



Academic domain-specific assessment and interpretation trees:

Referral-focused assessment



Within CHC-domain assessment and interpretation trees:

“Drilling down” in the CHC domains

- Core GIA+ cluster achievement-domain tree strategy

Similar too.....

FEATURE – CORE-SELECTIVE EVALUATION PROCESS

**Core-Selective Evaluation Process:
An Efficient & Comprehensive Approach to Identify Students
with SLD Using the WJ IV**

By Edward K. Schultz, PhD, Midwestern State University
Tammy L. Stephens, PhD, Account Executive, HMH/Riverside

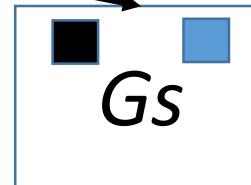
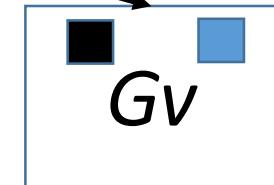
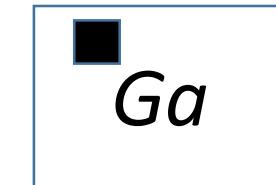
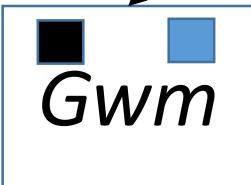
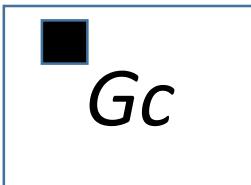
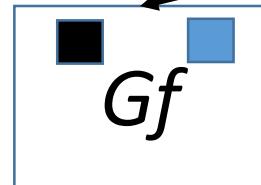
(www.iapsych.com/articles/wj4coresective.pdf)





Type of academic referral question
(e.g., basic reading skills, reading comp., basic math skills, math reasoning)

- GIA tests
- Other CHC factor test
- ▨ “Drilling down” testing



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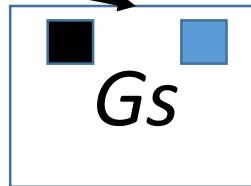
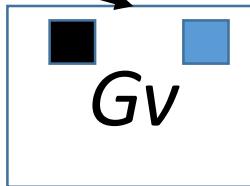
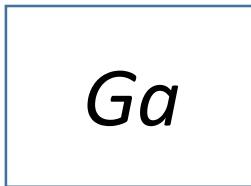
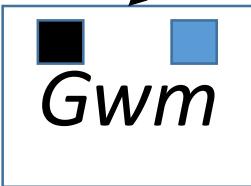
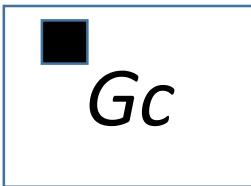
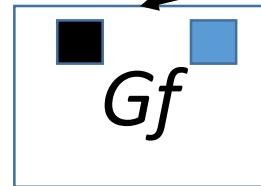


Core GIA+ cluster achievement-domain tree strategy



Type of academic referral question
(e.g., basic reading skills, reading comp., basic math skills, math reasoning)

- GIA tests
- Other CHC factor test
- “Drilling down” testing



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Selective+ achievement-domain tree strategy



Academic domain-specific assessment and interpretation trees: Referral-focused assessment

The following assessment trees are based on:

- Review of new WJ IV COG-ACH research (Niileksela et al., 2016; Cormier et al., 2016)
- Review of extant 20 years of COG-ACH relations research (McGrew & Wendling, 2010)
- Inspection of WJ IV SAPT development COG/OL test-ach cluster multiple regression results
- Inspection of unpublished WJ IV COG/OL test-to-ACH cluster correlations (ages 6-19)
- Inspection of unpublished special test-level multiple regression analyses (ages 6-19)
- Review of relevant research literature and clinical expert opinion

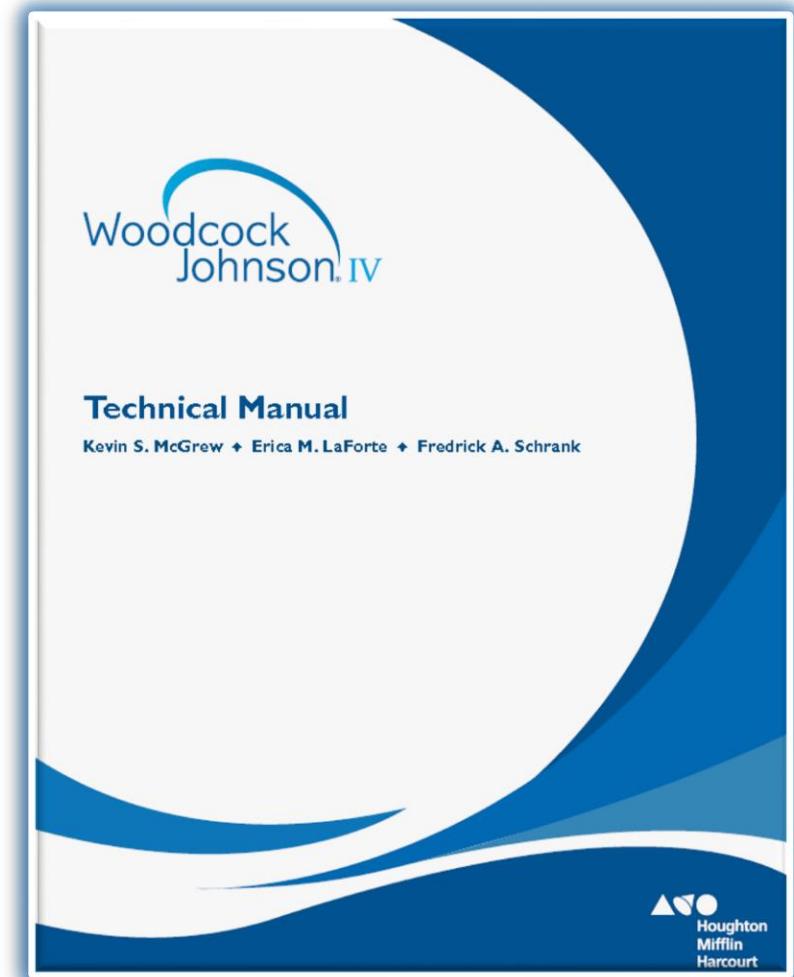
.93 .63 H .80

NmSeries
H (RQ) #

.63 .73 .64 ←

External criterion relations validity

Median correlation
with WJ IV reading,
math, and written
language
achievement clusters
(ages 6-19)



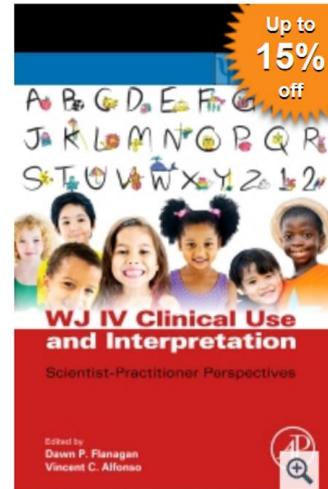
Chapter 3

A Special Validity Study of the WJ IV: Acting on Evidence for Specific Abilities

Christopher R. Niileksela¹, Matthew R. Reynolds¹, Timothy Z. Keith²
and Kevin S. McGrew³

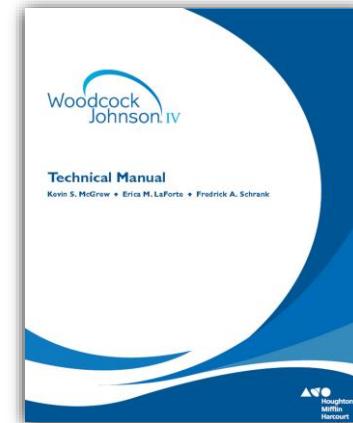
¹Department of Educational Psychology, Joseph R. Pearson Hall, University of Kansas, Lawrence, KS, USA ²Department of Educational Psychology, University of Texas, Austin, TX, USA ³Institute for Applied Psychometrics, St. Joseph, MN, USA

WJ IV Clinical Use and Interpretation, 1st Edition Scientist-Practitioner Perspectives

