Recent Developments in Psychological

Testing of Intelligence

with

Gifted and Talented Students

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Disclosure of Conflicting Interests

- The presenter has no financial interests or conflicts of interest in any of the tests discussed today. The presenter was however previously employed as the project director of the Stanford-Binet 5 and the NNAT, but he reserves the right to speak freely about the strengths and limitations of these measures.

Contents of this Presentation

- Overview of national trends and federal mandates
- Wechsler intelligence scales
- Stanford-Binet Fifth Edition (SB5)
- Woodcock-Johnson III Tests of Cognitive Abilities (WJ III Cog)
- Comparative Features of Group Tests
- Alternative assessments
- The Overexcitabilities

Educators just want a FSIQ score

A Sobering Thought for Psychologists

Note from a Psychologist to a Parent, 2010:

"The GT Office does not want to see a report with a GAI reported or other manipulations of the standard WISC-IV scores. They consider it 'massaging the data.' [The County GT Program Coordinator] told me once in a meeting that she just rolls her eyes when she sees a psychologist's report include all kinds of statements, such as indicating a child's score might fall over a certain range with a certain level of accuracy, so this child could potentially have a much higher score. … That type of extrapolation is clearly discounted and actually annoys the GT committee."

Overview of national trends and federal mandates

Overview, Federal Mandates, Delphi Technique, Multiple Criteria Approaches, Problems with Consequential Validity and Curricula, the GMU Gifted Assessment Program

Overview

GT Identification in Flux

- Traditional practices, such as intelligence testing, remain prominent because they appear to be most predictive of GT classroom performance and success
- Alternative pathways to GT Identification are appearing with increasing frequency, in order to improve upon equitable placement of minority students in GT

Zirkel's (2005) Classes of Gifted Students

Gifted Education and the Law

1. ***"Gifted Alone" Students*: students whose asserted legal rights are based solely on their gifted status without other legal protection;**
2. ***"Gifted Plus" Students*: students whose asserted legal rights additionally or alternatively derive from their special status in terms of having a disability under federal or state legislation/regulations or being a racial/ethnic minority subject to constitutional and/or statutory protection.**

"Gifted Alone" Students

- **The federal Constitution does not provide a right to an education, much less a right to a gifted education. Its only relevance is for students who are not only gifted, but also members of constitutionally protected groups, such as racial minorities. Further, federal legislation does not provide an entitlement to gifted education.**
- **Instead, the primary source of rights for students who are, or claim to be, gifted, is state law and school district regulations, along with related court decisions and published hearing/review officer decisions.**
- **Neither the federal special education law, the IDEA, nor the overlapping pair of disability-based civil rights acts—Sec. 504 and its sister statute, the ADA—applies if the student is gifted alone.**

"Gifted Alone" Students

No Federal Right to Gifted Educ.

- **Although the federal government contributed at times to the development of gifted education, such as Commissioner Marland's national report in 1971, Congress's establishment of the U.S. Office of Gifted and Talented in 1972 and, the Jacob Javits Gifted and Talented Students Education Act of 1988, the level of commitment has never reached an extensive or mandatory level.**
- **The scholarly recommendations for a strong federal commitment for gifted education and mandatory legislation modeled on the IDEA have been "mere academic exercises" (Zirkel, 2005).**

State Law and Regulations

- **The primary source of special educational rights for students who are gifted are state statutes and regulations along with the court decisions.**
- **The 2009 S*tate of the States in Gifted Education* found that nearly a quarter of all states provide no state funding for gifted students and that most gifted students are taught by teachers with little to no training in gifted education.**

"Gifted Plus" Students

Laws against Disability/Discrim.

- **Neither the IDEA nor the overlapping pair of disability-based civil rights acts—Section 504 of the Rehabilitation Act (Sec. 504) and the Americans with Disabilities Act (ADA)—applies if the student is gifted only.**
- **If the student is gifted and can demonstrate disability or discrimination as a member of a protected minority group, then legal protections are available.**

"Gifted Plus" Students

Laws against Disability/Discrim.

- **Any minority-group child who is or may be gifted is protected by civil rights laws that prohibit discrimination based on race or national origin.**
- **The Office of Civil Rights can be enormously effective in encouraging school districts to change gifted identification practices.**
- **When allegations of bias against Hispanics on the SBIV was investigated by OCR, our staff at Riverside Publishing dropped all our work to respond; an OCR complaint is VERY SERIOUS.**

"Gifted Plus" Students

ADA and Discrimination

- In 2008, the Americans with Disabilities Act of 1990 was updated with the ADA Amendments Act of 2008.
- *The ADAAA emphasizes that the definition of disability should be construed in favor of broad coverage of individuals to the maximum extent permitted by the terms of the ADA.*
- Section 504 of the ADA protects students with disabilities from discrimination, and the U.S. Office of Civil Rights enforces this law.

IDEA 2004 Rules and Regulations

Explicit Gifted-SLD Rules

"Comment: Many commenters stated that the elimination of discrepancy models would result in an inability to identify children with SLD who are gifted. One commenter stated that a scatter of scores should be used to identify children with SLD who are gifted.

Discussion: Discrepancy models are not essential for identifying children with SLD who are gifted. However, the regulations clearly allow discrepancies in achievement domains, typical of children with SLD who are gifted, to be used to identify children with SLD."

Federal Register, Vol. 71, No. 156; Monday, August 14, 2006; *Rules and Regulations*, page 46647.

- In practice, it is challenging to get help for Gifted 2e students.

LOOKING FORWARD …

One leading research methodology to predict future trends on the basis of expert consensus is the Delphi Technique.

Developed at Rand Corp. in the 1950s

Delphi Technique for Prediction

- Delphi techniques are an approach to collecting and organizing expert opinions on a subject in an effort to produce a group consensus and predict future human behavior
- Delphi surveys involve a series of three or four successive rounds of questionnaires on a single topic, in which experts are asked to rate their agreement with each statement
- In subsequent rounds, experts whose responses deviate from the average are given summary information and asked to reconsider their responses
- Three questionnaire rounds are usually sufficient to achieve the level of consensus desired.

Cramer Delphi Study 1990 with 29 experts

Most Important GT Issues

Gifted education experts identified key issues in education of the gifted, listed in order of priority:

1. Curriculum for the *gifted*;
2. Procedures for identifying children for *gifted* programs;
3. Selection and training of teachers for the *gifted*; and
4. Special populations of *gifted* (handicapped, females, minorities, underachievers, preschool, and the highly *gifted*).

Cramer, R. H. (1990). Issues related to the education of gifted children in the United States: A Delphi study. (Doctoral dissertation, Virginia Polytechnic Institute and State University, 1990). *Dissertation Abstracts International, 51*, 05A, 1574.

Smith Delphi Study 2000 with 50 experts

GT Identification of Ethnic Minorities

Consensus of assessment strategies that will be the most equitable and inclusive:

1. Modifications/Accommodation Strategies (72% consensus high priority)
   - A. Development of local norms
   - B. Untimed tests for students with disabilities
   - C. Removal of culturally-biased test items
   - D. Items read aloud or taped for visually impaired
   - E. Testing in different languages
   - F. "Put them in and see what happens"

Smith, J. A. (2000). Equitable, inclusive identification practices for underrepresented student populations in gifted and talented education: A Delphi study. (Doctoral dissertation, Pepperdine University, 2000). *Dissertation Abstracts International, 62*, 02A, 530.

Smith Delphi Study 2000 with 50 experts

GT Identification of Ethnic Minorities

2. Nonverbal tests of mental ability (64% consensus)
3. Observation of activity during meaningful tasks (for creativity; 62% consensus)
4. Portfolios (58% consensus)
5. Providing access to varied enrichment activities to facilitate the discovery of talent (58% consensus)

Continued…

Smith Delphi Study 2000 with 50 experts

GT Identification of Ethnic Minorities

6. Opportunities for performances, auditions. How does the student handle challenges? (56% consensus)
7. Analysis of the student's records/history (56% consensus)
8. Development of an eclectic student profile; data collection from many sources (56% consensus)

Continued…

Smith Delphi Study 2000 with 50 experts

GT Identification of Ethnic Minorities

9. Inventories/checklists of common characteristics among intellectually gifted students, underachieving students, and economically challenged students. (54% consensus)
10. Self-nomination, peer-nomination, parent/family nomination and nomination by significant others (52% consensus)
11. Test of Cognitive Ability (50% consensus).

Smith, J. A. (2000). Equitable, inclusive identification practices for underrepresented student populations in gifted and talented education: A Delphi study. (Doctoral dissertation, Pepperdine University, 2000). *Dissertation Abstracts International, 62*, 02A, 530.

What we have now for gifted identification is usually a multiple criteria approach, of which intelligence tests are only a single (but still important) part.

NAGC (2007) Position Statement

National Association for Gifted Children

"Best practices indicate that multiple measures and valid indicators from multiple sources must be used to assess and serve gifted students."

Virginia State GT Regulations 2009

Multiple Criteria for Identification

The identification process used by each school division must ensure that no single criterion is used to determine a student's eligibility. The identification process shall include at least three measures from the following categories:

a. Assessment of appropriate student products, performance, or portfolio;
b. Record of observation of in-classroom behavior;
c. Appropriate rating scales, checklists, or questionnaires;
d. Individual interview;
e. Individually administered or group-administered, [nationally] norm-referenced aptitude [and/or achievement] tests;
f. Record of previous accomplishments (such as awards, honors, grades, etc.); or
g. Additional valid and reliable measures or procedures.

Schroth et al. (2008) Preferred Criteria

Educator Beliefs on Identification

- **Gifted specialists rank standardized tests as #1 and teacher nominations as #4.**
- ***Administrators rank performance assessments by experts as #1.***
- **Teachers rank teacher nominations as #1 and standardized tests as #5.**
- ***Despite research showing the effectiveness of parent or peer nominations, educators rejected such nominations as an effective means of identification.***

Schroth, S. T., et. al. (2008). Identifying gifted students: Educator beliefs regarding various policies, processes, and procedures. *Journal for the Education of the Gifted*, 32, 155-179.

Schroth et al. (2008). Percent endorsing of n=411

Educator Beliefs: Gifted Identification

	Very effective	Effective	Ineffective	Very ineffective
Standardized tests	17.8	66.9	12.7	2.2
Teacher nominations	27	59.9	10.5	2.2
Parent nominations	3.2	36.5	47.4	8
Peer nominations	4.4	26.8	44.3	5.8
Portfolios of student work	33.1	54.5	6.3	0
Performance assessments by experts	34.5	56.2	2.2	1.5
Observations	39.9	50.4	5.1	0.2

Purposes of GT identification

What are we trying to predict?

- **Which students are most likely to succeed in an accelerated an differentiated academic curriculum …**
- **Which students have the greatest potential for excellence in learning …**
- **Which students might overcome disadvantages and become high achieving students …**
- ***What are a student's educational needs?***

Identification of Underrepresented students?

Questions of Consequential Validity

- **In 1989 and 1996, Samuel Messick of ETS argued that consequential validity is critical to a comprehensive view of test validity**
- **Consequential validity evaluates the intended and unintended consequences of test score usage, including positive and adverse consequences**
- **<u>EXAMPLE</u>: How many minority students, or English Language Learners, are identified as potentially gifted on the basis of nonverbal ability tests?**

Student-Curriculum Match?

