Full Position Paper: Intelligence Testing of Individuals Who Are Blind or Visually Impaired

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About the Authors

Stephen A. Goodman, M.A., M.S., now retired, has been a school psychologist and an administrator in general and special education. He completed his working career as Director of Pupil Personnel Services at the California School for the Blind (CSB). During his years at CSB, Steve worked with school administrators and assessment staff to develop an assessment program for individuals who are visually impaired as well as deaf-blind. He has been active in professional organizations for school psychologists and visual impairment professionals on a local and national basis, including having served as Co-Chair of the National Agenda for the Education of Children and Youth with Visual Impairments, Including Those with Multiple Disabilities. He has published in the fields of visual impairment and school psychology. His publications include articles on the assessment of individuals who are blind and visually impaired and on positive behavior management. Steve also co-edited a book with Stuart Wittenstein on Collaborative Assessment.

Marnee Loftin, M.A. has been employed at the Texas School for the Blind and Visually Impaired (TSBVI) for 27 years. In her role as School Psychologist, she administers a variety of instruments, including intelligence tests, to students ages 6-22 who are blind and visually impaired (VI) and function at a broad range of abilities. Marnee has been involved with a variety of curricula that has been developed and produced at TSBVI and is a frequent contributor to the popular TSBVI website. She regularly presents workshops on evaluation of students with visual impairments throughout Texas and the United States. Her publications include topics such as evaluation strategies for students with VI, students with neurodegenerative conditions, anc parent education. Her most recent publication, Making Evaluations Meaningful, addresses the identification and development of Individual Educational Programs (IEPs) for students who are blind and VI, and have other conditions such as emotional disturbances, autism spectrum disorders, and learning disabilities.

Carol Anne Evans, Ph. D., is a school psychologist and a former teacher of students with visual impairments. She co-authored the chapter on Visual Impairments in Jerome Sattler's 5th edition of Assessment of Children, and consulted with APH on the braille adaptation of the Woodcock-Johnson III Tests of Achievement. In addition to practicing in the Davis School District in Utah, Carol contracts with school districts to provide specialized assessments, and provides training and consultation on psychoeducational assessment of students who are blind and visually impaired.

Acknowledgements
The American Printing House for the Blind (APH) and the authors of this position paper wish to acknowledge and express appreciation to all the individuals who contributed information, guidelines, feedback, editing, reformatting, and graphic design expertise in order to develop and make this document available.

**Introduction**

There has been discussion as to the benefit of intelligence or cognitive tests administered to individuals who are blind and visually impaired. Are the results of an intelligence or cognitive test meaningful to individuals who are blind or visually impaired (VI), and useful to their instructors, families, and decision-makers?

An Intelligence Testing Committee made up of APH staff and field experts was formed in January 2007 to provide a rationale for administering intelligence tests to individuals who are blind and visually impaired. Original members included:

- Stephen A. Goodman, M.A., M.S., California School for the Blind
- Carol Anne Evans, Ph.D., Davis School District, Utah
- Marnee Loflin, M.A., Texas School for the Blind & Visually Impaired
- Will Evans, M.A., Products and Services Advisor, APH
- Barbara Henderson, M.A., Test & Assessment Project Leader, Accessible Tests Department, APH
- Michael Sell, B.A., Test Editor, Accessible Tests Department, APH
- Debbie Willis, M.A., Director of Accessible Tests Department, APH

As of February 24, 2009, members met a total of twenty-one times via teleconference. During the initial meeting, the committee members determined that the priority was to develop and disseminate "key points" in a position paper regarding intelligence testing of individuals who are blind and VI. Ten key points and guidelines were formulated. They are as follows:

1. Administering Intelligence Tests
2. Specialized Training
3. Reasons for Evaluation
4. Collaboration
5. Eye Condition and Developmental History
6. Adaptations
7. Tactile and Symbolic Representations
8. Direct Observation
9. Qualitative Interpretation
10. Reporting Results

A discussion regarding this group's position and necessary guidelines follows.

**Position Statement**

When appropriate practices are followed, cognitive or intelligence testing of individuals who are blind and visually impaired provides useful and valuable information to test-takers, their families, instructors, and other decision makers.

