DOI: 10.4103/0971-5916.256712

Quick Response Code:

Authors' response

We thank Andrade *et al*[1] for reviewing our work in eJCIndia. They mention that autism spectrum disorder (ASD) is common among males and clinical features may change as the child grows up and has criticized us for not matching the control on age and sex. We would like to state that ASD has certain core features which do not change with age. These core features form the basis for making the diagnosis irrespective of age. Earlier, a longitudinal study by Lord[2] showed that the diagnostic stability at age nine years was very high, especially for autism, although not so high for pervasive developmental disorder - Not Otherwise Specified (PDD-NOS) category. Guthrie *et al*[3] had also reported stability of diagnosis in younger children. The eJCIndia mentions that the same screening instrument may not be feasible for different age groups. However, the authors would like to submit that there are many instruments which are used across different age groups. For example, Autism Behaviour Checklist (ABC)[4] is for 2-14 yr, Childhood Asperger's Syndrome Test (CAST)[5] is for 4-11 yr and ten questions for serious disability developed by International Clinical Epidemiology Network (INCLEN)[6] are also for the same age group. The items included in CASI pertain to core features which may not change over age and thus the concern of eJCIndia regarding age matching is not sustainable. Since this was not a prevalence study, the demographic variables were not mentioned. Further, these factors do not affect presentation or diagnosis of autism. The eJCIndia further showed concern that our study did not show the utility of CASI among children with intellectual disability (ID) and those without ID.

It should be noted that in our sample, 70 per cent of ASD cases had co-morbid ID. Further, there was no significant difference on total score of CASI between ASD group with and without ID. Hence, it can be stated that the results of our study are not restricted to any particular subgroup and can be generalized.

A few suggestions such as convergent validity are well taken and can be addressed in future community studies. This study was about the development of a screening tool which can be further validated by doing community study in the general population.

Another concern expressed by Andrade *et al*[1] was that the ASD diagnosis was made retrospectively. However, the fact was that the retrospective cohort was used and the diagnosis was re-established by the expert using ICD-10. Despite having multiple diagnostic tools for the diagnosis of ASD, none has been found to be 'gold standard' and combining two instruments gives a higher diagnostic accuracy. Further, many authors opine that gold standard for diagnosis continues to be 'expert clinical opinion'[2,7-10]. It has been argued that expert clinician is able to make use of extensive knowledge and experience that goes beyond diagnostic criteria. It has been further suggested that all the children in the control group should have been evaluated individually by the researchers to confirm their normal development rather relying on the report of parents and teachers[1]. Although we theoretically agree but would like to draw the attention to the fact that the assessment of the clinicians is again based on the report of parents and teachers due to the deficit in communication in ASD. Since the parents and teachers spend a lot of time with ASD children, they are in a better position to report on these children. Keeping this fact in mind, the report by parents and teachers was considered as normal development as far as ID or ASD was concerned[10].

Another concern expressed was regarding blinding. It was pertinent to mention here that the scale was administered by research workers (independent investigators) who were not part of this study. Moreover, the diagnosis was made by the first author and scales were administered by research staff; so, partial blinding was there. Complete blinding was neither intended nor possible in such studies.

Another concern was about using convenient sample. For a disorder like ASD which is not very common, it would become financially and logistically extremely difficult to take the sample from community. Further, many scales or screening instruments have been developed in clinic population in the past. In earlier studies on development of screening and diagnostic tool, clinic population was used like CAST in 4-11 yr[5] and while developing Checklist for Autism in Toddlers (CHAT)[11], siblings of children with autism were taken. Individuals with ASD included in our study were not from a particular city but from north India.

The concern about poor sensitivity of ABC was ill-founded. ABC has been used widely as a screening instrument. In this age group, only a few screening instruments are available. We did not use the other scales due to logistic difficulties. For example, social responsiveness scale[12] has to be self-administered and it is in English language that makes it unsuitable for Indian population. Translation of scale is not easy, and in fact, it was one of the reasons that prompted us to construct a screening instrument. The ABC has shown good sensitivity in earlier studies. Eaves and Williams[13] have stated that their results support the original authors' contention that the ABC total score has adequate reliability to be used as a screening instrument.

Spearman's rho correlation was applied to find the relationship between CASI and ABC, and a correlation of 0.785 was found.