Questions of Consequential Validity

- **An ancillary question goes beyond equitable placement and addresses whether students whose GT placement was supported by nonverbal tests were wisely placed.**
- **<u>EXAMPLE</u>: For students identified on the basis of nonverbal test scores, how well do they succeed in GT curriculums?**
- **I know of no research addressing this question and of no research examining the consequential validity of each of the criteria in multiple criteria models of identification.**

Use of Nonverbal Tests

GT Curriculum Consequences

"In order for schools to program effectively for students identified through nonverbal assessment, they must change their current program models, which are highly verbally loaded, to a more general curriculum base that includes mathematics, especially geometry, science, and other subjects requiring spatial intelligence such as art, architecture, engineering, and mechanics, as core parts of the curriculum."

Joyce VanTassel-Baska (2008, pp.; 8-9)

George Mason University

GIFTED ASSESSMENT PROGRAM

A Regional Research Sample

GMU Gifted Assessment Program

- From about 2004-2005, the GMU Gifted Assessment Program became the sole provider of intellectual assessments for GT eligibility for Fairfax County Public Schools
- Students came to us by parent referral when they wanted additional testing or wanted to appeal an eligibility decision
- Our dataset is from that consecutive series of students but is not representative of all FCPS GT students

The GMU Gifted Research Sample

- Out of n=328 consecutive referrals, we selected all cases with a WISC-IV Full Scale IQ ≥ 120 (Superior Range)
- The resulting sample was *n*=219 students with: *Mean* Age=8.9 years (*SD*=1.4); *Mean* Grade=2.9 (*SD*=1.4); 46.6% Females, 53.4% Males; 71.6% White, 17.4% Asian, 1.8% Hispanic, 0.5% African American, and 8.7% Other; with 74.4% of student families reporting a gross annual household income of $100,000 or more.

The GMU Gifted Research Sample

- All examinees were tested by graduate students who had successfully passed an individualized competency exam (most taught by Wasserman)
- All scoring was independently checked with discrepancies corrected
- Parents reported 98% satisfied or very satisfied with the quality of the testing experience

Wechsler intelligence scales

General Ability Index, Cognitive Proficiency Index, Extended Norms, Recent Research, and GMU Findings

Based on constituent subtests

WISC-IV FSIQ Contributions

- Verbal content: 30%
- Nonverbal content: 30%
- Working memory content: 20%
- Processing speed content: 20%
- Mathematical reasoning: 0%
- Reasoning and knowledge subtests constitute 60% of the FSIQ
- For mathematically precocious students, the WISC-IV FSIQ will not capture their gifts

WISC-IV Special Population Study

Intellectual Giftedness

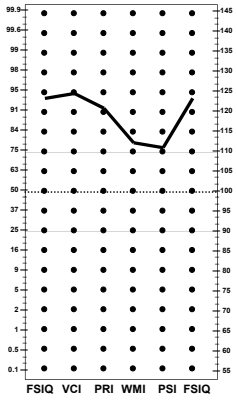
- The Wechsler (2003) study reports results from a study in which the WISC-IV was administered to a convenience sample consisting of 63 children ages 6 to 16 who had previously been identified as intellectually gifted based upon existing scores on an intelligence test that were at least 2 SD above the normative mean (i.e., FSIQ 130)
- This gifted sample was demographically matched on the bases of sex, face/ethnicity, parent education level, and geographic region to an equal number of examinees from the standardization sample
- Differences are explained in terms of Cohen's (1996) index of effect sizes, in which .2 is small, .5 is medium, and .8 is large. Cohen's approach involves the difference between the means of the two groups divided by the squared root of the pooled variance.

Intellectually Gifted Samples

Mean (SD) WISC-IV Index Scores

WISC-IV Manual	GMU Gifted Sample
FSIQ=123.5 (8.5)	FSIQ=126.9 (5.7)
VCI=124.7 (11.0)	VCI=127.3 (10.1)
PRI=120.4 (11.0)	PRI=124.0 (9.1)
WMI=112.5 (11.9)	WMI=118.4 (10.1)
PSI=110.6 (11.5)	PSI=110.4 (12.2)
n=63, ages 6 to 16	*n*=219, ages 6 to 13

Wechsler, D. (2003). *WISC-IV technical and interpretive manual.* San Antonio, TX: The Psychological Corporation.



WISC-IV Composites

Giftedness Profile

- Some 84% of intellectually gifted children had VCI, PRI, or FSIQ scores of 120 or higher
- WMI and PSI frequently fell in the average to high average range
- This finding is commensurate with the observation that gifted children tend to work more slowly, carefully, and methodically

WISC-IV Subtests: Gifted-Typical Comparisons

Subtest Profiles of Giftedness

- Very large elevations (effect sizes above 1.0): Vocabulary, Arithmetic, Similarities, Comprehension, and Block Design (in descending order)
- *Large elevations (effect sizes .65 to 1.0):* Information, Matrix Reasoning, Picture Concepts, Picture Completion, Letter-Number Sequencing, Word Reasoning (in descending order)

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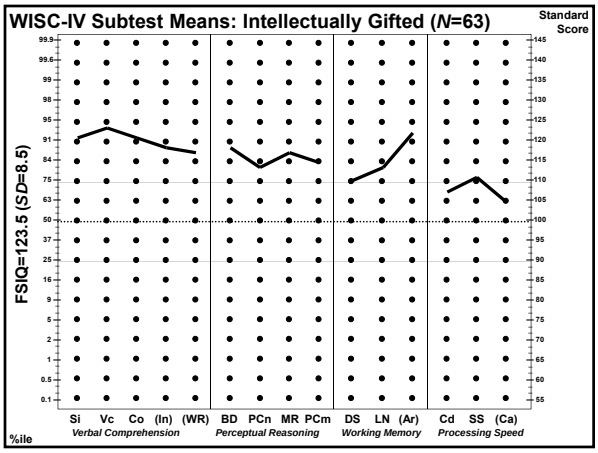
- *Medium elevations (effect sizes .35 to .64):* Digit Span, Coding
- *Not elevated (small effect sizes below .35):* Cancellation



WISC-IV Initial Findings

Intellectual Giftedness

- School-aged children who are intellectually gifted are likely to demonstrated substantial elevations in FSIQ and VCI, with a slightly less impressive elevation in PRI
- *The WMI and PSI indices will generally show very modest elevations by comparison*
- Substantial elevations are typically found in subtests tapping acquired knowledge, mathematical thinking, and perception and analysis of abstract visual patterns
- Process scores are unrevealing

The general ability factor (*g*) and the General Ability Index (GAI)

Limitations of the WISC-IV

The *g* Factor Problem

- Depending upon how you conceptualize the general ability factor of intelligence, *g*, the WISC-IV contains a substantial amount of content that has only fair or low amounts of *g*
- An individual's reasoning and problem-solving ability (*g*?), as estimated by the Full Scale IQ, may be artificially depressed by cognitive inefficiency

A Brief Review

The *g* Factor of Intelligence

- The g factor is a mathematically-derived general factor, stemming from the shared variance that saturates batteries of cognitive-intelligence tests.
- Charles E. Spearman (1904) discovered psychometric g, which has been termed "one of the most central phenomena in all of behavioral science, with broad explanatory powers" (Jensen, 1998, p. xii).

A Brief Review

The *g* Factor of Intelligence

- Jensen (1987, 1998) summarizes the literature showing that correlates of *g* include scholastic performance, job performance in a wide range of occupations, earned income, and other indices of success in life

What is *g*?

- Several researchers have presented evidence that *g* is essentially synonymous with a broad fluid reasoning ability factor (Carroll, 1993; Cronbach, 1984; Gustaffson, 1984, 1988; Undheim, 1981).
- *Kyllonen and Christal (1990) suggested that g may be working memory capacity, which they argued drives reasoning ability.*
- Still others have concluded that g is directly related to neural efficiency (Eysenck, 1986; Vernon, 1987) or mental complexity (e.g., Larson, Merritt, & Williams, 1988; Marshalek, Lohman, & Snow, 1983).

WISC-IV subtest average g loadings

Subtest Relative Contributions

Good (≥.70)	Fair (.50-.69)
Vocabulary (.82)	Matrix Reasoning (.68)
Information (.79)	Block Design (.67)
Similarities (.79)	Picture Completion (.63)
Arithmetic (.74)	Letter-Number Seq. (.60)
Comprehension (.70)	Symbol Search (.58)
Word Reasoning (.70)	Picture Concepts (.57)
	Digit Span (.51)

Poor (<.50)
Coding (.48)
Cancellation (.25)

How to Compute the GAI

- The GAI is computed by summing the scaled scores of the core subtests (not supplemental) in the VCI and PRI, and then using a new table for standard score, percentile rank, and confidence intervals (see WISC-IV Technical Report #4)
  - http://www.pearsonassessments.com/NR/rdonlyres/1439CDFE-6980-435F-93DA-05888C7CC082/0/WISCIV_Hr.pdf
  - Pages 30-31 in Prifitera, A., Saklofske, D. H., & Weiss, L. G. (2008). *WISC-IV Clinical Assessment and Intervention (2nd ed.).* San Diego, CA: Academic Press

Limitations of the GAI

- The WISC-IV GAI is derived from core VCI and PRI subtests, but it excludes Information, Arithmetic, and Word Reasoning, which have greater *g* loadings
- Of these omissions, Arithmetic (originally called Arithmetic Reasoning by Wechsler) is probably the most serious because it makes it harder to recognize mathematically precocious students

How to Report the GAI: Part 1

- Gerald's level of general intellectual ability is within the superior range of expectations for his age, but his cognitive inefficiency (particularly his average processing speed) reduces his overall intelligence to the high average level. On the *Wechsler Intelligence Scale for Children—Fourth Edition* (WISC-IV), Gerald obtained a General Ability Index (GAI) of 122, ranking performance at the 93rd percentile for his age. Allowing for measurement imprecision and statistical fluctuations in test scores, there is a 95 percent likelihood that his GAI score on repeated standardized testing under similar conditions will fall between 115 and 127. The GAI is a relatively new composite score on the WISC-IV, created to emphasize reasoning and problem-solving while not penalizing for difficulties with cognitive speed or capacity. As documented in his 2007 psychoeducational evaluation, Gerald demonstrates slow processing speed due to his Attention Deficit Hyperactivity Disorder, Inattentive Type diagnosis. On a composite index of cognitive efficiency, the Cognitive Proficiency Index (CPI), Gerald earned a standard score of 104, falling within the average range and ranking at the 62nd percentile for his age.

