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# BRIEF OBSERVATION OF SYMPTOMS OF AUTISM (BOSA) TRAINING

MONDAY, JUNE 29<sup>TH</sup>, 2020

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& Catherine Lord, PhD

# CONFLICT OF INTEREST

- Catherine Lord receives royalties from Western Psychological Services for the ADOS, SCQ and ADI-R.
- The BOSA is copyrighted by Western Psychological Services because of its overlap with the ADOS and BOSCC. C.L, A.H., D.D., K.B., C.T. & S.K. are authors of the BOSA, but it is not for sale and does not yield any royalties.

# HOUSEKEEPING ITEMS

Is this training being recorded?

Yes! It will be available on the UCLA CART YouTube channel afterward.

I came to the training last week; should I watch again?

No, you don't need to! We will be covering the same information today!

Will the slides from this training be posted?

Yes, we will make these slides available afterward.

How do I access the BOSA materials?

You will be able to access the BOSA materials after you complete and submit a permission agreement.

What is the permission agreement?

We need each person who will be administering the BOSA to submit a permission agreement before accessing BOSA materials as part of our agreement with WPS.

# HOUSEKEEPING ITEMS CONTINUED

Can I get a certificate for attending the training today?

Yes, a link will be emailed to you to receive a certificate for attendance.

Can I train others on my clinical team after I've attended this training?

We recommend that each person watches the recording of the training online if they can't attend.

When will the training materials be available?

We will send out permission agreements to everyone who is registered for the training. Upon receipt, we will give you a link to the materials. Each person using the BOSA needs to sign a separate Permission Agreement.

How much does the BOSA cost?

We are providing all of the written materials free of charge! There are some materials that you will need to purchase in addition to standard ADOS-2 materials.

Can I ask questions?

Yes! Please put your questions in the Q&A box and we will try to get to as many as we can!

# AGENDA & GOALS OF TRAINING

Introduce you to the BOSA

Learn how to administer and coach the examiner

Watch examples

Discuss coding guidelines & clinical considerations

# BRIEF OBSERVATION OF SYMPTOMS OF AUTISM (BOSA)

- Developed because the ADOS-2 is not appropriate to administer via telehealth nor while wearing face masks (unnatural social interaction)
- BOSA provides a standardized context of activities (adapted from the BOSCC & ADOS) that can be administered by an adult (e.g., a parent, therapist) within a 12-14 minute observation
- It is *not yet validated*; we are looking for teams to collaborate with and share deidentified data so we can study it!
- Clinicians familiar with the ADOS-2 can observe the BOSA (live or video) and complete many of the ADOS-2 codes.
- ADOS codes can be transferred to a DSM-5 checklist & recoded to demonstrate evidence of symptoms across diagnostic domains
- This is a tool designed to assist in clinical decision-making; not meant to replace the ADOS-2!
- Should be done **in combination with** a thorough developmental history and parent report measure (e.g., ADI-R)

# WHO CAN ADMINISTER THE BOSA?

- “Seasoned” ADOS users: ADOS-trained clinicians who have attended a clinical training or been trained by someone familiar with the ADOS-2; do *not* need to be research-reliable
- Must have attended or viewed a BOSA training (will be available online after the trainings)
- Must have and use original ADOS-2 protocols
- BOSA materials must be used as-is; no modifications

# BOSA SOCIALLY DISTANCED ADMINISTRATION OPTIONS

- Through an observation window
- Over a telehealth platform (e.g., Zoom)
  - In the participant's home
  - Viewed from another clinic room
- Be in the room with the participant while maintaining a safe distance with PPE
- Video-record the observation; watch and code later



# MATERIALS

## BOSA materials provided:

Clinical Guidelines

Instructions for the  
Caregiver/Therapist

Question Cards for Conversations

Print-outs of additional items  
from other ADOS-2 modules

DSM-5 Checklists

Clinical Summary Examples

## To use or purchase:

Use your ADOS-2 kit!

