

Identification of Gifted Minority Students: A Simple Solution

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1

My Background

- Interest in intelligence and instruction
- Experiences at UGA
- Test development
- Need for science to support practice
- Psychometrics
- Evidence based interpretation
- My personal perspective on being a researcher and test developer
- Why this work?



2

My Approach

- I began my work in gifted in 1985 with the publication of the first edition of the Naglieri Nonverbal Ability Test (NNAT)
- Then, by doing research on special groups
 - Does the NNAT work for minorities?
 - Does the NNAT work for ELL students?
 - Does the NNAT work for males and females?

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3

Does the NNAT work for minorities?

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Comparison of White, African American, Hispanic, and Asian Children on the Naglieri Nonverbal Ability Test

Jack A. Naglieri and Margaret E. Ronning
Ohio State University

This study examined differences between 3 matched samples of White ($n = 2,306$) and African American ($n = 2,306$), White ($n = 1,176$) and Hispanic ($n = 1,176$), and White ($n = 466$) and Asian ($n = 466$) children on the Naglieri Nonverbal Ability Test (NNAT). A. Naglieri, 1997a). The groups were selected from 22,620 children included in the NNAT standardization sample and matched on geographic region, socioeconomic status, ethnicity, and type of school setting (public or private). There was only a small difference between the NNAT scores for the White and African American samples (d ratio = .23) and minimal differences between the White and Hispanic (d ratio = .17) and between the White and Asian (d ratio = .02) groups. The NNAT was moderately correlated with achievement for the total sample and correlated similarly with achievement for the White and ethnic minority groups. The median correlation of NNAT with reading was .22 and NNAT with math was .13 across the samples. Results suggest that the NNAT scores have use for fair assessment of White and minority children.

Accurate assessment of intelligence for people from diverse cultural and linguistic backgrounds has been a topic of great debate and interest for some time (Sattler, 1988). To effectively evaluate diverse populations, researchers have widely used tests that comprise nonverbal, geometric designs arranged in a progressive matrix because they are considered culturally reduced in their content

as psychometric issues such as internal and test-retest reliability (Jensen, 1980; Naglieri, 1985a, 1985b; Naglieri & Prewelt, 1990; Nicholson, 1989). In response to these needs, other progressive matrix tests have become available. This includes the Test of Nonverbal Intelligence (Brown, Sherbenou, & Johnson, 1980), the Matrix Analogies Test—Short Form (MAT-SF; Naglieri, 1985b) and Expanded Form (MAT-EF; Naglieri, 1985a), the Naglieri

Does the NNAT work for minorities?

- Samples of White and Minority groups selected from total group of 89,600 matched on:
 - Gender
 - Region
 - SES
 - Urbanicity
 - Ethnicity
 - Public/private school setting



5

Does the NNAT work for minorities?

	N	Mean	Diff
White	2,306	99.3	
Black	2,306	95.1	4.2
White	1,176	101.4	
Hispanic	1,176	98.6	2.8
White	466	103.6	
Asian	446	103.9	0.3



6

Does the NNAT work for minorities?

- Jack A. Naglieri & Donna Ford (2003).
- Increasing Identification of Gifted Minority Children Using the Naglieri Nonverbal Ability Test (NNAT).
- Gifted Child Quarterly.

GIFTED IDENTIFICATION

Addressing Underrepresentation of Gifted Minority Children Using the Naglieri Nonverbal Ability Test (NNAT)

Jack A. Naglieri
George Mason University

Donna Y. Ford
The Ohio State University

ABSTRACT

A persistent problem in education is the underrepresentation of diverse students in gifted education programs. Many educators attribute the poor participation of diverse students in gifted programs to the ineffectiveness of standardized tests in capturing the ability of these students. Thus, a primary agenda of school selection committees is to find more culturally sensitive measures. This study examined the effectiveness of the Naglieri Nonverbal Ability Test (NNAT) in identifying gifted Black and Hispanic students in comparison to White students. The sample was comprised of

attribute the problem to standardized tests, contending that these tests fail to assess the strengths and abilities of culturally, ethnically, and linguistically diverse populations (e.g., Frasier et al., 1995). Support for this assertion comes from reports showing that Black, Hispanic, and Native American students consistently score lower than White students on traditional standardized tests (Bosly, 1992; Sattler, 1988).