How to Report the GAI: Part 2

- The *General Ability Index (GAI)* and *Cognitive Proficiency Index (CPI)* are WISC-IV composites recently released by the test publisher. The GAI provides an estimate of general intellectual ability without penalizing for cognitive inefficiencies, such as reduced processing capacity or speed. The CPI provides an estimate of how much and how quickly a student can process incoming information. In some instances, the GAI may provide a more accurate estimate of reasoning and problem-solving abilities than the WISC-IV Full Scale IQ. In a formal position paper, the National Association for Gifted Children (NAGC) recommends, "When the WISC-IV is used for the identification of gifted students, 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." [http://www.nagc.org/uploadedFiles/Information_and_Resources/Position_Papers/WISC-IV.pdf]

The Cognitive Proficiency Index (CPI)

WISC-IV

Cognitive Proficiency Index (CPI)

- The CPI is a composite score derived from the core WMI and PSI subtests
- CPI estimates information processing efficiency, i.e., processing capacity (WMI) and processing speed (PSI)
- The CPI tends to be easily disrupted by psychiatric or neurological disorders. For example, students with ADHD have lower mean scores (than VCI and PRI)

Information Processing Efficiency

CPI, WMI, and PSI Scales

- **Low scores on CPI, WMI, or PSI can make an individual more susceptible to information processing overload because of limitations in the amount or speed of information that can be throughput**
- **Academic accommodations may be requested, such as extended testing time and extended time to complete assignments, if processing speed is sufficiently depressed**

WISC-IV

Cognitive Proficiency Index (CPI)

- ***The CPI may be calculated using the sum of the core subtest scaled scores (not supplemental subtests) for the WMI and PSI indexes.***
- **The CPI is derived from the actual standardization data but is very similar to the Dumont Willis Index-2 (DWI-2), just as the GAI closely resembles the Dumont Willis Index-1 (DWI-1). See http://alpha.fdu.edu/~dumont/psychology/using_the_dwi_or_gia.htm**

WISC-IV

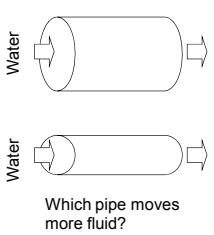
Cognitive Proficiency Index (CPI)

- **You can then look up the CPI standard score, percentile rank, confidence intervals, and GAI-CPI discrepancy base rates in:**
  - **Appendix F2 (CD ROM) in Flanagan, D. P., & Kaufman, A. S. (2009). Essentials of WISC-IV Assessment (2nd ed.). Hoboken, NJ: John Wiley.**
  - **Table 1.9 (pages 40-42) in Prifitera, A., Saklofske, D. H., & Weiss, L. G. (2008). WISC-IV Clinical Assessment and Intervention (2nd ed.). San Diego, CA: Academic Press.**

An information processing metaphor

Channel Capacity Models

- **The maximum possible information transfer rate through a channel**



In physics,
Fluid Flow Rate = Area x Velocity
(Cross-sectional AREA of pipe times the VELOCITY of fluid)

By analogy,
Information Flow =
Working Memory Capacity
x Processing Speed

Which pipe moves more fluid?

Channel Capacity Models

- **Channel capacity models assume that children with reduced working memory capacity and/or processing speed will have diminished information processing capacity and efficiency**
- ***The assumption is that children with these limitations will become overloaded , overwhelmed, or inefficient when presented with too much information at once information that is presented too quickly for it to be processed***

Limitations of the WISC-IV

The Processing Speed Problem

- **Processing speed contributes 20% to WISC-IV Full Scale IQ and will easily depress the FSIQ**
- **Mean PSI=110 in both the WISC-IV intellectually gifted research sample and our GMU Gifted Assessment Program sample, relative to Mean VCI of 124 (TPC) to 127 (GMU)**
- **Based on differences between index scores required for statistical significance (VCI-PSI critical value of 12.6 at p=.05 for all ages), *the average intellectually gifted student will show a relative weakness in processing speed***

Limitations of the WISC-IV

The Processing Speed Problem

- In our GMU gifted sample of n=219, defined by a consecutive series of students who earned FSIQ ≥120, we found that
  - A. In 59.4% of the sample, PSI is the lowest of the four index scores
  - B. In 47.5% of the sample, PSI falls in the average range or lower *AND* PSI is the lowest index score
- It is perhaps ironic that intellectually gifted students do tend to have faster reaction and response times (e.g., Duan, Shi, & Zhou, 2010), although many prefer a more reflective or careful style

Duan, X., Shi, J., & Zhou, D. (2010). Developmental Changes in Processing Speed: Influence of Accelerated Education for Gifted Children. *Gifted Child Quarterly, 54*, 85-91.

The Extended Norms

Limitations of the WISC-IV

Ceiling Problems & Highly Gifted

- With their scaled scores ending at 19 (+3*SD*), WISC-IV subtests have a low ceiling that may potentially underestimate IQ scores and hamper identification of highly gifted students
- It can even be argued that anytime the discontinue rule is not formally reached, a ceiling effect has occurred
- The WISC-IV FSIQ norms range only from 40 to 160, although higher scores among highly gifted children are possible (most of us will encounter a handful of 155-160 FSIQs in our careers)

Observations on Highly Gifted

- There is a long history dating back to the work of Lewis Terman, Catherine Cox, and Leta Hollingworth identifying their own examinees and through retrospective analysis, historical figures, who are qualitatively beyond the range of scores we can typically measure in terms of their development and achievements
- With extended norms, we may finally be able to objectively measure (and begin to understand) the abilities of the highly gifted

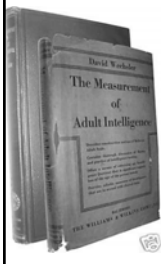
David Wechsler (1935, pp. 107-108)

Classification of '*Superiority/Genius*'

1. "There is first the general comparative connotation of *very-much-more-than*, to a superlative degree. The superior person is one who can do very much more of, or very much more quickly, or very much better, the kind of thing which the average person can do only in a moderate degree. This is the aspect which we referred to as ***ability to extraordinary degree***."
2. "Secondly, the superior person is a rare person. He is one in a hundred, or one in a thousand, or one in a million, etc. This is the aspect of ability implied by the term '***unusualness***.'"
3. "Finally the superiority of an individual, to warrant the classification of genius, must be ***in a field or a type of performance which is humanly esteemed*** in and for itself. This is necessary to exclude such extraordinary and unusual performances as sitting forty days on top of a telephone pole, and records in pie eating contests."

A Shrinking and Expanding Range

FSIQ Scores across Wechsler Scales



Scale	FSIQ Range
Wechsler-Bellevue (1939)	28-195
Wechsler-Bellevue II (1946)	28-195
WISC (1949)	46-154
WAIS (1955)	45-179
WPPSI (1967)	45-155
WISC-IV (2003)	40-160
WISC-IV Extended Norms (2008)	40-210

Wechsler's first intelligence tests (1939, 1946) extended up to a Full Scale IQ of 195!

Based on expert recommendations

SB5 Descriptive Ranges

- **176 to 225 Profoundly gifted or advanced**
- **161 to 175 Extremely gifted or advanced**
- **145 to 160 Very gifted or highly advanced**
- **130 to 144 Gifted or very advanced**
- **120 to 129 Superior**
- **110 to 119 High Average**
- **90 to 109 Average**

Based on expert panel input and appearing on page 22 in Roid, G. H. (2003). *Stanford-Binet Intelligence Scales, Fifth Edition, Interpretive Manual: Expanded Guide to the Interpretation of SB5 Test Results.* Itasca, IL: Riverside Publishing.

WISC-IV Extended Norms

- **The extended norms may be used to differentiate gifted children from highly gifted children**
- **They are typically applied when scaled scores on two or more subtests are 18 or 19, and can potentially extend the GAI, FSIQ, VCI, PRI, WMI, and PSI up to 210.**
- Citation: Zhu, J., Cayton, T., Weiss, L., & Gabel, A. (2008). WISC-IV extended norms (WISC-IV Technical Report No. 7). Retrieved March 10, 2010 from http://www.pearsonassessments.com/pai/ai/research/publications/techrpts/reslist.htm

How to Report Extended Norms

- **From Pearson:**

  "Because {child's name} obtained the top scaled score on {number of subtests} WISC–IV subtests, his/her composite scores were based on a special table of extended norms created, in part, from a sample of highly gifted children (see the WISC-IV Technical Report #7). Using these extended norms, his/her scores are as follows: . . ."

NAGC Position Statement on Use of the WISC-IV for Gifted Identification

http://www.nagc.org/index.aspx?id=2455

Stanford-Binet Fifth Edition (SB5)

Overview, Factor Indices, EXIQ and Experimental Composites, and Recent Research

History of SB5

A Chronology of Development

- **Richard Woodcock was the original author of the SB5, later joined by Gale Roid, and ultimately dropping out for health reasons. Howard Gardner was invited to coauthor but declined.**
- **The ambitious decision to dichotomize each CHC factor into verbal and nonverbal content was made to capitalize on SB history, the Wechsler Verbal-Performance dichotomy, and OCR challenges to the SBIV with the gifted**
- **Gifted experts were integral consultants in the early stages but not so much in final decisions**

Overview of the SB5

- Normed for ages 2 through 85+
- *Yields Composite indices including a Full Scale IQ, Nonverbal IQ, Verbal IQ, and Abbreviated IQ*
- Yields five factor scores that are continuous with the prior edition and build upon a modified Cattell-Horn-Carroll model of cognitive abilities
- *Mean of 100, SD of 15 for composite scores and mean of 10, SD of 3 for subtest scores*

Based on constituent subtests

A Review of SB5 Content

- Verbal content: 50% ??
- Nonverbal content: 50% ??
- Clear Academic content: 10%
- Mathematical reasoning: 20%
- Working memory content: 20%
- Processing speed content: 0%

❖ Several factor analyses have challenged SB5 verbal/nonverbal structure. The only clearcut intentional coverage of crystallized knowledge in the SB5 appears in Vocabulary. Finally, the SB5 was designed to measure mathematical reasoning with minimal acquired knowledge, just as Wechsler intended for his tests.

