

# Longitudinal Insights in the Use of the Naglieri Nonverbal Ability Test - NNAT



By Kathleen M. Stone, Ph.D.

School District 105 – La Grange, Illinois

**The Seventh Biennial Wallace National  
Research Symposium on Talent  
Development**

**May 23 – 25, 2004**



# ***Naglieri Nonverbal Ability Test (NNAT)***

---

- Brief, culture-fair.
- Nonverbal measure of school ability.
- Based on testing method - figural matrices.
- Designed to assess ability without requiring the student to read, write, or speak.
- Student must rely on reasoning and problem-solving skills.
- Items selected to ensure fairness across gender, race, and ethnicity – very diverse populations.
- Composed of universal Geometric shapes.



# Organization of NNAT

---

- Seven Levels – Kindergarten – Grade 12
- A Kindergarten
- B Grade 1
- C Grade 2
- D Grades 3 and 4
- E Grades 5 and 6
- F Grades 7, 8 and 9
- G Grades 10, 11, 12



# NNAT ITEMS

---

- 38 Items in each level.
- Specific Types of Problems form Clusters:
  - Pattern Completion (PC)
  - Reasoning by Analogy (RA)
  - Serial Reasoning (SR)
  - Spatial Visualization (SV)



# NNAT - CLUSTERS

---

- **PATTERN COMPLETION** – Complete pattern by determining general orientation & design details of missing portion.
- **REASONING BY ANALOGY** - Recognize logical relationship between several geometric shapes.
- **SERIAL REASONING** – Recognize sequence of shapes & changes in sequence.
- **SPATIAL VISUALIZATION** – Recognize how two or more designs look when combined.



# NNAT - SCORING

---

- NNAT yields a total score - NAI
- Reliable predictor of student's academic success
- Raw Score - 38 Items
- Standard Score
- Percentile Rank by Age
- Nonverbal Ability Index (NAI)



# DIRECTIONS FOR ADMINISTERING the NNAT

---

- There is a piece missing in the puzzle. One of the answers goes on the question mark to finish the puzzle.
- Look at every picture carefully and pick the answer you think is best.
- Do as many as you can.
- If you want to change your answer, erase the one you chose first and fill in the circle of the new one.
- Work on one page at a time.
- **TIMING:** 30 Minutes



# LONGITUDIAL REVIEW

---

## MAT- SF – Matrix Analogies Test (Short Form)

- 1990 - Sept. Grade 1
- 1991 - Sept. Grade 1
- 1992 - Sept. Grade 1
- 1993 - Sept. Grade 1
- 1994 - Sept. Grade 1
- 1995 - Sept. Grade 1
- 1996 - May KG

## NNAT – A & B

- 1997 - May KG A
- 1998 - May KG A, B
- 1999 - May KG A, B
- 2000 - May KG A, B
- 2001 - May KG A, B
- 2002 - May KG A, B
- 2003 - May KG A, B
- 2004 - May KG A, B





# 1996 Qualitative Study (Stone)

*Factors Affecting the Assessment of Bi-Lingual Mexican-American Students Using a Non-Verbal Test of Reasoning*

RESEARCH QUESTION:

*Why might a non-verbal test of reasoning have limitations in assessing the reasoning ability of bilingual Mexican-American students?*



# RELATED QUESTIONS

---

- *How do bi-lingual Mexican-American children think when solving problems on a non-verbal test of reasoning?*
- *What factors besides language might limit test performance?*
- *Does training in testing strategies affect test performance?*



# ADDITIONAL FACTORS

---

- MOTIVATION
- LANGUAGE  
(English & Spanish)
- EXPERIENCE WITH PATTERNS
- TEST-TAKING SKILLS
- VERBALIZATION
- IMPULSIVITY  
Slow, patient and persevering when interested, rather than quick and clever.
- ABSTRACT REASONING
- LEARNING STYLE



# TESTING MODIFICATIONS

---

- Walls – Office Work – Use of game boards -  
“Keep your eyes in your office.”
- Colored Paper as Bookmark (1/2 sheet)
- Circle whole piece rather than dot -  
(kinesthetic)
- Whole group stays together -  
(reduces impulsivity)  
“Brown paper up.”  
“Brown paper down.”  
“One, Two, Three, turn the page!”  
(Verbalization)



# TESTING MODIFICATIONS

---

- “Wait” and “Okay” if anyone needs time
- Verbalization “Easy!” – Thumbs UP!
- Simple comment on some puzzle designs - waves, target, etc.
- Same direction: “What piece fits best? Notice the *pattern*.”
- Additional Clue: “How does it *change*?”
- Don’t know? “Take a *smart guess*!”



# TESTING MODIFICATIONS

---

- Put “X” on answer if you change answer.
- Spanish for all directions for ELL students.
- Practice sheets given to KG teachers ahead of time to create comfort level with visual problem-solving.
- A Test for all KG students
- B Test for higher scoring students.  
B Test completed individually by students.



# SUPPORT FOR USE OF NNAT

---

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

Jack A. Naglieri, Donna Y. Ford

Fall of 1995 – Sample 20,270 - Black, White, Hispanic

- *Reaching New Horizons – Gifted & Talented Education for Culturally & Linguistically Diverse Students*

Jaime A. Castellano, Eva I. Diaz – c. 2002



# NNAT A/B - 16 REPETITIONS

---

- NNAT - B1 = A1
- NNAT - B2 = A9
- NNAT - B3 = A13
- NNAT - B5 = A11
- NNAT - B6 = A12
- NNAT - B7 = A15
- NNAT - B8 = A17
- NNAT - B9 = A18
- NNAT - B10 = A16
- NNAT - B11 = A14
- NNAT - B14 = A25
- NNAT - B20 = A29
- NNAT - B26 = A32
- NNAT - B28 = A35
- NNAT - B31 = A34
- NNAT - B34 = A37