**Recommendations**

**Issue 1: Administering Intelligence Tests**

*Guideline 1: Intelligence test results yield valuable information about an individual and increase the usefulness of the overall evaluation.*

Prior to administration of an intelligence test, the examiner needs to make preparations, such as ensuring that a Functional Vision Assessment (FVA) and Learning Media Assessment (LMA) have been administered. This is usually the task of the Teacher of Students Who Are Visually Impaired (TSVI) and/or Orientation & Mobility Specialist (O&M). The FVA report specifies how to present materials in a manner that best suits the individual's use of vision. The LMA report specifies the media that are best for the individual for different tasks. The results of the two informal assessments provide valuable information for the examiner.

It is important to be cognizant of the following:

1. Standardized tests range from entirely accessible to entirely inaccessible, depending on both the test and the degree and type of vision loss of the examinee.
2. When comparing test results of a visually impaired or blind individual to that of the general population, validity is affected inssofar as all test items may not be equally accessible to the visually impaired individual even when appropriate accommodations are utilized.
3. Evaluators must strive to use only subtests or tests that can either be made accessible or are accessible without changes.
4. The process of modification (which changes the content of reduces the cognitive demand of the items) of any test will make the test, by definition, a technically invalid test. However, results of a modified test often provide important clinical information that can be used in making decisions. These types of clinical judgments must be made cautiously by an evaluator skilled in working with this population and through a collaborative evaluation process.

If the results of the FVA and LMA indicate that the individual has enough vision to use it for at least some learning, it will be important to administer the visual-spatial ("performance-type") portions of intelligence tests. For specific guidelines on interpreting and reporting these results see Issue 9 (Qualitative Interpretation) and Issue 10 (Reporting Results).
Issue 2: Specialized Training

Guideline 2: Those administering tests need specialized training in theory of assessment and test construction, as well as child development and communication methods of individuals who are blind and visually impaired.

Professionals, even those with extensive training in assessment, must engage in additional preparation when working with an individual who is blind or visually impaired. Three key points are:

1. Evaluators must have training in the following areas:
   - Constructs of intelligence,
   - Child development (typical and atypical),
   - Test development, and
     - Test construction
     - Test interpretation
     - Test administration
   - Test administration with both general and special populations.

2. Evaluators must employ collaborative assessment, seeking and integrating the expertise of visual impairment professionals.

3. Evaluators must learn how to present test items to blind or visually impaired individuals while respecting their personal space, communication methods, and environmental needs.

Most evaluators are not trained or experienced in evaluating individuals who are blind and visually impaired. These evaluators must incorporate the expertise and experience of visual impairment professionals and collaborate with them throughout the evaluation process, from preparation through report writing.

Issue 3: Reasons for Evaluation

Guideline 3: The reasons for the evaluation, and the resulting specific clinical judgments and recommendations, should be clearly documented in each individual’s report.

Requests for evaluations are often the result of situations involving agency, federal, and state regulations. Nevertheless, the evaluator should always advocate for specific referral questions that accompany requests for evaluations. The evaluator needs to know as specifically as possible the circumstances that led to the request for an evaluation. Such specificity allows the evaluator to do the following:

1. Choose the most appropriate instrument(s) according to the concerns stated in the referral,
2. Ensure that data are collected to address the specific referral questions,
3. Minimize emphasis upon simply reporting scores, and
4. Maximize the potential for real-life applicability of results.

The evaluator should be careful to prepare recommendations and strategies that will be understood by all individuals who read the report. This includes the individual with visual impairment, family members, and teachers. Clear recommendations should exhibit the following characteristics:

1. Minimal use of professional jargon,
2. Clear explanation of technical terms,
3. Multiple examples to ensure the clarity of recommendations,
4. Understanding of the real-life situation for implementation of recommendations, and
5. Focus upon increasing the independence and self-advocacy of the individual with visual impairment.

As with all assessment, no individual intelligence test score should be used alone to determine a student’s cognitive abilities, the presence of an additional disability, or eligibility for a special program.

Issue 4: Collaboration

Guideline 4: The visual impairment and/or rehabilitation professional, classroom teacher, family, and individual must be involved during the planning, evaluation, and report writing process.