Use ADOS-2 protocols for scoring

Supplemental materials list  
provided with materials to purchase

Replace certain ADOS-2 materials  
for sanitation purposes as needed  
(e.g., plastic baby doll)

# BOSA ADMINISTRATION

# SELECTING THE APPROPRIATE BOSA VERSION

Use the following guidelines based on the individual's **age** and **language level** to decide which version is most appropriate:

- BOSA-MV: Any age, minimally verbal (i.e., nonverbal or use only single words/rote phrases)
- BOSA-PSYF: Any age, flexible phrase speech OR verbally fluent children under the age of 6-8\*
- BOSA-F1: Verbally fluent children ages 6-8\* to 10
- BOSA-F2: Verbally fluent children ages 11+ to adults

\* If between 6:0 and 7:11 years, you may select either the BOSA-PSYF or BOSA-F1 based on the purpose of the assessment, verbal ability, and attention span

# BOSA— CLINICIAN GUIDELINES: BEFORE YOU START

1. Prepare the environment
2. Review the instruction sheet together
3. Arrange people and materials
4. Remind examiner where you'll be
5. State your role in the assessment
6. Go over questions

# BOSA VERSIONS

## **Minimally Verbal (MV)**

- Any age, minimally verbal

## **Phrase Speech and Young Fluent (PSYF)**

- Any age, flexible phrase speech OR verbally fluent young children (under age 6-8)

## **Fluent Speech 1 (F1)**

- Verbally fluent children ages 6-8 to 10

## **Fluent Speech 2 (F2)**

- Verbally fluent children ages 11+ to adult

# BOSA VERSIONS

## **Minimally Verbal (MV)**

- Any age, minimally verbal

## **Phrase Speech and Young Fluent (PSYF)**

- Any age, flexible phrase speech OR verbally fluent young children (under age 6-8)

## **Fluent Speech 1 (F1)**

- Verbally fluent children ages 6-8 to 10

## **Fluent Speech 2 (F2)**

- Verbally fluent children ages 11+ to adult

## Assessment Room

Clinician



Camera/  
Observation Window



Child



Adult



Bubbles



BOSA — MV  
SET UP

# BOSA — MV ADMINISTRATION

Four "Activities"



Play with Toy Set 1  
4 mins



Play with Bubbles  
2 mins



Play with Toy Set 2  
4 mins



Play with Bubbles  
2 min



# BOSA VERSIONS

## **Minimally Verbal (MV)**

- Any age, minimally verbal

## **Phrase Speech and Young Fluent (PSYF)**

- Any age, flexible phrase speech OR verbally fluent young children (under age 6-8)