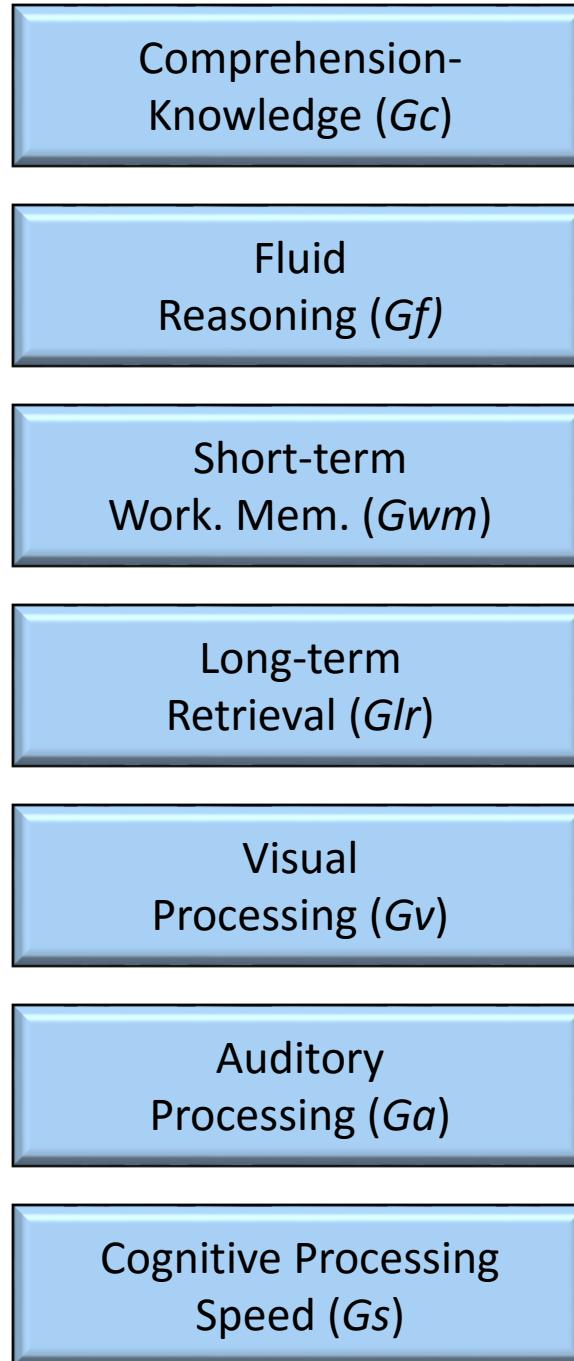


Editor(s) : Flanagan & Alfonso
Expected Release Date: 01 Feb 2016
Imprint: Academic Press
Print Book ISBN : 9780128020760
Pages: 432
Dimensions: 229 X 152

This useful guide provides helpful interpretative information to clinical practitioners using the Woodcock-Johnson, Fourth Edition (WJ IV) diagnostic test, also reviewing the background, content, and organization of the test to provide users with best practices for interpreting scores and discussing the use of the WJ IV with individuals from different cultural and language backgrounds



Applied Psychometrics 101: Multiple Regression



- b-weights represent relative importance of each CHC cluster in the prediction of the achievement cluster
 - Higher values means stronger relative contribution to prediction
- Models run at each year of age from age 6 through 19
- Studies produced, for each CHC cluster, 14 different b-weights that were inspected for possible developmental trends
- A smoothed curve (DWLS) is fit to the weights to provide best estimate of population parameters

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Kevin McGrew 01-11-16

GENERAL ARTICLES

The Relations Between Measures of Cattell-Horn-Carroll (CHC) Cognitive Abilities and Reading Achievement During Childhood and Adolescence

Jeffrey J. Evans
Evans Consulting, St. Cloud, Minnesota

Randy G. Floyd
The University of Memphis

Kevin S. McGrew
University of Minnesota

Maria H. Leforgee
Middle Tennessee State University

WJ III study-Reading

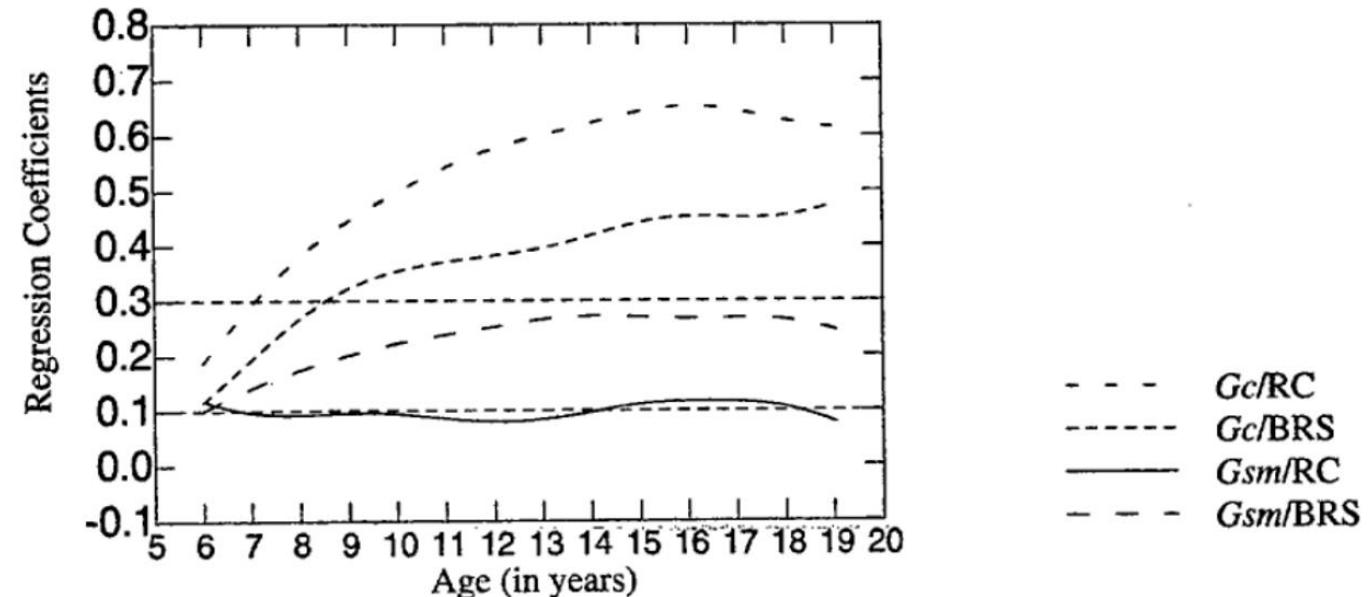


Figure 1. Standardized regression coefficients as a function of age for Comprehension-Knowledge (Gc) and for Short-Term Memory (Gsm) with Basic Reading Skills (BRS) and Reading Comprehension (RC).

WJ III study-Math

Psychology in the Schools, Vol. 40(2), 2003
Published online in Wiley InterScience (www.interscience.wiley.com).

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DOI: 10.1002/pits.10083

RELATIONS BETWEEN MEASURES OF CATTELL-HORN-CARROLL (CHC) COGNITIVE ABILITIES AND MATHEMATICS ACHIEVEMENT ACROSS THE SCHOOL-AGE YEARS

RANDY G. FLOYD

The University of Memphis

JEFFREY J. EVANS

Evans Consulting, St. Cloud, Minnesota

KEVIN S. McGREW

University of Minnesota

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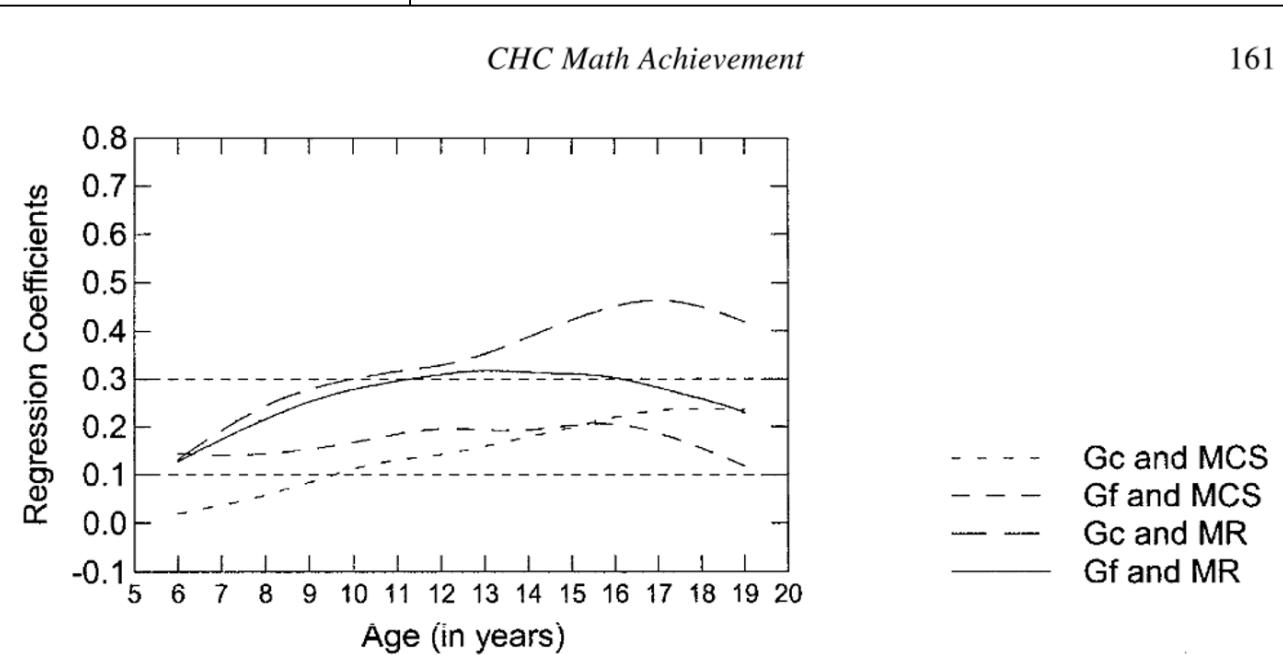


FIGURE 1. Standardized regression coefficients as a function of age for Comprehension-Knowledge (Gc) and for Fluid Reasoning (Gf) with Math Calculation Skills (MCS) and Math Reasoning (MR).

