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THE LEADER IN GLOBAL EDUCATION
FAIRLEIGH DICKINSON UNIVERSITY

WOODCOCK JOHNSON® III

These are unofficial WJ III® pages. Although we hope they prove useful for purchasers and users of the WJ III® , the information in them has not been authenticated by the WJ III® authors, Dr. Richard Woodcock, Dr. Kevin McGrew, and Dr. Nancy Mather, nor by Riverside Publishing. For the Riverside Publishing Company WJ III® web pages, use this link. © 2000 Riverside Publishing Company

WJ III® Odd Scores Explained Sometimes a test will give what appears to be strange results. The test may be inaccurate or our understanding of the scores themselves may be faulty. here is an example of what seemed like strange scores, but with correct explanation, the mystery is cleared up.

http://www.riverpub.com/products/clinical/wj3/update_letter.html 

WJ III® Report Writer Suggestions Read these suggestions after visiting the site above

READING FLUENCY CLARIFICATION: Information once posted at the Riverside WJ III® web site. Please read carefully about the "change" in rules.

Estimates of the Percentage of Population Obtaining Given Discrepancies Between Various WJ III® Tests and Clusters

A Difference That Eluded Someone on the WJ III® Achievement Test?? A small correction needed on an achievement piece

A Funny Thing Happened On the Way to the Forum!! A funny(??) things about the computer program (Version 1.1b)?

Cognitive Abilities: Implications for Achievement Our thanks to Dr. Ron McGee for providing us with these pages.

Woodcock-Johnson Tests of Cognitive Abilities (WJ III®) Unofficial descriptions of the test.

Woodcock-Johnson Tests of Achievement (WJ III®) Unofficial descriptions of the test.

WJ III® Questions and Answers A link to the Riverside Q & A page.

Changes in WJ Tests Comments and descriptions about certain changes made from the WJ-R® to the **WJ III®** .

Age Equivalent Changes from WJ-R to WJ III® Cognitive

Some Item Changes from WJ-R to WJ III® Cognitive

Age Equivalent Changes from WJ-R to WJ III® Achievement

Some Item Changes from WJ-R to WJ III™ Achievement

Some Interesting Reading and Spelling Measures and Comparisons from the WJ III® Non-empirically based subtest grouping that might be found useful.

WJ III® Computer Template Free, downloadable **WJ III®** Excel© Template to further aid in the interpretation of the test.

WJ III® Humor

New Tests: **Butterfly Ballot Test** **New Processing Speed Test**

Replacement parts: **Rubber Band**

OLD PAGES: Tables to Aid in the Interpretation of the *Woodcock Johnson - Revised Cognitive Battery*

Other sources of information:

- www.IAPsych.com Institute for Applied Psychometrics Web Site, Kevin S. McGrew, Director, includes myriad references, tools, and PowerPoint presentations on the **WJ III®** and other psychometric topics. You can also sign up there for the Cattell-Horn-Carroll (CHC) mailing list and listserv.
- Woodcock-Johnson III Newsletter: A Riverside Bulletin for Professionals. Publisher: Frederick A. Schrank. Supervising Editor: Jan M. Mauer. Itasca, IL: Riverside Publishing.
- Flanagan, D. P. (2001). *Assessment Service Bulletin Number 1: Comparative features of major intelligence batteries: Content, administration, technical features, interpretation, and theory*. Itasca, IL: Riverside Publishing.
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- McGrew, K. S., & Woodcock, R. W. (2001). Technical manual. *Woodcock-Johnson III*. Itasca, IL: Riverside Publishing.
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Test 28 Count the Black Dots

