THE IMPACT OF NATIVE LANGUAGE VS. ENGLISH-ONLY INSTRUCTION ON COGNITIVE DEVELOPMENT AND TEST PERFORMANCE

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Improving Education for English Learners with Special Needs: Promising Practices and Current Challenges

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PARTICIPANTS

- 34 ELL 3rd and 4th graders from same bilingual school in rural district.
- *Batería-III Woodcock-Muñoz Pruebas de Habilidades Cognitiva,* the Spanish version of the Woodcock-Johnson III Tests of Cognitive Abilities was used to assess the participants.
- The norm sample consisted of 1,413 subjects who were native Spanish speakers living in Latin America, Puerto Rico, Spain or the United States. Of those, only 279 lived in the U.S.

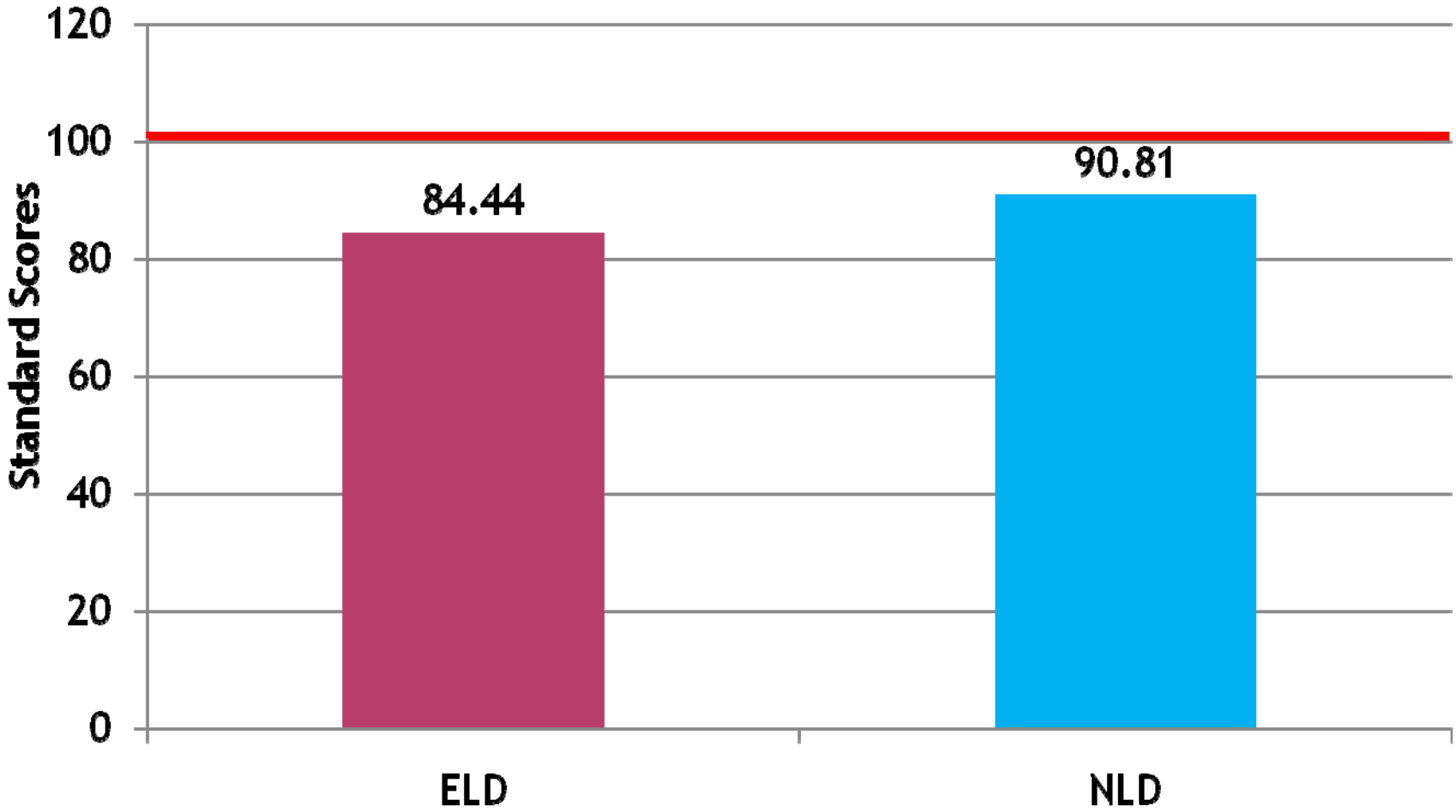
METHOD

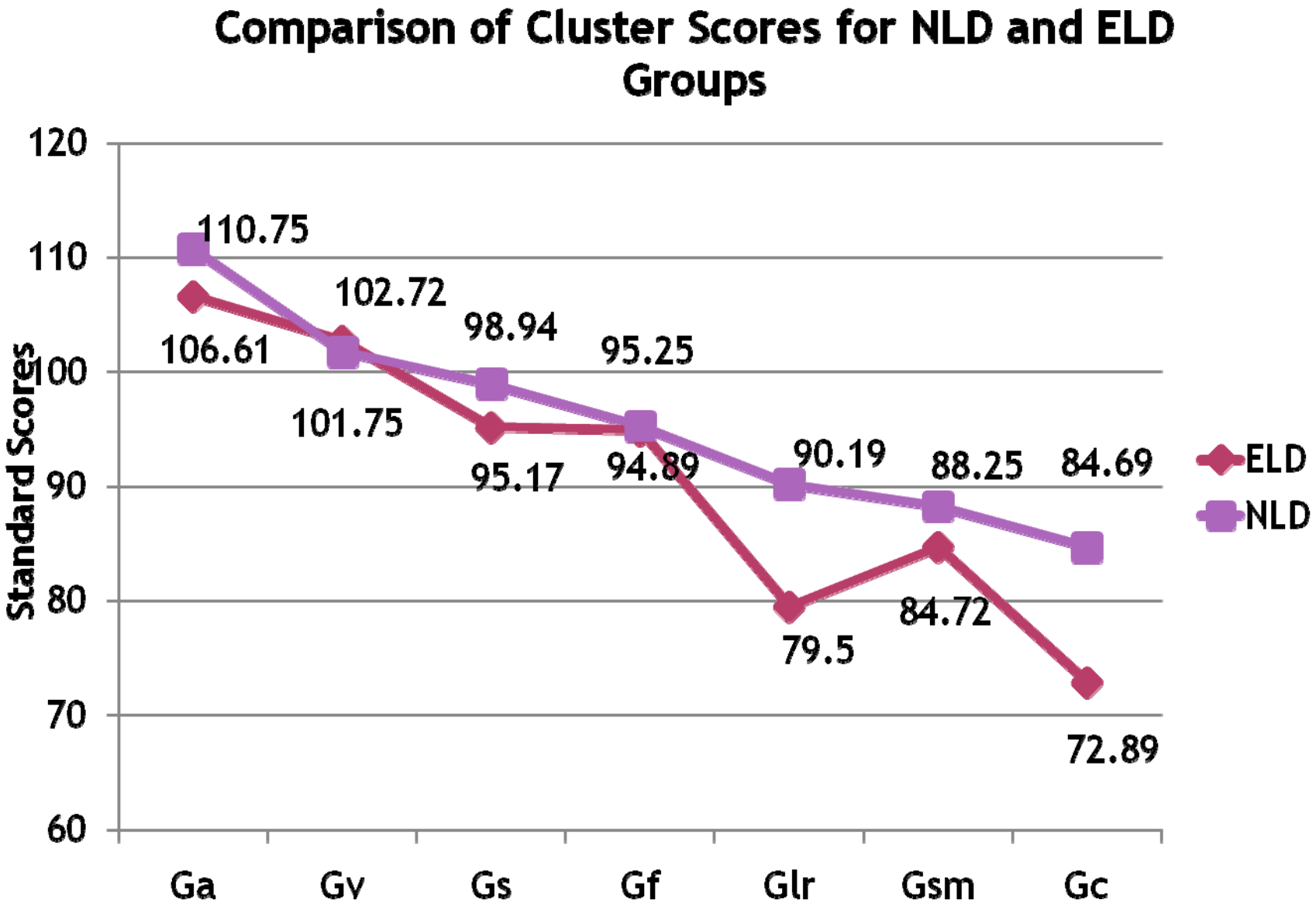
- A cadre of six bilingual, Spanish-speaking licensed school psychologists with at least 5 years of experience in bilingual assessment administered received formal training prior to assessing the participants.
- Each participant's scores were input into the Compuscore computerized program for the *Batería-III.*
- Statistical analysis were conducted primarily with t-tests using an alpha (p) level of .05.