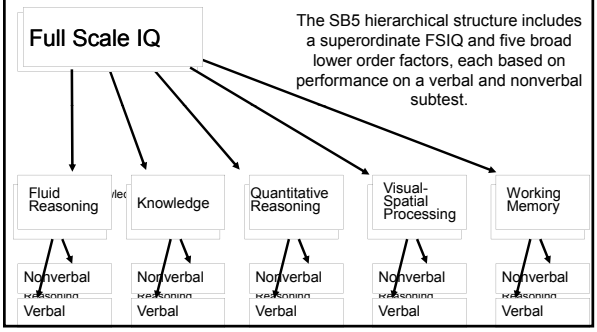
Wasserman's Reflections

The SB5 in Retrospect

- In designing the structure, there was probably too much worry about the OCR and fairness (hence the V/NV dichotomy) and not enough about predicting verbal academic performance (inadequate KN coverage)
- *It is always helpful to test ideas out with an expert panel of practicing psychologists, but this panel was dropped early in development*

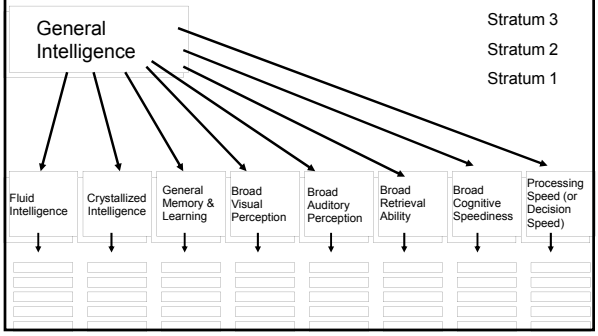
Structure of the SB5 (2003)

Stanford-Binet Intelligence Scales



Compare with John Carroll's (1993)

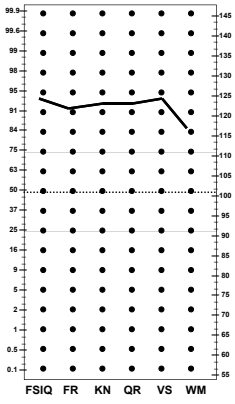
Three Stratum Model of Abilities



Stanford-Binet 5

Five Broad Cognitive Abilities

- ***Fluid Reasoning (Gf)*** ➢ Ability to solve novel and unfamiliar problems
- ***Knowledge (Gc)*** ➢ Breadth and depth of previously learned facts and skills
- ***Quantitative Reasoning (Gq)*** ➢ Processing of numerical concepts and relationships
- ***Working Memory (Gsm)*** ➢ Ability to hold and transform information in immediate awareness
- ***Visual-Spatial Processing (Gv)*** ➢ Ability to analyze and synthesize visual information



SB5 Technical Manual

Giftedness Profile

n=96, ages 5-17, from GT classes

Index	Mean (SD)
Full Scale IQ	123.7 (9.0)
NonVerbal IQ	122.2 (10.2)
Verbal IQ	123.5 (8.8)
Fluid Reasoning	121.0 (10.3)
Knowledge	121.7 (9.7)
Quant Reason	121.6 (13.5)
Visual-Spatial	123.0 (11.3)
Working Memory	115.8 (10.1)

SB5 Extended IQ Score (EXIQ)

- **EXIQ is a supplemental score that describes extreme levels of individual performance (i.e., for examinees earning a FSIQ <50 or >150 -- less than .2% of population)**
- **Conceptually, EXIQ is calculated from Rasch scaling (similar to how all WJ III scores are derived) while the FSIQ is calculated directly from standard score conversions of sums of scaled scores**
- **EXIQ correlates highly (.94 to .99, with a median value of .99) with the FSIQ**

SB5 Extended IQ Score (EXIQ)

- **EXIQ extends down to 10 and upward to 225.**
- ***EXIQ is only available as an extension of the FSIQ (using all 10 subtests or the prorated 8 subtests without the two Working Memory subtests).***
- **EXIQ can be calculated using tables in Appendix A of the Roid (2003) *SB5 Interpretive Manual*, pp. 114-130.**

Experimental Gifted Composites

- **The method of Tellegen and Briggs (1967) was used to calculate additional standard score equivalents**
- **Because the SB5 gifted sample (*n*=96) showed a lower mean for the Working Memory Factor Index, two experimental Gifted Composite Scores were created that omit the 2 Working Memory subtests.**
- **Users have reported that gifted students who are "meticulous" often perform poorly on the SB5 Working Memory subtests.**

From Roid (2003) SB5 Interpretive Manual

Experimental Gifted Composite

- **Experimental Gifted Composite (7 subtests)**
  1. **Sum scaled scores: NVFR+NVKN+NVQR+VFR+VKN+VQR+VVS**
  2. **Convert to standard score: 0.932*Sum + 34.8**
- **How well should it classify?**

  Using a Cut point of 120, the Gifted Composite score yields 93.5% accuracy of classification, 1.6% false negatives, 6.1% false positives (not cross-validated)
- **How well does it actually perform?**

  33.3% false negatives and 33.3% true positives in the Minton and Pratt (2006) study; performs poorly

Minton, B. A., Pratt, S. (2006). Identification discrepancies. Gifted and Highly Gifted students: How do they score on the SB5? *Roeper Review, 28, 232-236.*

From Roid (2003) SB5 Interpretive Manual

Exp. Nonverbal Gifted Composite

- **Experimental Nonverbal Gifted Composite (4 subtests)**
  1. **Sum scaled scores: NVFR+NVKN+NVQR+NVVS**
  2. **Convert to standard score: 1.596*Sum + 36.2**
- **How well should it classify?**

  Using a Cut point of 120, the Nonverbal Gifted Composite score yields 91.4% accuracy of classification, 2.3% false negatives, 6.3% false positives (not cross-validated yet on an independent sample)
- **No research reported yet**

Strengths and Limitations of the SB5

Recent Research on the SB5

1. **The SB5 provides a good measure of the general ability factor, *g***
2. **But the SB5 generates much lower scores in known-gifted samples than the Wechsler scales, even making allowances for Flynn and regression effects**
3. **Support is poor for the SB5 division of test content into verbal and nonverbal**
4. **Support is poor for the SB5 five factor CHC framework (FR, KN, QR, VS, WM)**

Strengths of the SB5

SB5 has good "g" loadings

- **All SB5 subtests (9 out of 10) but Nonverbal Fluid Reasoning have high (>70) *g* loadings, while on the WISC-IV only verbal subtests and Arithmetic have high (>70) g loadings (6 out of 15 subtests)**
- **"… clinicians would be wise to concentrate their interpretation on the overall global IQ score from the SB-5, even with the youngest age groups, where DiStefano and Dombrowski (2006) found some limited evidence for a two factor (verbal and nonverbal) model" (Canivez, 2008, pp. 539-540).**

Boise School District, Idaho 2006 SB5 Study

SB5 FSIQ << WISC-III FSIQ

Gifted Sample (IQ>130; n=36)

- **SB5 FSIQ 12 points lower than WISC-III FSIQ**
  - **Mean SB5 FSIQ=121 (6.4) Mean WISC-III FSIQ=133 (3.6)**
- **Highly Gifted Sample (IQ> 145; n=37)**
- **SB5 FSIQ 18 points lower than WISC-III FSIQ**
  - **Mean SB5 FSIQ=126 (7.8) Mean WISC-III FSIQ=144 (6.3)**

- **The drop in scores appears to be larger than might be expected on the basis of the Flynn effect and/or regression to the mean effects.**

Minton, B. A., Pratt, S. (2006). Identification discrepancies. Gifted and Highly Gifted students: How do they score on the SB5? Roeper Review, 28, 232-236.

Boise School District: WISCIII-Defined Gifted

SB5 Composite/Factor Scores

SB5 Index/Factor	Gifted (IQ>130; n=25)	Highly Gifted (IQ>145; n=31)
Nonverbal IQ	119 (7.0)	124 (9.4)
Verbal IQ	122 (6.9)	127 (7.5)
Fluid Reasoning	118 (9.3)	125 (9.8)
Knowledge	118 (7.6)	123 (8.7)
Quantitative Reas.	121 (9.8)	124 (13.3)
Visual-Spatial	121 (9.8)	123 (10.2)
Working Memory	115 (7.5)	119 (7.5)

Minton, B. A., Pratt, S. (2006). Identification discrepancies. Gifted and Highly Gifted students: How do they score on the SB5? *Roeper Review, 28, 232-236.*

Limitations of the SB5

Limited Support for VIQ and NVIQ

- **Inexplicably, some nonverbal tests require the examinee to verbally express an answer (e.g., Picture Absurdities which is part of Nonverbal Knowledge)**
- ***Research Examples*: Both Verbal and Nonverbal Knowledge load verbally at younger ages (2-10), while Verbal and Nonverbal Quantitative Reasoning both load verbally from ages 2-5 and nonverbally from ages 6-11**
- **In hierarchical EFA, "… some of the SB-5 'nonverbal' subtests actually account for more verbal factor variance than nonverbal factor variance …" Canivez (2008, p. 539).**

Limitations of the SB5

Limited Support for V/NV/5 Indexes

- **Canivez, G. L. (2008). Orthogonal higher order factor structure of the Stanford-Binet Intelligence Scales—Fifth Edition for children and adolescents. *School Psychology Quarterly, 23,* 533–541.**
- **DiStefano, C., & Dombrowski, S. C. (2006). Investigating the theoretical structure of the Stanford-Binet-Fifth Edition. *Journal of Psychoeducational Assessment, 24, 123–136.***

Woodcock-Johnson III Tests of Cognitive Abilities (WJ III Cog)

Overview, Psychometric g, Results with a gifted sample

Tests of Cognitive Abilities

Woodcock-Johnson III NU

- **By all rights, the WJ III Cog should perform well in gifted assessment:**
  1. **No ceiling issues (Rasch scaling permits subtest and cluster scores above 200)**
  2. **The General Intellectual Ability (GAI) score is weighted according to *g* loadings**
  3. **A theoretical framework including fluid reasoning and crystallized ability (Gf and Gc) as part of the CHC model of cognitive abilities**

WJ III Cog limitations

WJ III Cog *g* loadings

- **Crystallized intelligence appears to count more than fluid reasoning in the exploratory principle components analysis of the WJ-III Cog, as well as in the computation of the WJ-III Cog General Intellectual Ability (GIA) score.**
- ***The WJ-III Cog subtests are generally fair to poor measures of general intelligence.***
- **Principal components analysis, using stabilized squared multiple correlations in the diagonal as the final estimates of the communalities, was the exploratory procedure used to estimate general ability loadings**

Maccubbin, E. M., & Wasserman, J. D. (2002). WJ-III Cog *g* loadings: Implications and limitations. Paper presented at the Annual Meeting of the American Psychological Association, Chicago, IL.

WJ III Cog test average g loadings: Ages 6-8

Subtest Relative Contributions

Good (≥.70)
Verbal Comprehension (.77)
Visual-Auditory Learning (.76)
Fair (.50-.69)
Concept Formation (.68)
Visual-Auditory Learning Del. (.68)
General Information (.67)
Visual-Auditory Learning (.67)
Analysis-Synthesis (.57)
Numbers Reversed (.62)
Auditory Working Memory (.60)
Visual Matching (.59)
Memory for Words (.52)
Sound Blending (.51)
Retrieval Fluency (.50)
Poor (<.50)
Decision Speed (.49)
Spatial Relations (.35)
Pair Cancellation (.46)
Incomplete Words (.41)
Rapid Picture Naming (.40)
Auditory Attention (.39)
Spatial Relations (.35)
Planning (.36)
Picture Recognition (.31)

Maccubbin, E. M., & Wasserman, J. D. (2002). WJ-III Cog *g* loadings: Implications and limitations. Paper presented at the Annual Meeting of the American Psychological Association, Chicago, IL.

WJ III Cog test average g loadings: Ages 9-13

Subtest Relative Contributions

Good (≥.70)
Verbal Comprehension (.77)
General Information (.71)
Fair (.50-.69)
Concept Formation (.69)
Visual-Auditory Learning (.67)
Analysis-Synthesis (.60)
Auditory Working Memory (.60)
Visual-Auditory Learning Del. (.60)
Numbers Reversed (.56)
Visual Matching (.55)
Memory for Words (.53)
Sound Blending (.52)
Retrieval Fluency (.52)
Poor (<.50)
Decision Speed (.48)
Spatial Relations (.45)
Pair Cancellation (.43)
Incomplete Words (.39)
Rapid Picture Naming (.38)
Spatial Relations (.35)
Planning (.34)
Auditory Attention (.31)
Picture Recognition (.30)

Maccubbin, E. M., & Wasserman, J. D. (2002). WJ-III Cog *g* loadings: Implications and limitations. Paper presented at the Annual Meeting of the American Psychological Association, Chicago, IL.