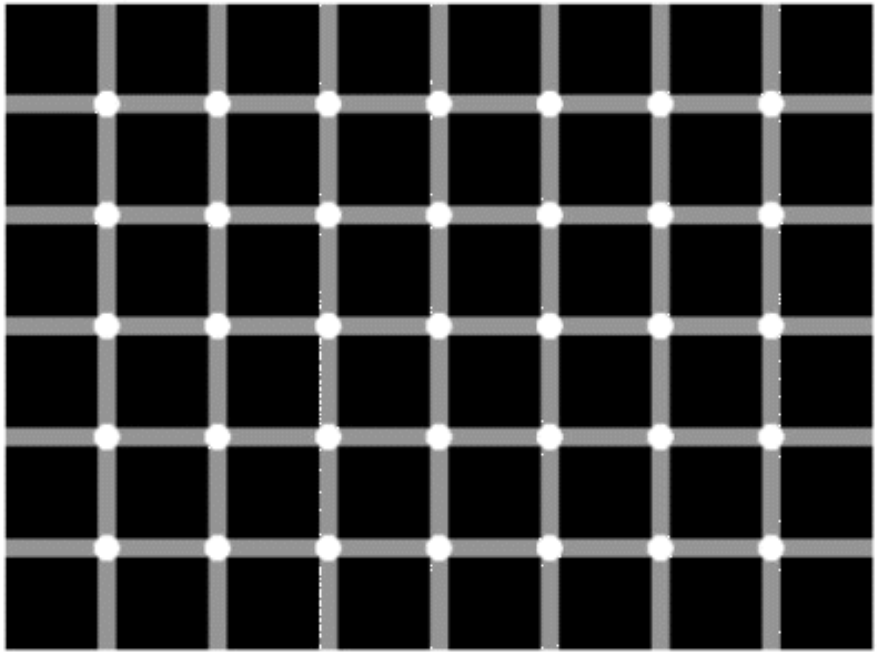
1

Basal: *Item 1*
Time Limit: *30 seconds*

If not using a stopwatch, be ashamed of yourself.

End time: ____ __ __
– Start time: ____ __ __
= Time: ____ __ __

"Count all the black dots in the matrix below as quickly as you can."



Test 28 Count the Black Dots

Scoring Table

Encircle row for the Number Correct

Number Correct	AE (Est.)*	GE (Est.)*
0	>55-0	>18.0
1	55-0	>18.0
2	54-11	>18.0
3	54-10	>18.0

*AE and GE are estimates of the precise values provided by the software scoring program.

Number Correct (0-3)

[Broad Ability - Processing Speed (Gs) Narrow Ability - Focused Utility (FU)]

WJ III Odd Scores Explained

I recently tested an 8 year old girl, referred in response to concerns regarding math difficulties and, to a lesser extent, reading delays. I gave her the first 17 tests on the WJ-III Cognitive, which produced a GIA score of 79. Her GIA is surprisingly low, given her scores on each of the 17 tests. Of the 17, one standard score was 79, one was lower, and the other 15 were higher. In some cases, scores were considerably higher than the GIA.

I understand that some scores carry more "weight" than others in determining the GIA, and that not all 17 scores I obtained are used in the GIA. I'm still surprised that the scores listed below yielded a GIA that low. I'd appreciate it if someone could enlighten me as to how this occurs. Many thanks.

GIA Ext. 79

VERBAL ABILITY Ext. 91	THINKING ABILITY Ext. 87	COG EFFICIENCY Ext. 72
Verbal Comp. 91	Gen Inf 91	
Vis-Aud 86	Ret. Flu. 88	
Spat. Rel. 90	Pic. Recog. 102	
Sound Blend. 87	Aud. Atten. 111	
Concept Form. 89	Analysis/Syn 86	
Vis. Match. 79	Dec. Speed 84	
Num. Rev. 72	Mem for Words 83	

Inc. Words 95
Aud. Working Mem. 101
Vis-Aud Learning Del z=-.32

First, of course, Inc. Words 95 and Aud. Working Mem. 101 don't count in the GIA.

Second, the mean of the 14 tests that do count is 88.5. That would be equivalent to a scaled score of 7.7. If a student averaged 7.7

on ten WISC-III subtests, the FSIQ Sum of Scaled Scores would be 77, which would yield a FSIQ standard score of 85, so the difference between your GIA of 79 and the mean standard score of 88.5 is 9.8 points and the difference between the GIA and the FSIQ you would get on a WISC-III with similar subtest scores is only 6 points.

Third, if you multiply each test by its weight for age 8 (p. 153 of the Technical Manual), the weighted sum is 87.58. The two highest scores (Picture Recognition and Auditory Attention) had the two lowest weights.

Fourth is that issue we discussed at great length some time ago, and for which Mark Daniel solicited a name. [My choice, the Luke Composite Effect, from the Gospel of Luke 8:18, imitating Keith Stanovich's Matthew (25:29) Effects and Ron Dumont's Mark (4:25) Penalty was voted out.] The point, though, as discussed most recently by Cathy Fiorello and Hubert Lovett, was that composite scores are more extreme (farther from the mean) than the average of the component scores.

The fifth issue is how one defines general intelligence. [I don't, so I am out of the discussion from here on.] The Wechsler scales have traditionally emphasized mostly Gc and Gv, which would have left you with scores of 91, 91, 90, and 102 for a mean of 93.5. Colin Elliott included Gf in his Differential Ability Scales core subtests, which would add scores of 89 and 86 for your kid, making the mean 91.5. The WJ III, based on CHC theory, includes Ga, Gs, Gsm. and Glr, which pulls your kid's average down to 88.5 and the weighted sum farther down to 87.5 before the composite effect kicks in for the final pull to 79.