PPV was established in the present study based on developmental phase of the scoring pattern; it may not be valid in community set up and it should be taken as one of the limitations of the study. We agree that sensitivity is more important for a screening instrument, but a judicious balance between sensitivity and specificity is required. Many cut-off scores were tried (Table), and based on Receiver Operating Characteristic (ROC) analysis, a cut-off score of 10 was decided to be taken for the sake of maximizing its balancing between sensitivity and specificity.

Table. Sensitivity and specificity at different cut-off scores on Chandigarh Autism Screening Instrument (CASI)

Cut-off CASI	Sensitivity (%)	Specificity (%)	Positive predictive value (%)	Negative predictive value (%)
6	93.82	82.3	57.78	98.15
7	92.77	84.78	61.11	97.85
8	92.77	86.34	63.64	97.89
9	91.57	87.58	65.52	97.58
10	89.16	89.13	67.89	96.96

Some of the observations of Andrade *et al*[1] have been already answered in the paper. It has been mentioned that CASI Bref comprises core features and items that have been mentioned in the text. Sensitivity of CASI Bref at cut-off 3 was very low, *i.e.*, 49.4 per cent hence was not mentioned. The scale was constructed so that it could be administered by community health workers or people not having specific training in administration of tools. Thus, self-administration by parents or caregivers becomes the intended method of administration.

Priti Arun* & Bir Singh Chavan
Department of Psychiatry, Government Medical College & Hospital, Chandigarh 160 030, India
**For correspondence*:
drpritiarun@gmail.com

References

1. Andrade C, Sahoo S, Solanki C, Narasimha VL, Nagandrappa S, Harsha D, *et al*. Development & validation of the Chandigarh autism screening instrument. *Indian J Med Res* 2019; *149* : 74-5.
2. Lord C. Follow-up of two-year-olds referred for possible autism. *J Child Psychol Psychiatry* 1995; *36* : 1365-82.
3. Guthrie W, Swineford LB, Nottke C, Wetherby AM. Early diagnosis of autism spectrum disorder: Stability and change in clinical diagnosis and symptom presentation. *J Child Psychol Psychiatry* 2013; *54* : 582-90.
4. Krug DA, Arick JA, Almond PJ. Autism screening instrument for educational planning. 3rd ed. Texas: Austin Pro-ed; 2008.
5. Williams J, Scott F, Stott C, Allison C, Bolton P, Baron-Cohen S, Brayne C. The CAST (Childhood Asperger Syndrome Test): Test accuracy. *Autism* 2005; *9* : 45-68.
6. Zaman SS, Khan NZ, Islam S, Banu S, Dixit S, Shrout P, *et al*. Validity of the 'Ten Questions' for screening serious childhood disability: results from urban Bangladesh. *Int J Epidemiol* 1990; *19* : 613-20.
7. Stone WL, Lee EB, Ashford L, Brissie J, Hepburn SL, Coonrod EE, *et al.* Can autism be diagnosed accurately in children under 3 years? *J Child Psychol Psychiatry* 1999; *40* : 219-26.
8. Volkmar F, Chawarska K, Klin A. Autism in infancy and early childhood. *Annu Rev Psychol* 2005; *56* : 315-36.
9. Steiner AM, Goldsmith TR, Snow AV, Chawarska K. Practitioner's guide to assessment of autism spectrum disorders in infants and toddlers. *J Autism Dev Disord* 2012; *42* : 1183-96.
10. Volkmar F, Siegel M, Woodbury-Smith M, King B, McCracken J, State M, *et al.* Practice parameter for the assessment and treatment of children and adolescents with autism spectrum disorder. *J Am Acad Child Adolesc Psychiatry* 2014; *53* : 237-57.
11. Baron-Cohen S, Wheelwright S, Cox A, Baird G, Charman T, Swettenham J, *et al*. Early identification of autism by the CHecklist for Autism in Toddlers (CHAT). *J R Soc Med* 2000; *93* : 521-5.
12. Constantino JN, Davis SA, Todd RD, Schindler MK, Gross MM, Brophy SL, *et al*. Validation of a brief quantitative measure of autistic traits: Comparison of the Social Responsiveness Scale with the Autism Diagnostic Interview-Revised. *J Autism Dev Disord* 2003; *33* : 427-33.
13. Eaves RC, Williams TO Jr. The reliability and construct validity of autism behavior checklist. *Psychol Sch* 2006; *43* : 129-42.