How to Use the New IQ Tests in Selecting Gifted Students
(Executive Summary)

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The new individual intelligence scales have raised many questions for school districts and schools for the gifted, as well as for state legislation, regarding selection of students for gifted programs. Our models for the identification of gifted students originated during simpler times, when one IQ test was popular throughout the United States, and it generated a single IQ score. The cut-off for admission to programs for the gifted was generally two standard deviations above the mean on the *Stanford-Binet Intelligence Scale*, around 132 IQ. When the *Wechsler Intelligence Scale for Children* (WISC) won over the American market in the 1960s (Lubin, Wallis & Paine, 1971), some states and districts determined that admission to gifted programs would be based upon Verbal, Performance or Full Scale IQ score in the gifted range (130 or above). Regardless of which IQ test was used, the IQ scores were relatively comparable and measured similar variables.

The new IQ tests have rendered all of these ideas obsolete. Different IQ tests no longer measure the same basic construct of intelligence. Each test identifies a different population as gifted. Gifted students may obtain widely varying scores on different instruments. Full Scale IQ scores are not the unitary constructs they once were and, often, they are not the best representation of the child's intellectual capacities. The familiar Verbal and Performance IQ scores are gone. There are multiple ways of administering and scoring the new instruments. The designation of giftedness is now unclear. Under these circumstances, how should decisions be made about the use of IQ tests in the selection of students for gifted schools, programs and services?

The following recommendations have been drawn from the Symposium on Assessment Techniques in the Identification of Gifted Learners hosted by the World Council for Gifted Children 16th Biennial Conference in New Orleans, Louisiana, August 7, 2005; the National Association for Gifted Children (NAGC) Task Force on Assessment, November 2, 2006; the NAGC website posting Janaury, 2008; chapters published in *Alternative Assessment of Gifted Learners* and *High IQ Kids*; in press in *The International Handbook on Giftedness*; and several studies presented at National Association for Gifted Children Conferences in the last three years. Please review the references for additional information on each recommendation.

Recommendations

1. Individual IQ tests provide better information for high-stakes decision making for gifted students than group tests. Group IQ tests are best used for general screening purposes (Rimm, Gilman & Silverman, 2008).

2. Gifted students are a *special needs* population; therefore, comprehensive assessment is needed to determine strengths and weaknesses, information which should be used in their programming (VanTassel-Baska, & Baska, 1993).

3. When students are selected for gifted programs on the basis of achievement tests, grades and teacher recommendations, programs are likely to miss children who are economically disadvantaged, who have few books in their homes, and fewer role models for achievement. Individual ability tests provide greater access to programs for diverse cultural groups and children of low socio-economic status (Silverman & Miller, in press).

4. The *Wechsler Intelligence Scale for Children, Fourth Edition* (WISC-IV) and the *Stanford-Binet Intelligence Scale, Fifth Edition* (SB5) are the two most popular individual IQ tests used in the selection of students for gifted programs. Both tests offer several methods of scoring. The Full Scale IQ scores generated on these tests are not as cohesive measures of general intelligence as in prior editions. When there are extreme discrepancies between composite scores on the WISC-IV (23 points or more), the Full Scale IQ score should **not** be derived (Flanagan & Kaufman, 2004). Therefore, the Full Scale IQ score should **not** be the main score used to determine program selection (Rimm, Gilman & Silverman, 2008).

5. It is not necessary to calculate a Full Scale IQ on the SB5; it is permissible to use either the Verbal IQ or the Nonverbal IQ independently to locate gifted children with different strengths. The highest index, composite or factor score is often the best predictor of success in the gifted program, if the program is responsive to the learning strengths of the students (Silverman, in press).

6. When using the WISC-IV, either the General Ability Index (GAI), which emphasizes reasoning ability, or the Full Scale IQ Score (FSIQ), should be acceptable for selection to gifted programs. The GAI should be derived using the table provided by Harcourt Assessments (Technical Report 4). The Verbal Comprehension Index (VCI) or the Perceptual Reasoning Index (PRI) are also independently appropriate for selection to programs for the gifted, especially for culturally diverse, bilingual, twice-exceptional students or visual-spatial learners. It is important that a good match be made between the strengths of the child and the attributes of the program. Students who have special learning needs should be admitted to gifted programs, provided that there are other indications of giftedness and instructional modifications are made to fit the needs of the students (National Association for Gifted Children, 2008).

7. Processing Speed and Working Memory often lower composite and Full Scale IQ scores for the gifted. The 63 gifted children in the norm sample reported in the WISC-IV *Technical Manual* had a mean Working Memory score of 112.5 and a mean Processing Speed score of 110.6 (Wechsler, 2003). Only 4 of 103 gifted

children tested at the Gifted Development Center scored 130 or above on Processing Speed (Silverman, Gilman & Falk, 2004). The Family Achievement Center found Processing Speed to be in the high average range for 42 children (Rimm, Gilman & Silverman, 2008). In another study, Wasserman (2006) reported that "over 70% of the students applying for gifted placement have Processing Speed Index scores in the average range or below" (p. 2). On the WISC-IV, the GAI omits both Processing Speed and Working Memory in the scoring. In using the SB5, a Gifted Composite Score and a Gifted Nonverbal Composite score can be generated in which Working Memory is eliminated (Silverman, in press).