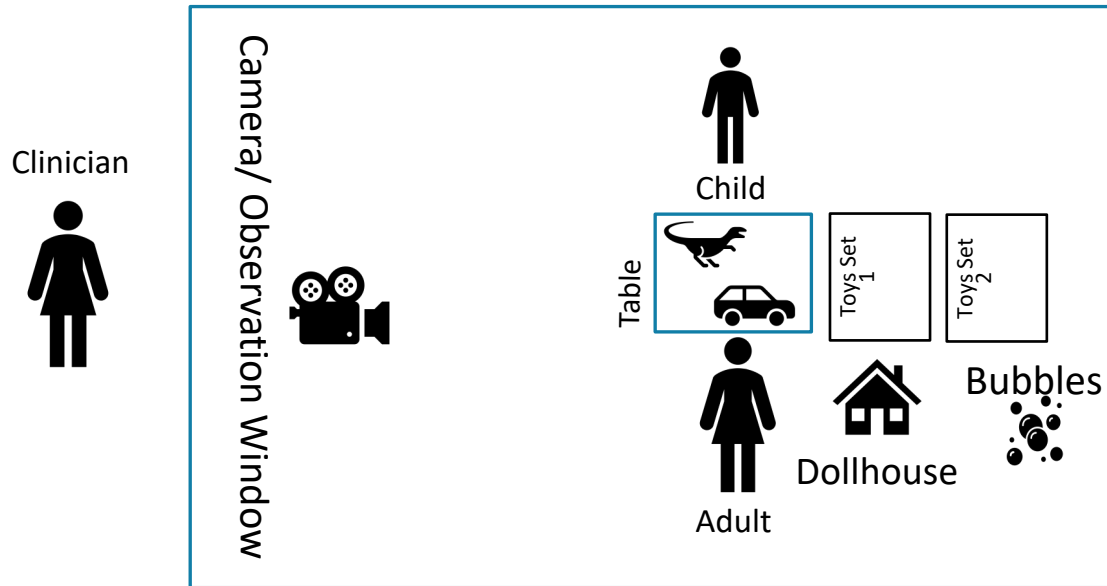
## **Fluent Speech 1 (F1)**

- Verbally fluent children ages 6-8 to 10

## **Fluent Speech 2 (F2)**

- Verbally fluent children ages 11+ to adult

## Assessment Room



BOSA — PSYF  
SET UP

# BOSA — PSYF ADMINISTRATION

Five "Activities"



Play with Toy Set 1  
4 mins



Play with Dollhouse  
2 mins



Play with Bubbles  
2 minutes



Play with Toy Set 2  
4 mins



Play with Dollhouse  
2 min

# BOSA VERSIONS

## **Minimally Verbal (MV)**

- Any age, minimally verbal

## **Phrase Speech and Young Fluent (PSYF)**

- Any age, flexible phrase speech OR verbally fluent young children (under age 6-8)

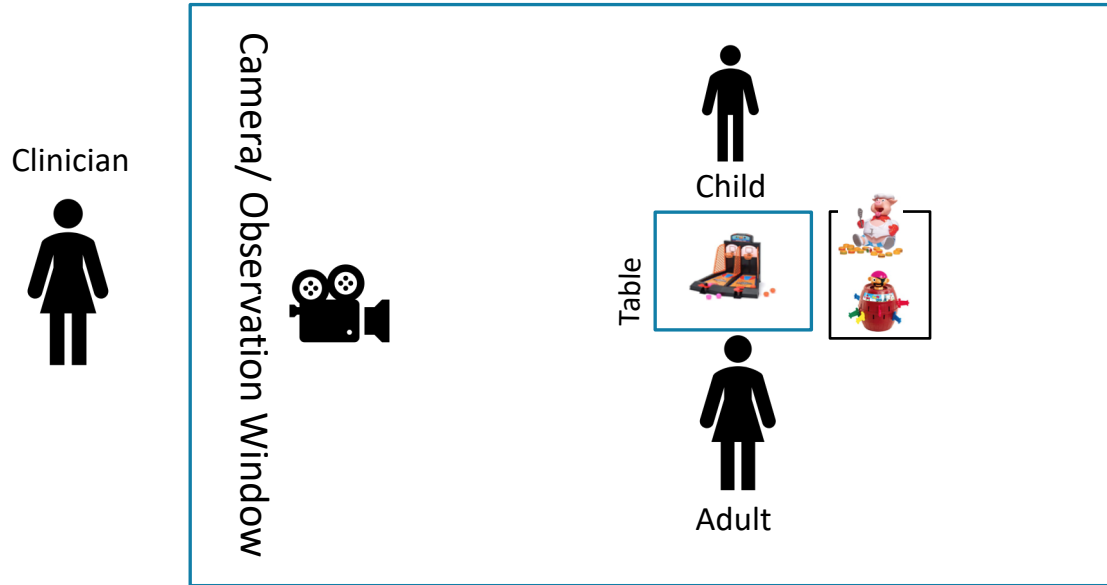
## **Fluent Speech 1 (F1)**

- Verbally fluent children ages 6-8 to 10

## **Fluent Speech 2 (F2)**

- Verbally fluent children ages 11+ to adult

## Assessment Room



BOSA — F1  
SET UP

# BOSA – F1 ADMINISTRATION

Five "Activities"



