The Autism Diagnostic Observation Schedule – Toddler Module

Romina Moavero
About the ADOS

- The Autism Diagnostic Observation Schedule (ADOS) is a semi-structured assessment of communication, social interaction, and play (or imaginative use of materials) for individuals suspected of having autism spectrum disorders.
- ADOS may be used with Autism Diagnostic Interview-Revised Scale (ADI-R) and has a higher predictive value (> 80%).
- Especially helpful for children who are less than 2 years old or have intellectual disabilities.
About the ADOS

- The ADOS consists of standardized activities that allow the examiner to observe the occurrence or non-occurrence of behaviors that have been identified as important to the diagnosis of ASD across developmental levels and chronological ages.

Structured activities and materials, as well as less structured interactions, provide standardized contexts in which social, communicative and other behaviors relevant to autistic disorders are observed.
About the ADOS-2

- A revision of the ADOS, the ADOS-2 is an observational assessment of Autism Spectrum Disorders (ASDs).
- Like its predecessor, the ADOS-2 is a semi-structured, standardized assessment of communication, social interaction, play, and restricted and repetitive behaviours.
- It presents various activities that elicit behaviours directly related to a diagnosis of ASD.
- By observing and coding these behaviours, you can obtain information that informs diagnosis, treatment planning, and educational placement.
About the ADOS-2

- The ADOS-2 includes five modules, each requiring just 40 to 60 minutes to administer.
- The examiner selects the module that is most appropriate for a particular child or adult on the basis of his/her expressive language level and chronological age.

Choosing the Right Module!

- First obtain a Language Sample
- The social and language demands placed on the participant have an effect on the extent the participant will show impairment
ADOS-2 Modules

- **Toddler Module**: For children *between 12 and 30 months* of age who do *not consistently use phrase speech* *
- **Module 1**: For children *31 months and older* who do *not consistently use phrase speech*
- **Module 2**: For children of *any age* who use phrase speech but are *not verbally fluent* **
- **Module 3**: For *verbally fluent children and young adolescents*
- **Module 4**: For *verbally fluent older adolescents and adults*
Defining language level for ADOS-2

* Phrase speech: defined as non-echoed, three-word utterances that sometimes involve a verb and that are spontaneous, meaningful word combinations.

** Verbal fluency: broadly defined as having the expressive language of a typical four-year-old child: producing a range of sentence types and grammatical forms, using language to provide information about events out of the context of the ADOS, and producing some logical connections within sentences (e.g., "but" or "though")
Choosing the Right Module!

If you are in doubt as to which module to choose, it is better to err in choosing a module that requires fewer language skills than an individual possesses than to risk confounding language difficulties with the social demands of the instrument.
Focus of the ADOS: what to observe?

- All modules provide social-communicative sequences that combine a series of unstructured and structured situations.
- Each situation provides a different combination of standard 'presses' for communication and social interaction.

'Presses' consist of planned social occasions in which it has been determined in advance that a behavior of a particular type is likely to appear.
Standardised Administration

- Each ADOS-2 module has its own Protocol Booklet, which structures the administration and guides you through coding and scoring.
- The order of tasks, pacing and materials can be varied, depending on the needs of the individual being assessed.
- As you administer activities, you observe the examinee and take notes. Within each module, the participant's response to each activity is recorded.
- Immediately afterwards, you code the behaviours observed.
- Then you use the Algorithm Form for scoring.
Remember ...

- The activities serve to structure the interaction; they are not ends in themselves.
- The object is not to test specific cognitive abilities or other skills in the activities, but to have tasks that are sufficiently intriguing that the child or adult being assessed will want to participate.
Toddler Module

The Toddler Module offers new and modified ADOS activities and scores appropriate for:

- Children between 12 and 30 months of age
- Expressive language: minimal speech (ranging from no spoken words to simple two-word phrases),
- Nonverbal age: equivalent of at least 12 months
- Walking independently.
The Toddler Module follows the same basic structure as the Module 1.

It should be conducted in a small child-friendly room, and a familiar caregiver should always be present.

Less focus on the social initiations by the child and greater focus on social responses:
- Examiner structuring an interaction and waiting for a minimal change in the child’s behavior, such as a shift in gaze, facial expression or vocalization.
ADMINISTRATION
**Toddler Module Activities**

Eleven activities are included in the Toddler Module, along with 41 overall codes.