WJ IV studies

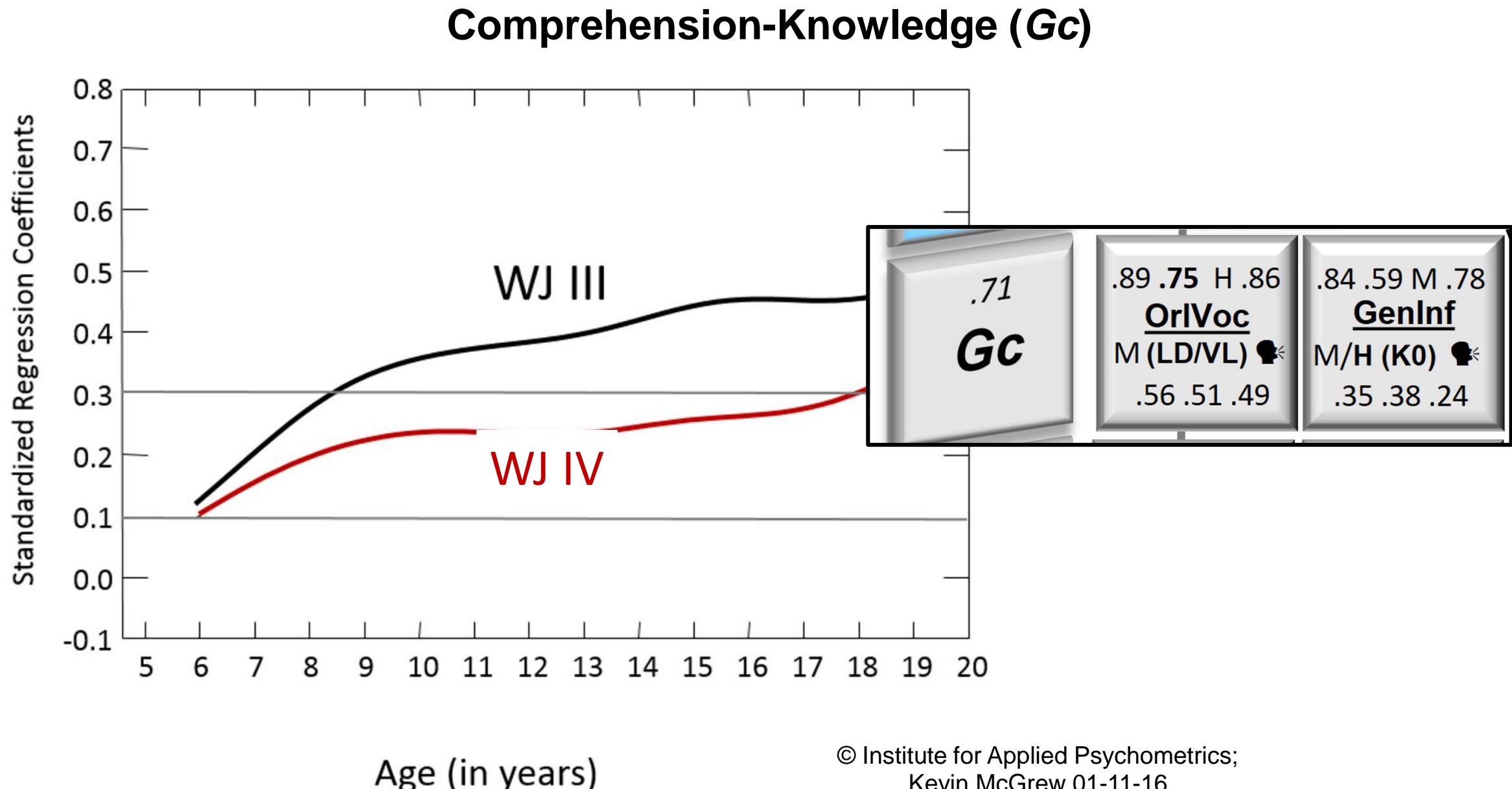
Cormier et al.

(2015a, 2015b, 2016; manuscripts
submitted for publication)

$\leq .01$ = no statistical or practical significant effect
 $.10 - .30$ = moderate effect
 $> .30$ = strong effect

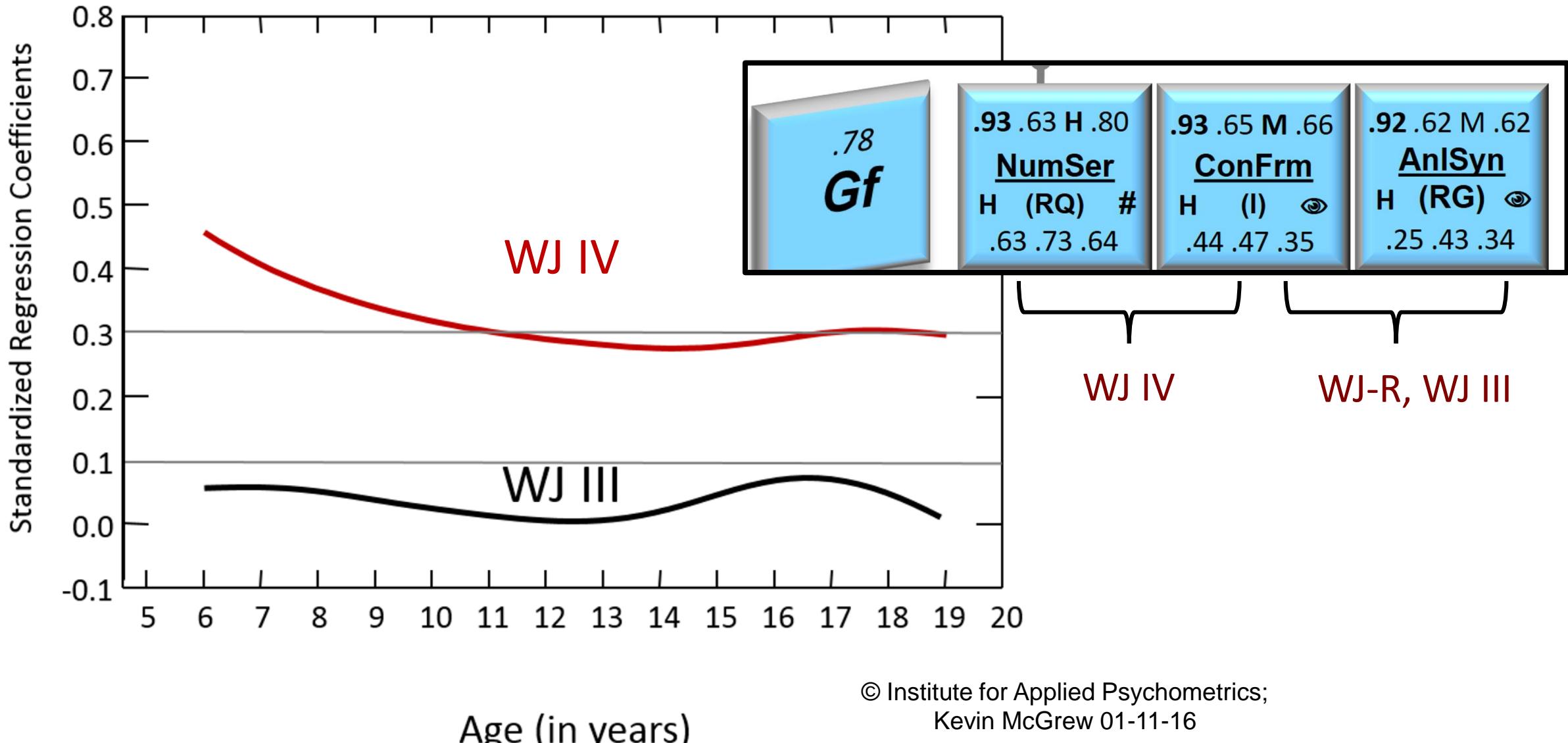
Effect size rules-of-thumb used in WJ III and WJ IV studies the same

Comparison of WJ III and WJ IV clusters association with **Basic Reading Skills**

