gestures or an alternative language?	
No communicative language?	
Does it exhibit restrictive or stereotyped behaviours during the process?	
Does the level of colour spot realization have adjusted visuomotor coordination?	
Does increase the paint signals by also making marks to differentiate the steps?	
Is imagination observed during the process of selecting brands and colours?	
Is creative by increasing activity beyond what is strictly requested?	
Does verbalize with a flexible tone during the activity?	
Is there no verbalization, so he/she use gestures or alternative language?	
Does show satisfaction with the interaction with the evaluator?	
Are expressive manifestations of his/her emotions observed during the task?	

Activity 4.2: Once a colour or shape has been related to each step of chocolate making, the assessed selects the first image, He cuts it out and places it next to the color or shape made to the right of the image, then, he says: "Now you can do the same, crop each image and place it next to each colour or shape you have chosen."

4.2. Observe and note on the right the most noteworthy aspects related to the following items:

Understanding the task.	
Does make verbalizations or comments about the task to be done?	
Does ask questions about what you need to do in the activity?	

Don't have verbalization, but use gestures or an alternative language?	
No communicative language?	
Starts the process of cropping the image, does it present a visuomotor level and adequate coordination to crop?	
Is the process of pasting the image according to the necessary place?	
While is going through the process, does make verbalizations or comments during the process? (Indicate which ones).	
Does contact the evaluator to ask for help or ask questions during the process?	
Does place each image match the colour or figure you initially selected?	
Do they persist in attention during the development of the activity?	
Does he/she constantly divert attention from activity?	
Should the evaluator redirect attention to the task frequently?	
If the evaluator corrects a colour or shape related to the step, does he/she show stillness or anxious behaviours?	
Does show interest in doing the activity?	
Does show enjoyment with social interaction with the evaluator?	
Does expressive and emphatic emotional communication of task satisfaction manifest?	
Does show disinterest in the task?	
Does the action increase above what is asked for in the task?	
Is there any improvisation during the activity?	

Activity 4.3: The evaluator removes the images and then says: "Now tell me, following your own colours and/or shapes, what each step of chocolate production corresponds to" (the appraiser helps you during the relationship process if necessary).

4.3. Observe and note on the right the most noteworthy aspects related to the following items:

Understanding the activity.	
Does remember the steps well, relying on each color or image that he/she selected?	
Does make explanatory comments for each step?	
Does simply associate the steps, without commenting?	
Don't have verbalization, but use gestures or an alternative language?	
No communicative language?	
Remember most of the steps?	
Makes mistakes in the timing of any step?	
Does forget a step, and the evaluator should intervene?	
When the evaluator rectifies you: Does it show stillness or increased anxiety?	
Looks for the images to remember a step?	
Does use any other autonomously created support to remember each step?	
When have any difficulties, ask the evaluator?	
When a difficulty arises, redirects his/hers gaze to the other side and try to entertain himself with another complementary action?	
Is he/she active during the development of the activity?	
Does he/she show passivity during the development of the task?	
Does show satisfaction with social interaction during the task?	
Does offer emphatic signs of your satisfaction?	

Activity 4.4: The evaluator shows the ounce of chocolate and places it on the table and then says, "Want to have some chocolate?

4.4. Observe and note on the right the most noteworthy aspects related to the following items:

Understanding the task.	
Does take the ounce of chocolate, take out the paper and eat it?	
Does verbalize the action and say yes, then the evaluator?	
Does get the ounce of chocolate and open it without help?	
Need help extracting paper from chocolate ounce?	
Does the paper opening process have a level of motor coordination?	
Eat the ounce of chocolate?	
While eating, does verbalize or comment to the evaluator?	
Don't have verbalization, but use gestures or an alternative language?	
Is motor coordination related to chewing flexible or rigid?	
Does show emotional satisfaction with the action?	
Show enjoyment with interactive tasking?	
Does verbalize that he/she likes chocolate?	
Does takes the chocolate passively and interactively?	
Does show clear expressions about eating chocolate?	

Semantic recovery:

Finally, the student is asked to remember each step learned from the process of making chocolate from cocoa fruit, During the remembrance session, you do not have any material in sight, but you can ask for it if you need it. (Successes, errors, or omissions are noted. Partial memories or reference to global cocoa processing processes should be noted. Write down if you resort to the relationships established by him/herself).

