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Scientific observation and intervention-based of a preschool child applying Montessori method and neuropsychological studies

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CASE REVIEW PROMOTING INCLUSION AND HABILITATION DURING THE 0-6 PERIOD OF LIFE

CASE REVIEW OUTLINE

- 1. Introduction
- 2. Case Study # 4 Objective
- 3. Autism Spectrum Disorder (ASD) Overview
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CASE STUDY # 4

INITIAL PSYCHIATRIC DIAGNOSIS:
AUTISM SPECTRUM DISORDER WITH **AVOLITION**

NEUROPSYCHOLOGICAL ASSESSMENT

PROPOSED INDIVIDUALIZED PLAN FOR INCLUSION USING MONTESSORI APPROACH

ASD is a neurological and developmental disorder that affects how people interact with others, communicate, learn, and behave. Although autism can be diagnosed at any age, it is described as a *developmental disorder* as it impacts development during the 0-3 period.

the Centers for Disease Control and Prevention (CDC) reports that ASD affected nearly 1 in 68 children in the United States in 2014.

AUTISM SPECTRUM DISORDER (ASD) OVERVIEW

ASD SYMPTOMS OVERVIEW

The American Psychiatric Association *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)* describes ASD main symptoms affecting child's development. There is wide variation in the type and severity of symptoms people may experience.

- Difficulty with communication and interaction with other people
- Restricted interests and repetitive behaviors.

The primary causes of ASD are still unknown; however, studies suggest some factors that are associated with an increased likelihood of developing ASD including having a sibling with ASD, older parents, certain genetic conditions (such as Down syndrome or Fragile X syndrome), and/or a very low birth weight.

Current brain research in ASD points that the main possible neurophysiological cause for the onset of the condition **seems to be enlargement of the brain volume** in the frontal and temporal lobes that occurs in the 0-3 period of life followed by impeded growth and a possible decline of brain volumetric capacity after around 10-15 years of age.

ASD CAUSES OVERVIEW

- Many children diagnosed with ASD may also present physical and mental health conditions and may have sensory issues involving over- or under-sensibility to sounds, lights, touch, tastes, smells, pain and other stimuli.
- Diagnosis in young children is often a two-stage process.

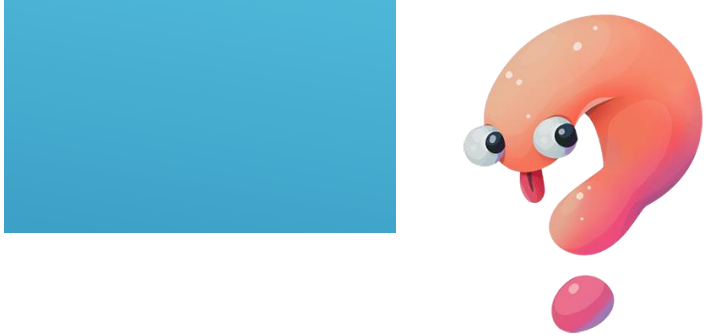
Stage 1:

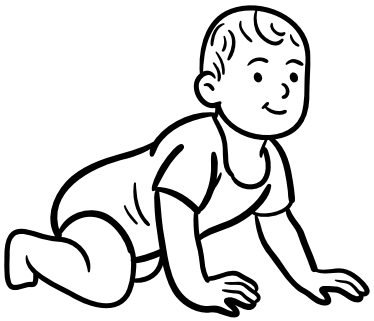
General developmental screening during Well-Child checkups

Stage 2:

Additional diagnostic evaluation

ASD DIAGNOSIS OVERVIEW





- In sciences or education, is the process of examining and detailing any phenomenon with objective and analytical intent to gathering as much information as possible and consists of a series of steps that guarantee the objectivity and demonstrability of scientific studies.
- The observer aspires to contemplate and understand a phenomenon in its manifestation without interfering. However, it is well known that the presence of an observer in many cases modifies what has been observed.

SCIENTIFIC OBSERVATION

- In the early childhood development and education field, the child is the center to the observer's work. The goal is to see the child exactly as she is through unbiased information gathering, while recognizing that the observer holds preconceived notions and unconscious biases.
- The observer must witness the different characteristics of a child with a higher degree of objectivity and become neutral and open to seeing actions and situations objectively.
- Then the observer takes mental and written notes of all observed and ensure the narrative of activity is free of judgement or opinions. The scientific observation must happen many times before drawing any conclusions.