John Willis

Woodcock-Johnson® III (WJ III®)

tter to Customers

13, 2002

rt Writer for the WJ III® Customer:

t Information about *Report Writer for the WJ III*.

Publishing has determined there is a reporting discrepancy in the *iter for the WJ III*. Specifically, inconsistencies in the narrative tra-Individual discrepancy section of the Table of Scores have ified; thus, we must ask that you postpone using the *Report* il an update is available.

antime, you may use the *WJ III Compuscore® and Profiles* o score and report your cases. We encourage you to check results ous uses of the *Report Writer* with your *Compuscore* program to appropriate results are reflected. Please contact Software 800.323.9540, extension 6070 for assistance.

will be accessible at here in the near future. You will receive an communication once more details are available. We apologize for venience this delay may cause you.

nected to the Latest Information about *Report Writer for I*.

ne to receive email notifications about updates and new features d directly to your email account. By enrolling online, you will be ckly access the latest information on the *Report Writer for the WJ* ere and follow the instructions to enter your contact information.

iate your patience and continued support of Riverside Publishing Please contact me at 800.323.9540, extension 7741 with any tions or comments.

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anager, Clinical Products and Services

WJ III® Report Writer Suggestions

Since the Report Writer for the WJ III was published in December, a few program "bugs" have been found. Regretfully, these were not caught in the quality assurance process. The principle bugs are described below and suggestions are provided for your use in verifying the reports you may have run already. Also, Dr. Woodcock and I both believe you can use your current Report Writer if you take these suggestions into account.

Two of the bugs occur in very specific and isolated circumstances and did not appear in the numerous sample reports created and reviewed in the development process.

Problem. There can be a problem in the Intra-Individual Discrepancies table on the Table of Scores for Broad Math. The Broad Math score may be reported inaccurately. When this occurs, it will manifest itself as an obvious error in that location of table of scores. Be assured, however, that the Broad Math score is correct in the narrative and also in the main part of the Table of Scores. The problem only occurs when you use the combination of Standard COG and Standard ACH for obtaining Intra-Individual Discrepancies. Suggestion. You can easily avoid this bug: Just don't select "Intra-Individual Discrepancies" until you get version 1.1. You can use the Intra-COG and Intra-ACH discrepancies instead.

Problem. There can be an occasional problem with the identification of "relative strengths" or "relative weaknesses" in the narrative portion of the report for Intra-Cognitive discrepancies. This problem does not appear in the Table of Scores. This bug occurs when all of the tests for the GIA (Std) are administered, and some, but not all, of the tests that would comprise the GIA (Ext) cluster are administered. Suggestion. If you use the COG, you can avoid this bug by always administering COG Tests 1-7 or COG Tests 1-7 and 11-17. Alternatively, if you want to administer another subset of COG tests for your purposes, use the Summary and Score report option, rather than the Comprehensive Report option.

Problem. The third bug occurs more frequently than the first two. The standard score classification labels for cluster standard scores 121 to 130 and 131 and above differ from the suggested standard score classification labels provided in Table 2-2 of the Report Writer manual. (The score provided in the Table of Scores is always correct.) In the narrative, the classification is reported as "high" when it should be reported as "superior." Also, a classification of "superior" is reported when it should say "very superior." Suggestion. Unfortunately, there isn't a way to avoid this problem with the current Report Writer. If you want to verify the accuracy of the narrative, look at the cluster scores in the Table of Scores. If any are above 121, use your word processor to insert the appropriate label in the narrative from Table 2-2.

There are a few other lesser or minor bugs, but these do not adversely affect scoring, use, or interpretation. I would describe them as things that I wanted to be implemented but were not. Consequently, I won't discuss those here. They will be implemented in Version 1.1.

In closing, I'd like to say that the response to the Report Writer has been very gratifying. I've greatly appreciated the comments I've received from several school psychologists on the usefulness of the checklists, for example. In the main, people have been very understanding about the bugs that have occurred. Most people just want to know when Version 1.1 will be available. Riverside is carefully doing quality assurance on it now. Hopefully, it won't be too long.

Fredrick A. Schrank, PhD, ABPP

Diplomate in School Psychology

American Board of Professional Psychology

Senior Author

Report Writer for the WJ III

READING FLUENCY CLARIFICATION

Reading Fluency 2-23-02

About June of last year someone drew our attention to conflicting instructions for scoring Reading Fluency in the Test Book and the ACH Examiner's Manual. Reading Fluency is a true-false test with a 3-minute time limit, therefore, a "correction for guessing" must be applied. A subject who is guessing has a 50-50 chance of selecting the correct answer for an item. One guesser might attempt 10 items in the 3 minutes and would get 5 correct by chance. Another guesser might attempt 50 items in the same 3 minutes and would get 25 correct by chance. Both subjects guessed but one ends up with a score of 5 and the other with a score of 25. After subtracting the number of errors from the number correct, each of these subjects would have a score of zero.