Play tabletop basketball  
2 mins



Play *Pop the Pig*  
(Game 1 with Conversation Cards)  
4 mins



Conversation  
2 mins



Play *Pop Up Pirate*  
(Game 2 with Conversation Cards)  
4 mins



Conversation  
2 min

# BOSA VERSIONS

- **Minimally Verbal (MV)**

- Any age, minimally verbal

## **Phrase Speech and Young Fluent (PSYF)**

- Any age, flexible phrase speech OR verbally fluent young children (under age 6-8)

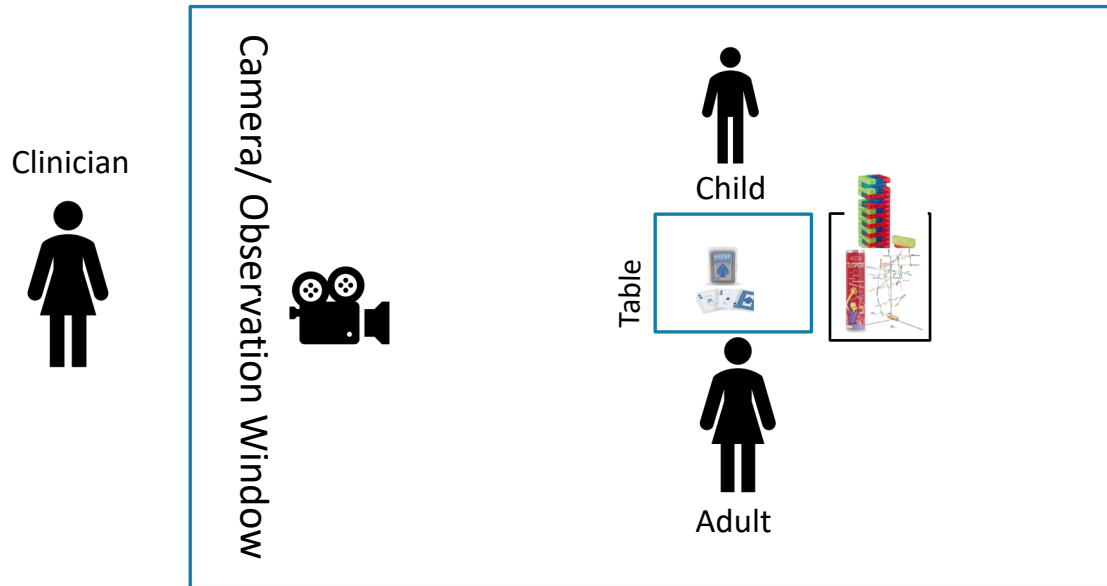
## **Fluent Speech 1 (F1)**

- Verbally fluent children ages 6-8 to 10

## **Fluent Speech 2 (F2)**

- Verbally fluent children ages 11+ to adult

## Assessment Room



BOSA — F2  
SET UP



# BOSA – F2 ADMINISTRATION

Five "Activities"