SCIENTIFIC OBSERVATION OF A CHILD

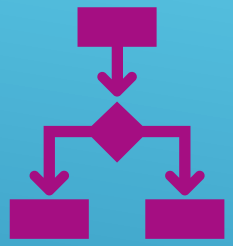
SCIENTIFIC OBSERVATION STEPS

Scientific observation allows observer to notice a child's manifestation of human tendencies, how that child's developmental process unfolds in the first plane frame, the realization of sensitive periods, and expression of developmental needs, all in the context of a specific developmental stage.

There are specific aspects and elements to be observed:

- The child in the environment
- The child's concentration and work
- Deviations from the norm
- Appropriateness of the tasks available to the child
- Behaviors and its causes
- Child's manifestation of needs
- Manifestation of human tendencies

EXAMINING ENGAGEMENT



Observer focused on examining engagement for the 2nd period of a lesson:

activation of tendencies (*exploration, order, orientation, repetition, communication, imagination, abstraction, work manipulation and movement*

concentration, perfection, exactness, etc.

Observer understands that tendencies are determined by the child's interest and drive, what manifest quite differently for individuals in different circumstances.

THE SCIENTIFIC OBSERVATION MUST BE ACTIVE, OBJECTIVE, METICULOUS, PRECISE, AND COMPREHENSIVE.

OBSERVER MUST INCORPORATE TRAIN OF THOUGHT AND FREEWRITING STYLE OF RECORDING, WRITTEN AND LATER REFLECTED UPON; ANALYSIS MAY NOT FOLLOW IMMEDIATELY AS MORE OBSERVATION IS OFTEN NEEDED.

REPORT MUST BE DETAILED, TO THE POINT, WITH A DIAGNOSTIC IMPRESSION AND RECOMMENDATIONS.

SCIENTIFIC OBSERVATION REPORT

OBSERVING SYMPTOMS RELATED TO ASD

Children diagnosed with autism may present difficulty with verbal and non-verbal communication:

- Understanding or using properly:
  - Spoken language (approx. 1/3 of ASD diagnosed individuals are nonverbal)
  - Eye contact (little or inconsistent; appearance of not looking or listening)
  - Gestures and facial expressions (not matching with what is being said)
  - Tone of voice (unusual; robot-like, flat, arrhythmic)
  - Expressions not meant to be taken literally
- During socialization:
  - Reacting slowly or not reacting to other's verbal contact or call for attention
  - Recognizing emotions, intentions, and actions in others
  - Recognizing one's own emotions
  - Expressing emotions, interest, or enjoyment
  - Sharing in imaginative play
  - Seeking emotional comfort from others
  - Seeming overwhelmed in small/large groups
  - Lacking ability to adjust behaviors to social
  - Taking turns in conversation; talking without noticing other's interest
  - Gauging personal space (appropriate distance between people)

ASD SYMPTOMS RELATED TO ASD (2)

Restricted and repetitive behaviors/routine

- Repetitive or unusual behaviors:
  - words or phrases recurrence (echolalia)
  - body movements (rocking, flapping, spinning, running back and forth)
  - motions with objects (spinning wheels, shaking sticks, flipping levers)
- Staring at lights or at spinning objects
- Rituals (objects lining up, touching objects repetitively in a set order)
- Lasting intense interest in specific topics (numbers, details, facts)
- Handling changes (comfort in daily schedule, meal menu, clothes, route to school)

Avolition, a lack of intrinsic motivation or reduced drive to complete goal-directed activities, has been detected in this case as a major concern impacting the child's development and learning.

Avolition, that should not be mistaken by apathy or laziness, means when a person demonstrates deep feelings of indifference or lack of emotion.

The psychiatrist assessing the child noted that the child is still in observation to rule out mood disorder (depression, anxiety) or early onset of schizophrenia.

In cases of schizophrenia, avolition suggests that a child is maybe wiling to complete a task but is unable to channel the mental and physical energies to do so. Even if there were feared consequences to that inaction, the child still would not be able to act.