WJ III Cog and Giftedness

Margulies & Floyd (2009) Study

- **The WJ III Cog was administered to a Southern, predominantly White sample of *n*=34 children in gifted placements with a WISC-III FSIQ≥125. Students in the sample had a Mean age of 12.8 years (SD=1.5).**
- **This is the only WJ III / Gifted study in which the sample was independently identified by means other than the WJ III itself.**

Margulies, A. S., & Floyd, R. G. (2009). A Preliminary Examination of the CHC Cognitive Ability Profiles of Children with High IQ and High Academic Achievement Enrolled in Services for Intellectual Giftedness. WMF Press. Retrieved March 10, 2010 from http://www.woodcock-munoz-foundation.org/pdfs/2009-01_MarguliesFloyd.pdf

Margulies & Floyd (2009) in descending order

WJ III Cog with a Gifted Sample

Broad Ability	Gifted	Ave. Ach.
Fluid Reasoning	117.38	100.85
	(9.85)	(9.71)
Comprehension–Knowledge	115.32	99.71
	(10.27)	(10.37)
Visual–Spatial Thinking	114.35	100.91
	(10.64)	(11.69)

… continued

Margulies & Floyd (2009) in descending order

WJ III Cog with a Gifted Sample

Broad Ability	Gifted	Ave. Ach.
Short-Term Memory	112.97	106.18
	(11.93)	(12.61)
Auditory Processing	111.41	102.53
	(10.72)	(10.72)
Processing Speed	111.21	99.38
	(17.47)	(12.93)
Long-Term Retrieval	104.94	102.35
	(10.83)	(11.21)

Margulies & Floyd (2009)

WJ III Cog with a Gifted Sample

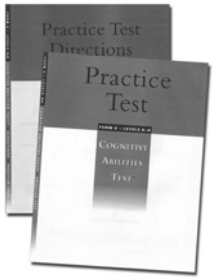
- The children with giftedness displayed the following pattern on the broad ability composites from highest to lowest: Fluid Reasoning, Comprehension–Knowledge, Visual–Spatial Thinking, Short-Term Memory, Auditory Processing, Processing Speed, and Long-Term Retrieval.

Comparative Features of Group Tests

CogAT, OLSAT, NNAT2/NNAT, and Raven Progressive Matrices

Form 6 Overview

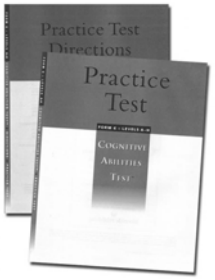
Cognitive Abilities Test (CogAT)



- The CogAT Form 6 is a multiple choice broad range ability test designed to appraise level and pattern of cognitive functioning in students from kindergarten through grade 12.
- CogAT has three levels (K, 1, and 2) in its primary edition and eight levels in its multilevel edition (A through H) for older children.

Three Batteries and a Composite Score

Cognitive Abilities Test (CogAT)

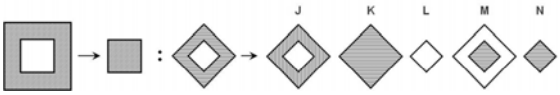


- At all grades, the CogAT is balanced between three batteries: Verbal, Quantitative, and Nonverbal, each comprised of two subtests in the primary edition or three subtests in the multilevel edition.
- Main scores all have a mean of 100 and *SD* of 16:
  - Verbal SAS
  - Quantitative SAS
  - Nonverbal SAS
  - Composite SAS

Three Batteries and a Composite Score

Cognitive Abilities Test (CogAT)

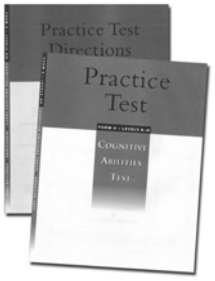
CogAT Figure Analogy Item Type



Nonverbal tests generally minimize the use of language and factual knowledge, thereby tapping a more fluid form of intelligence (and claiming greater fairness for educationally and economically disadvantaged students or students from a different language background).

Testing Time

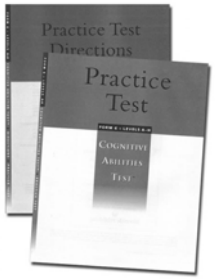
Cognitive Abilities Test (CogAT)



- ***The primary edition has no time limits and no reading requirements; most classes require 30 to 60 minutes for each of the three batteries.***
- **The multilevel edition has strict time limits of 10 minutes for each subtest (about 90 + minutes for all three batteries), which is considered sufficient for a majority of students to attempt all items. Instructions inform examinees about time limits for each subtest in advance.**

Theoretical Underpinnings

Cognitive Abilities Test (CogAT)



- ***CogAT is intended to measure both general and specific reasoning abilities.***
- **In particular, the authors cite Carroll (1993) as having provided evidence for three main first-order reasoning factors that parallel CogAT structure: Sequential Reasoning (mainly verbal content), Quantitative Reasoning (mainly mathematical content), and Induction (mainly figural content).**

Arthur S. Otis (1886-1963)

OLSAT
Otis-Lennon School Ability Test
Eighth Edition

- **Otis was a doctoral student under Lewis Terman at Stanford University; did Terman's statistics**
- **Developed many of the multiple choice tests used in the Army Alpha and Beta in World War I; later a test editor for the World Book Company, where he continually improved psychometrics**
- **Author of the OLSAT and other group-administered tests**

OLSAT 8 Overview

Otis-Lennon School Ability Test

- **The OLSAT 8 is a multiple choice broad range ability test "designed to measure those verbal, quantitative, and figural reasoning skills that are most closely related to scholastic achievement."**
- ***OLSAT has 7 levels (A through H) for Kindergarten through Grade 12.***

OLSAT 8 Verbal and Nonverbal Batteries

Otis-Lennon School Ability Test

- **The OLSAT 8 has Verbal and Nonverbal batteries.**
  a. **The Verbal battery includes Verbal Comprehension and Verbal Reasoning item clusters.**
  b. **The Nonverbal battery includes Pictorial Reasoning, Figural Reasoning, and Quantitative Reasoning item clusters.**
- ***OLSAT 8 generates School Ability Indexes (SAIs) with a mean of 100 and a SD of 16***
  - **Total SAI**
  - **Verbal SAI**
  - **Nonverbal SAI**

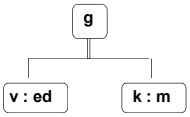
Testing Time

Otis-Lennon School Ability Test

- **OLSAT 8 Levels A and B are teacher-administered and teacher-paced, and two separate test sessions may be needed. Testing time rarely exceeds 75 minutes.**
- **Levels C through H are mostly self-administered and will typically require 60 to 75 minutes.**

Theoretical Underpinnings

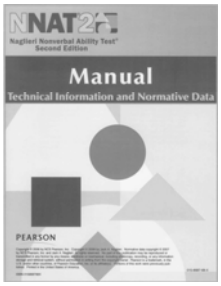
Otis-Lennon School Ability Test



- **The OLSAT 8 is based on a hierarchical model of ability with Spearman's general factor, "g" at the apex and two major group factors corresponding to Vernon's (1961) verbal-educational factor and practical-mechanical factor below.**

NNAT and NNAT2 Overview

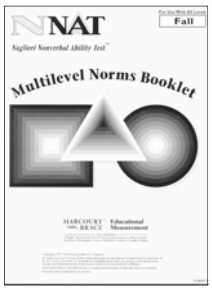
Naglieri Nonverbal Ability Test



- **The NNAT and NNAT2 are fairly unidimensional nonverbal tests that use progressive matrices to measure reasoning and general problem-solving ability**
- **NNAT and NNAT2 have seven levels (A to G) spanning the ages 5.0 to 17.11 and grades K through 12**

NNAT and NNAT2 Overview

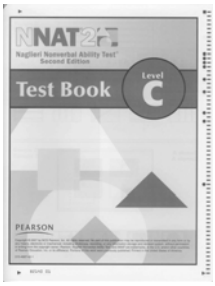
Naglieri Nonverbal Ability Test



- **NNAT and NNAT2 verbal instructions are relatively brief.**
- **Examinees have 30 minutes to complete 38 items (NNAT) or 48 items (NNAT2)**
- **All knowledge required to solve each item is presented in the item, so that factual knowledge, vocabulary, mathematics, and reading skills are not required.**

NNAT and NNAT2 Overview

Naglieri Nonverbal Ability Test



- **NNAT and NNAT2 verbal instructions are relatively brief.**
- **Examinees have 30 minutes to complete 38 items (NNAT) or 48 items (NNAT2)**
- **All knowledge required to solve each item is presented in the item, so that factual knowledge, vocabulary, mathematics, and reading skills are not required.**

NNAT2 Pictorial Directions

Naglieri Nonverbal Ability Test

Unique Pictorial directions (patent pending) require minimal receptive or expressive language allowing for the broadest administration scope to the most diverse student population.

Optional Pictorial Instructions? The use of cartoon panels with thought balloons may undermine the cross-cultural aspirations of the NNAT2.

NNAT and NNAT2 Scores

Naglieri Nonverbal Ability Test

- **The NNAT yields a normalized standard score termed the Nonverbal Ability Index (NAI), with a normative mean of 100 and a standard deviation of 15.**
- **The NNAT2 renames the standard score as the Naglieri Ability Index (NAI), changing the metric to a standard deviation of 16 (albeit still with a normative mean score of 100).**

NNAT and NNAT2 Theoretical Underpinnings

Naglieri Nonverbal Ability Test

- **The NNAT does not appear to have theoretical underpinnings, beyond the value of ostensibly nonverbal testing to optimize cross-cultural fairness in individuals with linguistically different or educationally/economically disadvantaged backgrounds**
- **Naglieri (2003) argues that general intelligence tests with verbal content and nonverbal content measure essentially the same construct as general ability tests that are all nonverbal or all verbal.**

Overview

Raven's Progressive Matrices

- **The Raven Progressive Matrices (Raven, Raven, & Court, 1998) is a suite, or family, of matrix relations tests which are the most researched of all nonverbal measures. The matrix reasoning paradigm was first developed by Raven in the 1930s.**
- ***Available in four versions intended for distinctive applications, the RPMs offer some interchangeability through Rasch scaling and equating studies. Online versions are now available for employment testing.***

Coloured Progressive Matrices

Raven's Progressive Matrices

- ***Coloured Progressive Matrices* (Classic CPM, or CPM-C): The Classic CPM consists of 36 items presented in color, usually for lower ability examinees. Norms are available for children ages 5 through 11 years and for adults of age 60+ years. Thirty minutes is sufficient for most examinees to complete the Classic CPM and Parallel CPM.**

Standard Progressive Matrices and SPM Plus

Raven's Progressive Matrices

- ***Standard Progressive Matrices* (Classic SPM, or SPM-C, and SPM Plus): The SPMs consist of 60 black and white items covering the entire range of ability from low ability adults through high scoring adults. Norms are available for ages 6 through 68+ years. Discriminatory power for high ability adolescents and adults was improved by raising the ceiling with five high end items on the SPM Plus. The SPMs are usually completed in less than 45 minutes, but an online version of the Classic SPM for employee testing sets a time limit of 42 minutes.**

Advanced Progressive Matrices

Raven's Progressive Matrices

- ***Advanced Progressive Matrices* (APM, Sets I and II):** APM Set I consists of a 12 item practice test or screener, which has value in establishing response set and facilitating an appropriate understanding of problem types. Set I is normally followed immediately by Set II, which consists of 36 items sequenced in ascending order of difficulty. Set II is intended to discriminate among highly gifted persons. With new norms published in 1998, the APM is intended to discriminate best among the top 20 percent of the population. If it is necessary to set a time limit for Set II of the APM, Raven and Raven (2003) recommend 40 minutes. An online version of the APM for employee testing sets a time limit of 42 minutes.

