THE EFFICACY OF INTELLIGENCE TESTING IN CHILDREN WITH PHYSICAL DISABILITIES,VISUAL IMPAIRMENTS AND/OR THE INABILITY TO SPEAK

Cheryl Crisp
Indiana University

Intelligence testing is an important part of any individualized education plan; however, a verbal test measure may not be appropriate for the child with a physical disability, visual impairment, and/or the inability to speak. A child with a physical disability may not be able to point accurately or build a tower with blocks; a child with a visual impairment may not be able to identify the colors in the small boxes contained in the test, and a child who is unable to speak may not have the same command of language as a peer who is able to speak. In order for schools and others to have an accurate depiction of the intelligence of a child with a disability, alternate testing methods may need to be employed. It is in the best interest of every child to have an adequate assessment to identify his/her individual educational needs. The purpose of this paper is to present the special needs of children with a physical disability, visual impairment, and/or the inability to speak and to propose some alternative testing methods to make testing more appropriate for these children.

For the past 29 years, I have devoted my life to the care of children and adults with disabilities, first as a nurse, and the past 4 years as a parent. It has become apparent to me that an intelligence quotient (IQ) score is not always indicative of the cognitive abilities of children with physical disabilities, visual impairments, and/or the inability to speak. Most intelligence measures require pointing, copying designs, and the ability to answer questions or tell stories. A child with athetoid cerebral palsy (CP) may know the correct answer, but the random movements associated with his/her disabilities makes it very difficult for the child to point to the correct object or block on a sheet of paper with a great degree of accuracy even when the child knows the correct answer. A child with a visual impairment may not be able to see the small color squares provided in the intelligence test kit to correctly identify the colors, even if he/she is able to identify large color blocks in the classroom with 100% accuracy. A child who is nonverbal may not understand the subtleties of language because he/she is not able to speak and has not developed language in the same manner as a child who is typically developing. Because of these things, I am very passionate about eliminating the use of antiquated and inappropriate testing measures for children with physical disabilities, vision impairments, and/or the inability to speak.

The *No Child Left Behind Act of 2001* has placed a new significance on the ability for children with physical and intellectual disabilities to perform well on standardized academic and psychological testing. Schools and educators have reached a new level of accountability to insure that all students perform well on academic skills (Hirsh-Pasek, Kochanoff, Newcombe, and de Villiers, 2005). However, the act fails to acknowledge that some children with physical and intellectual impairments will never reach an age-appropriate academic level. The child in a coma or persistent vegetative state, the child with severe and profound physical or intellectual impairments, and the child with severe head injuries are examples of the types of diagnoses that may cause a child to have little chance of attaining an age-appropriate math or reading level. The act does not have provisions to address the very special education needs and testing abilities of children with physical disabilities, visual impairments, and/or

the inability to speak. While testing accommodations are mandated for children with disabilities, not all children will be able to perform well even with the use of accommodations due to the accommodations being too limited to apply to children with significant impairments.

It is important for all persons who work with children to remember that every child is unique and individual, regardless of whether the child is typically developing or if a disability is present. Early in my career, I discovered a wonderful book by Marian Willard Blackwell (1979) entitled *Care of the Mentally Retarded.* One statement really stood out to me. *Each child and adult, no matter how profoundly affected is more human than retarded* (p. 4). Certainly treatments and ideas have changed tremendously in the past 30 years. However, the basic premise of the statement rings true even today.
I would, however, like to amend the statement to read *Each child and adult, no matter how profoundly affected is more human than disabled*. It is also important that everyone remember that each child and adult is individual and functions as such and that the person should always be placed before the disability.

It would be inappropriate to state that children with physical impairments never have intellectual disabilities as well. The two frequently go hand in hand. A child with a severe lack of oxygen shortly after birth may suffer from severe spasticity and moderate mental handicap. Children with cerebral palsy can have intelligence ranging from a genius level to a profound level of mental handicap. Any combination of physical and intellectual disabilities is possible. There is no textbook that can say exactly what disabilities go together. Certainly some syndromes, such as Down syndrome have specific and recognizable characteristics, but each child remains unique and individual (Sattler, 2002).