Evaluators, given current regulations, are mandated to assess individuals for the “. . . full range of services necessary for and available to them.” Best practices dictate that a team of professionals including a school psychologist, visual impairment professional, and a speech pathologist evaluate the individual. The school psychologist will administer and interpret test results pertinent to intelligence testing. The input of parents, regular education teachers, rehabilitation specialists, and any other members of the multidisciplinary team working with the individual must be sought and incorporated throughout the evaluation process.

While planning the evaluation, all members of the team must bring their particular areas of expertise forward. Evaluators must provide adaptations based on the input of the expertise of others insofar as it is consistent with principles of assessment and of their own professions. Resulting presentation procedures and instruments used must be accessible to the individual who is blind or visually impaired.

During the administration process, the evaluator should encourage and accept continued input. The evaluator should particularly attend to alternative explanations of data given by others engaged in the evaluation process. During report writing, all collaborators must work to provide information that is supported by the data obtained and supported by the professional knowledge of each member of the team.

It clearly takes longer to evaluate individuals who are blind and visually impaired. Therefore, planning, conducting, and interpreting the evaluation takes a longer time commitment. It is important that the test administrator and other involved parties be aware of and supportive of this commitment of time in order to help ensure valuable information is gained and conveyed regarding the individual being assessed.

Issue 5: Eye Condition and Developmental History

Guideline 5: The evaluator should be aware of the individual's medical and developmental history, as well as the implications of the eye condition on the tasks to be performed.
Evaluation of individuals with visual impairments requires careful consideration of a number of variables and the impact that these have upon the developmental process. As with all evaluations, the evaluator must acquire a comprehensive developmental history and details of early intervention. The evaluator must also have information specific to the impairment, including the etiology, degree of vision loss, and age of onset. The visual impairment professional continues to serve as a significant resource to the evaluator in understanding the implications of each of these variables. The medical history must be reviewed with an understanding of its impact upon all areas of functioning.

Developmental History and Early Intervention
A number of excellent resources specify the particular differences in developmental patterns for individuals with visual impairments. However, the patterns most frequently noted are delays in motor and language development. Individuals with severe congenital vision loss are more likely to exhibit such delays in development. Evaluators must consider the developmental history within the context of what represents a qualitative delay for a child with severe congenital visual impairment.

Early intervention is an important aspect of experiential learning. Evaluators must review developmental histories to ascertain the presence and the frequency of such intervention. Definitive research has not established the presence of a relationship between early intervention and academic success specific to individuals with visual impairment. However, the presence of such intervention provides more opportunities for experiential learning. Such experiences are critical for the development of basic concepts as a prerequisite for academic success. It is important that a solid base of experiential learning occurs prior to the determination of the presence of other disabilities. The evaluator must always determine the extent to which an individual has had the opportunity to participate in such early interventions.

Visual Impairment
The evaluator in collaboration with the professional in the field of visual impairment must have a clear understanding of the visual condition. The visual impairment professional can be of significant support in assisting the evaluator with this task. However, each evaluator must have knowledge of the different conditions that are ocular (structural) and neurological (involving the brain) in nature.

The individual with a visual impairment that is neurological in nature has an increased risk for other conditions that may affect education or vocation. Those with etiologies that are ocular in nature are somewhat less likely to have additional disabilities. Nevertheless, they may coincidentally have additional disabilities. Some ocular disorders are part of recognized syndromes and therefore have a higher likelihood of additional central nervous system disorders. In adventitiously acquired visual impairment or blindness, other circumstances may apply. (See Appendix A for a listing of common eye conditions and their etiologies.)

Degree of vision loss continues to be a significant factor in selection, administration, and interpretation of test results. Information about this issue is interspersed throughout this paper. However, the evaluator must have a clear understanding of various factors pertaining to each specific individual being evaluated. For example, information about visual field restrictions, qualitative fluctuations in visual abilities, and individual considerations of needed environmental modifications during testing are important supplements to the single variable of acuity.

Medical History
The evaluator must consider other elements of the medical history in relationship to possible effects on an individual’s functional abilities. Important considerations include long periods of hospitalization, invasive medical treatments, serious illnesses, concussions, incidents of hypoxia and/or anoxia, and family histories positive for learning or emotional difficulties. These may play an important role in assessing the presence of additional conditions.

Finally, past and current medications must be reviewed. The evaluator must consider these medications and their possible impact upon earlier development and current performance. The evaluator should document specific concerns in the final report.

