Demonstrating Competence – Appropriate Cognitive Assessments for People with Little or No Speech

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Background

Until recently it was thought that people's knowledge and understanding could be judged by their speech and actions. Idiots did not speak: "Having no ideas, and thinking not, they have nothing to desire: therefore have no need of sign, or of speech" (Esquirol, 1845). "An idiot is any child who never learns to communicate with his kind by speech ... this inability being due solely to defective intelligence ..." (Binet, 1909). In the early twentieth century, the new IQ tests provided a 'scientific' basis for matching intelligence and speech, codifying the ignorance of Esquirol and Binet.

Non-speakers were (and are) assessed using IQ tests requiring speech, with their inability to answer the questions scored as 'not thinking'. Extraordinarily, this did not change in the 1980s despite the development of new communication aids that enabled non-speakers once thought to be severely 'mentally retarded' to undertake secondary and tertiary education.

During the 1980s and 1990s, professionals and organizations providing communication aids to non-speakers, including the Anne McDonald Centre, a small but active augmentative communication service, tried to draw attention to the obvious anomaly. In 2002, the American Speech and Hearing Association declared that "Assessments requiring oral responses should not be administered to people with speech impairments, and people with speech impairments who have been assessed and graded using such tests should be offered supplementary communication and educational services to enable them to use alternative communication modes..." (ASHA, 2002).

Unfortunately, common sense and professional opinion apparently had little effect on the psychologists or bureaucracies responsible for assessing people with little or no speech. The Victorian Department of Education and Training (the Department) still uses Weschler tests that are normed on children with normal speech, normal hearing, normal sight, and normal hand skills, to test children who have little or no speech, children with hearing and sight impairments, children who have difficulty using their hands and children with major behavioural disturbances.

When questioned about what happened to children who could not, or would not, do the Weschler tests by the ABC 's Background Briefing programme in May 2015, the Department's spokesperson wrote that they instructed the psychologists to estimate the child's intelligence - "For students who are deemed to be unassessable, it is essential that any attempt made to conduct the assessment is fully documented, with a clear explanation of why the assessment could not be completed, and **an estimate of the student's cognitive functioning**" (emphasis added). We have seen reports in which this occurred. The results of the psychologists' assessments or guestimates determine special school placements, with those who receive an IQ of less than 50 being sent to Special Developmental or Autism Schools for children with IQs less than 50. Typically, these schools provide very limited educational programs and often restrict access to AAC to linguistically limited low tech strategies such as PECS.

In 2015, the Anne McDonald Centre staff administered the Peabody Picture Vocabulary Test – 3rd Edition – Revised (PPVT IIIR) to four boys attending the same SDS, all of whom had been diagnosed as having ASD and said to have IQs less than 50. Two were of primary age, and two were in their final year at the school. Three students scored in the average range, and one above average. We brought these results to the attention of the Department without any effect. When we had received no substantive response from the Department after five months, we decided to purchase more up-to-date tests and offer any clients who had the prerequisite skills the opportunity to undertake an assessment that did not require speech in the hope that any positive outcomes might assist individual clients.

We investigated all assessments that do not require spoken answers and chose 2 standardised widely-used assessments that only require a pointing response:

The Peabody Picture Vocabulary Test 4th edition (2007) (PPVT-4) requires test-takers to choose between 4 pictures. Normed for ages 2 to 90+ years.

Raven's Standard Progressive Matrices (2000) (RSPM & RSPM Parallel) requires test-takers to choose between 6 or 8 diagrams. Normed for ages 6 to 70+ years.

The Peabody Picture Vocabulary Test

The Peabody Picture Vocabulary Test is an internationally-used standardized assessment of receptive language which has been used since 1959. It has been normed on children and adults without disabilities. It is used in educational settings to compare the vocabulary of students from different backgrounds with the norms for their age. It is particularly useful for assessing individuals who have limited speech or hand skills, because

[1] The assessments were provided free of charge. The test-takers and their families received copies of their score sheets and a description of the tests undertaken to use as they wished.

examinees only need to be able to point to answer the questions. No speech or manipulative skills are required.

The Peabody Picture Vocabulary Test - Fourth Edition (PPVT-4) is an individually administered test that assesses receptive English vocabulary for individuals from the age of 2 years and 6 months to over 90 years. It may be administered by educators, speech pathologists or psychologists with appropriate qualifications.