The ACEI Position Statement on Standardized Testing (Perrone, 1991) discusses the performance component of standardized testing. For measuring physical development, children are asked to skip or stand on one foot for 20 seconds; on the cognitive level, they are asked, for example, to retell a story in its proper sequence. With regard to social and environmental experience, they are asked to count to 10, recognize colors and shapes, manipulate a crayon or pencil, and follow directions (p.4).

Any or all of these tasks may be difficult or impossible for children with physical disabilities, visual impairments, and/ or the inability to speak. The nature of standardized testing does not allow for much latitude in how the tests are administered. Designers of the test provide very specific instructions about how the test should be administered. (Machek, 2004; Epstein, Schweinhart, DeBruin-Parecki, & Robin, 2004). This makes testing accommodations very difficult. *Accommodations on the Stanford-Binet Intelligence Scale, Fifth Edition* (Braden & Elliot, 2003) provides detailed instructions on what accommodations can be made while still maintaining the integrity of the test. It also speaks very specifically to what accommodations are not possible regardless of disability. Therefore, even with accommodations, the *Stanford-Binet Intelligence Test, Fifth Edition* is still not appropriate for all children.

In his book, *Assessment of Children: Behavior and Clinical Applications, Fourth Edition,* Sattler, cautions testers *Do not allow a disorder or function in one area to bias your perception of how a child functions in other areas. For example, children who are mentally retarded may have excellent motor skills* (p.249). The reverse is also true. Children with physical disabilities may have excellent cognitive skills. However, the disability might interfere with the child's ability to perform certain tasks on the test. Murphy, Augustyniak, & Rinaldo (2006) remind us that while physical disability increases in children with neuromuscular disorders, their cognitive level does not deteriorate at the same rate. A child with Duchenne muscular dystrophy will most likely remain cognitively intact until the day that his body gives up since the disease attacks and destroys muscles and not cognitive function.
Case Study

M. F. was a teenager when I met him. He had suffered an anoxic injury shortly after birth, depriving his brain of needed oxygen, leading to a diagnosis of Cerebral Palsy. M. F. spent all of his life living in a facility for children with moderate to profound mental handicaps because his family had been assured that M. F. would never be able to function in the outside world. He was able to propel himself in his wheelchair by pushing himself backward, used symbols and pictures on his wheelchair tray as a means of communication, and would take the linens away from his caregivers and hide them as a way of teasing the caregivers. He understood all instructions given to him, and in later life, figured out a way to gain attention when he was suffering from mental illness. M. F. decided if he lodged his head between the fire doors, he would be able to hurt himself enough to gain the attention of the staff

working with him. Because of this behavior, M.F. was able to get the psychological help that he so desperately needed.

M. F. was able to show affection to the persons that he cared about, and he was able to show his dislike when he did not like those persons caring for him. He was able to show a wide range of emotions and often cried out of frustration when he was not understood or when he was bored. Unfortunately, M. F. was diagnosed with a profound mental handicap when conventional testing measures were obtained. His athetoid movements prohibited M. F. from being able to point to the appropriate test boxes. Dysarthria from his cerebral palsy rendered M. F. unable to speak, so he lacked the appropriate language development skills to correctly answer many of the language questions. By observation, M. F. was not profoundly mentally handicapped by any stretch of the imagination, but this label continued to follow M. F. until his death last year—all because intelligence testing indicated that his IQ was less than 25.

Fagan (2000) provides a list of special populations who are not able to comply with the requirements of standardized IQ testing. These include neuromuscular disorders which include cerebral palsy, all of the muscular dystrophies, and dystonia, brain injury, some language disorders including those where the person is unable to speak, developmental disorders, mental disorders, and cultural differences. Genetic and metabolic disorders may also render a child unable to comply with the requirements of standardized testing.