Norms and Scores

Raven's Progressive Matrices

- ***Score Transfer between Forms:*** **David Andrich, an expert in item response theory, has scaled the Raven's forms together to estimate corresponding scores on the CPM, SPM, and SPM Plus.**
- ***Best Norms for Gifted*****: The Fort Bend, Texas norms based on a nationally representative sample of 2700 examinees from ages 5 ½ to 17 years administered the SPM Plus.**

✓ **The RPMs each offer over 15 independent reference norms for examiners to utilize, and users are advised to select norms most appropriate to the examinee being assessed and the purpose of the assessment. The norms offer percentile ranks, but use of IQ equivalent scores are discouraged because score distributions tend to be nonnormal and sample dependent. None of the normative samples available offer the carefully stratified and representative composition of normative samples for major intelligence tests, like the Wechsler scales and the Stanford-Binet.**

Theoretical Underpinnings

Raven's Progressive Matrices

- **The Progressive Matrices are intended to measure the eductive component of general ability, or *g*. <u>Eductive ability</u> is defined as the ability to forge new insights, ability to discern meaning in confusion, the ability to perceive, and the ability to identify relationships. The essential feature of eduction is the ability to generate new, largely nonverbal concepts which make it possible to think clearly.**
- **Raven and Raven (2003) note that use of progressive matrices to select students for gifted education programs tends to admit a "very different type of student from those who do well in traditional 'academic' achievement tests" (p. 230). They recommend diversification of the educational process as a way to accommodate these gifted learners.**

Group test comparisons

Normative Characteristics

Criterion	CogAT 6	OLSAT 8	NNAT/NNAT2	Raven SPM
Year of Norms	Spring 2000 (2005 Normative update)	Spring/Fall 2002	Fall/Spring 1995-6 (NNAT); 2007 (NNAT2)	1999 (SPM Plus)
Normative Sample	149,798	445,500	63,000	2700
Representative	Yes (weighted)	Yes (weighted)	Yes (weighted)	Yes
Weighted	Yes	Yes	Yes	No
Conormed Tests	ITBS and ITED	SAT10	SAT9 and Aprenda2 (NNAT); none for NNAT2	None

Group test comparisons

Normative Characteristics

Criterion	CogAT 6	OLSAT 8	NNAT/NNAT2	Raven SPM
Age/Grade Range	5-17/K-12 (11 levels)	5-17/K-12 (7 levels)	5-17/K-12 (7 levels)	5-17/K-12 (SPM Plus)
Time limits (minutes)	90	Variable (maximum 75)	30	None (SPM Plus approximately 60)
Online Admin. Option?	No	No	Yes	Yes
Types of Norms	Age and grade norms	Age and grade norms	Age and grade norms (NNAT): age norms only (NNAT2)	Age norms only
Normative Gradations	3 month intervals	3 month intervals	3 month intervals	6 month intervals

Group test comparisons

Score Characteristics

Criterion	CogAT 6	OLSAT 8	NNAT/NNAT2	Raven SPM
Main Scores	Standard Age Score (SAS) for Verbal, Quantitative, Nonverbal, and Composite	School Ability Index (SAI) for Verbal, Nonverbal, and Total	Nonverbal Ability Index (NNAT); Naglieri Ability Index (NNAT2)	Percentile ranks recommended
Mean (*SD*)	100 (16)	100 (16)	100 (15) for NNAT; 100 (16) for NNAT2	None
Range of Scores	50 to 150	50 to 150	50 to 150 (NNAT); 40 to 160 (NNAT2)	5th through 95th percentiles
Adequate Ceiling for Gifted Students?	Yes	Yes	Yes	Yes (especially the SPM Plus)

Group test comparisons

Reliability Characteristics

Criterion	CogAT 6	OLSAT 8	NNAT/NNAT2	Raven SPM
Internal Consistency (usually median KR20 across levels)	Verbal 89/95, Quant. 90/94, Nonv. 91/95, Comp. 95/98 [Primary K-2/Multilevel A-H]	Verbal 84, Nonverbal 86, Total 91	NNAT 87, NNAT Clusters 23 to 89; NNAT2 86	CPM 90, SPM 90 , APM I 73
Test-Retest Stability	Verbal 81, Quant. 78, Nonv. 74, Comp. 87 (across 3 years)	None provided	NNAT2 77 (unspecified interval)	84 (1 year interval)
Standard Error of Measurement	Composite 2.1-3.8 across levels	Total 3.1-3.7 across levels	NNAT2 NAI 4.7-6.3 across levels	None provided for SPM Plus

Group test comparisons

Validity Characteristics

Criterion	CogAT 6	OLSAT 8	NNAT/NNAT2	Raven SPM
Correlations with IQ tests	.82 for CogAT and WJ III		Not reported in test manuals; .50s to .70s in prior research	.54 to .86 with the Wechsler and Stanford-Binet
Correlations with academic achievement	.60s to .70s with reading; .70s to .80s with math on ITBS	.50s to .70s with reading; .50s to .80s with math on the SAT10	Correlations of .63 with total achievement, .54 with reading, and .64 with math on the SAT-9	Higher with math and science than with language and overall academic achievement
Characteristics of Gifted Learners	?	?	?	?

Group test comparisons

Fairness Characteristics

Criterion	CogAT 6	OLSAT 8	NNAT/NNAT2	Raven SPM
Bias Review Panel	Yes	Yes	No	No
Differential Item Function (usually Mantel-Haenszel)	Yes	Yes	NNAT Yes; NNAT2 No	Yes
Group Mean Race/Ethnic Score Differences Reported?	No	No	Yes	Yes
Minority Placement Decisions	Under-inclusion	Under-inclusion	Improved inclusion (overinclusion also reported)	Improved inclusion

Concluding Comments

- **Both CogAT and OLSAT appear to perform well as multidimensional batteries of cognitive ability**
- **Both NNAT/NNAT2 and the Raven's Progressive Matrices (particularly the SPM Plus) perform well as fairly unidimensional batteries of nonverbal reasoning**
- **When deciding what to use, try to ignore the salesmanship and overstatement!**

Compromised Scientific Objectivity

Avoid the Deceptive Ads!

In 2008 promotional materials, the NNAT2 publisher states that test features include

- **"Utilize culturally neutral shapes and designs**
- **Isolates and evaluates fundamental reasoning, mathematics and problem-solving ability**
- **Unbiased for a culturally diverse student population**
- **Unbiased for hearing-impaired students**
- **Unbiased for students with minimal color-vision impairment "**

None of these statements have scientific merit.

New York Times Magazine, 1966

Wechsler on Nonverbal Tests

- **In 1966, David Wechsler explicitly argued against the use of nonverbal tests to predict academic performance, in an article that appeared in the *New York Times Magazine*, one of the last articles he wrote for the general public:**

"It is now two years since the New York City school system eliminated the I.Q. from pupils' records. Banned under the pressure of groups that claimed the I.Q. was unfair to the culturally deprived, it has been replaced by achievement tests. Meanwhile, a great deal of effort is being put into developing new, nonverbal scales to measure schoolchildren's abilities while eliminating the troublesome factor of language."

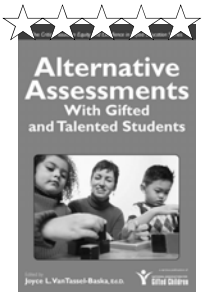
… continued

New York Times Magazine, 1966

Wechsler on Nonverbal Tests

Wechsler further noted, "Neither of these substitutes is an adequate replacement for the I.Q. … The substitutes simply do not test enough of the abilities that go to make up individual intelligence....

Contrary to claims, the results of [nonverbal] performance tests have been generally disappointing. The findings indicate that while they may be useful in certain situations, and for certain diagnostic groups, they prove quite unsatisfactory as alternates for verbal scales. They correlate poorly with verbal aptitudes and are poor prognosticators of over-all learning ability as well as school achievement. Above all, they have turned out to be neither culture-free nor culture-fair" (Wechsler, 1966, pp. 12, 63).



Much of this section drawn from VanTassel-Baska's (2008) book.

Alternative assessments

Portfolio assessment, Performance-based assessment, Off-level group standardized testing, and Teacher-completed rating scales

Identification of Gifted Students

Why Alternative Assessments?

- **Alternative assessment approaches are needed for the identification of underrepresented learners for gifted programs**
  - **Racial and ethnic minorities**
  - **English language learners**
- **Alternative assessments may also benefit others, including twice-exceptional (gifted 2e) students and spatially gifted students**

For Alternative Methods of Identification

Need to Study Student Success

"Although it is criminal to not include able learners in gifted programs, it also is criminal to place them in contexts where their chance of success is severely limited by factors beyond sheer ability such as functional level of skills within subject domains, motivation, and patterns of underachievement. Studies of such validity must be carried out on these measures to assess their viability in not just finding students but also seeing that they are properly serviced in programs."

Joyce VanTassel-Baska (2008, p. 9)
Alternative Assessments with Gifted and Talented Students

For More Diverse Inclusion

Examine Entire Eligibility Process

- **Teacher attitudes**
- **Parent awareness**
- **Student motivation**
- **GT Curriculum**
- **Screening Procedures**
- **Criteria for Eligibility**
- **How Decisions are Made**
- **Follow-up on Student-Curriculum Fit**

Portfolio Assessment

- **A portfolio is a multidimensional, purposeful, and systematic collection of student work over time that samples a student's abilities, progress, and accomplishments in a given area or areas**
- ***Portfolios are long-used by artists, photographers, architects, and others***

Elements to Consider

Portfolio Assessment

- ***Writing Samples*. Student writing can provide information about knowledge, vocabulary, analytical reasoning, creativity, and sensitivity to issues**
- ***Writing in Different Conditions*: Ideally writing samples should be diverse and include spontaneous writing, assigned writing under timed/untimed conditions, narrative and expository writing, and a student selection of "my best work".**

Elements to Consider

Portfolio Assessment

- ***Journals***. Journals or logs furnish open ended opportunities for expression as well as a motivating and personal forum for communication where students may choose their own form, topics, and language. Even successive drafts of papers can provide insights into student thinking and problem-solving abilities.