UNDERSTANDING AVOLITION

https://www.youtube.com/watch?v=0wmJjhrf-ak&ab_channel=DemystifyingMedicine

https://www.youtube.com/watch?v=cF2dhWWUyQ4&ab_channel=TEDxTalks

TIME FOR VIDEO PRESENTATION

- Interdisciplinary approach in support of a 4-year female child with a pending psychiatric diagnosis of ASD – avolition;
- The child was enrolled in a Montessori center in a small town since birth. She had a diagnosis of ASD when completed 3 years of age.
- Family moved to a larger city for more professional options and support.
- The child currently is enrolled in an inclusive Montessori classroom at a school with a well established and recognized inclusive program with Montessori teachers and health-allied professionals (a Special Services coordinator, part-time OT, S/L, PT, a clinical developmental neurologist on consultation, and a behavior therapist).

CASE STUDY # 4 OVERVIEW

- Pediatric follow-up:
  - Vision, Hearing, Blood test (no remarks)
  - Developmental, including S/L, OT, and PT (in progress)
- Neuropsychological Assessment of Age-Appropriate Skills

C.H.I.L.D. Protocol Scales **20** (48–60 months) and **16** (24-30 months)

  - Life and health history (in-depth conversation with family; data collection)
  - Physical health (vaccines, medical history, growth assessment)
  - Physiological (innate reflex, sleeping, eating, sphincters control, hygiene)
  - Perception (sensibility, sensory coordination, attention, concentration, memory)
  - Psychomotricity (gross, fine, sensorimotor coordination, construction of self, laterality, space and time)
  - Communication (comprehension, expression, pre-writing, pre-reading
  - Cognition (simple reflexes, circular reactions, internalization of schemes, pre-operational stage, pre-logical/intuitive thinking)
  - Socioemotional (affection, attachment, emotions regulation, empathy; interaction with others and environment)
- Psychiatric & Neurological examinations (in progress)

CASE STUDY # 4 ASSESSMENTS IN PROGRESS

FINDINGS FROM ASSESSMENTS (1)

- Screenings:
  - No remarks on vision and hearing;
  - Developmental findings are consistent with ASD diagnosis; child does not complete goal-oriented tasks spontaneously, on her own volition; needs constant stimuli.
  - S/L, OT and PT (in progress)
- Neuropsychological:
  - Parents stated child was developing typically, with no remarks regarding medical and developmental history, until she completed 36 months when they notice her lack of motivation and inability to complete daily task on her own; if left alone she will wonder throughout the home without a purpose, needing constant direction and supervision.
  - She is an easy going, happy child, well nourished, introverted but cooperative, and a little clumsy; she plays by herself most of times, and looks for prompts and directions from adults; she is the only child, very attached to her mother.

The assessment results in both scales confirm the parents' observations;

Daily routine tasks are accomplished with minimum prompt; she feeds herself and drinks with a straw; she dresses and undresses cloths with support, potty trained, she reacts to sounds, texture, smell, and taste; identifies her own plate, cup, and silverware; she sleeps well during the night;

Gross motor activities acquired before onset are preserved; she walks, runs, climb stairs, kicks and throw large balls, rides a tricycle moving it with feet, she points body parts in herself and other person; however, the skills expected for her age group are not acquired yet.

Fine motor activities: with prompts, she can build a tower with cubes, complete a simple puzzle; fit in a geometric puzzle with 4 basic forms; fit in all pegs in a toy; she identifies basic colors; scribbles lines in different directions; tries to draw a vertical line and a circle; turns pages in a book and observes the pictures; opens a door

FINDINGS FROM ASSESSMENTS (2)

Communication and socioemotional performance is delayed to 24 months of age; she is pleasant and social; uses 3 to 4-word phrases, uses 3-4-word sentence; in negative and interrogative sentences; she asks for names of objects; recognizes familiar objects and knows their uses (cup, toys, books); in a picture identifies and names 4 – 5 objects; imitates to count to 3; recognizes and names herself in a mirror; playing with a ball follows 2-3 commands;

Socioemotional she relates very well with parents and grandparents, and with children of her age and older; she seems comfortable with the Montessori environment, as she understands the areas; she has basic notion of right and wrong and follows daily routines; she enjoys music and movement activities, sings simple songs, follows music and tries to move with rhythm; with firm directions, she can be responsible for basic chores in consistent daily routine.

Cognition is impacted for her condition, as most of the tasks expected for her age demand goal-oriented spontaneous performance.

FINDINGS FROM ASSESSMENTS (3)

- As the child's attends a Montessori school, the interdisciplinary team made recommendations for an individualized lesson planning to be implemented in classroom and at home, using activities and materials available, while waiting for other assessments results and treatment plans.
- The main goal is to stimulate spontaneous action in a goal-orientated activity.