8. Funds for assessing gifted students are usually limited. For this reason, many districts employ short forms of individual intelligence scales, such as the *Wechsler Abbreviated Scale of Intelligence* (WASI) (Wechsler, 1999). A reasonable alternative would be to administer only the six core subtests of the WISC-IV from which the General Ability Index (GAI) can be derived: Vocabulary, Similarities, Comprehension, Block Design, Matrix Reasoning and Picture Concepts (Silverman, Gilman & Falk, 2004). As most of these subtests are richly loaded in general intelligence (**g**), they are likely to locate the students who would be most successful in a gifted program.

9. The gifted validation sample reported in the *Technical Manual* of the WISC-IV achieved a mean Full Scale IQ score of 123.5 (Wechsler, 2003). The mean IQ score of 202 children in the gifted validation sample of the SB5 was 124. Therefore, cut-off scores for gifted programs should be lowered to 120, rather than 130 (Rimm, Gilman & Silverman, 2008; Silverman, in press).

10. In selecting an instrument to use for assessing the gifted, it is necessary to keep in mind that the WISC-IV and the SB5 identify different students as gifted. As 30% of the WISC-IV measures abstract verbal reasoning, compared to 10% of the SB5, the WISC-IV is likely to find more highly verbal children. As 20% of the SB5 measures mathematically gifted children, compared to 0 – 10% of the WISC-IV (depending if Arithmetic, an optional test, is administered), the SB5 is likely to find more mathematically gifted children. While 20% of each test is devoted to the measurement of visual-spatial abilities, there may be more visual-spatial content in the SB5, so it may be preferable for locating spatially gifted children.

11. Those instruments or portions of instruments with the richest loadings on general intelligence (**g**) are the most useful for locating gifted children. *Raven's Progressive Matrices,* the Stanford-Binet scales and the Wechsler scales were all founded on the conception of intelligence as abstract reasoning (**g**). Abstract reasoning and general intelligence (**g**) are synonymous. Giftedness is high abstract reasoning. Therefore, **g** could as easily stand for giftedness as for general intelligence (Silverman, in press).

g-loadings on the WISC-IV

Good Measures of g

Vocabulary	(.82)
(Information)	(.79)
Similarities	(.79)
(Arithmetic)	(.74)
(Word Reasoning)	(.70)
Comprehension	(.70)

Fair Measures of g

Matrix Reasoning	(.68)
Block Design	(.67)
(Picture Completion)	(.63)
Letter-Number Sequencing	(.60)
Symbol Search	(.58)
Picture Concepts	(.57)
Digit Span	(.51)

Poor Measures of g

Coding	(.48)
(Cancellation)	(.25)

*Items in parentheses are optional tests.
(Flanagan & Kaufman, 2004, p. 309)

Recommendations for Differentiating Children at Higher Levels of Intelligence

12. Exceptionally gifted children are among the highest risk gifted populations (Rimm, Gilman & Silverman, 2008). An international group determined nomenclature for the higher IQ levels. Their results were published in a chapter on "Assessment of Intellectual Functioning" by John Wasserman (2003).

Table 5
Levels of Giftedness

Level	IQ Range	Standard Deviations
Profoundly Gifted	above 175	+5 SD
Exceptionally Gifted	160 – 174	+4 SD
Highly Gifted	145-159	+3 SD
Gifted	130-144	+2 SD

(adapted from Wasserman, 2003, p. 435)

13. The low ceilings on both the WISC-IV and the SB5 make it difficult to locate highly, exceptionally and profoundly gifted children. To document that the child's abilities exceed the measuring tool, Betty Meckstroth created a method of tracking the number of raw score points earned beyond the minimum score required to attain a 19 (the highest possible subtest score). Children have been found who scored 13 raw score points beyond the ceiling on Vocabulary (19 + 13) and 8 extra points on Similarities (19 + 8) on the WISC-IV (Rimm, Gilman & Silverman, 2008).