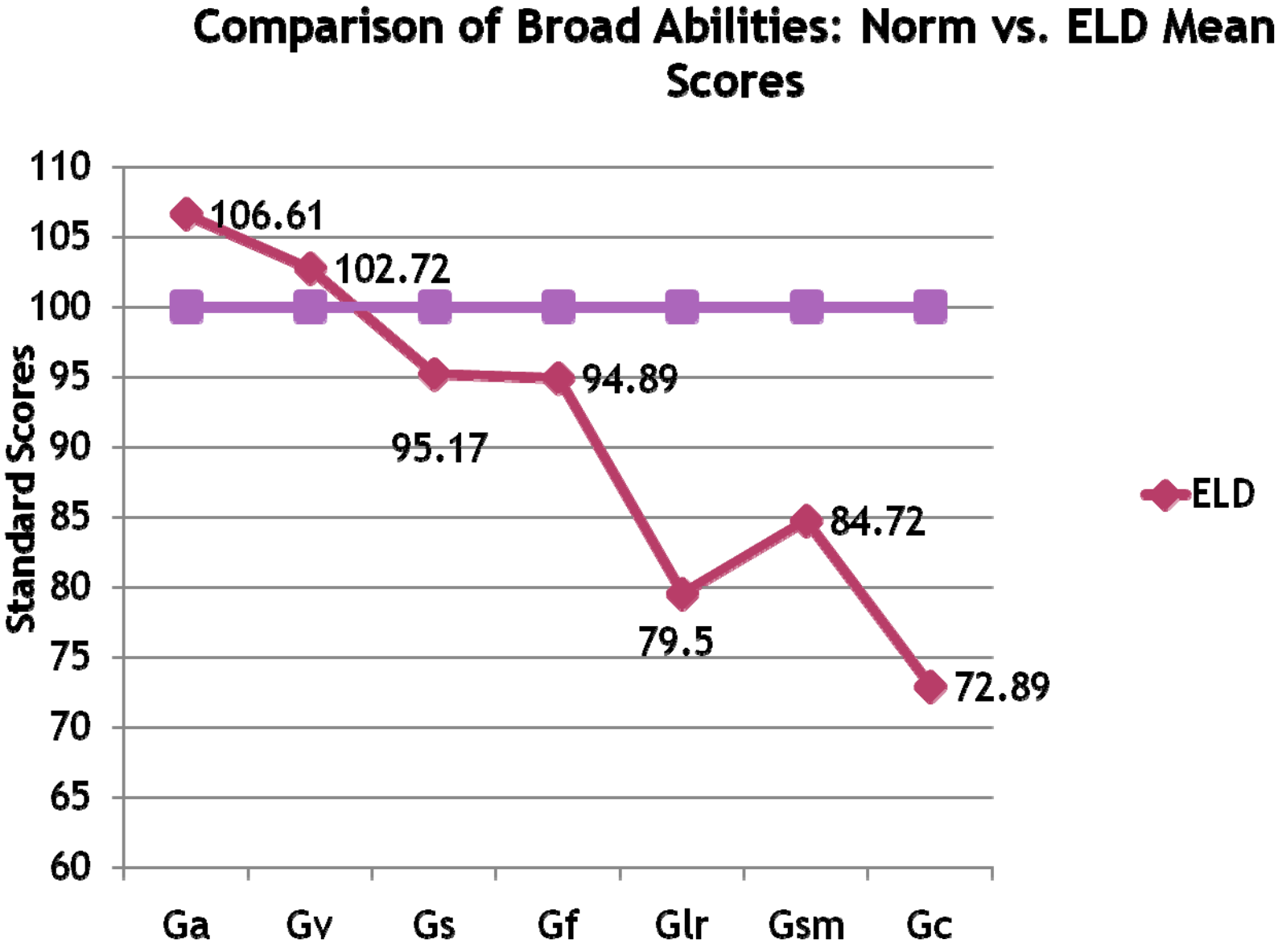
NULL HYPOTHESIS

- There should be no difference in the performance of the NLD and ELD groups if they are cognitively developing similarly.