Despite the fact that intelligence tests such as the Wechsler Intelligence Scale for Children-Third Edition

PUTTING THE RESEARCH TO USE

7

Does the NNAT work for minorities?

- Sample:
 - 19,210 children (fall 1995 NNAT sample)
 - Grades K to 12
 - Representative of US according to:
 - geographic region, socioeconomic status, ethnicity, school setting (public or private)
- We examined identification rates for groups of White (n = 14, 316), Black (n = 2,880), and Hispanic (n = 2, 014) students 5 – 18 years of age

Does the NNAT work for minorities?

GIFTED IDENTIFICATION

Table 2
NNAT Scores

	White		Black		Hispanic		Expected %
	n	%	n	%	n	%	
110 & above	1,571	10.3	269	9.4	190	9.5	9.0
125 & above	906	5.6	145	5.1	88	4.4	5.0
130 & above	467	2.5	75	2.6	46	2.3	2.0
135 & above	190	1.1	42	1.5	18	0.9	1.0
140 & above	90	0.6	19	0.6	9	0.4	0.4
Total Sample n	14,141		2,863		1,991		

Note. Expected percentage values are those associated with normal curve probabilities.

9

Does the NNAT work for ELL students?

Naglieri, Booth, & Winsler (2004). Comparison of Hispanic Children with and without Limited English Proficiency on the NNAT. *Psychological Assessment.*

BRIEF REPORTS

Comparison of Hispanic Children With and Without Limited English Proficiency on the Naglieri Nonverbal Ability Test

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George Mason University

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Adam Winsler
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Hispanic children with (n = 141) and without (n = 145) limited English proficiency were given the Naglieri Nonverbal Ability Test (NNAT; J. A. Naglieri, 1997a) and the Stanford Achievement Test—10th edition (SAT-10; 1991). The group was selected from the NNAT examination sample (N = 12,021) and matched on geographic region, gender, socioeconomic status, minority, and ethnicity. There was a very small difference in age, t(1) = 0.13 between the NNAT retained scores for the children with limited English proficiency (M = 88.1) and those without limited English proficiency (M = 90.7). The NNAT scores were analyzed and related to achievement for the groups. The sample of children with limited English proficiency scored consistently lower than the SAT-10 students and their achievement scores suggest that the NNAT may be useful for the assessment of Hispanic children with and without limited English proficiency.

Assessment of intelligence for persons with limited English language skills has been an important issue since the familiar verbal-scorable organization of tests was initially made popular in the Army Alpha and Beta tests (Yerkes & Yerkes, 1909). The value of a nonverbal test for evaluation of diverse populations was noted by Yerkes and Yerkes more than 80 years ago: "Men who do not know the verbal level of test in the successful world in order that they may be trained or otherwise advantageously with English may be included." (p. 19) The Beta test and other nonverbal tests have, therefore, served an important role in the assessment of diverse populations because their content is

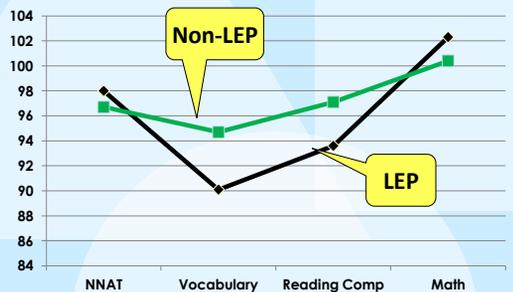
Recent research on the nonverbal approach to measuring general ability has shown that the Naglieri Nonverbal Ability Test (NNAT; Naglieri, 1997a) can be an effective way to assess general ability, yields small race and ethnic group differences, and shows good predictors of achievement. Naglieri and Runeson (2006) provided a detailed study of mean score differences between matched samples of White (n = 2,500) and Black (n = 2,100), White (n = 1,170) and Hispanic (n = 1,150), and White (n = 400) and Asian (n = 400) children on the NNAT. Only small differences were found between the

10

Does the NNAT work for ELL students?

