

### Comments on “Development of a Battery to Assess Perceptual-Motor, Cognition, Language, and Scholastic Skills among Bengali Children with Neuro Developmental Disorders”

We read with great interest the study published by Mukhopadhyay et al.<sup>1</sup> The article is interesting and promising in the lagging field of pediatric neuropsychological assessment, especially in the Indian context. This study addresses an important and growing area of enquiry in our field related to the identification of learning-related difficulties in children with neurodevelopmental disorders (NDDs). The developed battery appears to be comprehensive, with relevant domains.

Given the foregoing, it is unfortunate that Mukhopadhyay et al.<sup>1</sup> did not document the theoretical framework used to generate culturally appropriate items, method, and criteria for (sub)domain selection, the time required to complete the task, and its ecological validity.

NDDs include a variety of conditions that are unique in terms of clinical features, comorbidity, and neurocognitive correlates. Therefore, developing culturally appropriate items and tasks that could be sensitive across different NDDs with varying ages is a challenging task. Information regarding the theoretical framework used to generate culturally appropriate items and item validity is missing from the article, and this piece of information could be useful for conducting similar research in the future.

Cognitive skills are systematically and differentially correlated with academic skills in the six domains of learning disabilities (LDs).<sup>2</sup> Similarly, a differential neurocognitive profile has been reported in autism spectrum disorder (ASD),<sup>3</sup> attention deficit hyperactivity disorder (ADHD),<sup>4-5</sup> communication disorder (CD),<sup>6</sup> and specific learning disorder

(SLD).<sup>2</sup> It is apparent from the article that several core cognitive skills have not been incorporated/included in the battery, such as processing speed, rapid naming speed, verbal working memory, approximate number skills, executive functioning, fluency, social cognition, and episodic memory. Therefore, we might not be able to tap these crucial cognitive components while using this battery and probably miss certain vital information that is preserved or more impaired in children with NDDs. Deficits in working memory and processing speed are found to be shared across different LDs as well as ADHD.<sup>2,7</sup> Further, social cognition and encoding-related problems could be affected differently in children with various NDDs including ADHD, ASD, and SLD.<sup>8-9</sup> Deficits in social reciprocity and organizational resources such as encoding might tax perceptual and executive resources in children with certain NDD.

Further, the variability in the nature of the tasks (i.e., open-ended, semi-open-ended, and closed-ended), as well as the number of items included in respective domains, might pose further complications in establishing the sensitivity and specificity of the developed tool. Several crucial cognitive skills are grouped under a single subdomain, and their descriptions appear to be overinclusive. For example, auditory attention also assesses response inhibition; visual reasoning includes perceptual reasoning, concept formation, and problem solving. In NDDs, using the same task to assess multiple brain functions will adversely affect the profile analysis, whereas domain-specific sensitive tasks will be more useful to assess neurocognitive and academic functions.

Several other important features of this paper are of concern, such as the total time taken to administer the task and the smaller sample in the clinical groups. This battery will be used to assess scholastic backwardness in children with NDDs. The majority of these children will have marked difficulty in expressive and receptive speech, socialization, and attention and concentration, in addition

to sensory impairment. In this regard, it is crucial to use a quick and easy method to evaluate cognitive and scholastic skills in these children. Further, it is difficult to generalize the obtained findings due to the small sample size, as in this study, the age ranged from 4.5 to 9.5 years and the children were from five different categories, such as typically normal developing, ADHD, SLD, LD, and ASD. Therefore, a larger sample (including normal and clinical subjects) is required in order to assess the usefulness of the tool in different NDDs.

Considerable attempts have been made to develop culture-specific tools to identify learning difficulty in Indian contexts.<sup>10</sup> However, the majority of these tools cannot be used judiciously due to a lack of normative data. Therefore, future studies are warranted to develop robust normative data for these tools. There is a pressing need to connect knowledge across studies and achieve consensus regarding their specific usefulness in the Indian context. In our opinion, developing culture-specific tests for scholastic problems is a long and tedious process that involves challenges in training and research, especially when we have an acute shortage of mental health services in the country. In this regard, we appreciate the efforts of the investigators. However, the several issues we listed need to be considered to make this tool more useful.

---

#### Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

---

#### Ravikesh Tripathi, Deepak Salvi\*

\*Dept. of Clinical Psychology, Gujarat Forensic Sciences University, Gandhinagar, Gujarat, India. <sup>2</sup>Dept. of Clinical Psychology, Mahatma Gandhi Medical College, Jaipur, Rajasthan, India.