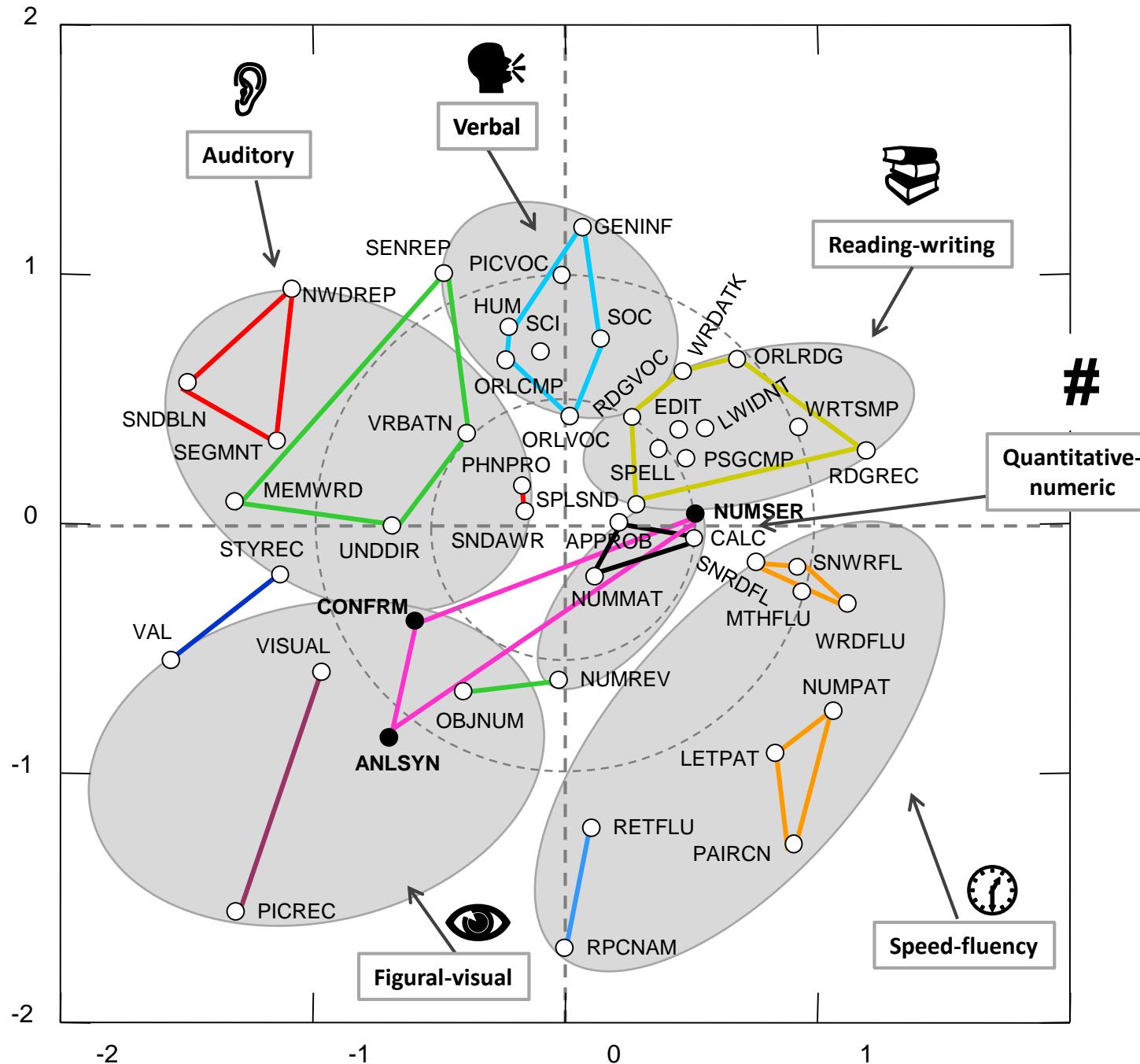


Comparison of WJ III and WJ IV clusters association with **Basic Reading Skills**

Fluid Reasoning (*Gf*)

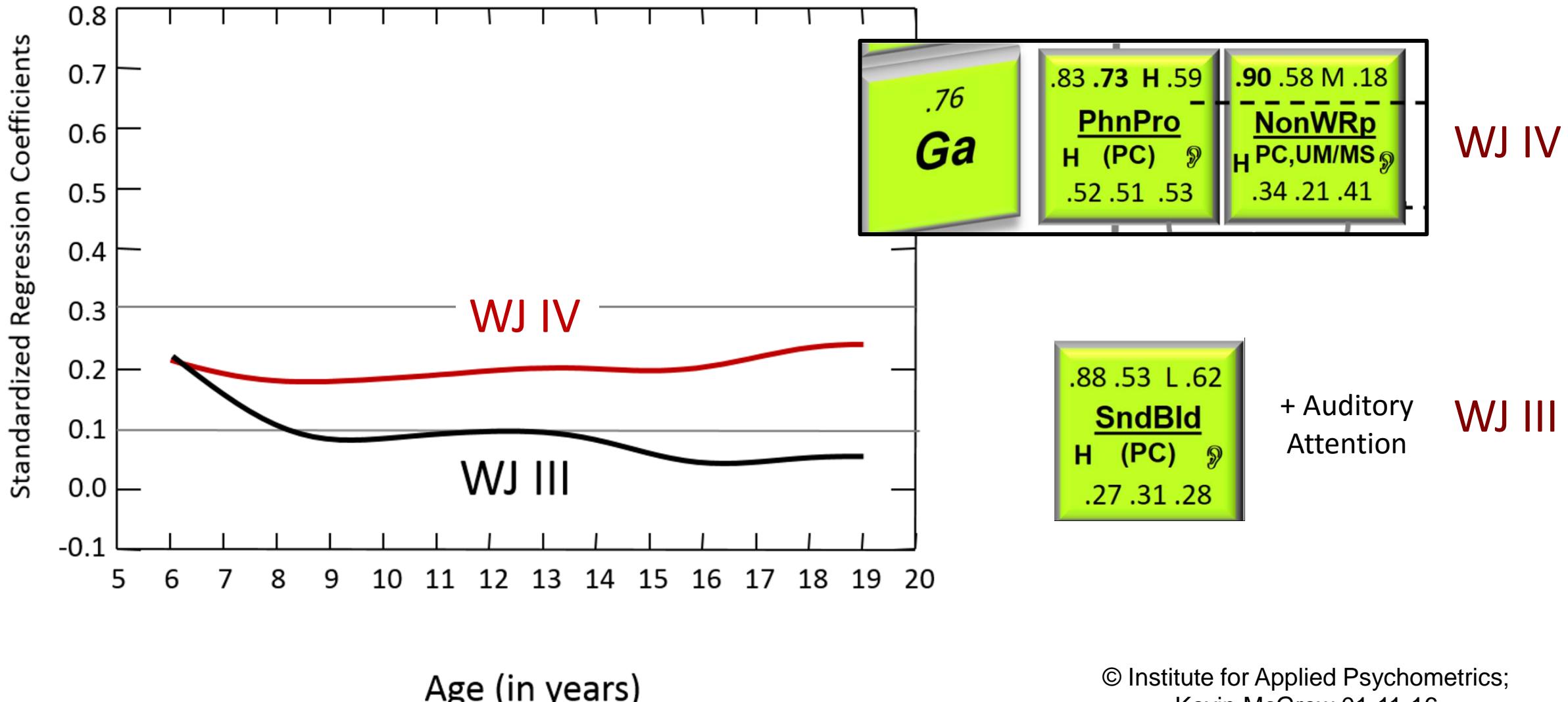


WJ IV test 2D MDS
(Ages 6 to 19; n =
4,082)

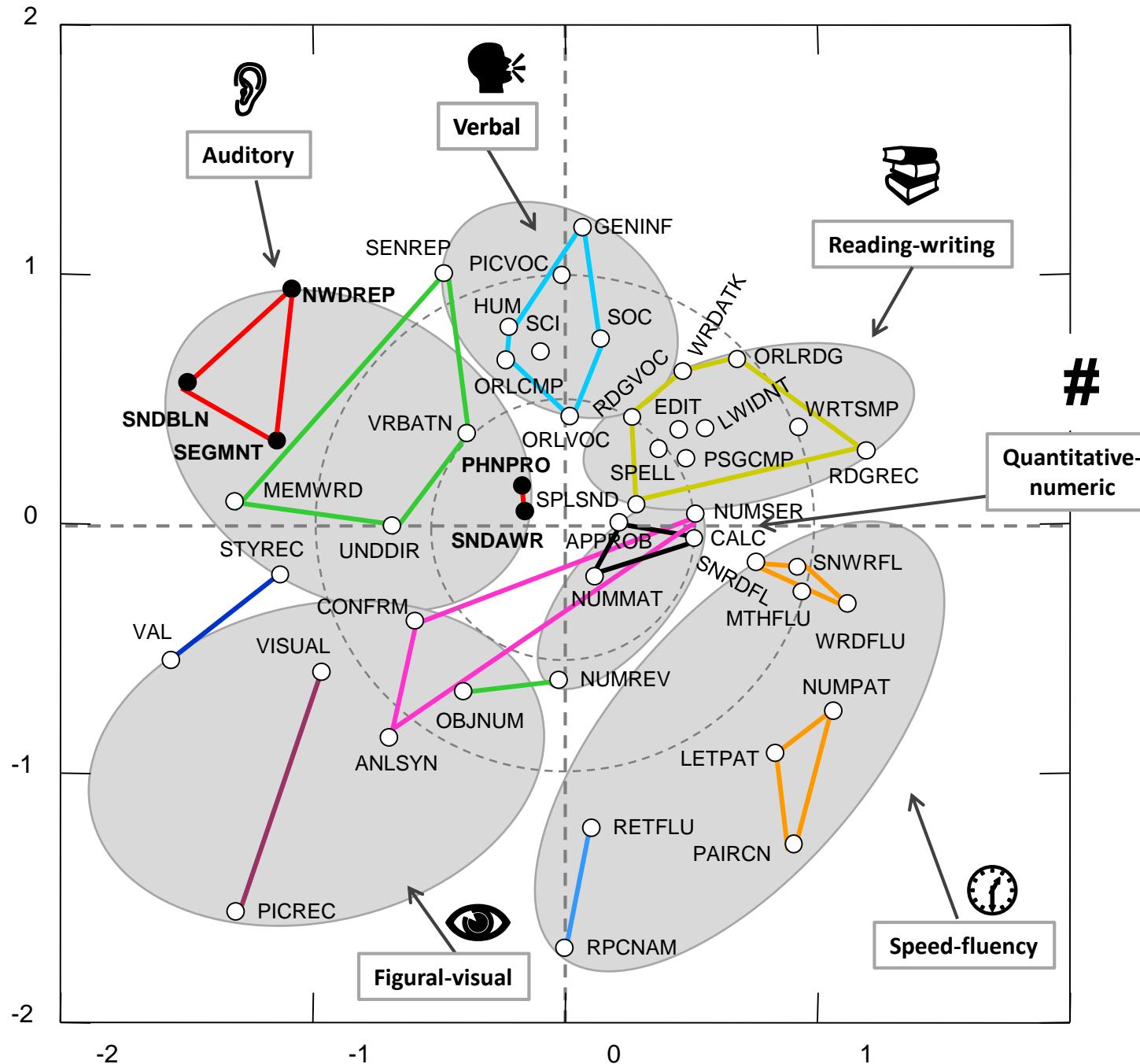


Comparison of WJ III and WJ IV clusters association with **Basic Reading Skills**