Play Slap Jack  
2 mins



Play *Jenga*  
(Game 1 with Conversation Cards)  
4 mins



Conversation  
2 mins



Play *Suspend*  
(Game 2 with Conversation Cards)  
4 mins

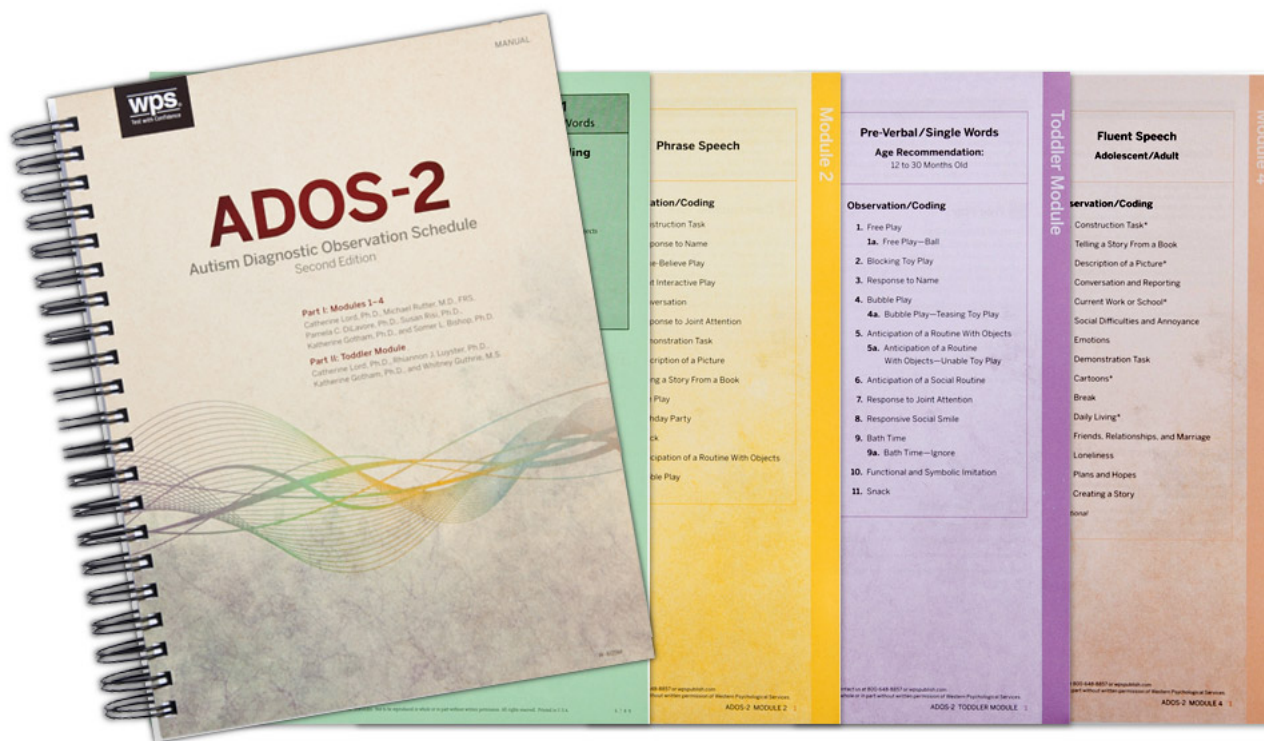


Conversation  
2 min

# **CODING AND CLINICAL CONSIDERATIONS**



# FIRST CODE ON YOUR ADOS-2 PROTOCOL



# TRANSFER CODES ONTO DSM-5 CHECKLIST

Module 1 DSM-5 Checklist | Date: \_\_\_\_\_ Examiner: \_\_\_\_\_ Age: \_\_\_\_\_ ID: \_\_\_\_\_