Issue 6: Adaptations
Guideline 6: Adaptations, which include accommodations that do not change the concepts tested nor the difficulty level of the test materials, should be planned in advance in collaboration with the visual impairment and/or rehabilitation professional and the test developer whenever possible, and be well-documented in the final report.

1. Any alterations to intelligence test stimulus materials or methods of presentation should be planned in advance and well-documented in reports.
2. accommodations are those changes made to provide access for the test-taker. These cannot alter the concepts being tested. For the purpose of this paper, they are defined as changes that do not affect the basic concept tested or its level of difficulty. Acceptable accommodations include providing the test in braille, large print, or audio formats.
3. Modifications, for the purpose of this paper, are changes that do affect concepts tested. These may not be used. Using memory aids such as a calculator are not permitted on an intelligence test when the intent of the item is to assess working memory.
4. When any changes have been made to the test or test administration of an intelligence test, conclusions about test performance should be considered and treated with caution.

Issue 7: Tactile and Symbolic Representations
Guideline 7: Symbols, tactile graphics, and miniature objects must be carefully considered and used with caution to represent pictorial or graphical information. Real objects should be used whenever feasible.

It is important to analyze the purpose of visual stimuli in each particular task on a test. If the stimuli are essential to the intent of the items, one must consider whether they can be made accessible in a tactile format.

It is important to present the task in such a way that it neither increases nor decreases the cognitive demand relative to that which would be expected of an individual who is sighted. Due to the extremely limited number of tests with all the items able to be provided in accessible format, some portions of tests may need to be eliminated (e.g., if their purpose is to evaluate interpretation of pictures). These determinations should be made in consultation with a visual impairment professional who examines the visual stimuli to determine which adaptations are appropriate.

Miniature objects may be used in some situations if the individual has experience with and/or knowledge of both the real object and the miniature object. Nevertheless, caution should be used, particularly with young children who may not have had these experiences. Whenever feasible, it is recommended that real objects be used or that they accompany the tactile or symbolic representation.
Issue 8: Direct Observation

Guideline 8: The assessment should include direct observation in multiple situations.

Observation is an important component of the evaluation of any person, but it is even more critical for visually impaired individuals. The limited number of evaluation instruments available necessitates an increased emphasis on observation in clinical as well as real-life settings. Observation provides the evaluator with valuable knowledge to supplement information from the normative evaluation.

During the evaluation of any individual, the examiner should note behaviors of importance; e.g., response to frustration, ability to attend to task, and general approach to problem solving. Observation also provides information specific to persons with visual impairment. These include the following:

1. Visual efficiency in unfamiliar settings,
2. Visual fatigue,
3. Organizational abilities required in problem-solving,
4. Application of O&M skills in new environments, and
5. Presence of potentially isolating self-stimulatory behaviors.

Additional observations in the work, school, and leisure situations can provide information about the following areas:

1. Social integration with peers,
2. Independent initiation of activities,
3. Organization of tasks for successful management and completion,
4. Self-advocacy skills, and
5. Self-management of technology.

Issue 9: Qualitative Interpretation

Guideline 9: When visual-spatial items or tests are administered, these results should be used only for clinical purposes and to identify appropriate modifications of educational or vocational materials and instructional methods. Results obtained from visual-spatial evaluations must never be reported as scores or used to determine the presence of other disabilities. Important exceptions to this guideline exist, and are documented below.

The visual-spatial items or tests may be administered to individuals with visual impairments if certain conditions are met. These include the following:

- The individual uses vision for learning
- The results of the FVA and LVA support the presence of adequate vision for the specific items on the test
- Both the visual impairment professional and the evaluator agree that the items would yield meaningful information about performance in a variety of situations with or without adaptation.
- Both the visual impairment professional and the evaluator agree that the items would yield useful information in relation to the referral questions.

Most visual-spatial items or tests have not been developed for individuals with visual impairments, and require some degree of adaptation or accommodation. The accommodation(s) will depend upon the actual visual condition as well as the specific items. Extreme caution should be used in making adaptations to these items or tests. Accommodations must be made as supported by the FVA and LVA, and input from the visual impairment professional and the evaluator. Accommodations must be noted in the report of the evaluation. It is important to note that such changes further support the need to report these data only in clinical terms rather than as specific scores. Common accommodations include extending the time available for completion of items, as well as allowing the use of optical or video magnification such as a Closed Circuit Television (CCTV) for enhancement of visual details.