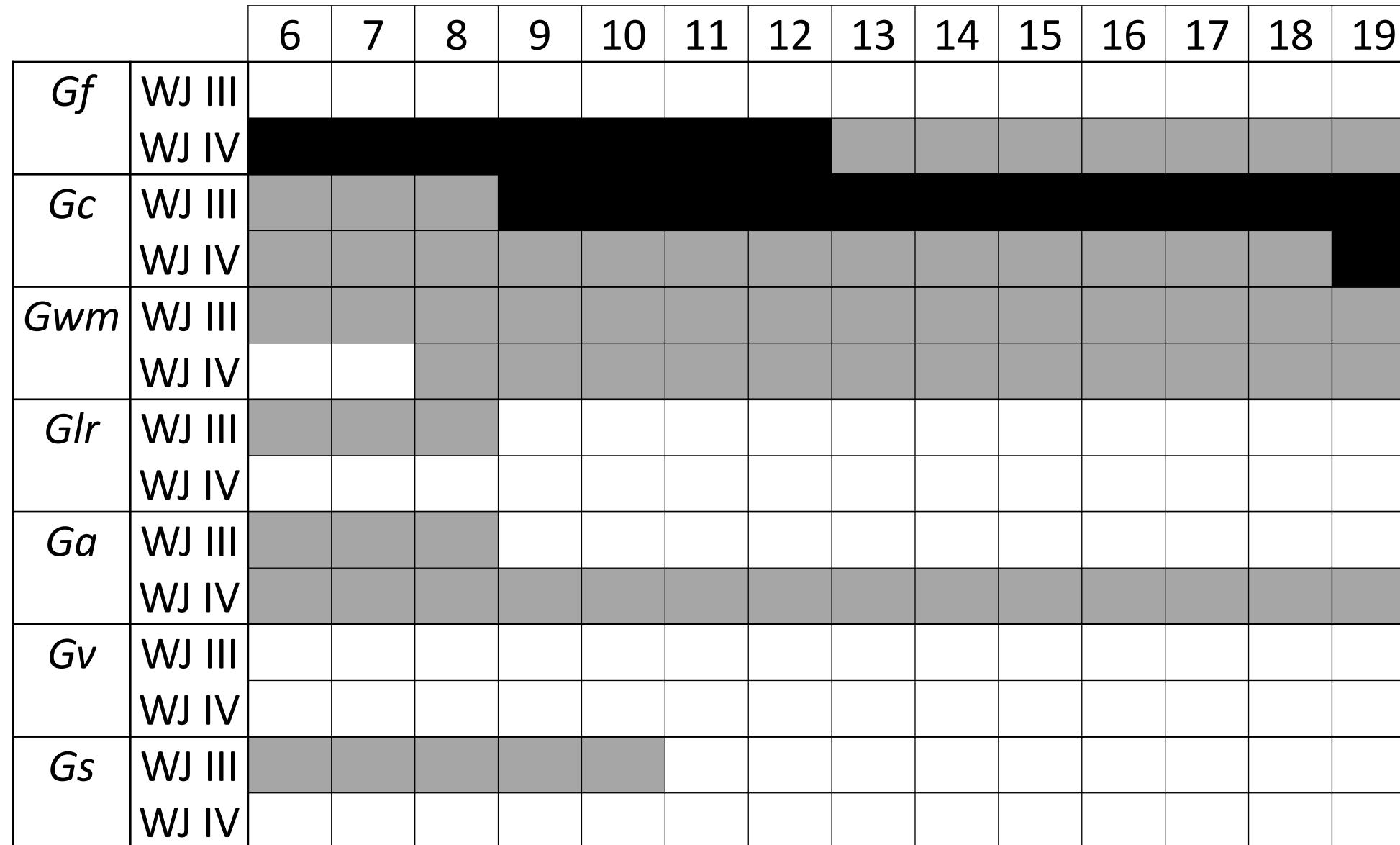
Auditory Processing (Ga)



WJ IV test 2D MDS
(Ages 6 to 19; n =
4,082)

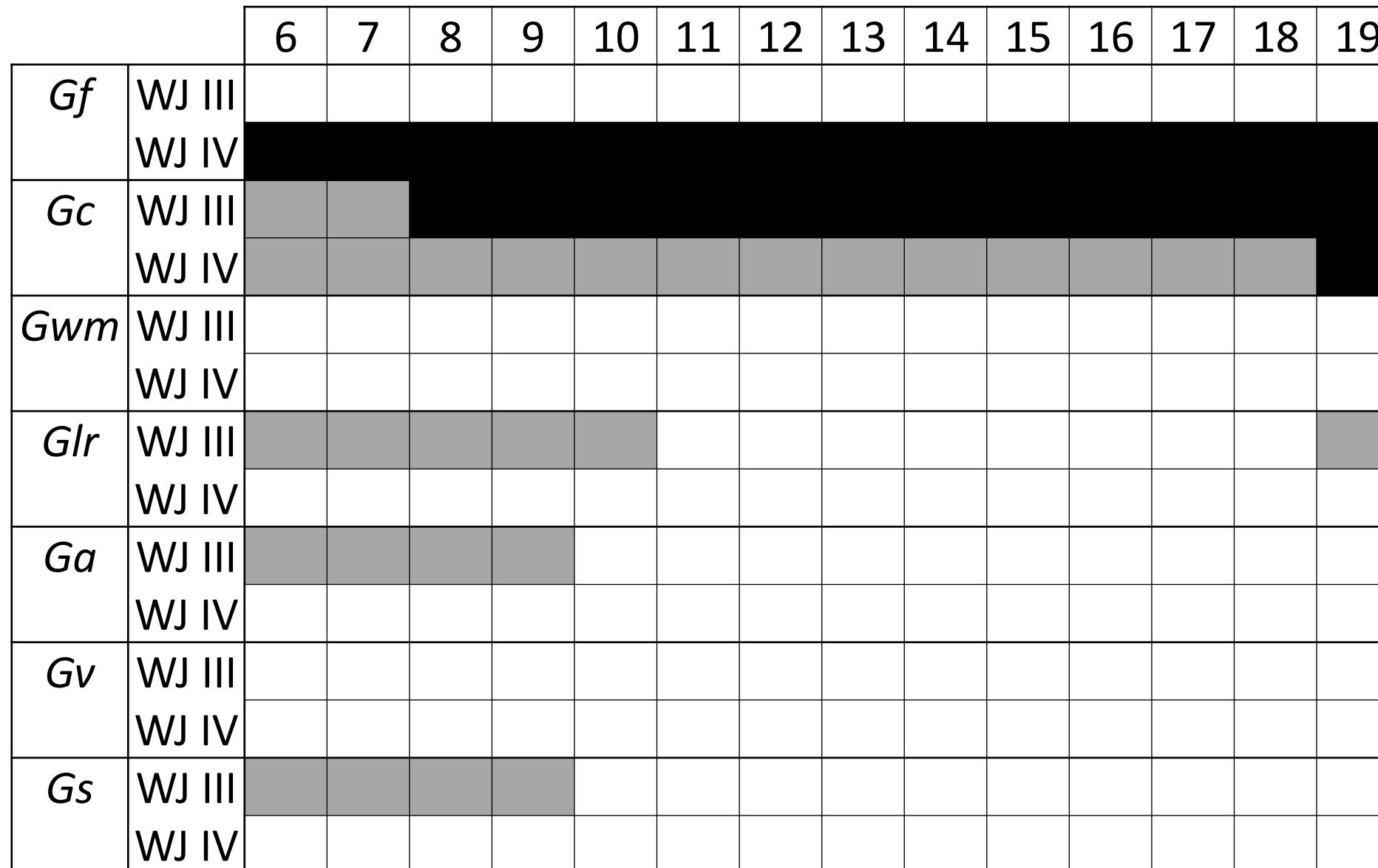


WJ III/WJ IV COG CHC-Basic Reading Skills relations summary and comparison by age