Language Level: A1. Overall Level of Nonechoed Spoken Language: \_\_\_\_\_

BOSA Version: MV

A. Impairment in Social Communication & Social Interaction						B. Restricted and Repetitive Behaviors					
1. Deficits in Social-Emotional Reciprocity	ADOS Score	Recode Rule	BOSA Score	Parent Report	All Info	1. Repetitive and Stereotyped Behavior	ADOS Score	Recode Rule	BOSA Score	Parent Report	All Info
*A2. Frequency of Spontaneous Vocalization Directed to Others		0-1→0 2-3→1				*A3. Intonation of Vocalizations or Verbalizations		0→0 1-2→1			
*B5. Shared Enjoyment in Interaction		0→0 1-3→1				A4. Immediate Echolalia		0→0 1-3→1			
B7. Requesting		0→0 1-3→1				*A5. Stereotyped/Idiosyncratic Use of Words or Phrases		0→0 1-3→1			
B8. Giving		0-1→0 2→1				*D2. Hand and Finger and Other Complex Mannerisms		0→0 1-3→1			
*B9. Showing		0-1→0 2→1				D3. Self injurious behavior		0→0 1-2→1			
*B10. Spontaneous Initiation of Joint Attention		0-1→0 2→1				Other (Specify): _____					
(B11 from M2). Amount of Reciprocal Social Communication		0→0 1-3→1				2. Excessive Adherence to Routines and Ritualistic Behavior					
*B12. Quality of Social Overtures		0-1→0 2-3→1				(D5 from M3). Compulsions/Rituals		0→0 1-2→1			
B13a or B13b. Amount of Social Overtures/Maintenance of Attention		0-1→0 2-3→1				Other (Specify): _____					
B14. Quality of Social Response		0-1→0 2-3→1				3. Restricted, Fixated Interests					
Other (Specify): _____						*D4. Unusually Repetitive Interests or Stereotyped Behaviors		0-1→0 2-3→1			
2. Deficits in Nonverbal Communication used for Social Interaction						Other (Specify): _____					
A6. Use of Another's Body		0→0 1-2→1				4. Hypo- or Hyper-reactivity to sensory input or unusual sensory interest					
*B1. Unusual Eye Contact		0→0 2→1				*D1. Unusual Sensory Interest in Play Material/Person		0→0 1-3→1			
*B3. Facial Expressions Directed to Others		0-1→0 2→1				Other (Specify): _____					
*B4. Integration of Gaze and Other Behaviors During Social Overtures		0-1→0 2-3→1				Other Behaviors (E Codes)					
Other (Specify): _____						E1. Overactivity		0→0 1-3→1			
3. Deficits in relationships						E2. Tantrums, Aggression, Negative or Disruptive Behavior		0→0 1-3→1			
B15. Level of Engagement		0-1→0 2-3→1				E3. Anxiety		0→0 1-2→1			
C1. Functional Play With Objects		0-1→0 2-3→1									
C2. Imagination/Creativity		0-1→0 2-3→1									
Other (Specify): _____											
Clinical Notes on Observations or Outside Information:	Note: ADOS Score: 0-3 from protocol; BOSA Score: 0 or 1 (absence vs. presence); Parent report: 0 or 1 (absence vs. presence); ADOS ratings other than 0, 1, 2, or 3 (i.e., 7, 8, and 9) should be converted to N/A for the BOSA Score; All Info: 0 or 1 (absence vs. presence), based on additional gathered or observed information. * Indicates ADOS-2 algorithm items.										

Module 1 DSM-5 Checklist | Date: \_\_\_\_\_ Examiner: \_\_\_\_\_ Age: \_\_\_\_\_ ID: \_\_\_\_\_

Language Level: A1. Overall Level of Nonechoed Spoken Language: \_\_\_\_\_

BOSA Version: MV

A. Impairment in Social Communication & Social Interaction						B. Restricted and Repetitive Behaviors					
1. Deficits in Social-Emotional Reciprocity	ADOS Score	Recode Rule	BOSA Score	Parent Report	Other Info	1. Repetitive and Stereotyped Behavior	ADOS Score	Recode Rule	BOSA Score	Parent Report	Other Info
*A2. Frequency of Spontaneous Vocalization Directed to Others		0-1→0 2-3→1				*A3. Intonation of Vocalizations or Verbalizations		0→0 1-2→1			
*B5. Shared Enjoyment in Interaction		0→0 1-3→1				A4. Immediate Echolalia		0→0 1-3→1			
B7. Requesting		0→0 1-3→1				*A5. Stereotyped/Idiosyncratic Use of Words or Phrases		0→0 1-3→1			
B8. Giving		0-1→0 2→1				*D2. Hand and Finger and Other Complex Mannerisms		0→0 1-3→1			
*B9. Showing		0-1→0 2→1				D3. Self injurious behavior		0→0 1-2→1			
*B10. Spontaneous Initiation of Joint Attention		0-1→0 2→1				Other (Specify): _____					
(B11 from M2). Amount of Reciprocal Social Communication		0→0 1-3→1				2. Excessive Adherence to Routines and Ritualistic Behavior					
*B12. Quality of Social Overtures		0-1→0 2-3→1				(D5 from M3). Compulsions/Rituals		0→0 1-2→1			
B13a or B13b. Amount of Social Overtures/Maintenance of Attention		0-1→0 2-3→1				Other (Specify): _____					
B14. Quality of Social Response		0-1→0 2-3→1				3. Restricted, Fixated Interests					
Other (Specify): _____						*D4. Unusually Repetitive Interests or Stereotyped Behaviors		0-1→0 2-3→1			
2. Deficits in Nonverbal Communication used for Social Interaction						Other (Specify): _____					
A6. Use of Another's Body		0→0 1-2→1				4. Hypo- or Hyper-reactivity to sensory input or unusual sensory interest					
*B1. Unusual Eye Contact		0→0 2→1				*D1. Unusual Sensory Interest in Play Material/Person		0→0 1-3→1			
*B3. Facial Expressions Directed to Others		0-1→0 2→1				Other (Specify): _____					
*B4. Integration of Gaze and Other Behaviors During Social Overtures		0-1→0 2-3→1				Other Behaviors (E Codes)					
Other (Specify): _____							ADOS Score	Recode Rule	BOSA Score	Parent Report	Other Info
3. Deficits in relationships						E1. Overactivity		0→0 1-3→1			
B15. Level of Engagement		0-1→0 2-3→1				E2. Tantrums, Aggression, Negative or Disruptive Behavior		0→0 1-3→1			
C1. Functional Play With Objects		0-1→0 2-3→1				E3. Anxiety		0→0 1-2→1			
C2. Imagination/Creativity		0-1→0 2-3→1				Note: ADOS Score: 0-3 from protocol; BOSA Score: 0 or 1 (absence vs. presence); ADOS ratings of 7, 8, and 9 should be converted to N/A for the BOSA Score; Parent report: ✓ if symptom reported in parent interview; Other Info: ✓ if symptom present based on additional gathered or observed information. *Indicates ADOS-2 algorithm items.					
Other (Specify): _____											
Clinical Notes on Observations or Outside Information:											