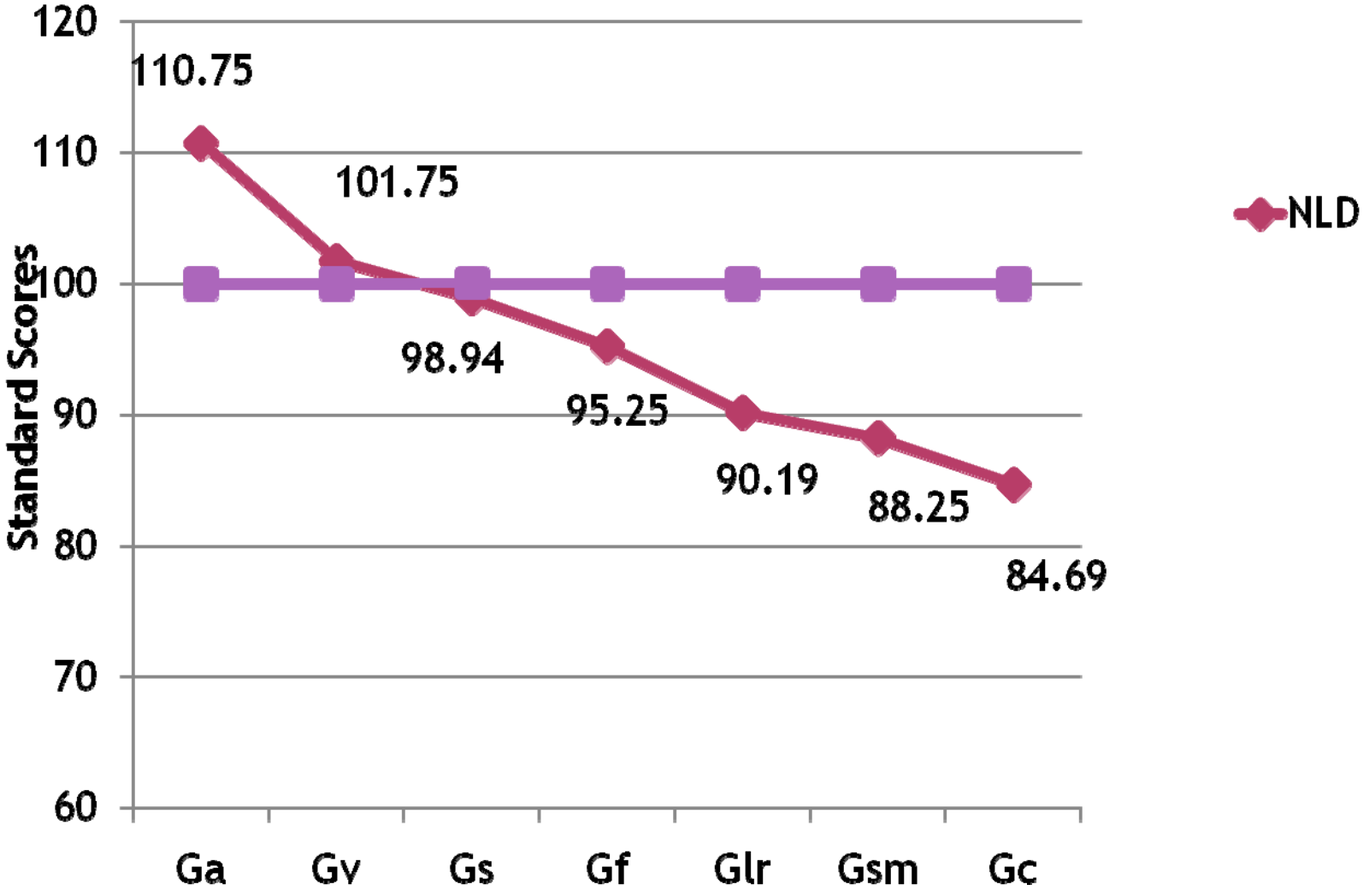
Comparison of GIA Mean Score for NLD and ELD Groups