Individuals with visual impairments show at least as much diversity in manners of learning and performance as do others. Therefore, it is essential that the examiner explore all aspects of learning and vocational performance. Although seemingly contradictory, for some, the visual channel represents the best mode of learning and performing.

It is important to note that some people with visual impairments are primarily visual learners. This is seen in those who have recently experienced a significant decrease in vision, as well as occasionally in individuals with congenital visual impairments. The presence of these abilities should be discussed during the initial consultation between the visual impairment professional and the evaluator when the determination is made regarding the administration of visual-spatial items or tests. The presence of these abilities is often further support for administering the visual-spatial items or tests. If visual learning is a specific area of strength, it is important to note this in the report, and that recommendations be made to include opportunities for visual learning in as many situations as possible.

The use of visual-spatial items or tests should be seen as an opportunity to provide further information about the individual's use of vision on various types of tasks, to demonstrate otherwise overlooked strengths, and to suggest meaningful accommodations in academic and vocational environments. This purpose can best be served by interpreting performance qualitatively rather than quantitatively. Such information may provide a rich source of data for the evaluator with knowledge and experience in working with individuals with visual impairments.

Issue 10: Reporting Results

Guideline 10: Reports of assessments of individuals with visual impairments need to be expanded to include an explanation of the procedures followed, changes in standardized administration, and the description of performance observed.

As stated in Guideline 1, intelligence tests provide useful information about the individual evaluated. All scores obtained on intelligence tests represent an estimate of abilities. The most widely used intelligence tests have not been developed with a representative sample of blind or visually impaired individuals during standardization. To date, separate norms are not available. The diversity of the population with visual impairments makes it unlikely that development of such norms would ever occur.

Given these limitations the report must employ the following procedures:
1. Test results are reported as an interval around the obtained score as well as the specific score.
2. Scores for verbal subtests and verbal scales are reported with a confidence interval that represents at least the 90% level of confidence.
3. Specific statements are included that indicate the extent to which scores appear to represent a valid estimate of abilities.
4. Specific concerns regarding validity of scores are clearly stated.
5. Adaptations to materials or methods of administration are listed.
6. Acknowledgment that instruments used have not been normed on individuals who are blind or who have visual impairments is stated, and
7. Documentation of whether accommodations were required to provide access to the materials and tasks on the test is provided.

When visual-spatial portions of tests are administered, in almost all cases the results must not be used to report numerical scores, or to compute full scale or other total scores. Research has shown that scores are artificially depressed and vary with visual acuity. Numerical reporting of these scores entails a risk of being misinterpreted and misused by others. The inclusion of such scores in the computation of a global intelligence score will artificially depress the total, and present the risk of globally lowered expectations.

Examples include:

- Reporting a low processing speed score may lead others to assume that it is a significant construct of intelligence in an individual with visual impairment. This may result in unrealistically lowered expectations for fluency of thought as well as academic fluency.
- Reporting a low full scale IQ has sometimes resulted in the misdiagnosis of an examinee as an individual with an intellectual disability, incorrect classification, and inappropriate educational placement. Use of a full scale IQ score may also result in failure to identify a learning disability when discrepancy between intellectual ability and academic scores is required for ID identification. Evaluators may conclude incorrectly that no learning disability is present, when in fact, there is one.

Instead, the visual-spatial portions of tests should be seen as an opportunity to provide further information about the individual's use of vision on various types of tasks, and to suggest meaningful accommodations in academic and vocational environments. This purpose can best be served by interpreting performance qualitatively, rather than quantitatively. (Examples of qualitative descriptions for use in reports can be found in Appendix B.)

On rare occasions, individuals may produce average or better scores on visual-spatial subtests. In such cases, it is necessary to report these scores in addition to the recommended qualitative descriptions as they describe an area of strength for the individual tested and present an effective manner of learning and performance. When reporting these scores, it is important to state the necessity of interpreting the results with great caution, and noting that it is very difficult, sometimes impossible, to determine the actual impact of the visual impairment.

Appendix A: Etiologies of Vision Loss

Etiologies primarily involving only the eye

A number of etiologies seen in school-age children are usually strictly ocular in nature, and therefore carry less inherent risk of additional disabilities.