Language Level: A1. Overall Level of Nonechoed Spoken Language: 3

BOSA Version: MV

A. Impairment in Social Communication & Social Interaction						B. Restricted and Repetitive Behaviors																												
1. Deficits in Social-Emotional Reciprocity						1. Repetitive and Stereotyped Behavior																												
	ADOS Score	Recode Rule	BOSA Score	Parent Report	Other Info	ADOS Score	Recode Rule	BOSA Score	Parent Report	Other Info																								
*A2. Frequency of Spontaneous Vocalization Directed to Others	2	0-1→0 2-3→1	1			*A3. Intonation of Vocalizations or Verbalizations	1	0→0 1-2→1	1																									
*B5. Shared Enjoyment in Interaction	1	0→0 1-3→1	1			A4. Immediate Echolalia	0	0→0 1-3→1	0	✓																								
B7. Requesting	2	0→0 1-3→1	1	✓		*A5. Stereotyped/Idiosyncratic Use of Words or Phrases	8	0→0 1-3→1	N/A																									
B8. Giving	2	0-1→0 2→1	1			*D2. Hand and Finger and Other Complex Mannerisms	2	0→0 1-3→1	1	✓																								
*B9. Showing	2	0-1→0 2→1	1	✓		D3. Self injurious behavior	0	0→0 1-2→1	0																									
*B10. Spontaneous Initiation of Joint Attention	2	0-1→0 2→1	1			Other (Specify): _____																												
(B11 from M2). Amount of Reciprocal Social Communication	8	0→0 1-3→1	N/A	✓		2. Excessive Adherence to Routines and Ritualistic Behavior																												
*B12. Quality of Social Overtures	2	0-1→0 2-3→1	1			(D5 from M3). Compulsions/Rituals	0	0→0 1-2→1	0																									
B13a or B13b. Amount of Social Overtures/Maintenance of Attention	2	0-1→0 2-3→1	1			Other (Specify): _____																												
B14. Quality of Social Response	2	0-1→0 2-3→1	1			3. Restricted, Fixated Interests																												
Other (Specify): _____						*D4. Unusually Repetitive Interests or Stereotyped Behaviors	3	0-1→0 2-3→1	1	✓																								
2. Deficits in Nonverbal Communication used for Social Interaction						Other (Specify): _____																												
A6. Use of Another's Body	0	0→0 1-2→1	0		✓	4. Hypo- or Hyper-reactivity to sensory input or unusual sensory interest																												
*B1. Unusual Eye Contact	2	0→0 2→1	1	✓		*D1. Unusual Sensory Interest in Play Material/Person	1	0→0 1-3→1	1	✓																								
*B3. Facial Expressions Directed to Others	1	0-1→0 2→1	0			Other (Specify): _____																												
*B4. Integration of Gaze and Other Behaviors During Social Overtures	2	0-1→0 2-3→1	1			Other Behaviors (E Codes)																												
Other (Specify): _____						<table border="1"> <thead> <tr> <th></th> <th>ADOS Score</th> <th>Recode Rule</th> <th>BOSA Score</th> <th>Parent Report</th> <th>Other Info</th> </tr> </thead> <tbody> <tr> <td>E1. Overactivity</td> <td>0</td> <td>0→0 1-3→1</td> <td>0</td> <td></td> <td></td> </tr> <tr> <td>E2. Tantrums, Aggression, Negative or Disruptive Behavior</td> <td>0</td> <td>0→0 1-3→1</td> <td>0</td> <td></td> <td></td> </tr> <tr> <td>E3. Anxiety</td> <td>0</td> <td>0→0 1-2→1</td> <td>0</td> <td></td> <td></td> </tr> </tbody> </table>						ADOS Score	Recode Rule	BOSA Score	Parent Report	Other Info	E1. Overactivity	0	0→0 1-3→1	0			E2. Tantrums, Aggression, Negative or Disruptive Behavior	0	0→0 1-3→1	0			E3. Anxiety	0	0→0 1-2→1	0		
	ADOS Score	Recode Rule	BOSA Score	Parent Report	Other Info																													
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B15. Level of Engagement	0	0-1→0 2-3→1	1																															
C1. Functional Play With Objects	3	0-1→0 2-3→1	1																															
C2. Imagination/Creativity	3	0-1→0 2-3→1	1	✓																														
Other (Specify): No interest in other children				✓																														
<b>Clinical Notes on Observations or Outside Information:</b> Visual inspection with toy train - observed outside of assessment Use of mom's hand as tool when requesting to leave (placed her hand on doorknob) Toe walking in hallway																																		