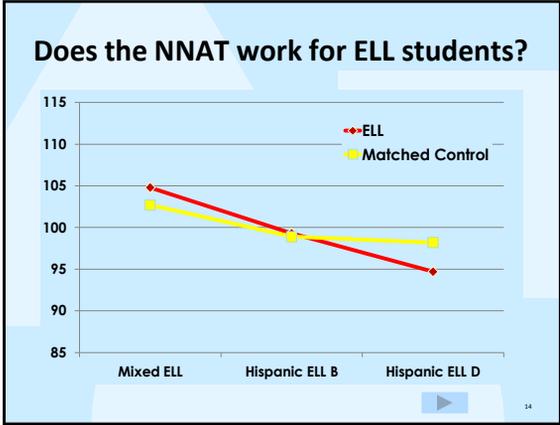
- 148 Hispanic children with limited English language proficiency
 - 98 % from West and South
 - 53 % males
 - 82% Low and Low Middle SES
 - 41% Urban settings
- 148 Hispanic children without limited English language proficiency
 - 98 % from West and South
 - 53 % males
 - 82% Low and Low Middle SES
 - 41% Urban settings

Does the NNAT work for ELL students?



Does the NNAT work for ELL students?

- Naglieri Nonverbal Ability Test – Individual Manual (2003)
- English Language Learners (ELL)
 - N = 187
 - ELL criteria
 - Native language was not English
 - they spoke a language other than English at home
 - The examinee's parents had resided in the United States less than 6 years
- Two groups of ELL students
 - native language was not English or Spanish
 - native language was Spanish



Does the NNAT work for males & females?

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INTELLIGENCE

Intelligence 34 (2006) 253–260

Developmental gender differences on the Naglieri Nonverbal Ability Test in a nationally normed sample of 5–17 year olds

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Available online 14 November 2005

Abstract

Lynn [Lynn, R. (2002). Sex differences on the progressive matrices among 15–16 year olds: some data from South Africa. *Personality and Individual Differences* 33, 669–673.] proposed that biologically based developmental sex differences produce different IQ trajectories across childhood and adolescence. To test this theory we analyzed the Naglieri Nonverbal Ability Test (NNA; Naglieri, J. A. (1997). *Naglieri Nonverbal Ability Test-Individual Form*. San Antonio: Harcourt Assessment Company.) standardized sample of 79,790 children and adolescents in grades K–12, which was representative of the US census on several critical demographic variables. NNAT data were consistent with Lynn's developmental theory of gender differences insofar as (a)

Does the NNAT work for males & females?

Table 2
Chronological Ages and NAI Scores for Males and Females by NNAT Levels

Levels	Males			Females			NAI difference
	M	SD	n	M	SD	n	
A	100.0	15.5	2,912	98.9	16.1	2,803	1.1
B	99.6	16.0	3,412	100.9	15.8	3,384	-1.3
C	98.9	15.4	4,044	98.6	15.5	4,068	0.3
D	100.8	16.7	8,016	100.5	15.5	7,984	0.3
E	99.0	16.5	7,716	99.9	15.4	7,556	-0.9
F	99.6	17.1	8,878	100.3	15.9	9,286	-0.7
G	100.3	17.0	4,656	99.6	14.7	5,065	0.7

Reaction from the Gifted Field

- Many school districts around the country use NNAT for universal screening of gifted students, especially in locations where there is diversity
- But opposition emerged

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An Unexpected Objection to NNAT

Gifted Child Quarterly, 2005, V 49

REVIEW OF NAGLIERI AND FORD

Review of Naglieri and Ford (2003): Does the Naglieri Nonverbal Ability Test Identify Equal Proportions of High-Scoring White, Black, and Hispanic Students?