According to Sattler (2002) visual experiences may influence the performance level of a child with congenital blindness in answering questions in cognitive tests. Limited visual experiences lead to limited abilities to perform well on some tests. A child may not be able to perform what he/she is unable to see, therefore making identification of shapes and colors extremely difficult. Therefore, it is important to either provide appropriate accommodations to the child taking the test or eliminate the tests completely and use other means of assessing the child's cognitive level.

While not every child with a communication disorder will have lifelong speech difficulties, at least 20% will have some kind of lingering communication disorder (Glogowska, Roulstone, Peters, & Enderby, 2006). This is in addition to the children who are unable to speak regardless of the amount of therapy received. Children who are unable to speak pose special problems to persons performing psychological or IQ testing. This nonverbal status of children has led to the development of nonverbal IQ measures. Nonverbal IQ tests were designed to evaluate cognitive ability without the need to assess language understanding and ability (DeThorne & Schaefer, 2004). However, no test measures are perfect and since some of these tests are totally nonverbal, even for the tester, not all children will be able to perform the tasks as they do not understand the instructions or gestures provided.

One commonly used test of nonverbal IQ is the Differential Abilities Scales or DAS (Elliot, 1990). The test requires that the child be able to build block towers replicating those built by the examiner, placing like picture cards next to one another, and a timed test to make designs using sponge shapes or wooden block to name a few tasks. Many of these tasks require the same level of physical ability as verbal IQ testing measures. A nonverbal IQ measure such as the DAS also does not account for the inability to speak even though it does provide important information on children with other types of communication disorders affecting intelligence.

A more appropriate measure of nonverbal intelligence would be the Comprehensive Test of Nonverbal Intelligence (CTONI; Hammill, Pearson, & Wiederhold, 1997). Unfortunately, this test also does not have accommodations for children with physical disabilities or visual impairments. It is acceptable for children who are typically developing but who are unable to speak and have an adequate understanding of language. However, not all children who are unable to speak develop the same level of language understanding as children who are typically developing in all areas (Lacerda, 2005; Smith, 2006). Pointing is required; therefore, the child who has difficulty pointing would not be able to successfully complete the test.

Klassen, Neufeld, and Munro (2005) suggest that an intelligence measure alone is not necessarily an indication of a learning disability. Other measures such as the ability to function in the environment should also be taken into account. Many European countries have moved away from using intelligence in their definitions of learning disability and include any disability that impedes learning under the umbrella term of learning disability; whereas in the United States, the diagnosis of a learning disability

is specific to those children with math and reading difficulties (Klassen et al, 2005; Siegel, 2003). A universal definition of learning disability describing the conditions included in the definition would help to alleviate some of the confusion surrounding current standardized testing measures.
A number of psychologists, educators, and healthcare professionals recognize the inefficiency of current standardized intelligence tests in accurately assessing IQ scores in children with physical disabilities, visual impairments, and/or the inability to speak. Unfortunately, there is currently no other method of evaluating cognitive and physical function that does not employ some type of standardized testing. Even though provisions for accommodation are made, there is a fine line between accommodation and the provision of testing environments that are both fair and ethical for all students including those who require minimal or no accommodations. It is important to remember that there is not one single standardized set of guidelines for acceptable accommodations. There are as many statements on accommodations as there are school systems in each state

It is very apparent that current methods of standardized testing, particularly methods of obtaining IQ measurements, are ineffective in accurately assessing cognitive levels in children with physical disabilities, visual impairments, and/or the inability to speak. Even though provisions are made for accommodations, these accommodations do not meet the needs of those children with significant differences in abilities from their typically developing peers. It is imperative that psychologists, educators, and medical professionals work together to develop more effective measures to assess cognitive development in children with significant disabilities affecting the child's ability to successfully participate in current standardized tests.