- Achromatopsia—hereditary disorder causing lack of normal "cone" vision in the center of the retina; may be complete or partial, resulting in color blindness or very limited color vision, and limited visual acuity.
- Albinism—hereditary disorder causing little or no pigment in eyes, skin, or hair (oculocutaneous albinism) or in the eyes only (ocular albinism) with relatively normal coloration of skin and hair, resulting in limited visual acuity.
- Aniridia—hereditary disorder causing congenital absence of the iris, making it impossible to control the amount of light entering the eye.
- Cataracts—in children, usually a hereditary disorder causing clouding of the crystalline lens.
- Diabetic retinopathy—progressive complication of diabetes causing damage to capillaries in the retina, first resulting in edema (swelling) of the macula, blurring vision, and eventually leaking of blood into the clear vitreous gel, causing clouding and preventing light from reaching the retina. Scar tissue may form in the vitreous, causing it to shrink away and detach the retina.
- Glaucoma—sometimes a hereditary disorder; caused by excessive production of aqueous fluid in the front of the eye, or inability to drain the fluid, resulting in increased pressure inside the eye and damage to the head of the optic nerve.
- Juvenile Macular Degeneration—a group of hereditary disorders causing deterioration of the cones in the center of the retina, resulting in a loss of vision in the center of the visual field, usually leaving peripheral vision intact. The two most common of these disorders are Stargardt’s disease and Best’s disease.
- Retinitis Pigmentosa—hereditary disorder causing progressive deterioration of the rods in the periphery of the retina, usually resulting in vision loss in the periphery of the visual field, leaving central vision intact for a variable number of years as the field gradually narrows (tunnel vision).
- Retinoblastoma—hereditary or spontaneous mutation causing life-threatening cancer in one or both retinas. Depending on the size, number, and location of tumors, treatment may consist of enucleation (removal) of the affected eye, or treatment with radiation, cryotherapy (freezing), laser, or chemotherapy.
- Trauma (eye injury)—The effects of injuries to the eye may be mild and of short duration; or they may be serious and have lasting consequences, with the potential to cause blindness. Any injury to the eye requires medical examination and treatment.
  - Abrasion of the cornea—scratching and irritation from foreign bodies on the surface of the eye such as blowing dust or sand, dirt particles, over-wear of contact lenses, debris from drilling or sawing, etc. Left untreated, abrasions can progress to vision-threatening ulcerations.
  - Blast force—impact to the eye, often related to sports activities involving balls, bats, racquets, or other objects causing compression of the eye. Some blunt force injuries to the face can cause fractures of the orbit (bone surrounding the eye).
  - Chemical—temporary irritation (hairspray) or severe burns causing blindness such as from acids (car battery) or alkaloids (household products such as drain cleaners)
  - Penetration—stabbing injury from sharp objects (pencil points, knives, awls), projectiles (gunshot, BBs, darts), sometimes resulting in rupture of the eye, or the leaving of foreign bodies within the eye.
  - Photochemical—injury to the cornea, and/or lens and/or retina from exposure to high levels of light (unprotected viewing of a solar eclipse, prolonged exposure to the sun, reflected light from snow or sand), and occupational hazards (arc light, laser beams, blue, ultraviolet, and infrared light).
Etiologies with neurological involvement

Many causes of vision loss involve brain structures in addition to the eyes, and therefore often involve a higher risk of additional disabilities.