Elements to Consider

Portfolio Assessment

- ***Class Discussions***. Audio or videotapes or anecdotal records of class discussions are another medium for evaluating giftedness because they reveal the child's knowledge base as well as verbal expression, responsiveness to others, interactive abilities, persuasiveness, social maturity, possible humor, and spontaneity.

Elements to Consider

Portfolio Assessment

- ***Artwork.*** Another avenue for exploring giftedness is artwork, especially where children have had free rein to respond artistically. In assessing children's artwork, important considerations include: student interests or persistent themes as well as experimentation with style, form, shape, color, and depth of personal expression.

Elements to Consider

Portfolio Assessment

- ***Projects***. Photos and recordings of student projects and performances supply data to further investigate a child's ability. A project prepared primarily at school yields information in academic and creative areas as well as in organizational abilities, task persistence, and leadership skill (if a group project).

Strengths and Limitations

Portfolio Assessment

- ✓ Richer, more idiographic content
- ✓ Sensitive to a wide range of contexts and contents
- ✓ Can be powerful in showing growth
- ✓ Potentially well-integrated with instruction
- × Time-consuming to implement
- × Lacking in reliability and validity without consistent content in each portfolio, a rigorous scoring system, and adequate rater/scorer training; not much empirical research
- × Much harder to use than group tests

"Thinking made visible"

Performance-based Assessment

- Performance-based assessments focus on challenging open-ended problems that require high-level thinking and problem-solving and put an emphasis on the process the student uses to come to an answer (***how***) rather than on whether or not the student can find the right answer (***what***)

"Thinking made visible"

Performance-based Assessment

- **Part, maybe most, of the gifted child's precocity is shown in *how he or she works through a problem*, and the *types of strategies* used in the initiation, development, and consummation of a challenging task (Callahan & Miller, 2005; Renzulli, 2003; Sternberg, 2002).**

"Thinking made visible"

Performance-based Assessment

- **Performance test results are scored by trained scorers, who can be teachers, who make judgments by examining student responses and awarding points according to a formal scoring rubric with demonstrated interrater reliability, the same way that Advanced Placement essay exams are scored by trained raters**

Help with the underrepresentation problem

Performance-based Assessment

- **In South Carolina, a statewide implementation of a performance assessment component *improved underrepresented student identification by 12-18 percent* (VanTassel-Baska et al., 2002) but did fall short in terms of the later uneven standardized test performance of these students**

Krypto Task

Math Thinking Performance

Tear apart the numbers on the paper strip that you have been given:

1 2 6 4 12 8

Use some or all of the first five numbers to get an answer of 8. You may change the order of the numbers and you may use addition, subtraction, multiplication, or division. Show all the solutions you can find:

- **Using 3 numbers:**
- **Using 4 numbers:**
- **Using 5 numbers:**

Score 0 to 4

Krypto Scoring Rubric

Give 3 points for each 3-number solution, 4 points for each 4-number solution, and 5 points for each 5-number solution.

4 points: Must have at least one 5-card solution and at least 18 points

3 points: Must have at least one 5-card solution and 11-17 points

2 points: 7-10 points or above 10 without a 5-card

1 point: 3-6 points or solutions attempted, but none correct

0 points: No response

Verbal/Written Performance Task

Create a humorous title for the following picture and write a descriptive paragraph about the picture, explaining why it is funny.

Score 0 to 4

Verbal/Written Task Scoring Rubric

There are many possible responses to this task. You may wish to sort the set of student papers into two piles (strong vs. weak) and then sort into four piles in order to apply the rubric effectively. Students may write an analytical explanation of their title or a humorous story. Either approach should receive full credit.

4 points: Both title and paragraph reflect strong understanding of pictorial humor.

3 points: Both title and paragraph reflect good understanding of pictorial humor.

2 points: Title is humorous, but paragraph is limited in being able to explain humor.

1 point: Both title and paragraph lack understanding of pictorial humor.

0 points: No response.

Grades 4-8

Science Skills Performance A

- Are earthworms attracted to light? In other words, do earthworms like light? Tell how you would test this question. Be as scientific as you can as you write about your test. Write down the steps you would take to find out if earthworms like light. You may begin. (There is no time limit, but most will be through in 10-15 minutes)

http://cfge.wm.edu/publications.htm

Grades 4-8

Science Skills Performance B

- Are bees attracted to diet cola? In other words, do bees like diet cola? Tell how you would test this question. Be as scientific as you can as you write about your test. Write down the steps you would take to find out if bees like diet cola. You may begin. (There is no time limit, but most will be through in 10-15 minutes)

Fowler, M. (1990) The diet cola test. Science Scope, 13(4), 32-34.

Score 1 or 0

Science Skills Scoring Rubric

- States PROBLEM or QUESTION
- PREDICTS outcome or HYPOTHESIZES
- Lists more than 3 STEPS
- Arranges steps in SEQUENTIAL order
- Lists MATERIALS needed
- Plans to REPEAT TESTING and tells reason
- DEFINES the terms of the experiment

continues with more criteria …

Strengths and Limitations

Performance Assessment

- ✓ Improves the underrepresentation problem in GT
- ✓ Through pre- and post-testing, performance assessment may be closely aligned with curriculum objectives
- ✓ Can be developed with reliability and validity
- ✓ Open-ended format with reliable scoring can show <u>process ("how" one thinks)</u>
- × Less generalizable findings than "g" tests; results in more "uneven profile" GT admissions
- × More costly and less efficient than group testing
- × Students identified for GT only with performance tests later perform more poorly on statewide standardized tests than GT peers

Off-level Standardized Testing

- Administration of achievement tests intended for much older students (e.g., EXPLORE, SCAT, ACT, or SAT) with primary or middle school students to identify advanced students who may benefit from accelerated educational programming
- *<u>Research Finding</u>*: Students earning SAT scores at or above the 99.99th percentile before age of 13 are 50-times more likely to pursue a doctorate ten years later (Lubinski, Webb, Morelock, & Benbow, 2001)

Includes ACT, SAT, EXPLORE, SCAT

Off-level Standardized Testing

- **In 2004, nearly one-fourth of a million students in grades 3-9 participated in off-level testing by talent search programs**
- ***Some 34,000 of these students subsequently participated in various talent search educational programs***
- **Includes talent programs sponsored by Johns Hopkins CTY, Northwestern CTD, Duke TIP, and others.**

Includes ACT, SAT, EXPLORE, SCAT

Off-level Standardized Testing

- **Students that score at or above the 95th percentile on nationally-normed achievement tests are eligible to take either the Explore or SCAT (grades 2-6) or the ACT/SAT (grades 6-8)**
- ***Off-level test results can then qualify students for a variety of regional and distance online educational programs through the university talent searches***

How scores are used at the Northwestern CTD

Off-level Standardized Testing

SAT Score: Reading/Verbal SS	Intervention
230-470	➢ Enrichment at home and school in Reading
480-580	➢ Advanced classes at school in Language Arts, Writing, etc.
Above 580	➢ Accelerated / Advanced Coursework in University Talent Search Program

For a Sixth Grade Student

Strengths and Limitations

Off-level Standardized Testing

- ✓ **An intuitive way to demonstrate advanced abilities and special educational needs for educational planning, or to monitor growth**
- ✓ **An affordable way to qualify for special educational programs in talent programs**
- × **Age-norms are typically lacking**
- × **Off-level tests still lead to underrepresentation of minority students in educational programs**

Teacher Gifted Rating Scales

- **Teacher nominations/recommendations are widely used as part of the eligibility determination process around the country**
- ***Teacher biases in nominations / recommendations contribute to many "misses" as well as perpetuating the underrepresentation problem***
- **The development of a new generation of teacher-based behavior rating scales may help improve teacher nomination reliability and validity**

Teacher Gifted Rating Scales

- **Teachers tend to favor academically high achieving and behaviorally compliant students, i.e., "model gifted" students**
- **Bright students who challenge teachers or create additional work for teachers may be penalized by some teachers**
- **Likewise, students who are bored by unstimulating work or whose "overexcitabilities" are interpreted as troublesome may suffer at the hands of some teachers**
- **A failure to recognize giftedness by teachers may be a leading reason for assessment referrals among private psychologists doing GT testing**

Six Gifted Rating Scales

- Gifted and Talented Evaluation Scales (GATES; Gilliam, Carpenter, & Christensen, 1996; Pro-Ed)
- Gifted Evaluation Scale (2nd ed.; GES-2; McCarney & Anderson, 1989; Hawthorne)
- Gifted Rating Scales (GRS; Pfeiffer & Jarosewich, 2003; Pearson)
- HOPE Nomination Scale (Peters & Gentry, 2009; Available from authors at Purdue University)
- Scales for Identifying Gifted Students (SIGS; Ryser & McConnell, 2004; Prufrock Press)
- Scales for Rating the Behavioral Characteristics of Superior Students, Revised (SRBCSS-R; Renzulli et al., 2002; Creative Learning Press)

Comparative Features

Gifted Teacher Rating Scales

	GATES	GES-2	GRS-P / GRS-S	HOPE	SIGS	SRBCSS-R
Year	1996	1998	2003	2009	2004	2002
Content	Intellectual Ability, Academic Skills, Creativity, Leadership, Artistic Talent; Teacher or guardian completed	Intellectual Ability, Specific Academic Aptitude, Creativity, Leadership, Perform/Vis. Arts, Motivation; Quotient Score	Intellectual Ability, Academic Ability, Creativity, Artistic Talent, Leadership Ability, Motivation	Social and Academic Abilities	General Intellectual Ability, Language Arts, Mathematics, Science, Social Studies, Creativity, Leadership	Learning, Creativity, Motivation, Leadership, Artistic, Musical, Dramatics, Communication Precision, Communication Expressiveness, Planning, Mathematics, Reading, Technology, Science
Format	50 nine-point ratings	48 five-point ratings	60 / 72 nine-point ratings	11 six-point ratings	84 five-point ratings	126 six-point ratings
Age range	5-18 years	5-18 years	4.0-6.11, 6.0-13.11	Grades K-5	5-18 years	Grades 3-12

Comparative Features

Gifted Teacher Rating Scales

	GATES	GES-2	GRS-P / GRS-S	HOPE	SIGS	SRBCSS-R
Scores	Scale standard scores; percentile	Scale scaled scores and Total standard scores	Scale standard scores	No standard scores	Scale standard scores / Home & School	No standard scores
Norms	1,083 gifted from 32 states and Canada; 68 teacher raters	1,439 typical from 14 states, 20 school systems; problems with representativeness	375 / 600 typical; ~28 / ~68 gifted; 472 raters	1,700 typical/low income from Midwest from a larger sample of nearly 8,000	921 (school) and 774 (home) for typical sample; 1055 (school) and 811 (home) for the gifted sample	No norms; Local norms recommended; this revised edition from studies with 572 above average students.