The test booklet contains 2 pages of training items and 228 pages of test items. Each test page displays four full-colour pictures. For each item, the examiner asks the examinee to indicate a specified word, and the examinee responds by selecting the picture that they think best illustrates that word. Test words include verbs and adjectives, as well as nouns. To answer the questions examinees need to be able to hear the questions, see the pictures, and point clearly and independently.

Words range from the simple (like 'ball' and 'dog') to the difficult (like 'arable' and 'lugubrious'). The test items are divided into groups of 12, and testing starts with the group that matches the examinee's chronological age, so teenagers and adults do not have to work through a lot of 'baby' words. Providing they score well on the items at their age level, they are given credit for items below that level.

Each examinee's Raw Score - the number of items the examinee gets correct - is correlated with their age, using the table provided to give a Standard Score which corrects for the effects of age. A 15-year-old is expected to know more words than an 8-year-old. If both answer the same number of questions correctly the 8 year-old will receive a significantly higher Standard Score. The Standard Score allows each examinee's results to be compared with other examinees and with other assessments, using percentile rankings.

A Standard Score of 100 falls on the 50th percentile, exactly in the middle of the average range. A percentile rank of 50 does not mean that the examinee only answered half the questions correctly but that the examinee performed better than 49% of people who have undertaken the PPVT.

The average range on the PPVT includes Standard Scores from 85 to 115 (percentiles 16 to 84). Standard Scores above 115 are above average (percentiles 85 and above). Standard Scores below 85 are below average (percentiles less than 16). 'Average' refers to the average for all test-takers, not just to the average of those with disabilities.

The PPVT is not a wide-ranging intelligence test. It does, however, indicate learning potential and results on the PPVT-4 correlate well with results on the PPVT-IIIR (PPVT-4 Manual, 2007) and results on PPVT-IIIR correlate well with results on Wechsler Intelligence Scale for Children – 4th Edition (WISC-IV) (Foo et al, 2013). Students who achieve significantly higher scores on the PPVT than they have previously scored on assessments such as the Weschler IQ tests - Wechsler Preschool and Primary Scale of Intelligence for children aged 3-6 years (WPPSI), Weschler Intelligence Scale for Children for children aged 6-16 years (WISC) and Weschler Intelligence Scale for Adults for people over age 16 (WAIS)- that require unimpaired speech and hand skills, are likely to have had their learning potential underestimated previously. The Weschler Intelligence Scale for Children has been used since 1949 and, as said above, is still often the only cognitive assessment administered to students with disabilities.

Raven's Standard Progressive Matrices

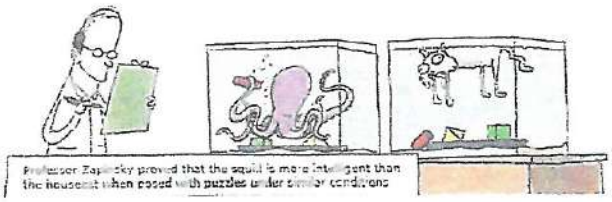
Raven's Standard Progressive Matrices (RSPM) is used for measuring abstract reasoning. It is regarded as a non-verbal estimate of fluid intelligence (reasoning), as opposed to the crystallized intelligence (acquired knowledge) measured by the PPVT. The test contains 60 multiple choice questions presented in order of difficulty, designed to measure the test-taker's reasoning ability. All of the questions in the RSPM consist of a black-and-white visual geometric design with a missing piece. The test taker is given six to eight choices from which to choose the missing piece. Raven's tests are often administered to groups ranging from 7-year-olds to the elderly, who use pencils to mark their score sheets. When administered individually the examinee points to his or her answer, and the examiner marks it on the score sheet. Raw Scores are standardized for age and country, and Standard Scores give a percentile ranking in a similar way to the PPVT. (Because the test requires no language it is used in more countries than the Peabody or Weschler tests.)

To answer questions on Raven's Matrices, examinees need to be able to see the designs, scan and analyse the options offered, and point clearly and independently. Because there are no spoken questions, hearing is not required. The first Raven's test was published in 1938.

The Parallel version of Raven's Standard Progressive Matrices is a very similar test with the same level of difficulty, but with different answers, so either or both tests can be used in assessing one individual. It also makes it possible to use a few plates from one test as practice plates before administering the other form. Unlike the PPVT the Raven's tests do not include practice plates. This is unfortunate as the analytic skills required by the RSPM may be quite unfamiliar to examinees. Student 6 from our cohort - photo below - demonstrated the importance of providing practice plates. Student 6, who had scored on the 95th percentile on the PPVT, only scored on the 25th percentile on RPSM, administered without any previous exposure to such a test. He was upset when he saw his score sheet even though the 25th percentile was in the average range, so we offered to administer the Parallel form at his next appointment. He was happy to have another try, and scored on the 90th percentile, without any training or additional test exposure. In general, examinees who undertook a Raven's test in addition to the Peabody which all the examinees did, scored lower on the Raven's than they did on the PPVT, though still well above their previous Weschler assessments .