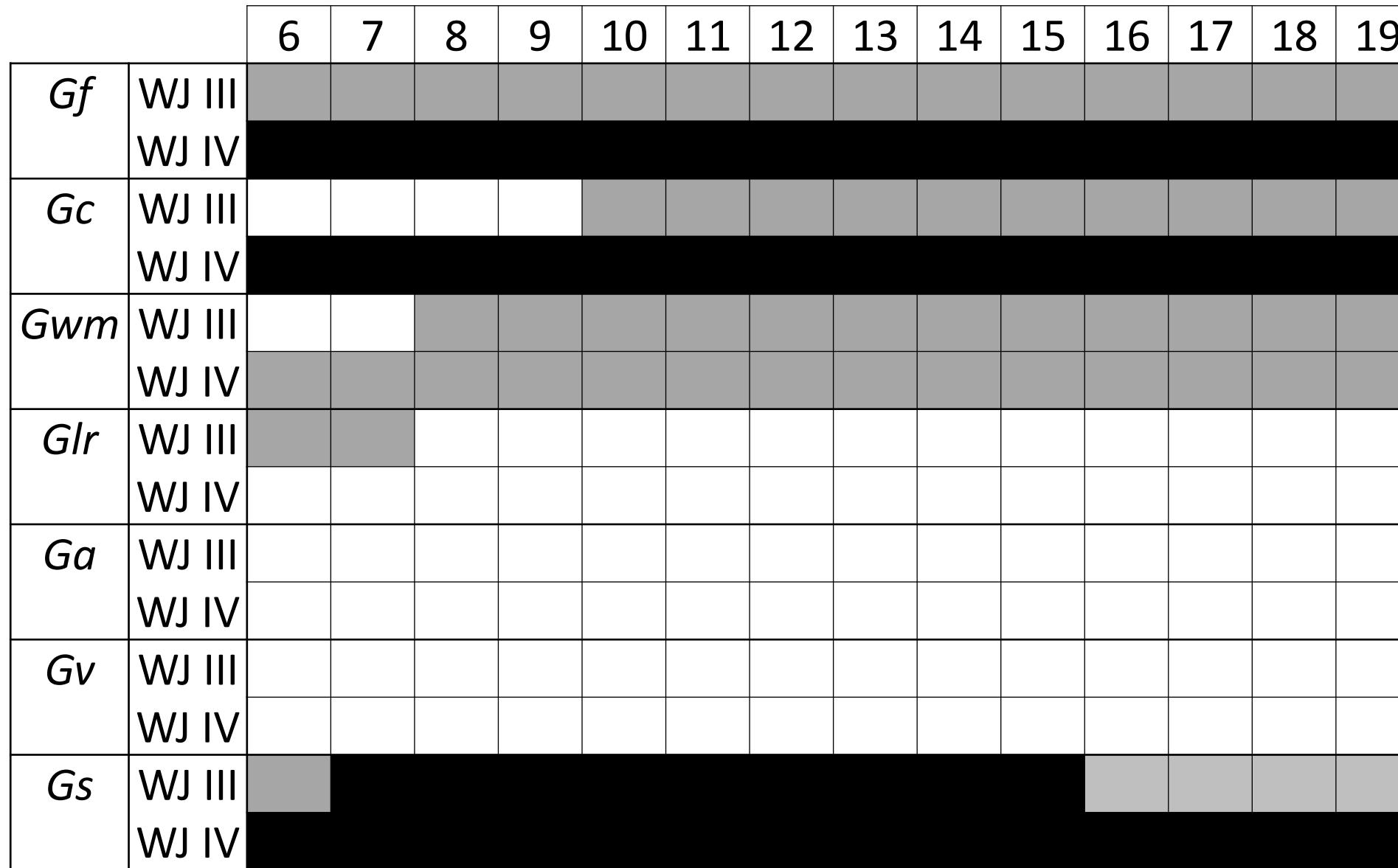


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McGrew 01-11-16

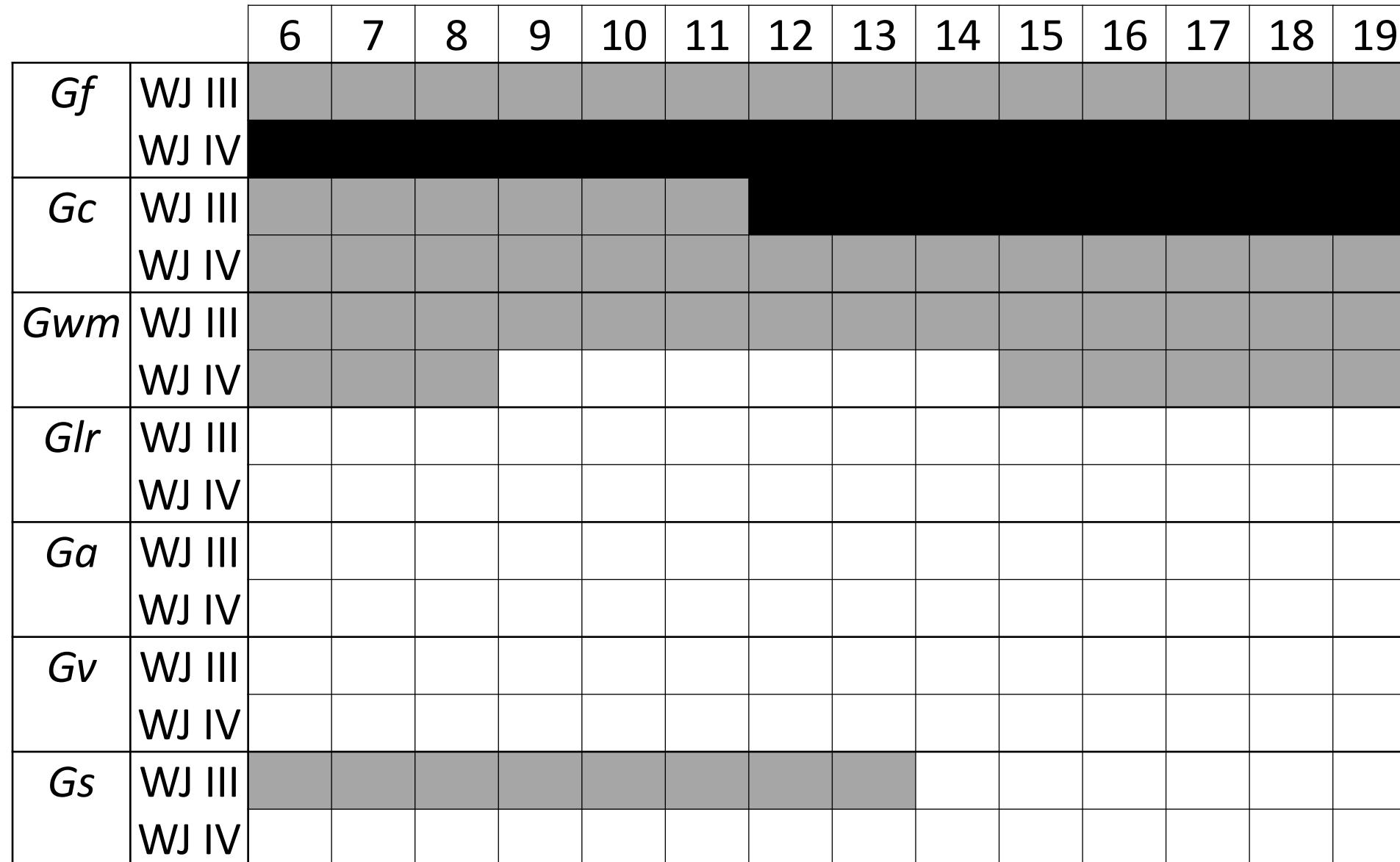
WJ III/WJ IV COG CHC-Reading Comprehension relations summary and comparison by age



WJ III/WJ IV COG CHC-Math Calculation Skills relations summary and comparison by age



WJ III/WJ IV COG CHC-Math Problem Solving relations summary and comparison by age





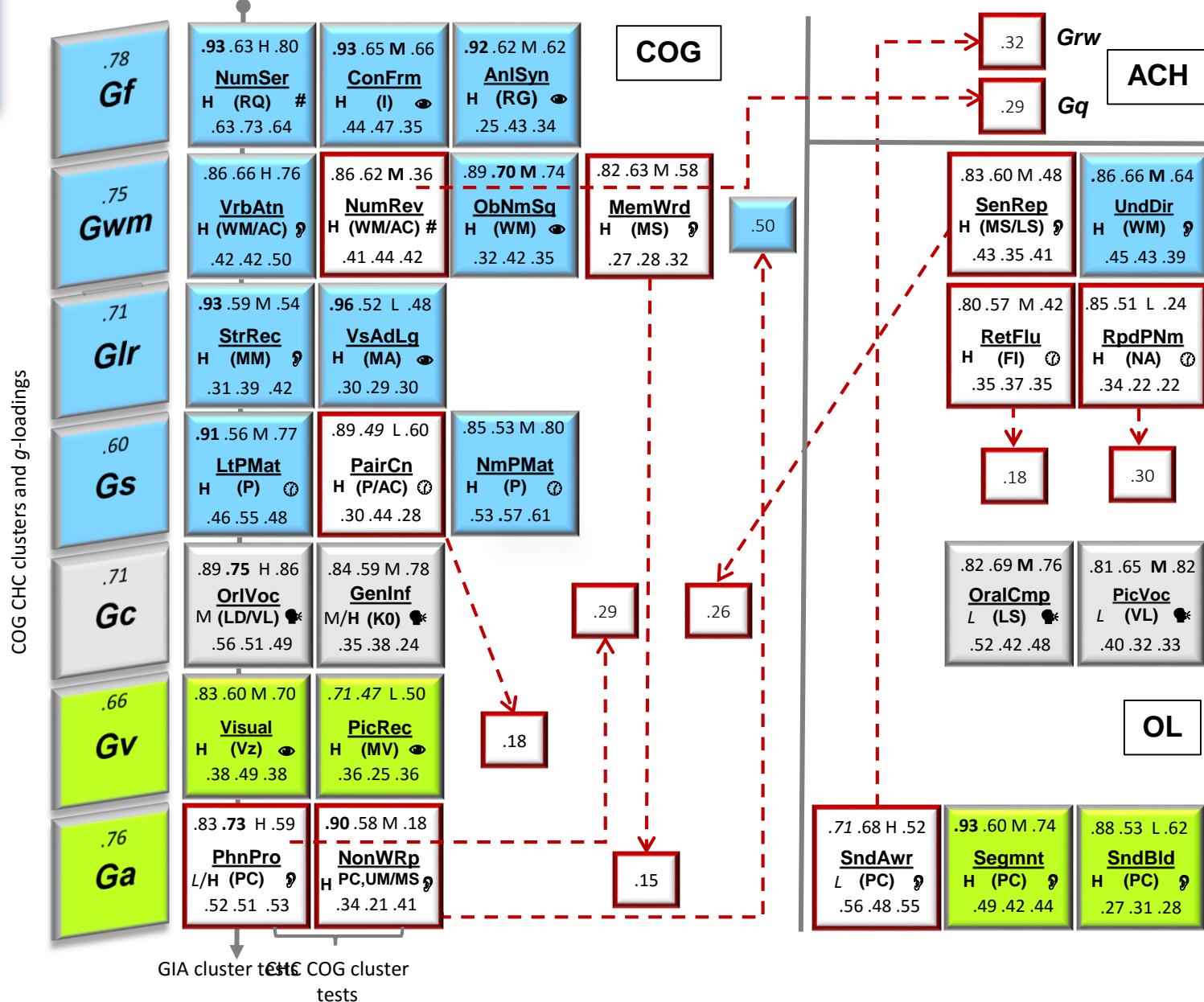
Within CHC-domain assessment and interpretation trees: Drilling down in CHC domains