General comments:

Creativity, Fiction and Imagination

Aim: To deepen the analysis of the capacity of fiction and imagination.

Materials: Waxes of different colours. A piece of paper. Cocoa beans. A saucepan and a mallet.

Activity 5.1: "Look, now we are going to make a different game, let's imagine that I have a piece of chocolate in my hand, although, as you can see, I have nothing, now pretend that I eat it Um, how tasty! Can you do it too?

5.1. Observe and note on the right the highlights related to the following items:

Understanding the activity.	
Ask questions about how to do the activity?	

Does comment on the reality of the action, saying, e.g., but there is no chocolate?	
Need help understanding the action?	
Does perform the action of simulating that he/she have chocolate in his/her hand?	
Does it perform the action of simulated eating chocolate?	
Does verbalize and/or comment on it?	
Does it show an alternative language? (Indicate which one.)	
Does improvise and increase the action beyond what is asked for in the activity?	
Does it show signs of creativity during the action, e.g., simulated offer the evaluator a piece of chocolate?	
Does it redirect attention to other, more specific interests?	
Does fictional action give him/her a certain motor stillness?	
Does verbalize with echolalia's during the action?	
Does show satisfaction with the interaction during the activity?	
Does express emphatic emotional expressions to let the evaluator know his/her satisfaction?	

Activity 5.2: "In this task, we are going to invent another way of making cocoa because we do not have all the necessary materials, since I only have a few seeds, a saucepan and a mallet: How could we make chocolate with just these materials? (The evaluator puts a few seeds in the saucepan and with the mallet crushes the cocoa bean and then says: Now, you can go on..."

5.2. Observe and note on the right the highlights related to the following items:

Understanding the activity.	
Does ask questions about how to do the activity?	
Is the verbal tone flexible or monotonous? How is voice modulation?	
Does it have an alternative language to oral?	
Does look at the instruments and redirect his/her gaze towards the evaluator?	
Does indicate that chocolate cannot be made with these instruments?	
Does verbalize and comment on issues related to the activity?	
Does redirect his/her gaze to another place and leave the activity?	
Does take the mallet directly and continue to maze the cocoa bean as the evaluator does?	
Does point and ask for the maze and/or bowl to the evaluator to perform the action?	
Does hammer the cocoa bean into shape?	
Does ask questions or make comments, e.g., can no longer be done with just these materials?	
Does it increase the action beyond what is expected?	
Does improvise on the action and carry out complementary actions to those carried out by the evaluator?	
Level of visual and psychomotor coordination.	
Does show satisfaction with the activity?	
Does show satisfaction with social interaction during task execution?	
Does he/she show emphatic and expressive to demonstrate satisfaction to the evaluator?	

Activity 5.3: "Uff, we can do anything, because whatever we paint on this paper becomes reality." On then, the evaluator draws with wax a truck to transport the cocoa and says: "Look, in this truck we can transport the cocoa beans, now you can paint everything you want to make the chocolate."

5.3. Observe and note on the right the highlights related to the following items:

Understanding the activity.	
Ask questions about the activity?	
Does it verbalize or comment on the reality of the action, e.g., "but are they still not true?"	
Does he/she express in alternative language?	
Does take the paper and take the crayons to make a drawing?	
Does point to and/or ask for the paper and/or crayons to make the drawing?	
Does make a single drawing to indicate the task of transforming cocoa into chocolate?	
Does make two or more drawings with different waxes to indicate two steps of the transformation process?	
Verbalize and/or make comments during the development of the activity?	
Does it show any kind of echolalia or stereotyped behaviour during the execution of the actions?	
Not showing interest in the task?	
Does direct attention to other specific topics of interest?	
Does it show emotional expressiveness of dissatisfaction with the activity?	
Does show apathy with the activity?	
Does it display any kind of stereotypical behaviour? (Indicate which).	
Does he show motor stillness and manifest a certain level of anxiety during the execution of the task?	
Does show enjoyment with communicative and social interaction with the evaluator?	
Does manifest emphatic emotional expressions during the development of actions? (Annotate type of expressions).	
Does it increase the actions beyond the expected requests for the development of the activity?	
Does make gestures of dissatisfaction with any stimulus, bringing your hands to your ears, etc.?	
Does have a tendency to lose attention on the task and go to other topics of particular interest to him/hers?	
Does the evaluator need to reorient his/her to the task frequently?	
Is he expressionless, cannot know what he feels during the development of the interaction?	