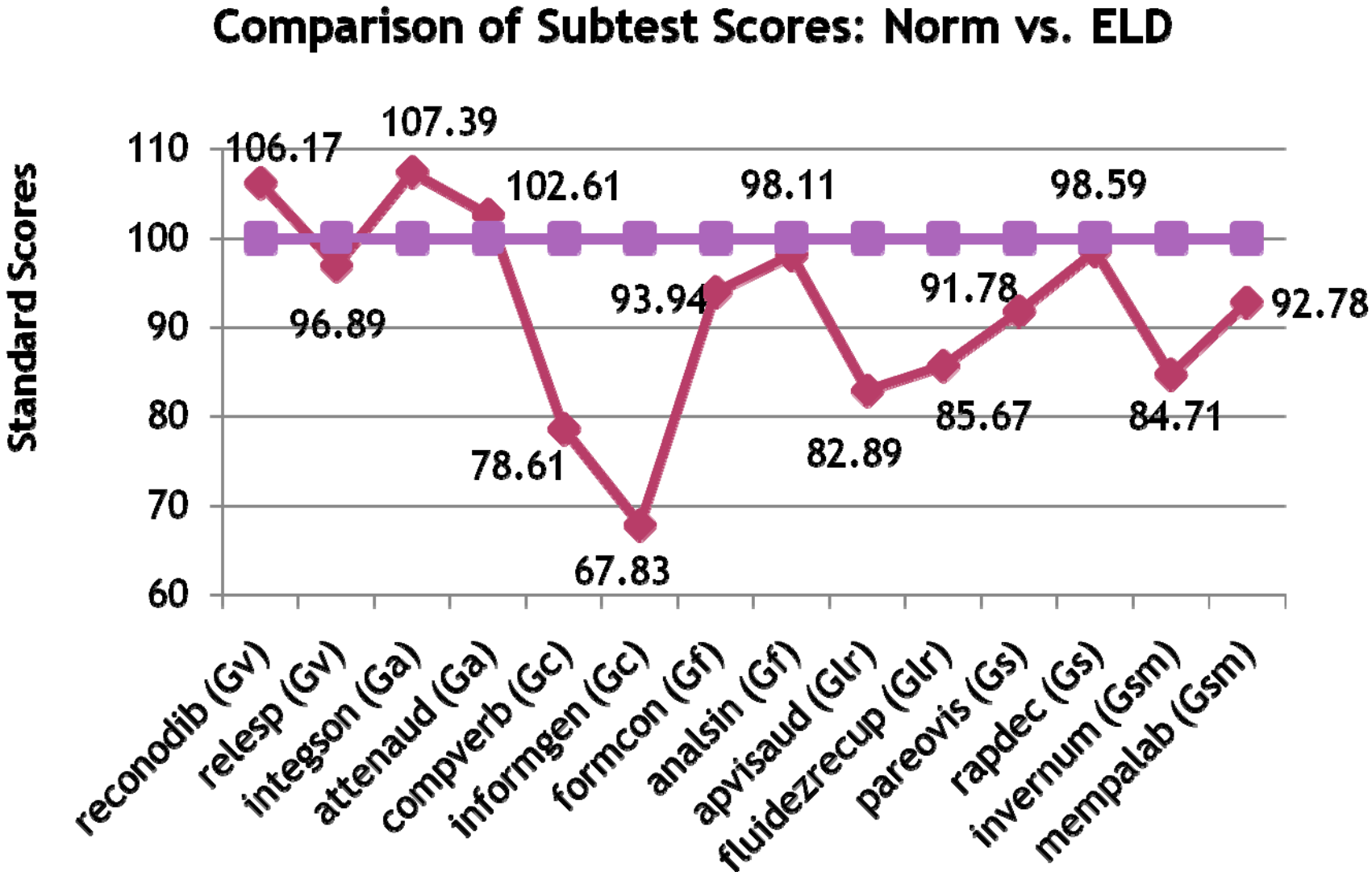


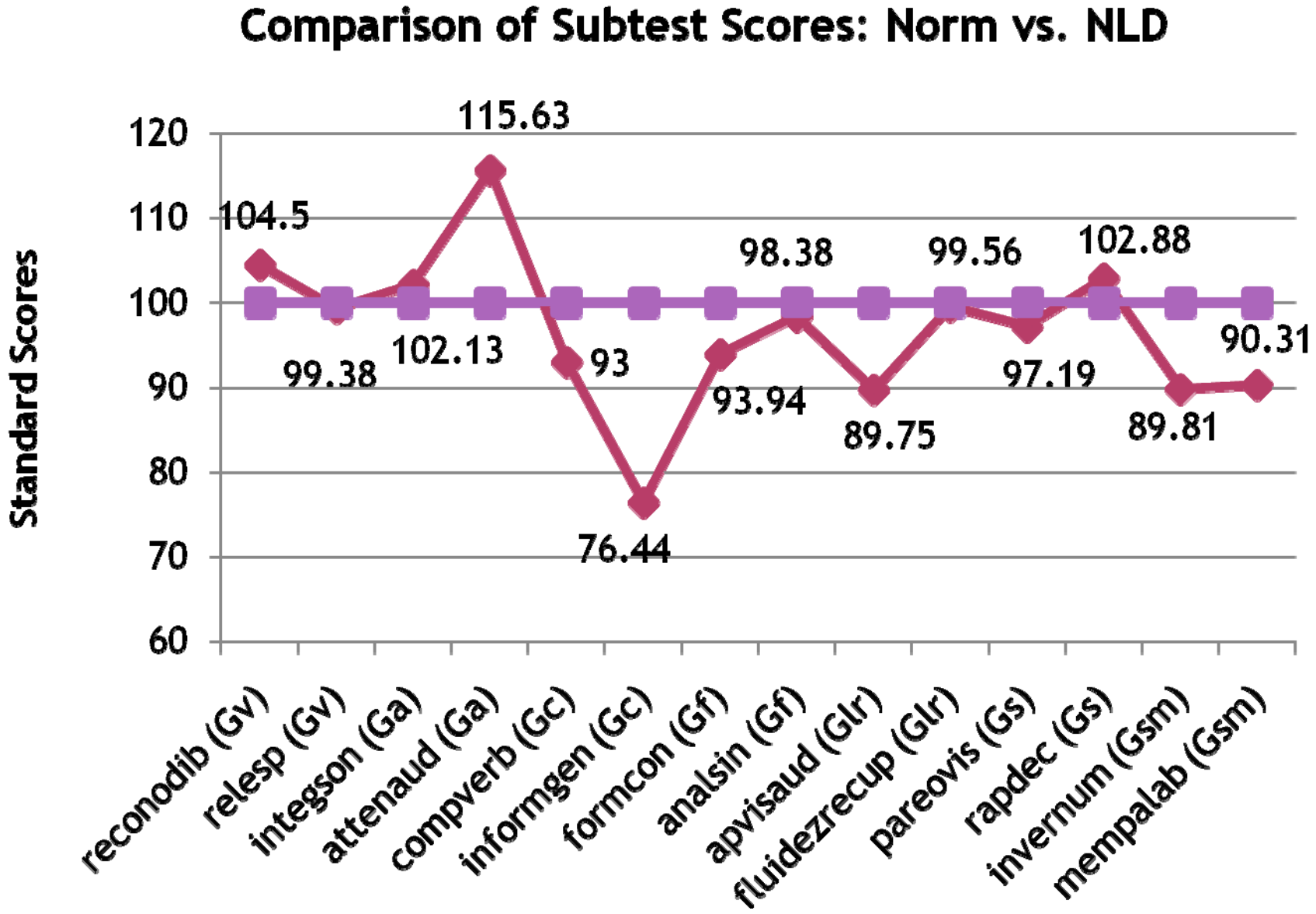

Comparison of Cluster Scores for NLD and ELD Groups
Standard Scores
120
110
100
90
80
70
60
110.75
102.72
98.94
95.25
90.19
88.25
84.69
106.61
101.75
95.17
94.89
79.5
84.72
