Handbook for the Social Orienting Continuum and Response Scale (SOC-RS).

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Background

The SOC-RS is a quantitative scale assessing the following behaviours: social referencing; joint attention; orienting to name; and social smiling. The assessment is made during observation of a video-recorded Autism Diagnostic Observation Schedule (ADOS) Module One or Two (Lord, Rutter, DiLavore, & Risi, 1999). Codes are made using Noldus Observer software. For a copy of a suitable coding scheme or consultation regarding the application of the SOC-RS to novel studies, please contact Dr. Mosconi or Dr. Fletcher-Watson.

The SOC-RS has been shown to be reliable and valid for use with children with autism and typically-developing children (Mosconi, Reznick, Mesibov, & Piven, 2009) and is also appropriate as an outcome measure for intervention studies (Fletcher-Watson & McConachie, 2010).

This handbook gives instructions for coding the SOC-RS. Pre-requisites for use of the SOC-RS are: familiarity with the ADOS; a sample of full ADOS recordings; familiarity with Noldus Observer software.

General Coding Principles

- Code each video twice: first pass for **state** codes, second pass for **behaviour** codes.
- **State** code categories are mutually exclusive AND **behaviour** categories are also mutually exclusive. **Behaviour** codes will always occur during **state** codes, although the **not observable** state code precludes any behavioural codes.

State Codes

- The entire ADOS should be coded continuously under one of three mutually exclusive "state" categories: **playing/engaged**, **disengaged**, **not observable**. There should not be any time during the assessment in which a "state" is not identified.
- If a behaviour changes for <3 seconds, the existing state code continues. For example, if the child puts a toy down for less than 3 seconds and then begins playing again, no state change should be recorded.
- When the **state** is unclear, the existing code should continue until a clear change of **state** occurs. When deciding what **state** to code at the start of a new observation or immediately after a period where the child was **not observable**, the video should be

viewed until a reliable state can be identified. This state should then be coded from the first moment in which the child had become observable.

Not Observable:
- Any time that the child is not present on camera. No behaviours should be scored when the child is not observable.
- Code **not observable** when the child's face is off camera, but not merely when they have their back to camera.

Playing/Engaged
- Any time in which the target child is engaged either with a toy or with another individual while on camera
- Code playing/engaged when the child is looking at toys; looking at other people acting; eating; or tantrum or crying with the purpose of communicating with another individual
- Unusual sensory or repetitive play (e.g. mouthing items, lining them up) is NOT included in this category. But, a behaviour must last longer than 3 seconds to incur a change of state code.

Disengaged
- Any segment in which the child is not playing or interacting with anyone else or is engaging in stereotypic or unusual sensory behaviour while present on camera.
- If a behaviour when later repeated now seems clearly abnormal/repetitive, the coder should go back to re-code the earlier episode as **disengaged**

Behaviour Codes

Social Referencing:
- Any instance in which the child is observed looking directly at another person's face, (excluding events coded as **response to name, joint attention initiation** or **social smiling** as these codes take precedence – though also note that these codes can only be made in more limited circumstances).
- It must be clear that the child is looking at the person's face and not another part of the body and not at a proximal object. It is possible to code looking to an adult whose face is not on camera, but err on the side of caution (e.g. assume child is looking at balloon, not face, unless clearly otherwise)
- The child must fixate on the person's face (for $\geq$ 1 sec), rather than glance briefly or glance past another person.
- If the child looks between multiple individuals, then **Social Referencing** should be coded for each individual he/she makes eye contact with.
- If the child **references** an individual, glances away, and then looks back at the same person, a new code should not be made unless the glance away was a genuine shift of attention (and $\geq$ 1 sec)

Joint Attention Responding (JAR):
- Events in which the examiner, parent, or other individual attempt to direct the child's attention to an object via establishing attention and shifting his or her gaze or pointing.
- These interactions require a distal point, so pointing to a picture on a page that the child is reading should NOT be scored as a joint attention opportunity. Likewise a person pointing to a target already being fixated by the child does not count.
- Only score a **JAR** opportunity if the child attends to the examiner/parent when prompted. Eye-contact is not required but the child should be clearly attending to the adult and looking at the appropriate location to see the attentional cue when it appears.