General comments:

Dimension Coding

The deep analysis of five vectors has allowed find the corresponding score to 10 basic dimensions of Scale scored with quantitative continuous values from 0 (no deficit) to 4 (severe deficit): Direct Scores (DS).

1. Understanding conceptual units.

There is no understanding a significant conceptual unit. There is no ability to imagine situations different from the direct reality of the context.	4
Concretion of details of a conceptual unit, but there is a small attribution to imagining global symbolic reality (if the attribution of imagination isn´t shown, indicate code 4).	3
Ability of discern an analysis of the conceptual unit to access its meaning.	2
Understanding of a conceptual unit, but there is a tendency to subdivide the overall unit into its details related.	1
There is no qualitative deficit.	0

2. Significant reconstruction.

Total absence for the reconstruction of the semantic global information received.	4
Reconstruction is comprehensive about the stimulus, but it needs mediated external support.	3
Reconstruction of the conceptual details of meaning global has been developed on the previously established relationships.	2
Rebuild the global stimulus presented through the relationships created by self. There is ability to making partial attributions of the symbolic meanings (if he doesn´t have this attribution of symbolic meanings, indicate code 2).	1
There is no difficulty to understanding the global meaning of the new stimulus.	0

3. Conceptual categories.

There is no understanding the belonging of the conceptual units to one conceptual category.	4
The construction of one category is limited to a specific number of concepts.	3
There is awareness that object belongs to the conceptual category, but mediated external support is need.	2
There is awareness that object belongs to the conceptual category, although there is difficult to give an such element to its correspondent category.	1
There is ability to hierarchize conceptual units inside their corresponding category.	0

4. Inter-conceptual relationships (nodes).

There is no ability to develop relationships or nodes between concepts.	4
There is no create relationships autonomously, but you are capable of learning them with mediated external support.	3
There is the ability to understand the relationships of similarity and difference of conceptual elements with their corresponding categorical group.	2
There is the ability to autonomously generate relationships between two concepts that have been previously learned. It is creative to develop relationships (if these observed relational criteria are very limited and scarce, indicate code 2).	1
There is no limitation to developing relationships with new concepts.	0

5. Categorical relationships.

There is no understanding of relationships between conceptual categories to.	4
There is comprehension of the existence of two different categories, but there is no able to attribute relationships about.	3
There is ability of establishing a relationship between several conceptual categories, but requires external mediated support.	2
There is ability to assigning a previously learned relationship or link to different categories. It observes a creativity to develop relationships or nodes between several categories (if the creativity observed is very limited, indicate code 2).	1
There is ability to create relationships between different categories.	0

6. Information recovery.

There is information recovery, but it is extremely mechanical about.	4
The recovery of conceptual information needs mediated external support.	3
The recovery of information is based on the relationship- nodes regarding to the same previously learned concept.	2
The information recovery is based on the relationship- nodes created regarding to the learned previously concept.	1
There is no qualitative disorder.	0

7. Social interaction.

There is hardly any social interaction.	4
There is social interaction and redirects attention towards evaluator, but this social interaction is very limited.	3
There is a reciprocal social interaction, but doesn´t show signs of enjoyment along social interaction with the evaluator.	2
Interacts with the evaluator and shows clear signs of enjoyment with the social interaction, but occasionally diverts attention to idiosyncratic elements.	1
There is no qualitative disorder.	0

8. Social communication.

There are barely indicators of mutual reciprocal social communication.	4
Social communication is very limited. There is an alternative non-verbal social communication.	3
There is a reciprocal social communication, but it needs constant external close support. Social communication is verbal or non-verbal.	2
There is initial and spontaneous verbal communication, but just after demands of evaluator.	1
There is no qualitative disorder.	0

9. Stereotyped behaviours.

There are highly stereotyped behaviours are observed, related to the parsimonious tone, slow, rigid and inflexible.	4
There are repetitive stereotyped movements in the hands and/or fingers and/or occasional swaying in the midline of the body.	3

There are signs of repetitive behaviours agree with unsafety situations and/or increased anxiety.	2
There is adapted behaviours, but, sometimes, motor repetitive was observed.	1
There is no qualitative disorder.	0

10. Restrictive behaviours.

There is too much referring to specific behaviours that permanently disable the selective attention.	4
There are obsessive-compulsive behaviours regarding to specific aspects, but there is ability to persevere in attention over goal- task.	3
There are signs of motor stillness and/or anxiety, but concentration on the goal- task has been held.	2
There is much sensorially to noises, food and/or other stimuli, but it allows lead an ordinary daily life.	1
There is no qualitative disorder.	0

From the coding analysis of dimensions, it is possible to proceed to sum of direct scores (see Table 10).