Testing tests

Shortly after we started assessments with the PPVT-4 and the Raven's tests, we received a letter from the Department that confirmed the need for a new approach to assessment. The Department said "Standardised measures are used ... for determining eligibility ... it is essential that procedures are consistent and variations in scores are not attributable to the use of different test instruments. In order to achieve this, a common test is needed. The Weschler tests are recommended ... as they are a valid and reliable tool for the assessment of cognitive functioning of children and young people, including those with an intellectual disability ... and Australian norms are available" (DET, March 7, 2016). So as far as the Department is concerned, one size fits all, and apparently you can tell which students have an intellectual disability before administering a test. We do not agree.



By the end of June 2016, 25 children and young adults had been assessed with the PPVT-4, of whom 10 had also undertaken RSPM. All 25 examinees had little or no speech and were reported as having previously been assessed as IQ <50. Their ages at the time of testing were between 4 and 28. Two were pre-school age, 18 were school age (5-18), and 5 were above school age. All but 3 were male. Twenty-three examinees had diagnoses of ASD. One had Down syndrome and one Global Developmental Delay. Twenty-two of the PPVT assessments were videoed.

Our pre-requisites for the students to whom we offered the PPVT 4 were adequate sight and hearing, the ability to select from 4 items independently, and the ability to sit and focus for 10 minutes at a time (test administration typically took half an hour). Those examinees who were not able to focus for 10 minutes in the test situation took breaks after each set of 12 questions.

Hand-eye co-ordination, scanning and attention skills form a significant part of communication aid access training. Many older students did not have the necessary skills to undertake these assessments when they started to attend the Centre but had acquired them during therapy. We have observed that students who have had significant iPad, smart phone or tablet exposure typically present with better pointing and hand/eye co-ordination than students with similar diagnoses who came to the Centre before 2010. The variability in handskills is important. It suggests that basic selection skills should be checked prior to assessment, and therapy provided prior to cognitive testing if selection skills are not adequate for the task.

The outcomes of the 25 examinees were quite unexpected - 14 examinees obtained scores in the average range and 11 examinees obtained above average scores. Not one scored below the average range. Previously all 25 had been assessed as not only below average, but very significantly below average – IQ <50 – on tests requiring speech.

We did not cherry-pick either the examinees or the results. The outcomes cited are those of all clients aged below 30 who completed a PPVT at the Centre from January to June 2016 together with the 4 clients previously tested whose results had already been passed to the Department . Two young clients with significant health issues did not complete testing by the end of June and they are not included.

The Peabody was administered in the usual way, with the advantage that we have adjustable height tables and slope boards, so we could accommodate the physical needs of examinees of very different sizes. The Peabody is not time-limited, and every effort was made to keep testing as relaxed as it could be given the presence of the camera and observers. Most examinees were very familiar with the Centre and the staff, and were used to undertaking multiple-choice activities during therapy sessions.

Conclusions

The unexpected outcomes of these 25 'low-functioning' individuals highlights the importance of using assessments that fit the receptive and response strategies of the individual being assessed.

The importance of speech and physical capacity in cognitive assessment should be formally recognised. All tests of cognition should be marked with the speech and physical skills necessary to complete them, together with the sight, language and hearing skills necessary to understand them. Bureaucracies should instruct the assessors they employ to use only tools that fit the individuals being assessed.

Further research is needed on the development of tests with particular skill sets suited to people with specific impairments. In the meantime, all students who have been assessed with inappropriate tests, including those with little or no speech, should be treated as competent and given access to empowering communication strategies and compensatory education programmes.

Please email Rosemary Crossley at admin@annemcdonaldcentre.org.au if you would like a copy of the bibliography for this article.

[5] We will examine the Raven's results in a later article.

[6] Where possible we obtained their previous IQ assessments. If these were unavailable we accepted attendance at the Department's schools for students with IQs less than 50 as indicating that their intelligence had been assessed as falling in this range.