- 1 a. Free Play
- 1b. Free Play - Ball
- 2. Blocking Toy Play
- 3. Response to Name
- 4a. Bubble Play
- 4b. Bubble Play - Teasing Toy Play
- 5a. Anticipation of a Routine with Objects
- 5b. Anticipation of a Routine with Objects - Unable Toy Play
- 6. Anticipation of a Social Routine
- 7. Response to Joint Attention
- 8. Responsive Social Smile
- 9a. Bathtime
- 9b. Bathtime -- Ignore
- 10. Functional & Symbolic Imitation
- 11. Snack
Focus of child observation

- Verbal and non-verbal communication
- Use of toys, sensory or motor behavior
- Social response and interaction
Focus of child observation

VERBAL/NON VERBAL COMMUNICATION

1. Numbers and quality of gestures
2. Frequency and aims of using pointing
3. Frequency of spontaneous vocalizations direct to others
4. Facial expressions direct to others
Focus of child observation

SOCIAL RECIPROCAL INTERACTION

1. Shared enjoyment in interaction
2. Showing
3. Integration of gaze and other behaviors during social overtures
4. Spontaneous beginning and response to joint attention
Focus of child observation

RESTRICTIVE/REPETITIVE BEHAVIORS

1. Unusual sensory interest in play material/person
2. Atypical hand or finger movement/postures
3. Unusual pattern of interest or repetitive use of any object
4. Intonation of verbalization or vocalization
Free Play- Free Play - Ball

Is preferable to administer this sub-tests at the beginning of the session, for create a relaxed situation without demands, during which the child can settle in and become familiar with you.
Free Play

**HOW TO ADMINISTRATE**

1. Tell the parent to give the baby a few minutes to explore the environment alone
2. Allow the child to play alone for at least 3 minutes
   - If the child cries or does not watch the toys after 2 minutes even with your help, you can encouraged the parents to sit on the floor with the child and to interest him/her to the various toys
   - If the child continues to be agitated, remove the material and return to this activity later
Free Play

WHAT TO FOCUS

1. Does the child spontaneously seek the involvement of the examiner or the parents? if so, how it does it?
2. Does the child show joint attention to objects, seek help or affection? if so, how it does it?
3. How does the baby communicate?
4. Does the child expresses affection toward others? How does he/she express? Does the child explore materials in symbolic or functional?
5. Does the child remain focused on a game or pass quickly from one game to another?
6. the child does repetitive actions?
Blocking Toy Play

HOW TO ADMINISTRATE

1. Engage child in Shape Sorter Toy

2. Then, limit access to the toy for 5 to 7 seconds

3. Once child complains, remove the hand for 10-15 seconds

REPEAT FOR TWO ATTEMPS
Blocking Toy Play

**WHAT TO FOCUS**

- How the child respond to the strange situation in which an adult intentionally prevents access to the toys for no reason?
- Is able to use eyes contact to understand the action of the examiner?
- Is able to show his/her displeasure using vocalization?
- Does the child manipulate the hand of the examiner as a form of communication?
- Does the child show a facial expression directed to another as a form of communication?
# Blocking Toy Play

**WHAT TO FOCUS**

Mark each child’s behavior observed in response of both attempts

<table>
<thead>
<tr>
<th>Attempt</th>
<th>Eyes contact to examin.</th>
<th>Eyes contact to others</th>
<th>Move examiner’s hand</th>
<th>Vocalizations of frustrations</th>
<th>Other vocalizations</th>
<th>No response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attempt 1</td>
<td>Eyes contact to examin.</td>
<td>Eyes contact to others</td>
<td>Move examiner’s hand</td>
<td>Vocalizations of frustrations</td>
<td>Other vocalizations</td>
<td>No response</td>
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<tr>
<td>Attempt 2</td>
<td>Eyes contact to examin</td>
<td>Eyes contact to others</td>
<td>Move examiner’s hand</td>
<td>Vocalizations of frustrations</td>
<td>Other vocalizations</td>
<td>No response</td>
</tr>
</tbody>
</table>
Response to Name

**HOW TO ADMINISTRATE**

Assess the child's reaction when he/she has called by name to get his attention

- Administer the test when the child is engaged in a interesting game... but ...
- ... Ensure that the child is not busy with a new game or with particularly interesting toy
- Position yourself so that the child has to turn his head to see your face
Response to Name

HIERARCHY OF STIMULI

1. Call the child up to 4 times
   - For each time, wait and see if the baby turns and looks you straight in the face.
   - If the child does not turn around and not look you in the eyes in any of the four attempts:

2. Ask the parent to call the child by name.
   - Parent can make a maximum of 2 attempts without using physical contact
   - If the child turns around and not look parent in any of the two attempts:
3. Ask the parent to try any sound or familiar phrase that can be used to get the child's attention for a maximum of 2 attempts.
   - if the child turns around and not look parent in any of the two attempts:

4. Ask the parent to use any strategy including physical contact to get the child's attention.
Bubble Play

**HOW TO ADMINISTRATE**

Assess the child's abilities in joint attention and social request

- Start activities when the child is distracted by another game
- Stand in front of the child with the bubble-shooting
- Ask parents to not comment or talk when bubbles start to come out
- Take out the bubbles but do not call back the attention on them
- Then, if the child is not interested, create a funny routine to help the child to get involved in the activities
Bubble Play

WHAT TO FOCUS

- Beginning of joint attention (specific item)
- Sharing the enjoinement in interactions
- Modality of request for bubbles
- Typical/atypical motor behavior during the activities
**Bubble Play-Teasing Toy Play**

- This activity has the same administration and focus of “Blocking toy play”
- Mark each child’s behavior observed in response of both attempts

<table>
<thead>
<tr>
<th>Attempt</th>
<th>Eyes contact to examin.</th>
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</thead>
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<td>1</td>
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<td>2</td>
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</tbody>
</table>
Anticipation of a Routine with Objects

**HOW TO ADMINISTRATE**

Assess the child's abilities in joint attention and social request

- Blow the balloon slowly and hold it in front of the child
- Keep the balloon high above your head and engage the child before starting the activity, using a phrase as “ready... go” or “one, two, three... go “
- Let the balloon to fly into the room
- Wait that the child bring the balloon or indicate in some way that he desire that it is still inflated
Anticipation of a Routine with Objects

**HOW TO ADMINISTRATE**

- If the child is not going to take the balloon or shows no interest, collect the deflated balloon and repeat the procedure slowly, pausing at each step to see what the child will do.

If the child responds in a clearly negative activity with the balloon, you can establish routines with different objects but you must keep the same procedure.
Anticipation of a Routine with Objects

**WHAT TO FOCUS**

- Beginning of joint attention
- Sharing the enjoinment in the interaction
- Modality of request for balloon
- Typical/atypical motor behavior during the activities
Anticipation of a Routine with Objects - Unable Toy Play

- Hold the neck of the balloon for 5 seconds while blowing and shake the balloon and then say “It’s not working”
- Repeat one time
- Blow back up and release

How does the child respond to the strange situation in which the examiner seems to be unable to complete the game?
Anticipation of a Social Routine

**HOW TO ADMINISTRATE**

Specific order of activities

1. Peekaboo
2. Tickling
3. Swinging

Because this behavior acquires a better score if the child shares the fun during a play activity without being touched, it is preferable to start with the play that not involve physical contact.
Response to Joint Attention

Evaluates the child's ability to follow the gaze, coordinated with orientation of the face, gestures or vocalizations used to direct his attention

**HOW TO ADMINISTRATE**

- Hide the animal or remote controlled car on a table or a chair at the beginning of evaluation
- Administer the test when the child is engaged in a interesting game
Response to Joint Attention

*HOW TO ADMINISTRATE*

- Call or touch the child, and if it’s possible, wait that he/she look at you before starting with the stimuli.

- You can try up to five times to catch child’s gaze, then, even if it’s not possible to obtain child’s attention, you can start with hierarchy of stimuli.
Response to Joint Attention

**HIERARCHY OF STIMULI**

1. Say “Hey (child’s name), look” and moving your eyes in the direction of the game, turning both the head.

   *Not say the name of the game in no time*

   If the child follows your gaze, you can activate the game, if not:

2. Repeat “Hey (child’s name), look THAT ONE”, moving again your eyes. Repeat another time.

   **YOU HAVE ONLY THREE VERBAL ATTEMPS**
Response to Joint Attention

HIERARCHY OF STIMULI

3. Say “Hey (child’s name), look” and point the toy. You have TWO attempts with pointing

*If the child follows your pointing, you can activate the game, if not:

4. Use the remote control to turn on the game and observe child’s behavior (communication, request, showing ... )
Responsive Social Smile

This item evaluates the child's smile in response to a social overtures of an adult

HOW TO ADMINISTRATE

- Administer the activity when the child does not already smile.
- Keep the child’s attention and try to encourage a smile with your smile or funny facial expression/verbalization.
  
  You have TWO attempts, then ...  