---

#### Address for correspondence:

Ravikesh Tripathi, Dept. of Clinical Psychology, Gujarat Forensic Sciences University, Gandhinagar, Gujarat 382007, India. E-mail: ravikeshtripathi@gmail.com

---

Submitted: 4 Jun. 2020  
 Accepted: 7 Jul. 2020  
 Published Online: 31 Aug. 2020

## References

- Mukhopadhyay P, Bhattacharya L, Roy PK, et al. Development of a battery to assess perceptual motor, cognition, language, and scholastic skills among Bengali children with neuro developmental disorders. *Indian J Psychol Med* 2020; 42: 238–249.
- Fletcher JM and Grigorenko EL. Neuropsychology of learning disabilities: The past and the future. *J Int Neuropsychol Soc* 2017; 23(9–10): 930–940.
- Zwick GP. Neuropsychological assessment in autism spectrum disorder and related conditions. *Dialogues Clin Neurosci* 2017; 19(4): 373–379.
- Pievsy MA and McGrath RE. The neurocognitive profile of attention-deficit/hyperactivity disorder: A review of meta-analyses. *Arch Clin Neuropsychol* 2018; 33(2): 143–157.
- Willcutt EG, Pennington BF, Boada R, et al. A comparison of the cognitive deficits in reading disability and attention-deficit/hyperactivity disorder. *J Abnorm Psychol* 2001; 110(1): 157–172.
- Tomas E and Vissers C. Behind the scenes of developmental language disorder: Time to call neuropsychology back on stage. *Front Hum Neurosci* 2019; 12: 517.
- McGrath LM, Pennington BF, Shanahan MA, et al. A multiple deficit model of reading disability and attention-deficit/hyperactivity disorder: Searching for shared cognitive deficits. *J Child Psychol Psychiatry* 2011; 52(5): 547–557.
- Shalom DB. Memory in autism: Review and synthesis. *Cortex* 2003; 39: 1129–1138.
- Şahin B, Karabekiroğlu K, Bozkurt A, et al. The relationship of clinical symptoms with social cognition in children diagnosed with attention deficit hyperactivity disorder, specific learning disorder or autism spectrum disorder. *Psychiatry Investig* 2018; 15: 1144–1153.
- Kohli A, Sharma S, and Padhy SK. Specific learning disabilities: Issues that remain unanswered. *Indian J Psychol Med* 2018; 40: 399–405.

**HOW TO CITE THIS ARTICLE:** Tripathi R, Salvi D. Comments on “Development of a battery to assess perceptual-motor, cognition, language, and scholastic skills among bengali children with neuro developmental disorders”. *Indian J Psychol Med.* 2020;42(5):482–483.



Copyright © 2020 Indian Psychiatric Society - South Zonal Branch

Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution- NonCommercial 4.0 License (<http://www.creativecommons.org/licenses/by-nc/4.0/>) which permits non-Commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).

### ACCESS THIS ARTICLE ONLINE

Website: [journals.sagepub.com/home/szj](http://journals.sagepub.com/home/szj)  
 DOI: 10.1177/0253717620945130

## Responses to the Comments on “Development of a Battery to Assess Perceptual-Motor, Cognition, Language, and Scholastic Skills among Bengali Children with Neurodevelopmental Disorders”

We appreciate the thoughts shared and the specific concerns expressed<sup>1</sup> by our learned friends regarding our article.<sup>2</sup> We also appreciate their concern related to the specific difficulties we face in India regarding the assessment of children with neurodevelopmental disorders (NDD). Kindly find our comments related to the specific concerns expressed by them as follows.

- This is a tool for the identification of perceptual, cognitive, motor, and language skills, to tap down the processes behind the scholastic difficulties in children with NDD and has a subtle

difference from an assessment tool. In this work, our goal was not to develop a tool to only assess and generate a score or a quotient and label a child. We aimed and are still in the process of further developing the test to get comprehensive information about a child’s underlying processes causing difficulty in scholastic performance, which could be utilized by mental health professionals, educators, and parents for intervention.

- As our work evolved from the difficulties we faced while planning intervention for children with NDD, in this test, those subtle aspects of perceptual-motor, cognitive, language, and scholastic skills, like quantitative thinking, have been incorporated that we do usually miss to test and think as unimportant. We have witnessed in our clinical work that interventions in these areas help to bring a lot of positive outcomes in cognition, behavior, and academics in the client, within their limits. Moreover, very few standardized tools are available to evaluate scholastic skills. Most of the tools

that assess scholastic skills focus only on reading, writing, and mathematics (computation). Language, being the most important skill in a multilingual schooling environment, like in India, has been given special attention in this tool.

- Across the diagnostic categories of NDD, the basic level of monitoring, including attention monitoring, which interferes with task-involvement, is disturbed. For this reason, the prerequisite skill that interferes with their basic adaptation in daily life and basic academic task (as this is considered as the main task at this developmental age), has been paid attention to in our study. Unless these skills and their underlying processes are modified through intervention, the assessment of executive function—separately—may not be helpful at this juncture. For example, in those with attention deficit hyperactivity disorder or autism, the psychopathology refrains them from their task involvement for a very basic deficit in execution and interferes with task involvement to the extent that it cannot