The following assessment trees are based on:

- Close examination of the CFA results in the WJ IV TM
- Close examination of the EFA, cluster analysis and MDS results in WJ IV TM
- Additional unpublished EFA, CFA, cluster analysis and MDS (2D & 3D) completed post-WJ IV publication (across ages 6-19)
- Review of supplemental/clinical groupings for WJ, WJ-R and WJ III (e.g., McGrew, 1986; 1984)
- Extensive unpublished “Beyond CHC” analysis of the WJ III data
- Theoretical and clinical considerations
- Suggested groupings by Dehn (2015), Miller (2014) & Proctor et al. (2015, ASB6)

This is an example

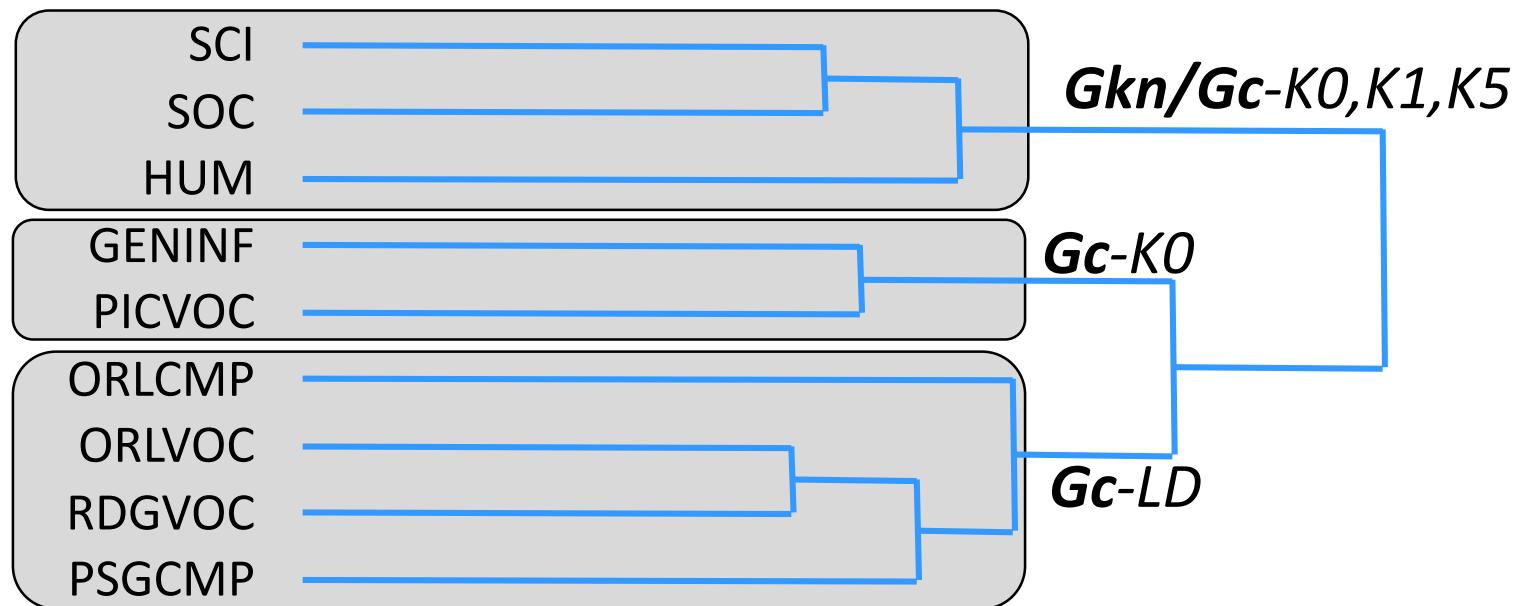
Closer look at secondary factor loadings in CFA models in TM



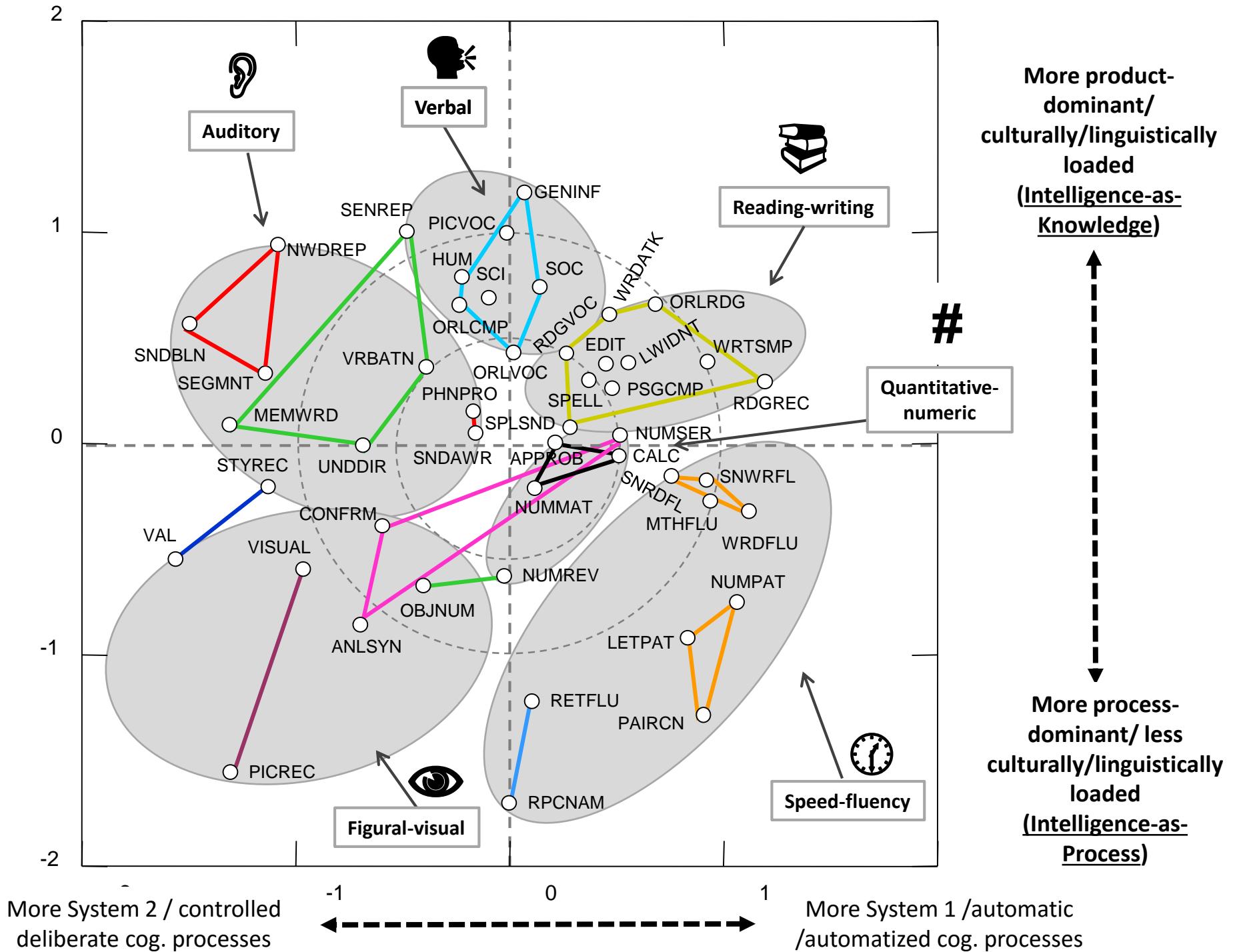
This is an example !