[7] The 2 younger students were retested with the PPVT-4, with similar results. The 2 older students had left school and were not retested, but their results on the PPVT-IIIR were included.

Four students involved in our Assessment Project in early 2016

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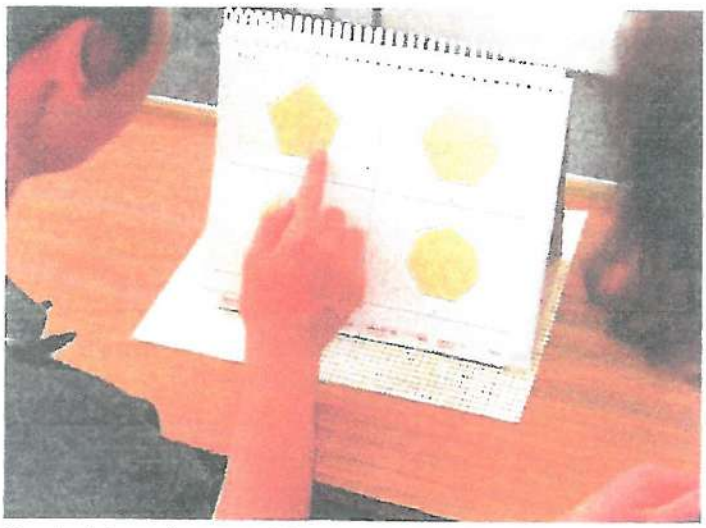
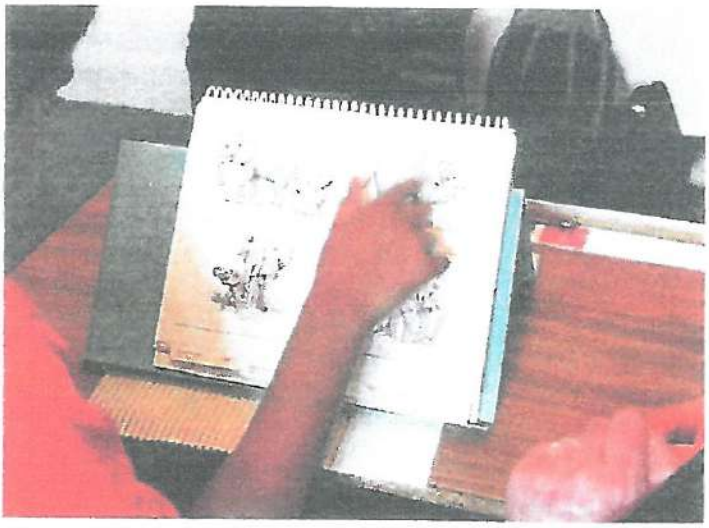
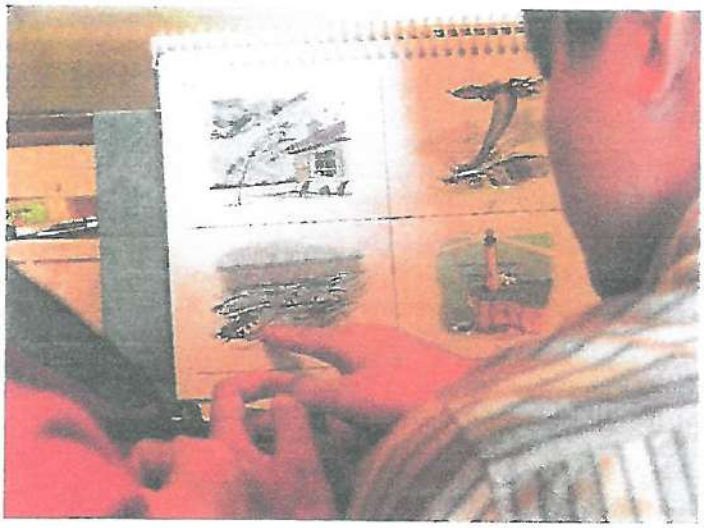


Student 6, male with ASD aged 15.5 PPVT 95th percentile Raven's SPM 25th percentile Raven's SPM - Parallel 90th percentile. Does Brain Pops at home. Emails me if the topic is interesting.



Student 13, male with ASD aged 13.0 PPVT 95th percentile Raven's SPM -- Parallel 50th percentile



Student 18, male with ASD aged 17.0 PPVT 86th percentile Raven's SPM – Parallel – 60th percentile

Student 8, male with ASD aged 10.10 PPVT 95th percentile Raven's SPM – Parallel – 90th percentile