David F. Lohman
University of Iowa

ABSTRACT

In a recent article in this journal, Naglieri and Ford (2003) claimed that Black and Hispanic students are as likely to earn high scores on the Naglieri Nonverbal Ability Test (NNAT; Naglieri, 1997a) as White students. However, the sample that Naglieri and Ford used was not representative of the U.S. school population as a whole and was quite unrepresentative of ethnic sub-

den, especially over ability tests that also have verbal and quantitative sections. They argue that, because verbal and quantitative abilities are developed through schooling, tests that measure these abilities would be inappropriate for identifying academically gifted minority students.

Strong claims have been made for the NNAT. The test is said to be culture fair (Naglieri, 1997b); to show, at most, small and inconsequential mean differences between minority and White students (Naglieri &

Our Reply

Gifted Child Quarterly, 2005, V 49

RESPONSE TO LOHMAN

Increasing Minority Children's Participation in Gifted Classes Using the NNAT: A Response to Lohman

Jack A. Naglieri *George Mason University* Donna Y. Ford *Vanderbilt University*

ABSTRACT

In a previous article, we (Naglieri & Ford, 2003) provided evidence from a large-scale study that similar proportions of White, Black, and Hispanic children would be identified as gifted using the Naglieri Nonverbal Ability Test (NNAT; Naglieri, 1997). Lohman (2005) has taken issue with our conclusions and our methods. We provide several responses to diverse populations of gifted children. Second, it is also well known that the other author is an educator who has worked more broadly within the area of gifted education to address the persistent problem of minority student underrepresentation. Both of us have worked to increase representation of minority children in classes for the gifted and have provided many research papers, conceptual papers, and presentations on this topic. Our positions and goals are clear.

First, we find the fact that minority children are

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The Essence of the Disagreement

- Is gifted high ability regardless of academic skill level?
- Or is gifted better described as "academically gifted" or what Naglieri, Brulles & Lansdowne (2011) term "talented"

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Arguments continue... but now they are a moot point

Court Decision about Testing ELL Students for Gifted Programs

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Illinois School District U-46

IN THE UNITED STATES DISTRICT COURT FOR THE NORTHERN DISTRICT OF ILLINOIS EASTERN DIVISION

DANIEL, DINAH and DEANNA MCFADDEN,)		
minors, by their parent and next friend, Tracy))	
McFadden, KAREN, RODOLFO and KIARA))	
TAPIA, minors, by their parent and next friend,))	
Mariela Montoya; JOCELYN BURCIAGA, minor,))	
by her parent and next friend, Griselda Burciaga;))	
and KASHMIR IVY, minors, by their parent))	
and next friend, Beverly Ivy; KRISTIANNE))	
SIFUENTES, minors, by her parent and next))	
friend, Irma Sifuentes,))	
Plaintiffs,))	No. 05 C 0760
v.))	Judge Robert W. Gittleman
BOARD OF EDUCATION FOR ILLINOIS))	
SCHOOL DISTRICT U-46,))	
Defendant.))	

22

Illinois School District U-46

- Main question:
 - Does the District's gifted program unlawfully discriminate against Minority Students?

Whether there is any merit to the District's argument depends on whether the named plaintiffs' claims are defined generally or specifically. Their general claims are that U-46 is a discriminatory school district that acts to keep whites and Minority Students separate. The District accomplished this, according to plaintiffs, in many ways, but the net result is that each Minority Student suffered the indignities of segregation and, under Brown v. Bd. of Education, 347 U.S. 483 (1954), each Minority Student in the District would have standing to challenge all of the segregational aspects and actions of the District.

23

Illinois School District U-46

- Plaintiffs argued that the testing was faulty...

challenge the manner in which the District identified gifted students. Specifically, plaintiffs spent a large part of their case establishing that the District's method of identifying gifted students effectively eliminated from consideration many Minority Students simply because the tests used by the District measured achievement based on verbal skills. According to plaintiffs, every Minority Student, particularly Hispanics, were tested under these faulty procedures.