# CLINICAL SUMMARIES PROVIDED

- Introduction to what the BOSA is and how it was developed; wording to describe that it was adapted from standardized activities from the BOSCC and ADOS-2; uses binary ADOS-2 scoring
- Examples for each version of the BOSA; descriptions of what activities are included and who it is appropriate for
- Examples of individuals who meet ASD criteria, don't meet criteria, and need additional information from the ADI-R
- Example for when you don't have enough information to confirm or rule out autism; recommend in-person follow-up evaluation

# CLINICAL CONSIDERATIONS

Again, this measure is not meant to replace the ADOS-2!

- Certain symptoms may not be as readily apparent (e.g., restricted/repetitive behaviors and interests)
- There is risk for “false negatives” (i.e., ruling out autism when the person does have autism) because the observation is so brief and limited in scope.
- Preliminary ADOS item analysis on binary codes suggests a low cutoff for optimal sensitivity and specificity

No severity rating – presence versus absence only

Not an outcome measure! Contact us if you're interested in using the BOSCC for research purposes.

Many items on the ADOS-2 are linked to autism (but are not necessarily specific to autism)!

- Potentially high risk of “false positives” (i.e., an individual scoring on many items when they do not have autism)

We are working on developing algorithms to improve this!

Rely **heavily** on a thorough developmental history, medical background, and parent report of symptoms (ADI-R)

Information across contexts should be interpreted by someone with clinical expertise in autism spectrum disorder



# Q&A TIME!



THANK YOU!

A recording of this training will be posted  
on the UCLA CART YouTube channel:  
<https://www.youtube.com/user/UCLACART>

The Permission of Use Agreement form will  
be sent & posted in the chat.

Please share your deidentified data!

Contact us at  
[makingbettermeasures@gmail.com](mailto:makingbettermeasures@gmail.com)  
with additional questions.