- You can ask to the parent to make child smile without use physical contact.
Bathtime

Evaluates the child's ability to take part in a play of social routine

**How to Administer**

- Routine of taking a bath:
  - Adjusting hot water
  - Playing with toys
  - Washing the baby
  - Drying off the baby

- Checking for understanding the routine and how the child interact or imitate your actions
Bathtime Ignore

Evaluates the child's behavior when he/she is ignored by examiner and parent

HOW TO ADMINISTRATE

- Instruct parent to not respond for 1 minute, unless the child clearly engages him/her
- Act like taking note but keep view of child
- Record the duration of Ignore activity in the protocol
- Pay attention to:
  - How the child occupies himself
  - How the child responds to withdrawal
  - If and how the child initiates the interaction with you or his parent
Functional & Symbolic Imitation

This items evaluates the child’s abilities to imitate action with real objects or with symbolic substitute

IMITATION TRIALS: 3 Phases:

Each phase has three chance for object

1. Phase 1: Real Object (frog, cup, airplane, flower): Demonstrate use of object (e.g. jump for frog) and ask child to do the same.

If the child is able to imitate, you can move to a different object. If not, you can repeat the teaching trial
Functional & Symbolic Imitation

**TEACHING TRIAL:**

- You can give only three demonstrations for teaching to imitate your action.
- You can help physically the child only in ONE attempt.
- You can move on only if the child imitate your action independently.
2. **Phase 2**: *Real Object* (frog, cup, airplane, flower) and substitute object (planeholder):
   - Name the new object (e.g. “This is a cup”)
   - Demonstrate use of the new object (e.g. fly for airplane)
   - Ask child to do the same with the real object.
   - Ask child to do the same action with the planeholder

If the child is able to imitate, you can move to the third phase. If not, you can return to the phase 2 with a new object.

*If the child is not able to imitate with the new object, you must stop the administration*
3. **Phase 3: Unseen Object** (airplane, flower) and substitute object (planeholder):

- Take the planeholder and say the name the new unseen object (e.g., “This is a airplane”)
- Demonstrate use of the new object (e.g., fly for airplane) but only with the planeholder
- Ask child to do the same action with the planeholder

If the child is not able to imitate action for the unseen object, you can return to the phase 2 with a new object.
Snack

This activity gives the child the opportunity to make a request for a daily activity

**HOW TO ADMINISTRATE**

- Put two snacks on a plate and let him choose
- Wait and see if the child ask more snacks spontaneously.
- If not, raise food containers out of reach of the child and ask “Do you want more?”
- Observe communicative behavior of the child and then repeat the procedure
SCORING AND DIAGNOSTIC ALGORITHM
The 41 overall codes are organized on the basis of five main groups:

1. Language and Communication
2. Reciprocal Social Interaction
3. Play/Imagination
4. Stereotyped Behaviors/Restricted Interests
5. Others abnormal behaviors
SCORING

- The examiner observes child’s behavior and assigns specific score to predetermined observational categories.
- Categorized observations are subsequently combined to produce quantitative scores for analysis.
- Each item is actually scored 1 or 2 depending how often an autistic trait is seen or 0 if not seen.
SCORING

*Summary items versus items with specific observation*

- **Summary items**: Some items require that the examiner consider all the behaviors observed during ADOS administration (e.g.: Pointing, Facial expression ...).
  - For these items, the examiner must be consider both typical and atypical behaviors and make a balance between the most behaviors, not only among the best!!

- **Specific observation**: Other items require that the examiner considers only the behaviors that occur during a specific activity (e.g: Response to Joint Attention, Response to Name ... )
Diagnostic Algorithm

- A subset of items comprise the diagnostic algorithms, following the format of the other modules.
- Algorithm items are structured according to the domains used in the revised ADOS algorithms.
The purpose of the ADOS algorithm is to provide a classification for the child’s current ASD diagnostic status.

Two different diagnostic algorithms are provided for children between 12-21 months and between 21-30 months.

The Toddler Module includes only two classifications intended for research use:
### Algorithm Items