- Anophthalmia/Microphthalmia (small eye syndrome)—in one or both eyes, congenital absence of, or abnormally small eyes. Causes include genetic mutations and possible environmental factors, and the condition is sometimes associated with other birth defects and disabilities.
- Congenital optic nerve anomalies—a group of disorders involving the development of the optic nerves during gestation, some of which may be associated with other neurological problems, as well as endocrine disorders that may not become apparent until later in life. These etiologies carry a higher than average risk of disorders on the autism spectrum.
  - Optic nerve atrophy—damage to the optic nerve, in some cases hereditary, in others caused by lack of oxygen around birth, and some other causes vision loss ranges from mild to profound.
  - Optic nerve hypoplasia—stable condition in which the optic nerve is underdeveloped.
  - Optic nerve dysplasia—abnormal development of the optic nerves, the optic chiasm (point at which the optic nerve fibers cross over one another, often associated with abnormalities of midline brain structures, absence of the septum pellucidum, and hypoplasia with multiple endocrine disorders.
  - Cortical (cerebral) visual impairment—visual impairment caused by damage to the posterior visual pathways and/or the occipital lobes from many different causes including prenatal or perinatal hypoxic or anoxic injury (often associated with cerebral palsy); infections such as meningitis or encephalitis; trauma such as severe asthma, near drowning, choking; and acquired brain injuries, among others. Visual loss may range from severe to total blindness, and the extent of other neurological damage is related to many factors including the location and severity of the injury.
- Retinopathy of prematurity (previously called retrolental fibroplasia)—a condition affecting the retinal blood vessels of premature babies, causing overgrowth into the vitreous with resulting scarring and various degrees of retinal detachment. A number of causes may contribute to the development of ROP, including prematurity itself, excessive oxygen, and exposure to light. Some treatments may reduce the severity of vision loss, which may range from mild impairment to blindness. Babies who are severely premature have a higher probability of other problems including brain hemorrhages and subsequent neurological impairments.

Appendix B: Examples of Qualitative Interpretation of Performance on Visual-Spatial Tasks

Below are several examples of qualitative information that an evaluator might include in psychological reports on students who have visual impairments:

1. At some point, it may be necessary to decide whether to continue to attempt to administer items with visual stimuli. For example, Arthur persisted in calling the sample item on the WISC-IV Picture Completion a banana because of its color and was unable to identify correctly any other pictures on this, or any of the other subtests. He was unable to identify objects in my office by sight, but was able to identify all of them by touch. This finding suggests a profound limitation in functional vision and supports the Functional Vision and Learning Media Assessments, which stated that touch is his primary learning channel. It also seems to explain why Arthur is currently having great difficulty in learning to read print.

2. Carlos correctly completed some of the more difficult items on the WISC-IV Block Design subtest, but required about 50% more time than is standard for sighted children his age. These results suggest that he is able to do visual construction tasks accurately when given adequate time to complete the work.

3. Although Laura’s performance on the WISC-IV Symbol Search and Coding subtests was accurate, she worked slowly and very carefully on these subtests of processing speed. Laura has nystagmus (rapid involuntary movement of the eyes) and photophobia (extreme sensitivity to light) associated with albinism, and these typically cause her to need more time for detailed visual work.

4. Despite his severe visual field loss, Leon completed all the WISC-IV block design items within the time limits. Leon stated that he loves puzzles and works on them for relaxation.

5. Olivia was unable to respond accurately to items on the WISC-IV Picture Concepts subtest when wearing her glasses. She was able to see the details of pictures when items were presented on the video magnifier. She also stated that she finds it easier to read fluently when using the machine.

6. Karma, a college student dealing with increasing vision loss from glaucoma, struggled with the tasks on the WAIS-III Picture Completion subtest. Early items, where the missing parts were large and obvious, were fairly easy for her. Later items, with more complex pictures, and smaller, less obvious critical details were very difficult. When viewing the pictures under video magnification, and given enough time to search for the details, she was able to complete several more items.

7. Marshall, a student with moderate vision loss (visual acuity = 20/250) secondary to optic nerve dysplasia, presents an unusual cognitive profile for a student with visual impairment. His efficiency with visual tasks is more highly developed than are his verbal skills. Difficulties with Vocabulary and Similarities (particularly problems with extending responses to queries of one-point answers) led to a WISC IV Verbal Comprehension Index score of 86 (low average). These results are supported by below average scores in academic measures of reading and oral comprehension. By contrast, with the use of a video magnifier he was able to appreciate subtle details of pictures on the subtests of the Perceptual Reasoning Index, achieving a score of 112 (high average). Results suggest that despite his significant visual impairment, Marshall is primarily a visual learner, and that vision represents a significant learning channel strength for him.

Examples 1-6 above were adapted from Seltzer & Evens, 2006.

Resources


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Work in progress: This document represents a set of guidelines for assessing the cognitive abilities of individuals who are blind and visually impaired. These guidelines are a "work in progress" and will be routinely updated and revised as additional information is received and research results are learned. Please address questions, concerns, and suggestions about this paper to the director of APH's Accessible Tests Department at 800-223-1839® or e-mail them to tests@aph.org

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