It is my desire that no child with a physical disability, visual impairment, or the inability to speak be tested using these conventional IQ measures because the tests by nature do no provide a true picture of the cognitive and physical abilities of the child who is not typically developing. False labels are just that, but once the label is made, it is hard to get it retracted or changed. No child should have to have a label of moderate mental handicap follow him/her around just because the child was not able to physically perform well on an IQ test. Inappropriate labeling leads to children being *left behind* in regards to education and abilities and should not be tolerated by psychologists, educators, healthcare providers, and most importantly the parents and children. We must find a better way to assess abilities than these outdated and ineffective IQ measures if we are truly to help all children attain the goals established by the *No Child Left Behind Act of 2001.*

References

Blackwell, M. W. (1979). *Care of the Mentally Retarded.* Boston, MA: Little Brown, & Company.
Braden, J. P. & Elliot, S. N. (2003). Accommodations on the Stanford-Binet Intelligence Scales, Fifth Edition *Stanford Binet Intelligence Scales, Fifth Edition, Assessment Bulleting Number 2.*
DeThorne, L. S. & Schaefer, B. A. (2004). A guide to child nonverbal IQ measures. *American Journal of Speech-Language Pathology, 13*, 275-290.
Elliot, C. D. (1990). *Differential Ability Scales*. San Antonio, TX: Psychological Corporation.
Epstein, A. S., Schweinhart, L. J., DeBruin-Parecki, A., & Robin, K. B. (2004). Preschool assessment: A guide to developing a balance approach. *Preschool Policy Matters, 7.*
Fagan, J. F. III, (2000). A theory of intelligence as processing implications for society. *Psychology Public Policy, 6*(1). 168-179.
Glogowska, M., Roulstone, S., Peters, T. J., & Enderby, P. (2006). Early speech-and language-impaired children: Linguistic, literacy, and social outcomes. *Developmental Medicine & Child Neurology, 48*, 489-494.
Hammill, D. D., Pearson, N. A., & Wiederhold, J.E. (1997). *Comprehensive Test of Nonverbal Communication*. Austin, TX, Pro-Ed.
Hirsh-Pasek, K., Kochanoff, A., Newcombe, N. S., & deVilliers, J. (2005). Using scientific knowledge to inform preschool assessment: Making the case for "empirical validity". *School Policy Report, XIX*(1), 3, 5-11.
Klassen, R. M., Neufeld, P., & Munro, F. (2005). When IQ is irrelevant to the definition of learning disabilities. *School Psychology International, 26*(3), 297-316.
Lacerda, F. (2005). On the clinical relevance of early deficits in critical linguistic functions. *Acta Paediatric 94*(12). 1701-1703.
Machek, G. (2004). Individually administered intelligence tests. Accessed 6/1/2006 file://F:\HumanIntelligenceIndividuallyAdministeredIntelligenceTests.htm

Murphy, J., Augustyniak, K. & Rinaldo, V. (2006). Students with neuromuscular disorders: A survey of parental satisfaction with school-based services. *International Journal of Special Education, 21*(1), 68-76.
No Child Left Behind Act of 2001, Pub. L. No.107-110, 115 Stat 1425 (2001).
Perrone, V. (1991). ACEI Position Paper on Standardized Testing: A position paper of the Association for Childhood Education International. Accessed 5/18/2006 from file://F:\OnStandardizedTesting.htm
Sattler, J. M. (2002). *Assessment of Children: Behavioral and Clinical Applications, Fourth Edition.* La Mesa, CA: Jerome M. Sattler, Publisher.
Siegel, L. S. (2003). IQ-discrepancy definitions and the diagnosis of LD: Introduction to the special issue. *Journal of Learning Disabilities 36*(1). 2-3.
Smith, M. (2006). Speech, language, and aided communication: Connections and questions in a developmental context. *Disability and Rehabilitation 28*(3), 151-157.