

Table 2. Definitions for social communication

| Outcome | Instrument | Study | Description |
|---------------------------|---------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Social interaction</i> | TSSA | Bharathi, 2019 | The TRIAD Social Skills Assessment (TSSA; Stone 2010) is a 'criterion-based tool' providing specific assessment considering parent, teacher, observation, and direct interaction with children 6-12 y.o. It consists of three components: <ul style="list-style-type: none"> - Problem Behavior Rating Scale, - Social Skills Survey - Social Skills Rating Form. Each item is rated on a 4-point Likert scale, with higher scores indicating more favorable behaviors |
| <i>Social interaction</i> | CARS 'social communication' domain | Gattino, 2011; Rabeyron, 2020 | The 'social communication' domain has been derived from the factor analysis of the CARS and is composed of five items of the original tool, all related to social communication skills: <ul style="list-style-type: none"> - Imitation; - Verbal communication; - Nonverbal communication; - Consistency of intellectual responses; - General impressions. |
| <i>Social interaction</i> | ADOS social affect (SA) subscale | Bieleninik, 2017 | The ADOS consists of four modules, appropriate for individuals with different developmental and language levels. ADOS-SA consists of two subdomains: <ul style="list-style-type: none"> - 'Language and Communication' - Reciprocal social interaction'. The score can range from 0 to 24 (module 1 and 2) or 0 to 27 (module 3), with higher scores meaning greater symptom severity. |
| <i>Social interaction</i> | SRS, total score | Bieleninik, 2017; LaGasse, 2014; Sharda, 2018; Thompson, 2014 | The SRS is a 65-item scale measuring the severity of autism symptoms as they occur in natural social settings. The total score can range from 0 to 195. Higher scores are indicative of greater symptom severity. |
| <i>Social interaction</i> | SSRS | Ghasemtabar, 2015 | total score can range between 0 and 80. Higher scores indicate higher social skills and thus favorable outcome. |
| <i>Social interaction</i> | PDDBI 'social approach behaviors' subscale | Kim, 2008 | Higher scores are indicative of better social skills |
| <i>Social interaction</i> | SSIS, total score | Porter, 2017 | The SSIS is a scale with 75 (self) to 79 (parent) items across 3 subdomains: <ul style="list-style-type: none"> - Social skills, - Competing problem behaviors, - Academic competence The total score can range from 0 to 225 (self) or 237 (parent), with higher scores representing favorable outcomes. |
| <i>Social interaction</i> | ASSP | Schwartzberg, 2013 | 49-item tool divided into three sub-categories: <ul style="list-style-type: none"> - Social reciprocity (23 items); - Social participation (12 items); - Detrimental social behaviors (10 items) |
| <i>Social interaction</i> | VSEECs | Thompson, 2014 | 88-item measure used to assess the social and emotional functioning of children from birth through 5.11 years. |
| <i>Social interaction</i> | non-validated outcome measure: observing behavior | Kim, 2008 | frequency and duration of the child's turn taking, frequency of imitation behaviors, frequency, and duration of both 'emotional synchronicity' and 'musical synchronicity', and behaviors associated with the frequency and duration of joy. |

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|---------------------------------|------------------------------------------------------------------------------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Non-verbal communication</i> | 'non-verbal communication' domain of the CARS | Gattino, 2011; Rabeyron, 2020 | The CARS is a 15-item observation-based behavioral rating scale administered by health professionals for the diagnosis of children with autism and pervasive developmental disorders. Total scores can range between 15 and 60, with higher scores indicating higher severity. |
| <i>Non-verbal communication</i> | ESCS | Kim, 2008 | A videotaped structured play-based assessment measuring nonverbal social communication skills in children aged 6-30 months |
| <i>Non-verbal communication</i> | CCC-2 | Sharda, 2018 | parent/caregiver-administered 70-item rating scale to measure children's social communication skills across 10 domains. This tool is focused on the assessment of non-verbal communication, pragmatics, as well as aspects of language structure and discourse. |
| <i>Non-verbal communication</i> | The section 'action and gestures' of the MBCDI-W&G | Thompson, 2014 | MBCDI-W&G are a set of parent-rated measures designed to evaluate the verbal and nonverbal communicative skills of young children. Higher scores are indicative of higher levels of non-verbal communication. |
| <i>Non-verbal communication</i> | non-validated outcome measure: observing behavior | Kim, 2008; LaGasse, 2014 | - Kim, 2008: frequency and duration of eye contact (i.e. the child looking at the therapist) - LaGasse, 2014: video recordings of children in both groups were analyzed for instances of group communication and social interaction attempts: coding of predefined behaviors (i.e., eye gaze, joint attention, initiation of communication, response to communication, withdrawal behaviors) |
| <i>Verbal communication</i> | verbal communication' domain of the CARS | Gattino, 2011; Rabeyron, 2020 | The CARS is a 15-item observation-based behavioral rating scale administered by health professionals for the diagnosis of children with autism and pervasive developmental disorders. Total scores can range between 15 and 60, with higher scores indicating higher severity. |
| <i>Verbal communication</i> | subscales 'phrases understood', 'words understood' and 'words produced' of the MBCDI-W&G | Thompson, 2014 | MBCDI-W&G are a set of parent-rated measures designed to evaluate the verbal and nonverbal communicative skills of young children. Higher scores are indicative of higher levels of non-verbal communication. |
| <i>Verbal communication</i> | Comprehension Checks (CCs) | Schwartzberg, 2013 | A series of five close-ended questions (yes or no) to evaluate participants' comprehension of social stories. |
| <i>Verbal communication</i> | PPVT-4 | Sharda, 2018 | short, standardized measure of one-word receptive vocabulary. The test requires the participant to choose one of four color pictures on a page. Higher scores indicate better receptive vocabulary. |
| <i>Verbal communication</i> | non-validated outcome measure: observing behavior | Lim, 2010; Lim, 2011 | counting the frequency of appropriate verbal responses |

Abbreviations: ADOS = Autism Diagnostic Observation Scale; ASSP= Autism Social Skills Profile; CARS = Childhood Autism Rating Scale; CCC-2 = Children's Communication Checklist; ESCS = Early Social Communication Scales; MBCDI-W&G = MacArthur-Bates Communicative Development Inventories, words and gestures; PDDBI = Pervasive Developmental Disorder Behavior Inventory; PPVT-4 = Peabody Picture Vocabulary Test-4; SRS = Social Responsiveness Scale; SSIS = social skills improvement system rating scales; SSRS-P = Social Skills Rating System Scale-Parent form; TSSA= TRIAD Social Skills Assessment; VPES = Verbal Production Evaluation Scale; VSEECs = Vineland Social Emotional Early Childhood Scales

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