24

Illinois School District U-46 (pg. 22)

The District's elementary school children are tested and identified for the gifted program while they are in the second and third grades. The elementary gifted program begins in grade four and continues through grade six.¹⁶ The "mainstream" program run by the District is known as SWAS ("school within a school"). Children who are in the SWAS program are then tested in the sixth grade to see whether they wish to and are qualified to participate in the middle school gifted program. For many years, the District has run a separate program especially for Hispanic students who are identified as gifted. This program is known as SET/SWAS ("SET" stands for "Spanish English Transition"), and its classes are taught in Spanish and English by bilingual teachers. SWAS classrooms are located in three elementary schools that plaintiffs claim are predominately white. SET/SWAS classrooms are located in two schools that plaintiffs claim are predominately Minority. Both the SWAS and SET/SWAS programs are voluntary, and both teach the same academic curriculum.

Illinois School District U-46 (pg. 23)

➤ Court decision: A segregated program for gifted Hispanic students was not necessary

The District's reasoning behind operating a separate, segregated program is that, in its view, these gifted students were not English proficient enough to perform well in the higher achieving gifted program classes. Although this sounds like it might be a debatable educational judgment, the court finds that the District has not met its burden of proving that a segregated program like SET/SWAS is necessary to educate gifted Hispanic students. Put another way, the District has failed to establish that the SET/SWAS program was narrowly tailored to further a compelling governmental interest.

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26

Illinois School District U-46 (pg. 24)

The students for the mainstream elementary SWAS program are identified initially by scoring 92%²¹ or greater on an achievement test known as the MAP test,²² which plaintiffs' witnesses credibly demonstrated favored children with higher verbal skills and disfavored Minorities. Thus, gifted children for whom English is a second language would likely score lower on a MAP test than other available tests such as the non-verbal, culturally neutral Naglieri Nonverbal Aptitude Test, which plaintiffs' expert testified identified gifted students without a bias towards those students with higher English verbal skills.

27

Illinois School District U-46 (pg. 24)

Although the parties presented conflicting evidence regarding the degree to which the District relied on the MAP scores to identify children for the elementary SWAS program, the court finds that the weight of the evidence supports plaintiffs' contention that the MAP scores were the primary tool used to place students in elementary SWAS. Thus, unless a child scored 92% or more on the MAP, he or she was generally not considered for further testing and evaluation to determine whether he or she was eligible for the mainstream gifted SWAS program. Children were chosen for the SET/SWAS program by their scores on the non-verbal Naglieri test, a Spanish language achievement test (Logramos) and classroom observations by teachers and specialists, along with their MAP scores.

28

Illinois School District U-46 (pg. 25)

The results of this process were predictable. For example, in the school year 2006-2007-- and 1,363 African-American students constituted 6.3% -- only five of the 231 students enrolled in the mainstream SWAS program (2%) were Hispanic, and only 2 students (less than 1%) were African-American. Similarly low numbers were recorded in the school years from 2007 through 2009. Likewise, in middle school SWAS, only 20% of the students were Hispanic and 2% were African-American in the school year 2006-2007. Similarly disparate participation was recorded in middle school, and even worse participation in high school gifted programs by Minority Students were recorded in subsequent school years.²³ Although the District takes issue with some of the methodology employed by plaintiffs in offering these statistics, there is no doubt that Minority Students do not participate in the mainstream gifted programs in District U-46 at anything close to their proportion of the District's population.²⁴

Illinois School District U-46 (pg. 25)

Because much of the evidence about the District's gifted program was presented through the parties' respective expert witnesses (plaintiffs' Dr. Donna Ford and defendant's Dr. [REDACTED]), the court will briefly discuss these experts. Initially, the court notes that both Dr. Ford and Dr. [REDACTED] are highly qualified, experienced professionals in the subject of gifted education. Based on their demeanor at trial and the thoroughness of their analyses, however, the court credits Dr. Ford's testimony over that of Dr. [REDACTED], in the many areas about which they disagree. Dr. [REDACTED], unlike Dr. Ford, appeared to be totally biased in favor of the District, improvement. She could find little fault with any aspect of the District's gifted program, and generally refused to acknowledge the obvious distinctions between the segregated SET/SWAS and the mainstream SWAS programs. Dr. [REDACTED]'s demeanor on the witness stand and reluctance to respond forthrightly to pertinent questions by plaintiffs' counsel diminished her credibility with the court.