72.89
Ga
Gv
Gs
Gf
Glr
Gsm
Gc
ELD
NLD

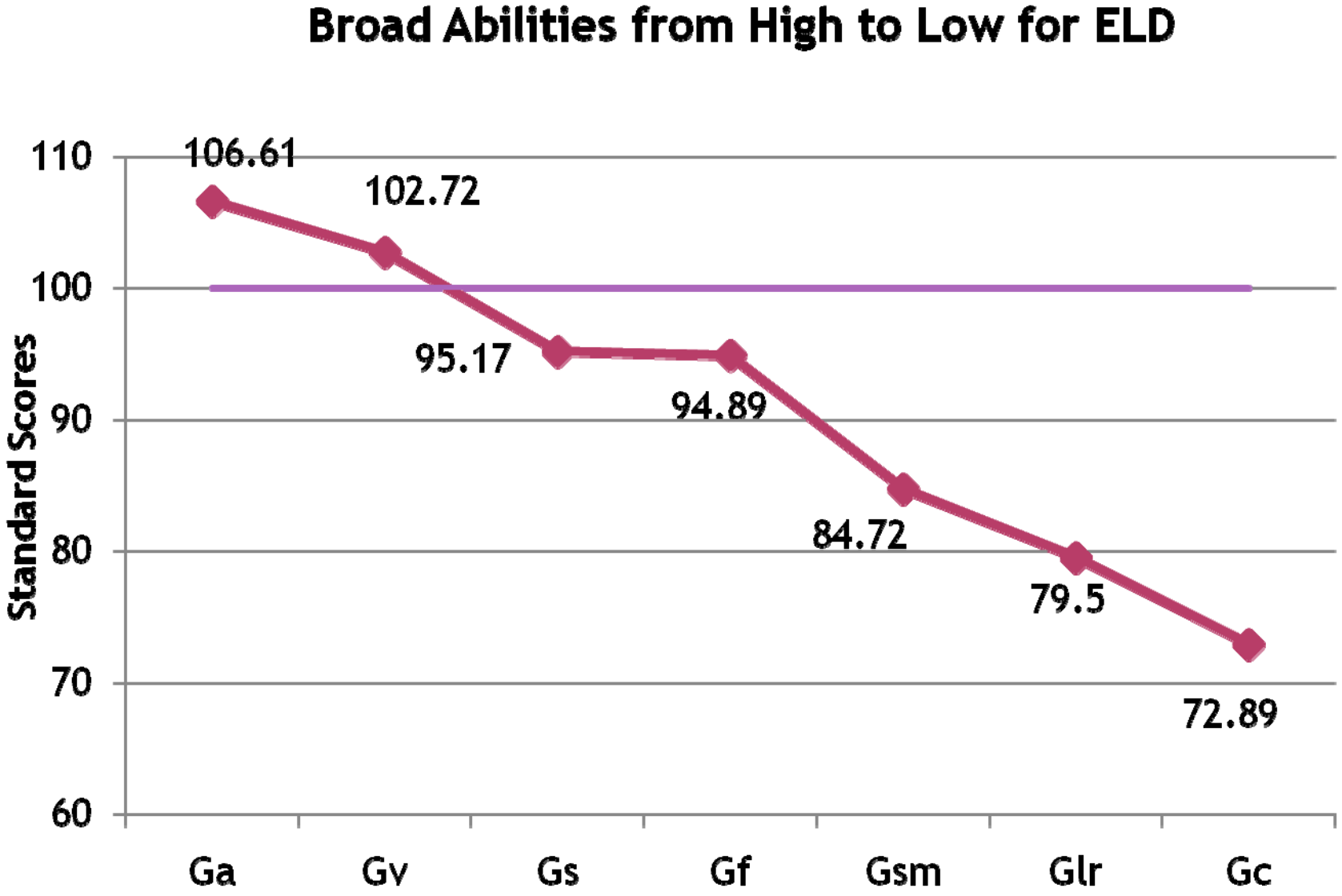

Comparison of Broad Abilities: Norm vs. ELD Mean Scores
Standard Scores
110
105
100
95
90
85
80
75
70
65
60
106.61
102.72
95.17
94.89
79.5
84.72
72.89
Ga
Gv
Gs
Gf
Glr
Gsm
Gc
ELD

