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Case Study: An Individual with Autism and an Intellectual Disability

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Abstract

The current study is a single-subject case study. For this study, we measured the academic level of an individual with autism and an intellectual disability as compared to typically developing peers. We interviewed his special education teachers and also observed or administered a test to him a total of 6 times. There were three standardized tests administered: Woodcock Reading Mastery Tests-Revised, Kaufman Test of Educational Achievement-3, and KeyMath-3. These three standardized tests measure the participant's overall level of academic achievement, as well as breakdown his strengths and weaknesses in specific areas of reading and math. We analyzed the scores from these standardized tests to gain understanding of the student's academic ability in order to provide recommendations for the instructional level in which the student should be taught.

Background

C.S. attends a middle school in Chesterfield County. He has both an intellectual disability and autism. C.S. is in a self-contained classroom for students with intellectual disabilities for reading, math, and social skills. He goes into a general education classroom for science, social studies, computer art, and gym with an aide for support; however, C.S. is not on an SOL track for any subject. Instead, his teachers put together a VAAP binder as a supplement of the SOL. C.S. frequently disrupts the class when he is frustrated or overwhelmed by yelling out lines from movies. This is also currently an issue in his general education classrooms because he gets made fun of for his outbursts.

Autism Spectrum Disorder is characterized as "persistent deficits in social communication and social interaction, and restricted, repetitive patterns of behavior, interests or activities"(American Psychiatric Association, 2013). There is not solely one cause of autism. Autism is influenced by genetics and the environment (Bellochi, 2017).

Intellectual Disability (ID) is characterized as "a disorder with an onset during the developmental period that includes both intellectual and adaptive behavior deficits"(American Psychiatric Association, 2013). Adaptive behavior is use of social and practical skills. ID has a few causes: abnormal gene inheritance, mother's use of alcohol or drugs, problems at birth, and disease at a young age (For example, Whooping Cough). Intellectual disabilities have four levels of severity: mild, moderate, severe, and profound.

Rationale/Purpose

The purpose of this of study is to compare C.S.'s achievement scores to those of his peers and to determine his current academic achievement level, strengths, and weaknesses, therefore we have administered a test of academic achievement.

Hypothesis

We predicted that C.S.'s scores will be lower than peers his age and grade. We also predicted that C.S.'s math composite on the KTEA-3 would match his standard score on the math total on KeyMath-3. We predicted that C.S.'s reading composite on the KTEA-3 would match his standard score on the total reading cluster on the Woodcock Reading Mastery Tests-Revised.

Method

Participants

- Case Study
- 1 participant
- 13 years old
- 7th grade

Materials

- Kaufman Test of Educational Achievement
- KeyMath-3
- Woodcock Reading Mastery Tests- Revised

Graphs



Kaufman Test of Educational Achievement

The KTEA-3 is an extended battery that is administered individually and assesses key academic skills in depth. This test was developed by Dr. Alan S. Kaufman and Dr. Nadeen N. Kaufman and published in 2014. The test is comprised of four major composites: the academic skills battery composite, reading-related composite, oral composite, and the cross-domain composite. Each composite is made of smaller composites. Each smaller composite is made up of subtests. There are 19 total subtests.

- Academic Skills Battery: Standard Score (SS) = 71, Percentile Rank (PR) = 3
- Reading Core Composite: SS = 65, PR = 1
- Math Core Composite: SS = 71, PR = 3
- Written Language Core Composite: SS = 84, PR = 14

C.S. fell in the significantly below average range for the academic skills battery, reading core composite, and math core composite. His score on the written language core composite only fell slightly below average. C.S.'s strengths were in reading fluency and decoding, while his weaknesses were in comprehension and oral language.

Comparisons

C.S.'s standard scores on the KeyMath-3 total test and the KTEA-3 math core composite were compared because these tests measure performance in the same academic area. As expected, C.S.'s standard score was identical for both (SS = 71). C.S.'s standard scores on the WRMT-R total reading cluster and the KTEA-3 reading core composite were compared because these tests measure performance in the same academic area. Unexpectedly, C.S.'s standard score on the reading core composite of the KTEA-3 (SS = 65) was significantly lower than his standard score on the total reading cluster on the WRMT-R (SS = 90). C.S.'s score was significantly below average on the KTEA-3 composite, while his score fell in the average range on the WRMT-R cluster.