- Successive **JAR** opportunities should be separated by a pause sufficient in duration for the child to have made a JA response (approximately 2 sec) to allow the coder to observe whether the child responded or not to each opportunity
- The ADOS press refers to the 'Response to Joint Attention' task, in which the examiner has up to 5 attempts to get eye contact with the child in order then to shift gaze toward a toy (e.g. remote controlled rabbit). If the child has not followed gaze shift alone, the examiner adds pointing.
- There are eight possible **JAR** codes:

	During press		Outside press	
	Just eye/head	With point	Just eye/head	With point
No response	1	3	5	7
Response	2	4	6	8

- These codes distinguish between **JAR** opportunities occurring within and without the specific **JAR** press of the ADOS, and between the modality of the cue (with or without a point). They also distinguish between children who do and do not respond to the opportunities. The codes can be combined to create more general measures of **JAR** (see 'scoring' section below)
- No distinction is made between individuals making a bid for joint attention (e.g. parent vs. examiner)

Joint Attention Initiation (JAI):
- Events in which the child initiates joint attention.
- The child must seek to get another individual to attend to an object or person of interest either by a shift in eye gaze or a point.
- Only bids that are "proto-declarative" in nature should be scored. Protodeclarative bids are defined as those made for primarily social purposes, such as sharing interest or initiating conversation about an object. "Proto-imperative" episodes should not be scored – these are bids in which the subject initiates joint attention solely as a means to obtain an object.
- Established attention between child and adult beforehand is not required. Child must shift eye-gaze, head-turn, point or clearly vocalise to indicate attention. Co-ordinated eye-gaze shift and gesture / vocalisation is not required. The individual with whom the subject is attempting to share attention does not have to respond in order for this behaviour to be coded.
- Vocalisations must be clearly directing another's attention, not just a vocal response to a stimulus (e.g. 'wow!')
- Inter-rater reliability is likely to be enhanced by using caution (i.e. not assuming **JAI** if the child does not clearly do this).

Orienting to Name:
- Events in which the child's name is stated, followed by at least a 1 second pause in which the child's response is observed by the person who called his/her name.
- If a parent or the examiner calls the child's name repeatedly at a rapid rate, or the child's name is followed by or paired with an additional command, gesture or the sound of a toy, no opportunity should be indicated.
- The ADOS press refers to the 'Response to Name' task in which the examiner moves behind or to the side and calls the child's name; the child needs to make eye contact for a 'response' to be credited. The examiner makes up to four attempts, before asking the parent to do so, up to three times without touching the child.
- There are four possible **Orienting to Name** codes:

	During press	Outside press

No response	1	3
Response	2	4

- These codes distinguish between **Orienting to Name** opportunities occurring within and outside of the specific response to name press of the ADOS. They also distinguish between children who do and do not respond to the opportunities. The codes can be combined to create more general measures of **Orienting to Name** (see 'scoring' section below)

Social Smiling
(this code is also known as emotion sharing as it covers a wider range of behaviours than just smiling)

- Any event in which the child exhibits appropriate <u>positive</u> emotion and also makes a clear attempt to share this emotion with another person should be coded here.
- The child must be <u>clearly attempting to share</u> the emotion with the other person, but does not have to initiate this sharing. The child has to imitate or respond to someone else's emotion, or attempt to affect the mental state of the other person by communicating his/her own emotion.
- Examples of ways a child may share an emotion include making eye contact with, communicating with (e.g., shouting "Yay"), sharing attention with, laughing with, or seeking out another person.
- Simply looking at another person with a positive facial expression is not necessarily enough to code **social smiling**.
- Instances in which a child smiles or laughs apparently to himself, with no eye contact, and the adult then also laughs, should not be coded as **social smiling**.
- Events in which the child is exhibiting an emotion as part of play and focuses on the examiner after being interrupted are scored as **social referencing** and not as **social smiling.**
- As with **social referencing** if the child shares emotion with an individual, glances away (or briefly loses their emotional expression), and then returns to share emotion with the same person, a new code should not be made <u>unless</u> the glance away was a genuine shift of attention (and > 1 sec) and the second period of **social smiling** is distinct from the first

Scoring

- Only include participants for rating if they are visible on camera (sum of **playing/engaged** + **disengaged** states) for more than 10 minutes in total
- Scoring of **Social Referencing**, **joint attention initiation. Joint attention responding** and **social smiling** is by *rate per minute of observable time* converted to z-score. E.g. (number of **social referencing** events) ÷ (time coded as **playing/engaged** + time coded as **disengaged**).
- When computing reliability, a 3 second window of tolerance is used

Extra JAR scores
- A dichotomous responder/non-responder code can be calculated for **joint attention responding** based on whether or not the child responds to one of the early ADOS presses, using eye-gaze and head turn only. Children are either scored as 'responders' if they respond to one of the first presses, or 'non-responders' if they do not respond.
- In addition, it is possible to score **JAR** for only those events a) within the press and/or b) without a point
- Then **JA total** is scored by standardizing the proportion of **JAR** and **JAI** initiations and then averaging these standardized scores.

Extra Orienting to Name scores
- For **orienting to name** it is also possible to score according to the press number at which the children responds, using only the specific ADOS presses for scoring.
- If the child does not respond at all during any of the seven ADOS presses, a score of 8 for 'fail' can be given.

References

Fletcher-Watson, S., & McConachie, H. (2010). Brief Report: Measuring change in autism spectrum disorders using the SOC-RS. *Journal of Autism and Developmental Disorders, submitted*.

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