RECOMMENDATIONS

- **Activity/Program Name:** The Montessori Pink Tower
- **Materials:** The Pink Tower (10 wooden cubes painted pink and width graduated in increments from 1 cm to 10 cm), floor mat, small stand, a stand mirror, a cell phone/laptop for activity recording;
- **Direct Aims:** Demonstration of intrinsic motivation
  - Spontaneous manipulation of an object
  - Spontaneous completion of a goal-oriented task
  - Refinement of voluntary movement by placing cubes one on top of the other
- **Indirect Aims:** Refinement of visual-motor coordination, attention and concentration
  - Enhancement of visual discrimination of dimensions and space.
  - Refinement of fine and gross muscular coordination,
  - Development of expressive basic language
  - Development of pre-math concepts
- **Stimulus (d):** **"Touch it"**
- **Response Criteria:** Child to take initiative to touch/manipulate the object on her own
- **Mastery Criteria:** 75% or more on 3 consecutive data points.
- **Extension:** 5 other activities are chosen to support direct and indirect aims:
  - Gross motor (with a ball), music & movement, language, and drawing (To Be Developed)

LESSON PLANNING (1)

- **Teaching Steps:** Steps are taught based on the Montessori presentations using a behavioral modification approach
- Adaptation of a Montessori activity, material, and daily schedule:
  - The teacher (or an older child) sitting in front of the mirror, at child's left side, demonstrates the mounting and dismounting of the Pink Tower
  - The teacher may highlight the meaningful features of the tower (color, cube sizes, construction)
  - The teacher silently and slowly leave the area and stay in an observation distance
  - If (or when) the child moves intentionally or touches one of the cubes the teacher emits an empathic statement
  - If the child makes eye-contact through the mirror the teacher makes a gesture for positive reinforcement
  - After the 10 minutes, the teacher shows to the child the video with her working
- The child works in increments of 10 minutes, leaves the area for another activity and returns for other 10 minutes. The same sequence until the child spontaneously touches the cubes or initiates any action towards the objects in front of her.

LESSON PLANNING (2)

- **Prompting Procedures:**

  F (Full prompt) **P** (Partial prompt) **G** (Gestural Prompt)

- **Schedule**
  - Continuous reinforcement 10min in _____ intervals
  - Stimulus (the pink cubes,
- **Social:** Empathic statements; older child's presence)
- **Stimuli:** Concrete: The cubes color and different sizes, the mirror;

  the teacher supportive presence, her own image in the mirror, her view of the video)
- **Generalization:**

  Manipulation of books or other age-appropriate materials

  in front of the video
  - Using the same plan with 5 other activities:
  - Making bubbles: soap, grater, and large bowl with water
- Replication at home
- Replication by other people e.g., parents, teacher assistant

LESSON PLANNING (3)

- **Presentation Start Dates:** 1:_____
- **Presentation Acquisition Dates:** 1:_____
- **Variation Start Dates:** 1: _____
- **Variation Acquisition Dates:** 1: _____
- **Notes:**
- Visually appealing and engaging, the Pink Tower is a foundational material from the Montessori Sensorial area
- We are using double reinforcement:

  Tangibles (the cubes and the image in the mirror) and
- **Social:** the teacher's and/or an older child's presence, empathy, and support.

LESSON PLANNING/RECORD-KEEPING (4)

- The spontaneous manipulation of the Pink Tower, as an iconic object to the

  Montessori classroom, embodying the direct and indirect purposes
- Increased drive to complete a goal-oriented task.
- Through the adaptation of the use of the Pink Tower it is expected that the child, having observed the basic presentation of the material, will perceive the appealing objects in front of her confirmed by her image in the mirror stimulating her intrinsic motivation, so she may try to break her emotional and behavioral paralysis, channeling the mental and physical energies needed to complete the proposed task.
- The mirror and her video are used as visual confirmations of herself, her movements or lack of them, and the objects surrounding her.
- We expect that indirectly, in a long run, the child will extend the acquired skills to other appealing activities, may start developing concepts of self-awareness, competence, self-determination, and pro-social behavior while spontaneously completing a goal-oriented task.
- Far ahead demonstrating acquisition of basic concepts of language and pre-math.

EXPECTED OUTCOMES

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