WJ IV tests cluster analysis (Wards) (Ages 6 to 19; n = 4,082)

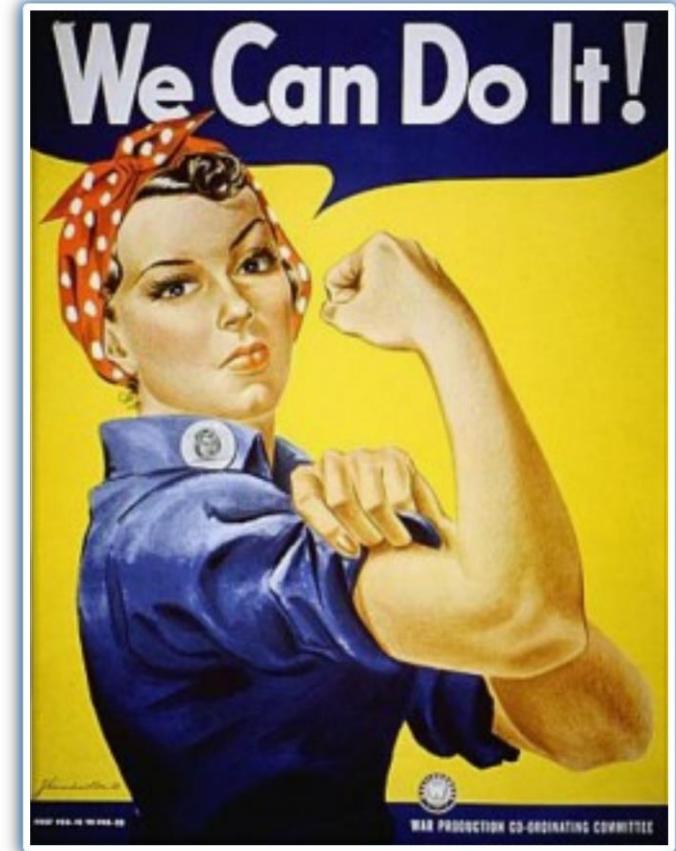
Focus on *Gc* tests



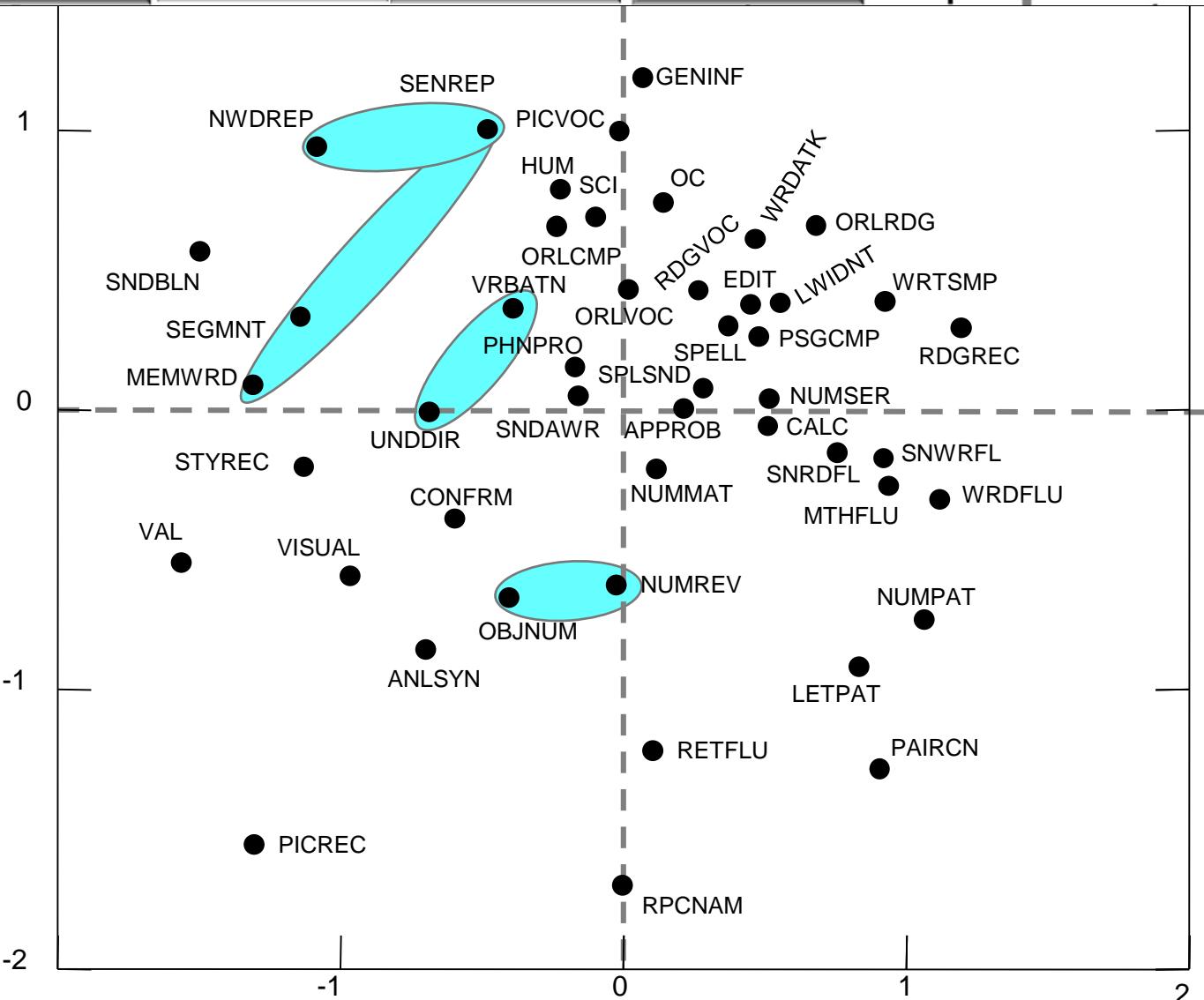
WJ IV test 2D MDS
(Ages 6 to 19; n =
4,082)



Empowerment in “intelligent” intelligence test interpretation



.75 Gwm	.86 .66 H .76 VrbAtn H (WM/AC) ♀ .42 .42 .50	.86 .62 M .36 NumRev H (WM/AC) # .41 .44 .42	.89 .70 M .74 ObNmSq H (WM) ⚡ .32 .42 .35	.82 .63 M .58 MemWrd H (MS) ⚡ .27 .28 .32	.50 ↑	.83 .60 M .48 SenRep H (MS/LS) ♀ .43 .35 .41	.86 .66 M .64 UndDir H (WM) ♀ .45 .43 .39
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Within CHC-domain assessment trees: Drilling down into CHC domains

Key to the following slides

Gray shaded CHC domain – primary assessment domain

Dark lines with bold fonts = WJ IV published clusters

Dashed lines with regular fonts = clinical/supplemental test groupings

Dark outlined squares = COG/OL tests: Gray outlined squares = ACH tests



See document with all broad and narrow published and clinical groupings
[\(www.iapsych.com/articles/wjivgroupings.pdf\)](http://www.iapsych.com/articles/wjivgroupings.pdf)

WJ IV author provided and supplemental/clinical groupings or clusters to consider
© Institute for Applied Psychometrics, Kevin S. McGrew, 11-19-15 working draft

CHC domain*	Narrow CHC (or other) ability	WJ IV tests
Gc	Gc - Comprehension-Knowledge	Oral Vocabulary, General Information
	Gc-Ext: Comprehension-Knowledge - Extended	Oral Vocabulary, General Information , Picture Vocabulary
	Lexical Knowledge (VL) - Vocabulary	Oral Vocabulary, Picture Vocabulary
	Lexical Knowledge (VL) / Vocabulary-Extended	Oral Vocabulary, Picture Vocabulary, Reading Vocabulary, Rapid Picture Naming?
	Listening Ability (LS) - Listening Comprehension	Oral Comprehension, Understanding Directions
	Listening ability (LS) - Extended	Oral Comprehension, Understanding Directions, Story Recall
	General (verbal) information (K0)	General Information, Picture Vocabulary
	General (verbal) information (K0) - Extended	General Information, Picture Vocabulary, Science, Social Studies, Humanities
	Knowledge of culture (K2)	General Information, Picture Vocabulary, Humanities
	Language development (LD)	Oral Vocabulary, Oral Comprehension, Reading Vocabulary, Passage Comprehension
Gf	Receptive & Expressive Language	Oral Comprehension, Story Recall, Understanding Directions, Memory for Sentences
	Gf - Fluid Reasoning	Number Series, Concept Formation
	Gf-Ext: Fluid Reasoning - Extended	Number Series, Concept Formation, Analysis-Synthesis
	Quantitative reasoning (RQ) - Quant. Reasoning	Number Series, Analysis-Synthesis
	Quantitative reasoning (RQ) - Extended	Number Series, Analysis-Synthesis, Number Matrices, Applied Problems
	Verbal reasoning (Gf-Verbal)	Concept Formation, Analysis-Synthesis, Oral Vocabulary, Passage Comprehension
Gwm	Gf-Extended 4; Gf-Gv hybrid	Number Series, Concept Formation, Analysis-Synthesis, Visualization
	Gwm - Short-term Working Memory	Verbal Attention, Numbers Reversed