Comparison of Broad Abilities: Norm vs. NLD Mean Score

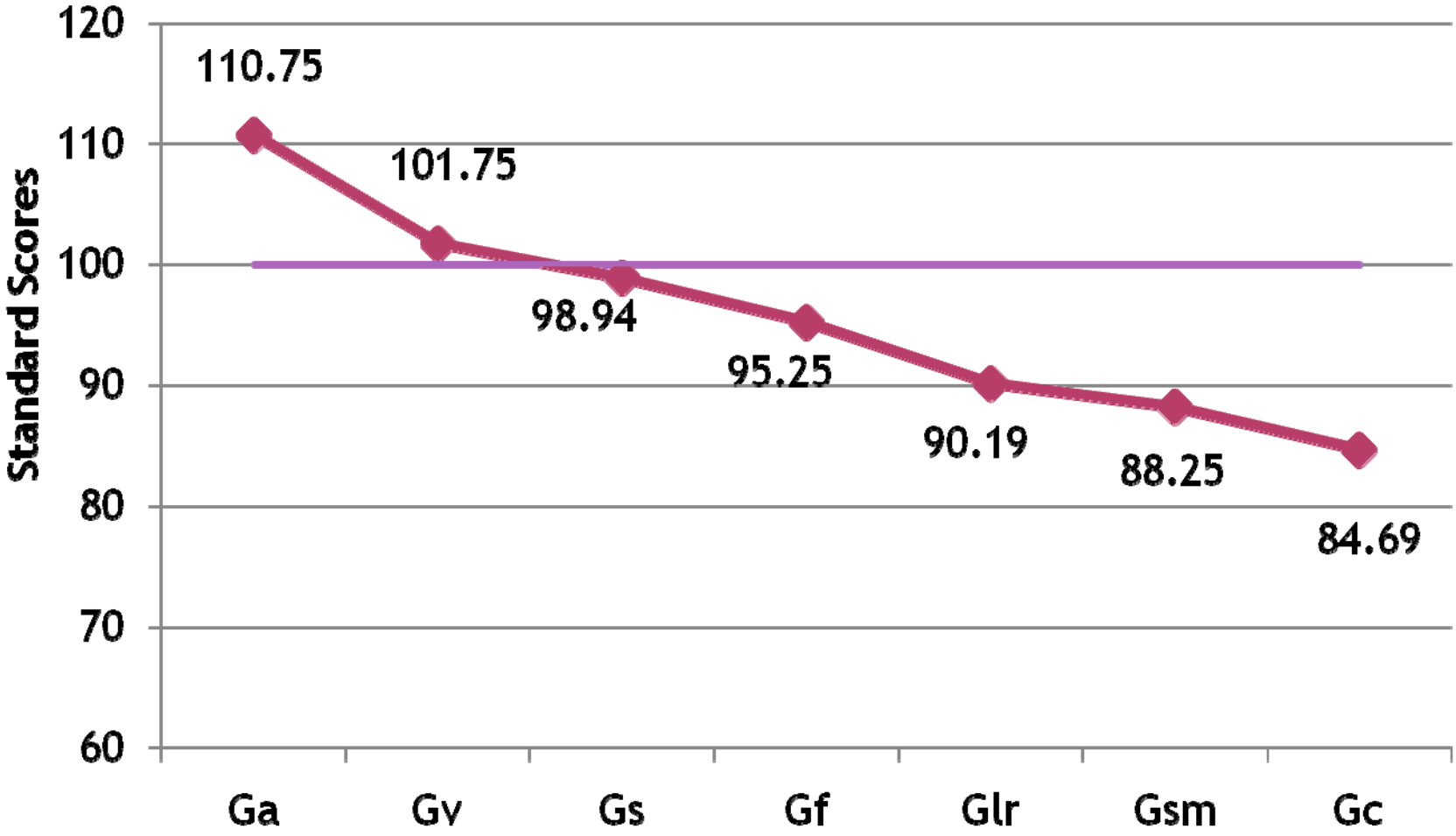



Comparison of Subtest Scores: Norm vs. ELD
Standard Scores
110
100
90
80
70
60
106.17
96.89
107.39
102.61
78.61
67.83
93.94
98.11
82.89
91.78
85.67
98.59
84.71
92.78
reconodib (Gv)
relesp (Gv)
integson (Ga)
attenaud (Ga)
compverb (Gc)
informgen (Gc)
formcon (Gf)
analsin (Gf)
apvisaud (Glr)
fluidezrecup (Glr)
pareovis (Gs)
rapdec (Gs)
invernum (Gsm)
mempalab (Gsm)