KeyMath-3

The KeyMath-3 measures essential mathematical concepts and skills developed by Austin J. Connolly. The KeyMath-3 was published in 2007 by Pearson and takes between 30 and 90 minutes to administer. This is a diagnostic test and is individually administered, designed for students from kindergarten through twelfth grade. The test is broken up into 3 areas: basic concepts, operations, and applications. The basic concepts area has five subtests: numeration, algebra, geometry, measurement, and data analysis and probability. The operation area is broken up into three subtests: mental computation and estimation, addition and subtraction, and multiplication and division. The application area has two subtests: foundations of problem solving and applied problem solving.

- Total Test: SS = 71, Grade Equivalent (GE) = 3.2, PR = 3
- Basic Concepts: SS = 73, GE = 3.4, PR = 4
- Operations: SS = 78, GE = 4.2, PR = 7
- Applications: SS = 60, GE = 1.2, PR = 0.4

C.S. fell significantly below average in all areas. His strengths are in one-step problems and operations. His weaknesses were fractions, decimals, variables, and exponents, as well as applications.

Woodcock Reading Mastery Tests- Revised

The WRMT-R is a normative comprehensive reading assessment, published by Pearson. The test has a total reading cluster score. The test has an additional three clusters: readiness, basic skills, and reading comprehension. Each cluster has two tests with one test having three subtests, making a total of 9 sections that make up the assessment. The subtests are visual-auditory learning, letter identification, word identification, word attack, word comprehension, and passage comprehension. The average time to administer each cluster is 10-30 minutes.

- Total Reading Cluster: SS = 90, GE = 5.1, PR = 26
- Readiness Cluster: SS = 70, GE = 2.3, PR = 2
- Basic Skills Cluster: SS = 98, GE = 6.9, PR = 44
- Reading Comprehension: SS = 80, GE = 3.8, PR = 9

C.S. was in the average range for total reading cluster and basic skills cluster. His reading comprehension score fell below average. His readiness cluster fell significantly below average. His weakness is in reading comprehension and his strength is in word attack.

Recommendations

We would recommend working with C.S. in several areas of academics. Based on the scores on the KTEA-3, his teachers should work to help C.S. improve his oral language skills and teach him comprehension strategies as this should increase his success in other areas. We would also recommend using a standardized test that has a nonverbal form. This is because C.S. performed much better on items where he could write or point to answers. Throughout the three assessments we have administered to C.S. (KTEA-3, Woodcock Reading Mastery Tests- Revised, and KeyMath-3), we have noticed C.S. struggles on tests that he needed to give a verbal answer for. Data shows that C.S. may benefit from quizzes and class activities that allow C.S. to use his written language skills more than his oral language skills until his oral language skills are more developed. We would also recommend using a standardized test that has a nonverbal form in order to get a more accurate representation on C.S.'s current academic level of achievement. This is because C.S. performed much better on items where he could write or point to answers. We would recommend working with C.S. in several areas in math. Based on his focus items, he should work on two-step problems, familiarizing himself with decimals, fractions, exponents, and variables.

Based the WRMT-R scores, we advise C.S.'s teachers to, until C.S. makes improvement, provide him with content reading materials that are on around a 5th grade-6th grade level. Content above grade 6.5 will be too difficult for C.S. to comprehend. We recommend that his teachers ask him questions about what he has read during and after reading, because is not comprehending what he is reading.

References

- American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC
- Bellochi, S., Henry, V., & Baghdadli, A. (2017). Visual Attention Processes and Oculomotor Control in Autism Spectrum Disorder: A Brief Review and Future Directions. *Journal Of Cognitive Education & Psychology*, 16(1), 66-93. doi:10.1891/1945-8959.16.1.77