Table 10. Direct Scores (DS)

Categorial dimension	*Dimensions*	*DS*
(A) Processing	1.Comprehension	
	2.Significant	
	3.Categories	
	4.Inter-categorical	
	5.Nodes	
	6.Recovery	
Σ Total		
Categorial dimension	*Dimensions*	*DS*
(B) Social	7. Social interaction	
	8. Social communication	
Σ Total		
Categorial dimension	*Dimensions*	*DS*
(C) Behaviour	9. Stereotyped behaviours	
	10. Restrictive behaviours	
Σ Total		
Σμ DS (A+B+C)/ 3=		

Ds´ Transformation into Percentiles

Agreeable to DS overage of previous coding process, it is possible to transform it into their corresponding percentiles, which allows specified the diagnostic level: ASD 1-2-3 (see Tables 11-13).

Table 11. ASD-1 Level

PERCENTILES		PROCESSING	SOCIAL	BEHAVIOUR	μ
	5	6.33	2.00	.00	2.77
	10	8.33	2.00	.00	3.44
	15	8.33	2.85	.00	3.72
	20	10.33	3.00	2.60	5.31
	25	10.33	3.00	3.00	5.44
	30	10.33	3.00	3.00	5.44
	35	10.33	3.00	3.00	5.44
	40	10.33	3.00	3.00	5.44
	45	10.33	3.00	3.00	5.44
	50	10.33	3.00	3.00	5.44
	55	10.33	3.00	3.00	5.44
	60	10.33	3.00	3.00	5.44
	65	10.33	3.00	4.00	5.77
	70	10.43	3.00	5.00	6.14
	75	11.08	3.00	5.00	6.36
	80	12.73	3.00	5.20	6.97
	85	15.26	6.00	6,00	9.08
	90	20.66	6.00	6,00	10.88
	95	20.66	6.00	6,00	10.88
μ		11.56	3.34	3,34	6.08
σ^2		14.33	1.47	3,74	6.52
σ		3.78	1.21	1.93	2.31

Table 12. ASD-2 Level

PERCENTILES		PROCESSING	SOCIAL	BEHAVIOUR	μ
	5	12.66	3.00	3.00	6.22
	10	13.66	3.50	4.00	7.05
	15	14.66	4.00	5.00	7.88
	20	18.66	6.00	5.00	9.88
	25	19.16	6.00	5.00	10.05
	30	20.66	6.00	5.00	10.55
	35	20.66	6.00	5.00	10.55
	40	20.66	6.00	5.00	10.55
	45	20.66	6.00	6.00	10.88
	50	20.66	6.00	6.00	10.88
	55	20.66	6.00	6.00	10.88
	60	20.66	6.00	6.00	10.88
	65	20.66	6.00	6.00	10.88
	70	20.66	6.00	6.00	10,88
	75	20.66	6.00	6.00	10,88
	80	20.66	6.00	6.00	10,88
	85	25.50	9.00	9.00	14.5
	90	27.00	9.00	9.00	15
	95	30.00	9.00	9.00	16
μ		20.47	6.08	5.91	10.82
σ^2		17.90	2.68	2.68	7.75
σ		4.36	1.63	1.63	2.54