14. As of February 7, 2008, a new set of extended norms is available for the *Wechsler Intelligence Scale for Children, Fourth Edition* (WISC-IV) for assessing exceptionally and profoundly gifted children. The WISC-IV extended norms were developed in response to a request from the National Association for Gifted Children (NAGC) Task Force on Assessment. NAGC sponsored a study of WISC-IV scores of 334 gifted children from 8 sites. The maximum subtest scaled score was raised from 19 to 28. The maximum index (composite) and full scale scores was raised from 160 to 210. It is necessary to achieve subtest scaled scores of 18 or 19 for the extended norms to apply. The new norms were posted on the Harcourt/Pearson website in *WISC-IV Technical Report #7:*

http://harcourtassessment.com/HAIWEB/Cultures/en-us/Productdetail.htm?Pid=015-8979-044&Mode=resource

15. The *Interpretive Manual* of the SB5 (Roid, 2003) offers a table of Extended IQ scores for children who score above 150 IQ or below 40 IQ. Scores range as low as 10 and as high as 225 IQ. Based on Rasch scoring, the examinee is credited with all raw score points beyond the requirement to obtain the ceiling score of 19. As few score above 150, Rasch-Ratio scores may also be derived by hand for students who score 130 and above on the SB5 (Carson & Roid, 2004). It is recommended that students be selected for gifted programs who attain a score of 120 or above on the SB5, and that Rasch-Ratio scores be derived to qualify students for services for the highly and exceptionally gifted or to determine the degree of acceleration needed (Silverman, in press).

16. Rimm Ratios can be derived by utilizing test-age equivalents for subtests provided in the WISC-IV manual (p. 253), converted into months, to determine a child's mental age. Age-equivalent scores reflect all correct items for each subtest. The child's mental age is divided by the chronological age and multiplied by 100 to derive a Rimm Ratio (Rimm, Gilman & Silverman, 2008). This method is most appropriate for children 10 and under, due to the low ceiling of the test-age equivalents.

17. The two-step process employed in the Talent Searches for differentiating the most able students at 12 or 13 years of age is the best model for locating exceptionally gifted children. Talent Searches provide out-of-level testing to children who score

at or above the 95th or 97th percentile in reading and mathematics. Since 1989, younger children in these ranges have been found by using a combination of two different measures: one comparing them with others their own age and one with a higher ceiling, like the SAT, that compares their abilities to those of older children. Because it is organized by age levels, with increasing levels of difficulty, all the way to Superior Adult III, the "Binet-type age scale might be considered the original examination suitable for extensive out-of-level testing" (Stanley, 1990, p. 167).

18. Examiners who assess the exceptionally gifted offer out-of-level testing to children who achieve on a standard IQ test (e.g., the WISC-IV, WPPSI-III, SB5, DAS-2, KABC-2, etc.) at or above the 99th percentile on at least two subtests (particularly those subtests that are good measures of **g**). In the case of the *Raven's Progressive Matrices,* a score at the 97th percentile would probably warrant an out-of-level supplementary test. The *Stanford-Binet Intelligence Scale (Form L-M)* is given purely as a **supplemental** measure to test the limits of children's abilities when they achieve ceiling-level scores on tests with lower ceilings (Silverman & Kearney, 1989; see also, Silverman & Kearney, 1992; Wasserman, in press). When the child exceeds the scores in the norm table of the SBL-M, a formula IQ is derived according to the instructions on page 339 in the manual (Terman & Merrill, 1973). The formula IQ is a ratio metric.

> The SBL-M remains unmatched in its breadth of procedures and is probably truer to the changing nature of cognitive-intellectual abilities over development than any test subsequently published. Its unique age-scale format and liberal discontinue rules enable testing to continue far beyond one's chronological age, thereby providing examinees with an opportunity to demonstrate considerably advanced competencies.
>
> I consider this test appropriate only after an examinee has approached the ceiling of a more recently normed test (such as the WISC-IV or SB5…), as a method of resolving just how far above the ceiling the examinee's true abilities may lie. When reported in an appropriately conservative manner (because of its limitations), the ratio IQ approach provides the only available means of estimating intelligence in exceptionally and profoundly gifted ranges that has any prior foundations in research (e.g., the work of Terman and Hollingworth). (Wasserman, 2007, p. 51)

19. It is permissible to use the SBL-M as a supplemental test, as long as examiners acknowledge that the scores are on a different metric and, therefore, not comparable to deviation IQs (Carson & Roid, 2004). The publisher prefers that the SBL-M be co-administered with the SB5 so that three types of composite scores might be contrasted: standard scores, Rasch-Ratio scores, and SBL-M scores (Carson & Roid, 2004).

20. The Flynn Effect is the most frequently cited reason for not using a test with older norms. Newer studies suggest that the Flynn effect may be have tapered off at the beginning of the 1990s (Teasdale & Owen, 2005). John Wasserman (2007b) recently studied the Flynn Effect and writes:

    > My January, 2007 examination of psychological research databases suggests that the Flynn effect has not yet been adequately demonstrated for all levels of ability … there is no substantive evidence for its validity with high ability individuals (particularly those who are intellectually gifted). … I have yet to see any sound empirical studies of the Flynn effect in gifted samples. (p. 1)

For more information on the recommendations listed above, please see [(Rimm, Gilman & Silverman, 2008; Silverman, in press; Silverman, 2007; Silverman & Miller, in press; Wasserman, 2007a.]

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