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Social Affect</strong></td>
<td></td>
</tr>
<tr>
<td>Frequency of Spontaneous Vocalization Directed to Others</td>
<td>Response to Name</td>
</tr>
<tr>
<td>Gestures</td>
<td>Ignore</td>
</tr>
<tr>
<td>Shared Enjoyment in Interaction</td>
<td>Requesting</td>
</tr>
<tr>
<td>Showing</td>
<td>Pointing</td>
</tr>
<tr>
<td>Unusual Eye Contact</td>
<td>Unusual Eye Contact</td>
</tr>
<tr>
<td>Facial Expressions Directed to Others</td>
<td>Facial Expressions Directed to Others</td>
</tr>
<tr>
<td>Integration of Gaze and Other Behaviors During Social Overtures</td>
<td>Integration of Gaze and Other Behaviors During Social Overtures</td>
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<tr>
<td>Spontaneous Initiation of Joint Attention</td>
<td>Spontaneous Initiation of Joint Attention</td>
</tr>
<tr>
<td>Response to Joint Attention</td>
<td>Amount of Social Overtures/Maintenance of Attention: CAREGIVER</td>
</tr>
<tr>
<td>Quality of Social Overtures</td>
<td>Quality of Social Overtures</td>
</tr>
<tr>
<td></td>
<td>Overall Quality of Rapport</td>
</tr>
<tr>
<td><strong>Restricted, Repetitive Behaviors</strong></td>
<td></td>
</tr>
<tr>
<td>Unusual Sensory Interest in Play Material/Person</td>
<td>Unusual Sensory Interest in Play Material/Person</td>
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<tr>
<td>Hand and Finger Movements/Posturing</td>
<td>Hand and Finger Movements/Posturing</td>
</tr>
<tr>
<td>Unusually Repetitive Interests or Stereotyped Behaviors</td>
<td>Unusually Repetitive Interests or Stereotyped Behaviors</td>
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<tr>
<td>Intonation of Vocalizations or Verbalizations</td>
<td></td>
</tr>
</tbody>
</table>
**Module 1 Algorithms**

**CONVERTING ITEM CODES TO ALGORITHM SCORES**
- Convert assigned ratings of 3 to algorithm scores of 2.
- Convert assigned ratings other than 0, 1, 2, or 3 (i.e., 7, 8, and 9) to algorithm scores of 0.
- Transfer assigned ratings of 0, 1, and 2 directly to the algorithm form (do not convert).

### Social Affect (SA)

<table>
<thead>
<tr>
<th>Communication</th>
<th>(A-2)</th>
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<tbody>
<tr>
<td>Frequency of Spontaneous Vocalization Directed to Others</td>
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</tr>
<tr>
<td>Pointing</td>
<td>(A-7)</td>
</tr>
<tr>
<td>Gestures</td>
<td>(A-8)</td>
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</table>

<table>
<thead>
<tr>
<th>Reciprocal Social Interaction</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Unusual Eye Contact</td>
<td>(B-1)</td>
</tr>
<tr>
<td>Facial Expressions Directed to Others</td>
<td>(B-3)</td>
</tr>
<tr>
<td>Integration of Gaze and Other Behaviors During Social Overtures</td>
<td>(B-4)</td>
</tr>
<tr>
<td>Shared Enjoyment in Interaction</td>
<td>(B-5)</td>
</tr>
<tr>
<td>Showing</td>
<td>(B-9)</td>
</tr>
<tr>
<td>Spontaneous Initiation of Joint Attention</td>
<td>(B-10)</td>
</tr>
<tr>
<td>Response to Joint Attention</td>
<td>(B-11)</td>
</tr>
<tr>
<td>Quality of Social Overtures</td>
<td>(B-12)</td>
</tr>
</tbody>
</table>

**SA TOTAL**

### Restricted and Repetitive Behavior (RRB)

**Restricted and Repetitive Behaviors**

<table>
<thead>
<tr>
<th>Intonation of Vocalizations or Verbalizations</th>
<th>(A-3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereotyped/Idiosyncratic Use of Words or Phrases</td>
<td>(A-5)</td>
</tr>
<tr>
<td>Unusual Sensory Interest in Play Material/Person</td>
<td>(D-1)</td>
</tr>
<tr>
<td>Hand and Finger and Other Complex Mannerisms</td>
<td>(D-2)</td>
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<tr>
<td>Unusually Repetitive Interests or Stereotyped Behaviors</td>
<td>(D-4)</td>
</tr>
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</table>

**RRB TOTAL**

**OVERALL TOTAL (SA + RRB)**

### ADOS-2 COMPARISON SCORE

(See back of form for conversion table.)

<table>
<thead>
<tr>
<th>Level of autism spectrum–related symptoms:</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
</tr>
<tr>
<td>9</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>7-3</td>
</tr>
</tbody>
</table>

**CLASSIFICATION/DIAGNOSIS**

**ADOS-2 Classification:**

**Overall Diagnosis:**
Diagnostic Algorithm

- Toddler Module algorithms provide ‘ranges of concern’ rather than cut-off scores.
- These ranges help the test user to form clinical impressions, but avoid formal classification – which may not be appropriate at such a young age.
- The Toddler Module quantifies risk for ASD and signals the need for continued monitoring.