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Autism Diagnostic Observation Schedule (ADOS): Toddler Module



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Synonyms

[ADOS-T](#)

Description

The Autism Diagnostic Observation Schedule – Toddler Module (or ADOS-T; Luyster et al. 2009; Lord et al. 2012) – is a semi-structured assessment of social engagement, communication, and play using a set of planned “presses” within a naturalistic social interaction. It is intended for children under 30 months of age who have a nonverbal mental age of at least 12 months. Other guidelines for use include independent walking and minimal language; once the child masters three-word phrases, the Toddler Module is no longer considered appropriate.

Eleven activities are included in the Toddler Module, along with 41 overall codes. Two algorithms are associated with the module, including one for all children between 12 and 20 months of age and nonverbal children between 21 and

30 months of age and a second algorithm for verbal children between 21 and 30 months of age. These algorithms include formal cutoffs, which are primarily intended for research use and provide a binary classification of ASD or nonspectrum. Each algorithm also has three “ranges of concern,” which are intended for clinical use and provide three classifications of concern: little to no, mild to moderate, and moderate to severe. The Toddler Module can be administered in a professional’s office or playroom, although a familiar caregiver must be present. Codes are completed immediately after Toddler Module completion and are based on all behaviors during the administration. Each code can be scored between 0 and 3, with higher scores indicative of greater abnormality.

Historical Background

The Toddler Module was developed in response to a research and clinical need for a standardized instrument for use in very young children at high risk for, or suspected of having, an autism spectrum disorder (ASD). Research had indicated that the ADOS Module 1 was over-inclusive (meaning it exhibited relatively poor specificity) for children with nonverbal mental ages under 16 months (Gotham et al. 2007). The Toddler Module was developed for use in this very young population and was intended to aid in both clinical and

research efforts targeted at children who fell below the floor of the ADOS.

The creation of the Toddler Module was based primarily on the Module 1 of the ADOS (Lord et al. 2000), which provides a series of semi-structured, play-based tasks and activities to probe for a range of behaviors. Module 1 items that were appropriate for infants and toddlers were included, and additional tasks were created based on a review of the literature on early social and communicative development. Some other important changes were made based on current knowledge of early development in children with ASD, including a shift from three classifications on the algorithm (autism, ASD, nonspectrum) to two (ASD, nonspectrum), based on extensive evidence of the instability of specific diagnoses within the autism spectrum. For similar reasons, an emphasis was placed on using algorithm ranges of concern in order to encourage a focus on clinical monitoring and follow-up rather than assigning a formal diagnosis to a very young child.

Psychometric Data

Instrument development involved both validity and reliability studies (Lord et al. 2012). The validity study was completed using data from 182 children. Analyses were repeated using two overlapping samples, one of which included each child only once and a second that included multiple visits from some children. The final set of 41 codes was selected in order to yield markedly different distributions across diagnostic groups or to have high clinical or theoretical importance. In addition, codes were chosen in a manner that minimized collinearity with other codes or sample characteristics. Two algorithms were generated by selecting items that met theoretical and empirical thresholds for optimal group classification. Each algorithm includes items in two domains – social affect (SA) and restricted, repetitive behaviors (RRB) – and cutoff scores were selected based on maximal sensitivity and specificity. Using formal cutoffs, sensitivity and specificity exceeded

86% on the younger/nonverbal algorithm, and they exceeded 83% on the verbal algorithm.

The reliability study included ratings from 7 independent, “blind” raters on 14 Toddler Module administrations (8 from children with ASD, 3 from typically developing children, and 2 from children with non-ASD developmental disabilities, one child contributed two administrations). Inter-rater reliability was evaluated using weighted kappas for nonunique pairs of raters, with kappas between 0.4 and 0.74 considered good and kappas at or above 0.75 considered excellent. Three codes were not included in the reliability analyses because of limited variability; 30 codes had kappas equal to or above 0.60, and the remaining eight codes exceeded 0.45. Inter-rater item reliability was measured using percent agreement and the full range of 0–3 scores: the mean percent agreement was 84%. All items exceeded 71%, and 30 of 41 items had exact agreement of at least 80%. Inter-rater agreement on the algorithms’ (younger/nonverbal and verbal) diagnostic cutoffs was 97% and 87%, respectively; inter-rater agreement for ranges of concern was 70% and 87%, respectively. Test-retest reliability was also satisfactory across both algorithms.

Note that although standardized calibrated severity scores are not available as a formal component of the instrument (Lord et al. 2012), research suggests that they may be helpful in reducing the effects of language level on algorithm totals (Esler et al. 2015).

Clinical Uses

Clinical usage of the Toddler Module should be accompanied by other sources of information. The ranges of concern may be useful in providing an indication of the degree to which a child is exhibiting symptoms consistent with an ASD, but in some cases, these behaviors may be attributable to other, non-ASD etiologies. Therefore, informed clinical judgment is critical in interpreting results within a broader developmental framework. Examining the profile of scores across the 41 codes may be useful in identifying areas of

difficulty for the child and can help in education and intervention planning.

See Also

- ▶ [Prelinguistic Autism Diagnostic Observation Schedule](#)

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