Table 13. ASD-3 Level

PERCENTILES		*PROCESSING*	*SOCIAL*	*BEHAVIOUR*	*μ*
	5	29,33	9.00	6.00	14.77
	10	30,00	9.00	6.00	15
	15	31,00	9.00	6.10	15.36
	20	31,00	9.00	6.80	15.6
	25	31.00	9.00	7.00	15.66
	30	31.00	9.00	7.20	15.73
	35	31.00	9.00	7.90	15.96
	40	32.40	9.00	8.00	16.46
	45	33.33	9.00	8.30	16.87
	50	33.13	9.00	9.00	17.11
	55	33.33	9.00	9.00	17.11
	60	34.13	9.00	9.00	17.37
	65	35.33	9.00	9.00	17.77
	70	35.33	9.00	9.00	17.77
	75	38.33	10.50	9.00	19.27
	80	41.33	12.00	9.20	20.84
	85	41.33	12.00	9.90	21.07
	90	41.33	12.00	11.20	21.51
	95	41.33	12.00	12.00	21.77
μ		34.46	9.69	8.38	17.52
σ^2		18.4	1.73	2.75	7.64
σ		4.29	1.31	1.66	2.42

Diagnostic Conclusion

Finally, has been possible to assemble a highly accurate diagnostic conclusion, whose statistical mean reference (μ) can be observed in Table 14.

Table 14. Diagnostic Conclusion

Total mean (μ)	*Diagnostic conclusion*
≈6.08	**ASD-1**
≈10.82	**ASD-2**
≈17.52	**ASD-3**

Conclusions

The diagnostic probability has been delimited from the upper limit of percentile 50 for each corresponding level, assuming the statistical mean as a reference indicator to set the ASD´ level.

Diagnostic effectiveness was contributed by the incorporation of perceptual-cognitive dimensions, without excluding behavioural dimensions included in the currently classifications of autism diagnosis.

Therefore, the currently behavioural process of autism diagnostic group has been complemented statistical with the perceptual-cognitive dimensional parameters, which encourage the development of neuropsychological information processing from initial sensory-perceptive process to semantic recovery of information throughout the creating networks or information relationship- nodes.

In this sense, according the Global Cyclical Theory (GCT) (Ojea, 2023b), it´s indicated that first conceptual perceptual analysis is differentially significant between ASD' group and neurotypical group, but participants with ASD also show any global understanding, although with limited semantic contents. However, people with ASD show severe deficits on executive action of nodal-neural relationships influencing the whole propositional conceptual process throughout continuous circular way.

This process has been analyzed like a whole and it allows to assurance the effectiveness of the autism specific diagnostic evaluation. Therefore, it is necessary that specialists carry out specific training in the particular processing mode of people with ASD to proceed with the differential

diagnosis processes (Kirsty et al., 2021), so that both doctors, psychologists and pedagogues require in-depth training and professional empowerment to successfully face this diagnostic process, in order to analyze and conveniently interpret the data resulting from direct observation, facilitated by technical instruments, for its transfer to the data coding processes and the final score (Kim & Lord, 2012a; Sacrey et al., 2018), since it is, precisely.

The active interpretation performed by the professional of the observed data, which occurs during the reciprocal interaction between the evaluator and the evaluated, which facilitates the increase in the validity and reliability of the coding of the observed data. A clear example of these statements is the application of the ADOS-2 Scale (Lord et al., 2012), since its application requires highly specific training on the psycho-neurological processual functioning of people with ASD, otherwise, many data would simply go unnoticed by the evaluator or, perhaps, what is worse, many observations could be misinterpreted and not encoded or miscoded.

Although, the interpretative data of the evolutionary and behavioural processual behaviour evaluated by the ADOS-2, can be complemented with the ADI-R Revised Diagnostic Interview (Rutter, LeCouteur & Lord, 2003), which presents a criterial measurement, whose reliability ranges from 67 to 100% (Kim, Thurm, Shumway & Lord, 2013), with a specificity between 64% and 94% (Kim & Lord, 2012b), in the absence of this specific vocational training, even the weighted reliability of both tests may lead to errors in the coding process, with the complementary evolutive scales that have been need (Portellano, Mateos, Martínez, Granados & Tapia, 2002).

Hence, the diagnosis process is fundamental because it is a basic aspect to ease a comprehensive gestalt global specific program design, which analyzes the cognitive- perceptive, social and practical domains, in order to facilitating psycho-socio-educational programs adjusted to specific needs at neurocognitive in the people with ASD, regarding added specifically to creating of neural and relational-nodes in which people with ASD are mostly need (Ojea, 2018).

In synthesis, this specific training should also be extended to families and caregivers, as active partners, and collaborators, both in the processes necessary for the elaboration of the diagnosis, and in the design and implementation of specific intervention programs (Miller, Perkins, Dai & Fein, 2017).

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