Comparative Features

Gifted Teacher Rating Scales

	GATES	GES-2	GRS-P / GRS-S	HOPE	SIGS	SRBCSS-R
Reliability	All internal consistencies for scales > .90; teacher-rating test-retest stability ranges from .70 to .87 and is lower than for gifted than for typical or handicapped students; no interrater reliability studies	Most coefficient alphas .94 to .96 across scales; stability coefficients range from .86 to .93; interrater reliability across scales range from .69 to .91.	GTS-P internal consistency ranges .97 to .99; stability coefficients range from .91-.95; interrater reliability ranges from .70-.84 for the GRS-P and from .70-.79 for the GRS-S.	Internal consistency of .97 (Academic scale) and .95 (Social scale)	All scale internal consistencies ≥ .85 and averaging above .90; stability coefficients range from .58 to .93. Correlations between parent and teacher ratings range from .43 to .60, lower than expected for identical school and home forms.	Internal consistencies range from .84 to .91 with total scale coefficient alpha of .97; stability coefficients are high; interrater reliability was .50 for teachers from different subjects.

	GATES	GES-2	GRS-P / GRS-S	HOPE	SIGS	SRBCSS-R
Validity	Correlations with three gifted behavioral rating scales are moderate to strong with small to medium sample sizes; gifted/typical classification accuracy studied with standardization sample; no predictive validity studies.	Factor analyses problematic for five subscales; .correlations of 74 to .86 with GATES scales; no predictive validity studies	Factor analyses do not provide support for test structure (especially IA and AA scale distinction); adequate convergence with external measures of ability, achievement, creativity, artistic talent, motivation, and leadership; comparison between typicals and gifted students yielded moderate to very large score differences; predictive validity studies were promising	EFA, CFA, and MCFA support two factor test structure invariance analyses on gender, race, and income	No factor analyses to support scale structure; adequate convergent validity with other measures; comparison between typicals and gifted students yields a large mean score difference.	Exploratory PCA supported learning, creativity motivation, and leadership scales; significant predictive validity for student performance in gifted program

Comparative Features

Gifted Teacher Rating Scales

	GATES	GES-2	GRS-P / GRS-S	HOPE	SIGS	SRBCSS-R
Fairness	None	Analyses to demonstrate comparable psychometrics across racial & ethnic groups	None	Developed to identify underrepresented groups; factorial invariance demonstrated for gender, race, and income	Differential item functioning (DIF) analyses conducted to remove biased items.	None

Peters & Gentry (2008/2009)

Hope Nomination Scale

Please read the following statements and rate how frequently you observe the behaviors using the following scale:

6=always 5=almost always 4=often 3=sometimes 2=rarely 1=never

1. **Performs or *shows potential* for performing at remarkably high levels**
2. **Is curious, questioning**
3. **Is empathetic**
4. **Shows compassion for others**
5. **Has *desire* to work with advanced concepts and materials**
6. **Questions authority** *… continued*

Peters & Gentry (2008/2009)

Hope Nomination Scale

Please read the following statements and rate how frequently you observe the behaviors using the following scale:

6=always 5=almost always 4=often 3=sometimes 2=rarely 1=never

7. **Is eager to explore new concepts**
8. **Exhibits a strong sense of social justice and fairness**
9. **Uses alternative processes**
10. **Is insightful and intuitive**
11. **Thinks "outside the box"**
12. **Has intense interests**
13. **Shows outstanding talent in specific content area(s)**

Strengths and Limitations

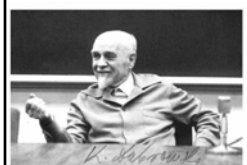
Teacher Rating Scales

- ✓ **Norm-referenced (usually) and systematic way to collect information; good curriculum alignment**
- ✓ **Variable reporting of interrater agreement, which is needed for reliable GT identification**
- ✓ **Content fairly consistent across scales**
- × **Need for local/specific norms**
- × **Poor teacher judgment was the original reason why intelligence testing needed to be developed**
- × **Behavior rating scales often lack specific behavioral anchors (e.g., student does this x times per day), so too much rating subjectivity?**

The Overexcitabilities

Dabrowski, Theory of Positive Disintegration, Overexcitabilities, the OEQ-II, and Resources

Kazimierz Dabrowski (1902-1980)



- **Polish psychiatrist, psychologist, and psychoanalyst credited with developing the *Theory of Positive Disintegration***
- ***Author of 15 books and hundreds of publications, most impossible to find in English***

In U.S. over the past 25 years, former student Michael M. Piechowski has popularized his work, as it applies to gifted education, with an emphasis on the overexcitabilities. Another former student, Bill Tillier, has preserved his legacy by disseminating his writings and creating a central website [http://positivedisintegration.com/].

Kazimierz Dabrowski (1902-1980)

- **Dabrowski, K. (1964). *Positive disintegration.* Boston: Little Brown & Co.**
- **Dabrowski, K. (1967). *Personality-shaping through positive disintegration.* Boston: Little Brown & Co.**
- **Dabrowski, K., with Kawczak, A., & Piechowski, M. M. (1970). *Mental growth through positive disintegration.* London: Gryf Publications.**
- **Dabrowski, K. (1972). *Psychoneurosis is not an illness.* London: Gryf Publications.**

Why Dabrowski Matters

- **His theory provides a framework for normalizing and positively reframing the intensity of many gifted individuals.**
- ***His theory offers a positive alternative to pathologizing or marginalizing gifted student behaviors***
- **The overexcitabilities are seen as an expected part of the journey toward one's developmental potential**

Kazimierz Dabrowski
Theory of Positive Disintegration

- **Dabrowski described five hierarchical levels of personality development and argued that in exemplary individuals, development from a lower to a higher level occurs through positive disintegration**
- ***Positive disintegration* is a breakdown of existing psychological structures due to conflicts between internal values and perceptions and external social standards, followed by a reintegration at a higher level after some internal struggle**

Kazimierz Dabrowski
Theory of Positive Disintegration

- **TPD enables some neurotic disorders (e.g., anxiety and depression) to be reconceptualized as developmental mechanisms, a mark of advancing development**
- ***Dabrowski and Abraham Maslow were friends and correspondents from 1966 through Maslow's death in 1970; Maslow's (1970) conceptualization of self-actualization is conceptually related to TPC***
- **Dabrowski's work anticipated some aspects of positive psychology (e.g., growth following adversity)**

Kazimierz Dabrowski
Developmental Potential

- **Developmental Potential is "The constitutional endowment which determines the character and the extent of mental growth possible for a given individual" (Dabrowski, 1972, p. 293). It may advance or inhibit development.**
- **Developmental Potential may be assessed through examination of**
  a. **Abilities and talents** (e.g., intelligence)
  b. **Overexcitabilities** (a higher than average sensitivity or responsiveness to experience)
  c. **Internal drive and motivation** (i.e., a "third factor" of autonomy and self-determination)

Dabrowski's Theory
Overexcitabilities

- ***Definition*: "Higher than average responsiveness to stimuli, manifested either by psychomotor, sensual, emotional (affective), imaginational, or intellectual excitability or the combination thereof" (1972, 303).**
- ***Dabrowski noted that overexcitabilities may stem from either heightened sensitivity or heightened responsiveness to experiences***

Behaviors Explained by the Overexcitabilities:
Characteristics of the Gifted

- **"TPD accounts for the development of affective characteristics associated with the gifted: emotional intensity; unusual sensitivity to the feelings of others; heightened self-awareness; feelings of being different; idealism and sense of justice; early development of inner locus of control; high expectations; perfectionism; strong need for consistency between abstract values and personal actions; advanced levels of moral judgment; early concern about death; high energy; aesthetic sensitivity." (Nelson, 1992, p. 362)**

Nelson, K. C. (1992). Kazimierz Dabrowski: Poland's Gifted 'Outsider'. In N. Colangelo, S. G. Assouline, & D. L. Ambroson (Eds.), *Talent development: Proceedings of the 1991 Jocelyn Wallace National Research Symposium on Talent Development (pp. 357-361). Unionville, NY: Trillium Press.*

Several instruments, including OEQ-II

Measurement of Overexcitabilities

- Dąbrowski tried unsuccessfully to develop tests of developmental potential.
- *Piechowski developed the original OEQ, which measured only one facet (overexcitabilities) of developmental potential.*
- The Overexcitability Questionnaire (OEQ-II) is now undergoing research. See Falk, R. F., Lind, S., Miller, N. B., Piechowski, M. M., & Silverman, L. K. (1999). The Overexcitability Questionnaire-Two (OEQII): Manual, Scoring System, and Questionnaire. (Available from the Institute for the Study of Advanced Development, 1452 Marion St., Denver, CO 80218).

Overexcitabilities

Psychomotor

- ***Psychomotor OE*** **is characterized by high levels of physical activity, surplus of energy, and a proclivity to experience through movement.**
- **From the OEQ-II:**
  - I thrive on intense physical activity, e.g., fast games and sports.
  - I am the type of person who has to be active—walking, cleaning, organizing, doing something.
  - If an activity is physically exhausting, I find it satisfying.

Overexcitabilities

Sensual

- ***Sensual OE*** **is enhanced sensitivity from all senses: taste, touch, sound, sight and smell. It may be pleasurable or painful; soothing or irritating, harmonious or discordant.**
- **From the OEQ-II:**
  - I delight in colors, shapes, and textures of things more than other people do.
  - I feel music throughout my whole body.
  - The difference in aromas is interesting.

Overexcitabilities

Imaginational

- ***Imaginational OE*** **is expressed through a high level of creative output, ideas and images, or productions; "creative juices" are flowing.**
- **From the OEQ-II:**
  - I like to daydream.
  - My pretend world is very real to me.
  - Things that I picture in my mind are so vivid that they seem real to me.
  - Words and sounds create unusual images in my mind.

Overexcitabilities

Intellectual

- ***Intellectual OE*** **involves seeking answers, a sustained quest for knowledge, insatiable curiosity, a tendency to approach situations cognitively and analytically, and an appreciation of complexity.**
- **From the OEQ-II:**
  - I observe and analyze everything.
  - Theories get my mind going.
  - I love to solve problems and develop new concepts.
  - I like to dig beneath the surface of issues.

Overexcitabilities

Emotional

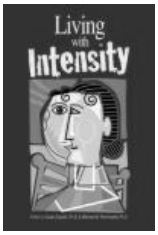
- ***Emotional OE*** **is recognized as intense feelings, strong and deeply felt connections in relationships, empathy and attachment, and a heightened experience of depression or loss as well as elation or joy.**
- **From the OEQ-II:**
  - I feel other people's feelings.
  - It makes me sad to see a lonely person in a group.
  - I have strong feelings of joy, anger, excitement, and despair.
  - My strong emotions move me to tears.

OEQ-II and OEQ-2C

Overexcitability Questionnaire-II

- The OEQ-II (middle school to college ages) and OEQ-2C (for ages 6-14) have been developed.
- These new measures remain research instruments and should not yet be used to make clinical or educational decisions.
- For more information, email Dr. Frank Falk at rfalk@uakron.edu

Overexcitability Readings



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Greater Overexcitability in Gifted?

More Research Needed!

- Pyryt (2008) reviewed the research findings on overexcitability and the gifted and concluded that gifted individuals are more likely than those not identified as gifted to show signs of intellectual OE, but based upon the research strategies and testing done to date, the gifted do not consistently demonstrate "the big three," intellectual, imaginational and emotional OE.

Finis

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