Comparison of Subtest Scores: Norm vs. NLD
Standard Scores
120
110
100
90
80
70
60
104.5
99.38
102.13
115.63
93
76.44
93.94
98.38
89.75
99.56
97.19
102.88
89.81
90.31
reconodib (Gv)
relesp (Gv)
integson (Ga)
attenaud (Ga)
compverb (Gc)
informgen (Gc)
formcon (Gf)
analsin (Gf)
apvisaud (Glr)
fluidezrecup (Glr)
pareovis (Gs)
rapdec (Gs)
invernum (Gsm)
mempalab (Gsm)


Broad Abilities from High to Low for ELD
Standard Scores
110
100
90
80
70
60
106.61
102.72
95.17
94.89
84.72
79.5
72.89
Ga
Gv
Gs
Gf
Gsm
Glr
Gc

Broad Abilities from High to Low for NLD



SUMMARY

- Students in the NLD group scored about a 1/3 to ½ SD higher on the GIA than the ELD group.
- The mean for the NLD group was in the average range (x = 90.81) but below average for the ELD group (x = 84.44).
- Comparison of the means for the 7 broad abilities showed participants in the NLD group scored in the average range (SS $\geq$ 85) on all abilities whereas the ELD group had 3 abilities that were in the below average range (Gc, Glr, Gsm).
- Instruction in the native language keeps the students closer to normal cognitive development than English only instruction.

CHC BROAD ABILITIES: GF - FLUID INTELLIGENCE

Thinking used:

- with new tasks which cannot be performed automatically
- for reasoning, forming and recognizing concepts; comprehending implications
- for drawing inferences
- in reorganizing or transforming information
- for problem-solving and extrapolating

CHC BROAD ABILITIES: GC - CRYSTALIZED INTELLIGENCE

Knowledge:

- That has been acquired over time (general fund)
- of one's culture and the effective application of this knowledge (breadth and depth)
- that is primarily verbal- or language-based developed during life experiences and formal schooling

CHC BROAD ABILITIES: GV - VISUAL PROCESSING

Ability to:

- think about visual patterns and visual stimuli
- generate, perceive, analyze, synthesize, manipulate, and transform visual patterns and stimuli
- complete puzzles and interpret graphs or charts
- visualize stimuli not presented visual (the "mind's eye")

CHC BROAD ABILITIES: GSM - SHORT TERM MEMORY

Ability to:

- apprehend and hold information in immediate awareness and then use it within a few seconds
- retain "chunks" of information (most individuals can only retain five to seven "chunks" at one time)

CHC BROAD ABILITIES: GLR - LONG TERM RETRIEVAL

Ability to:

- store information (e.g., concepts, ideas, items, names) in long-term memory and to fluently retrieve it later through association. (Does not represent *what* is stored in long-term memory but the *process* of storing and retrieving information.)

CHC BROAD ABILITIES: GA - AUDITORY PROCESSING

Ability to:

- perceive, analyze, and synthesize auditory stimuli
- perceive and discriminate subtle nuances of patterns of sounds

CHC BROAD ABILITIES: GS - PROCESSING SPEED

Ability to:

- fluently perform simple clerical-type tasks quickly, especially when under pressure to maintain concentration and attention
- take simple tests that require simple decisions

Academic Area	Empirically Associated Broad and Narrow Abilities
Basic Reading Skills: *Decoding and word recognition skills*	**Broad Abilities:** Gc, Gsm (increase with age), Glr, Gs (decrease with age) **Narrow Abilities:** Ga-PC
Reading Comprehension: *Constructing meaning from text through a complex process that integrates multiple linguistic factors*	**Broad Abilities:** Ga, Glr, Gsm, Gf (in older age groups), Gc (may be primary difference between individuals with good and poor comprehension) **Narrow Abilities:** Gsp (narrow perceptual speed) is significant at all ages
Basic Math Skills: *Arithmetic and computational skills*	**Broad Abilities:** Gc, Gf, Gs **Narrow Abilities:** Ga-PC, Gs-P, Gsm-MW
Math Reasoning: *Problem solving skills in math*	**Broad Abilities:** Gc (significance increases with age), Gf, Gs, Gsm **Narrow Abilities:** Ga-PC, Gs-P, Gsm-MW, Gsm-MS

Source: McGrew, K.S., & Wendling, B.J. (2010). Cattell-Horn-Carroll cognitive-achievement relations: What we have learned from the past 20 years of research. *Psychology in the Schools, 47*(7), 651-675.

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