Book Reviews/ Évaluation des livres

Pediatric Test of Brain Injury.

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The Paediatric Test of Brain Injury (PTBI) was developed to "estimate a child's ability in applying neurocognitive-linguistic skills that are vulnerable to paediatric brain injury and relevant to functioning well in school. The test is intended to permit tracking of recovery starting in the acute phase " (PTBI Manual, p 2).

The authors all have clinical backgrounds in speech-language pathology. In addition, they bring specific expertise in paediatric acquired brain injury (ABI; Hotz), head injury (Helm-Estabrooks,) developmental language and its disorders (Wolf-Nelson) and paediatric language assessment (Plante). The authors' range of specialization speaks to the complexity and diversity of the target population. There are many challenges involved in developing a test for a child with a brain injury because, on one hand, the child's skills are changing predictably following developmental patterns, and, on the hand, ther is unpredictable change due to the recovery process. The PTBI addresses a clear clinical need. A standardized test is a much needed contribution to this field.

Development of the PTBI

The authors partnered with 14 clinical centres across Canada and the United States to develop and standardize the PTBI. The test is designed for children with brain injury between the ages of 6-16. The authors present a standardization sample that includes children with traumatic brain injury(TBI; n=134), non-traumatic acquired brain injury (ABI; n=46) , and typically developing children (n=77). The PTBI targets a clearly defined ABI/TBI population and offers comparative information on differing patterns of deficit between the TBI and ABI groups. This is a unique comparable set of assessment data that would not be available elsewhere.

The PTBI is comprised of ten subtests: Orientation, Following Commands, Word Fluency, What Goes Together, Digit Span, Story Retell – Immediate and Delayed, Naming, Yes/No/Maybe, and Picture Recall. The subtests have been chosen to reflect areas of cognitive communication deficit typically seen in children with brain injuries.

The PTBI is the first evidence-based tool that allows the clinician to document the quickly changing language skills of a child with a brain injury in an efficient way. The PTBI's use of Item Response Theory is impressive and innovative: Each individual item in a subtest is assigned a score that reflects how difficult it is in relation to the easiest item in the subtest. The authors argue that "the advantage of this method is that examiners are able to calculate an ability score for a test that reflects a child's current level of functioning more accurately than a simple count of items passed, leading to a superior ability to track change" (p. 1).

Clinical Use of the PTBI

The manual competently and concisely communicates the theoretical background, test development, and relevant conceptual framework to the practicing clinician. Another welcome innovation is the detailed presentation of the statistical background. Information is presented using clinical questions (e.g. "How do I interpret the criterion categories?"), and the authors provide an interpretative answer, followed by a summary of the evidence that supports the answer. It is an effective, practical, and refreshing way to explore the technical framework of the test.

The test is typically completed within 30-40 minutes, as suggested by the authors. The completion of ten subtests in approximately half an hour necessitates a frequent change of activity and minimizes boredom in the children tested. This is an important consideration in the TBI population where attention deficits, fatigue and testing ennui can limit the patient's ability to cooperate. In clinical use, we found that the test was easily administered by clinicians, with little need for cajoling.

The test booklet encourages clinicians to document behavioural observations and the time taken for each subtest. Below each subtest on the test form, a variety of possible behavioural observations are listed along with notes to direct the clinician. Consequently, patterns of behaviour across subtests and changes in speed of task completion over time become apparent.

One of the subtests included (Picture Recall) is a visual memory picture drawing task. The PTBI was developed by Speech-Language Pathologists for use by "SLPs, psychologists and others" but it is primarily a language test. Most of the subtests have a language basis so the rationale for the inclusion of a drawing task is unclear. Certainly, the information available from this subtest is not information a speech language pathologist is trained to interpret or remediate.

The Word Fluency subtest includes an animal name generation task that is not only used in other speech language pathology tests but in neuropsychology and occupation therapy testing. In the Canadian health care system, a child with a head injury will often be tested concurrently by different professionals disciplines. We

fear that this type of test may be overused to the point of being meaningless.

In the Story Retell task, the inclusion of a delayed recall (5-10 minutes) in addition to the immediate recall is a relevant task. Additional space for verbatim recording on the form would have been helpful. The scoring of content items does not allow for an exploration of a disordered narrative, such as inappropriate extraneous information, sequencing, syntax or word finding difficulties. This information would be available from a verbatim transcription of the narrative.

The test claims to give literacy as well as language-based information. However, the only reading required in the test is done in conjunction with the examiner and there is no writing component. There is not enough information gathered to provide relevant details for literacy intervention planning.

The test reports excellent inter-rater reliability (pp.52), but in practice the instructions for scoring in subtests such as Story Retell, What Goes Together, and Picture Recall are not completely clear. There was variation in scoring between the authors of this review. It would have been helpful if examples of possible responses and specific scoring were included in the manual.

Test Interpretation

The ten subtests have been chosen to give a picture of how the child is functioning with regard to cognitive communication. Selective clinical judgement is needed to interpret the subtests' ability scores and how they relate to cognitive communication areas for each child. Clinicians need to investigate each subtest performance and determine which areas of cognitive communication (ie. memory, attention, comprehension, processing, etc.) are impacting the child's functioning. In clinical practice, goal setting for specific deficits and baseline information would need to be established with ongoing diagnostic therapy and could not be done solely from the PTBI. The authors do state that the purpose of the PTBI is not to generate therapy goals or comprehensive rehabilitation programs for children.

It is important to note that this is a criterion based test. This means that the test looks at whether the participant is able to complete the tasks. The test is not a norm-referenced test, which would compare participants to a pre-defined TBI or ABI population. The test allows children completing the PTBI to be placed in performance categories of high, moderate, low and very low. These categories are based on the performance of the standardization sample of typically developing children on each task. The classification of the four performance categories as it relates to severity can be confusing and potentially problematic: In the context of TBI, where lawyers and insurance companies need to understand how a child is performing, an "average" child would be in the "high" category which makes the relative performance of the head injured child unclear.

The test employs a standard error measurement, which is used to establish that a change in ability is significant and not just a practice effect from multiple administrations of the same test. However, this standard error measurement can make it difficult to establish a clear severity level. For example, if a 6-year-old completes the Digit Span subtest, astandard error measure of 9 is assumed. However, this means that a child can move from a "very low performance category" to a "moderate performance category", but this change would not be outside the SEM and therefore would be non-significant. While this is an extreme example, the standard error measurement may affect some subtests or ages to a certain degree.

Conclusion

The PTBI is an effective tool for measuring change in cognitive communication ability for the pediatric TBI and ABI population. The authors have designed a test with the purpose of establishing current cognitive communication ability levels and to track changes over time. In this they have succeeded.

The PTBI has limitations. A complete language assessment using traditional testing tools remains a necessity for reintegration into the school system. Diagnostic therapy remains indispensable for establishing baselines for focussed therapy goals. The PTBI would be most effective showing cognitive communication change following a brain injury for the child in an acute hospital or acute rehabilitation setting.