Illinois School District U-46

Dr. Ford, on the other hand, demonstrated a superior knowledge of the subject and in fact authored the NAGC's²⁷ protocol used to identify children for gifted programs. In plaintiffs' Ex. 120, the NAGC's position paper titled "Using Tests to Identify Gifted Students," the NAGC warned against using a single test (such as the MAP) to include or exclude a child for gifted education, because every standardized test contains biases that could skew the results. Although the District used what it termed a weighted "matrix" to identify students for the mainstream SWAS program that included the MAP scores, performance on the Cogat²⁸ test, and teacher and parent recommendations, the court credits Dr. Ford's opinion that this procedure produces discriminatory results because it relies too heavily on achievement criteria. As plaintiffs have demonstrated, a child can be a high achiever without being gifted, and can be gifted without being a high achiever.

²⁸The Cogat (Cognitive Abilities Test) is another widely-used achievement test that emphasizes verbal skills.

Illinois School District U-46 (pg. 27)

Dr. Ford credibly opined that the best way to identify gifted children, as recognized by the NAGC, is to measure intelligence non-verbally (with a test such as the Naglieri) with language supports for children whose first language is not English. If a test such as the MAP is used, setting a standard of 90% or greater (as did the District) is far too high given cultural and language impediments to verbal skills; in Dr. Ford's opinion, if such a test is used at all, the threshold should be 80% rather than 90%. In addition, Dr. Ford found, and the court credits her testimony, that teacher recommendations are unreliable measures when used as an initial screening to identify gifted children. Although all of these criteria can be used in a "matrix" or mix of identifying information, over-reliance on verbal testing, such as utilized by the District, will exclude many gifted Minority Students.

Illinois School District U-46 (pg. 27)

In Dr. Ford's opinion, which this court credits, the disproportionately low number of minority children in the mainstream gifted SWAS program proves that the District's method of testing is discriminatory. Although Dr. Ford testified that, ideally, participation in gifted programs by minorities would roughly equal their proportion of the student population, she recognized that a 20% allowance for cultural differences and voluntary exclusion from gifted programs by minorities was to be expected. Thus, with a population of approximately 40% Hispanic, the District should expect approximately 32% of the children in its mainstream gifted program to be Hispanic. The fact that only 2% of the children in SWAS were Hispanic demonstrated to Dr. Ford, and the court, that the District's method of identifying gifted Minority Students was flawed and resulted in an obvious disparate impact on those students by separating them from their gifted white peers. Indeed, both sides in this case agree that children for whom

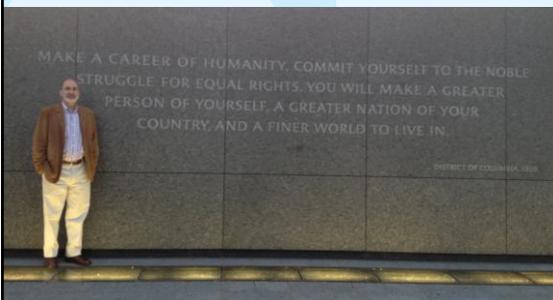
Illinois School District U-46

➤ Conclusions

students – Hispanic and Black students for SWAS. Judge Gettleman found discrimination regarding (a) tests for screening and for identification, (b) designated cutoff scores for screening and identification, (c) use of both verbal and math scores at arbitrary designated levels for screening and for identification, (d) use of weighted matrix, as well as content and criteria in weighted matrices that favored achievement and traditional measures, (e) too little reliance on a nonverbal test (Naglieri Nonverbal Ability Test) for admission to SWAS, (f) re-testing Hispanic students for middle school gifted program, (g) timing of testing, (h) use of parental referrals, and (i) use of teacher referrals (see Table 2).

34

Dr. Martin Luther King Make a career of humanity...



Thank you !

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35