The clerical staff correcting these tests were instructed erroneously to count skipped items as incorrect. If a "correction for guessing" is applied, this procedure unfairly penalizes subjects who prefer not to guess. "Unfair" because all skipped items are counted as incorrect but only half of them would have been incorrect if the subject had guessed rather than skipped.

Below is a recent post in response to the question about the possible impact of changed scoring upon Reading Fluency norms:

From: "Barbara Wendling" <bjwendling@worldnet.att.net>
To: <IAPCHC@yahoogroups.com>
Sent: Tuesday, February 12, 2002 3:17 PM
Subject: Re: [IAPCHC] WJ III Reading Fluency

> Here is information about the norming of Reading Fluency: (source of info. -> Dr. Woodcock)
>
> In the norming, skipped items were counted as errors, but this happened infrequently. The scarcity of skips occurring results in an imperceptible impact on the norms. However, the effect on the occasional individual who skips several items could be significant in a clinical evaluation. We don't want to unduly penalize individuals for not guessing.
>
> After reviewing a sampling of 800 norm subjects across a representative span of ages, only 16 skipped any items. Seven of those 16 only skipped one item. Nine of those 16 were ages 6 or 7, suggesting that skipped items occur more at the younger ages.
>

Let me draw attention to and provide a little more detail about two important statements in the post:

First, the impact on norms or other group statistics would be imperceptible. Upon realizing that the norming data had been scored with skipped items counted as incorrect we undertook a review of the Reading Fluency norming test data to evaluate the differential effect of the two scoring procedures. We pulled protocols for a sample of 800 norming subjects. Many of the 800 subjects had data for both Forms A and B of the test, thus, a total of 1072 tests were checked for instances of skipped items. Sixteen tests with skipped items were identified and then re-scored to determine the increase in W score that would have occurred if the skipped items had not been subtracted from the number correct. The increase in W ranged from 0 to 16. The average increase for the 16 tests was about 5 W units. The sum of the gains was about 68. The impact on group statistics (e.g., descriptive statistics, norms, and factor analyses) was estimated by dividing the sum of the gains by the number of tests reviewed (68/1072 = 0.06 W). The means, on average across the sample, would have been higher by 6/100th of a W unit if skipped items had not been counted as errors. Another estimate was obtained by determining the impact upon standard deviation (SD). An inspection of the SDs reported for Reading Fluency in Appendix A of the WJ III Technical Manual indicates a median SD of about 50 W units across all ages. Dividing the median SD by the average gain (50/.06 = 833) shows an effect size of about 1/800th of a SD. These two estimates provide evidence of the "imperceptible" impact upon group statistics.

Second, even though it happened infrequently in the norming sample, it is important that clinicians do not count skipped items as errors. For example, one subject in the sample of tests reviewed received a new score that was 16 W points higher. The scoring instructions in the Test Book are correct. The problematic statement appeared in an early printing of the ACH Examiner's Manual and was corrected in later printings. If you have an older manual on hand, you may wish to turn to page 48 and delete the second sentence under Scoring ("Score as incorrect any items skipped prior to the last item the subject completed"). We all apologize for the confusion this may have caused some of you.

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Estimates of the Percentage of Population Obtaining Given Discrepancies Between Various WJ III® Tests

Age

	Percentage Obtaining given or greater discrepancy in either direction	2-3	4-5	6-8	9-13	14-19	20-39	Percentage Obtaining given or greater discrepancy in a specific direction
	50	11.05	8.53	8.02	7.02	6.04	5.28	**25**
	25	18.42	14.22	13.36	11.70	10.06	8.80	**12.5**
Comprehension-Knowledge (Gc)	**20**	20.50	15.83	14.87	13.02	11.20	9.79	**10**
Verbal Comprehension (LK, LD)	**10**	26.43	20.41	19.17	16.79	14.43	12.62	**5**
General Information (K0)	**5**	31.39	24.24	22.77	19.94	17.14	14.99	**2.5**
	2	37.32	28.82	27.07	23.70	20.38	17.82	**1**
	1	41.32	31.91	29.98	26.25	22.57	19.73	**.5**
	.1	52.85	40.82	38.34	33.57	28.86	25.24	**.05**

Age

	Percentage Obtaining given or greater discrepancy in either direction	2-3	4-5	6-8	9-13	14-19	20-39	Percentage Obtaining given or greater discrepancy in a specific direction
	50		11.53	11.34	11.43	10.14	10.25	**25**
	25		19.21	18.90	19.05	16.90	17.08	**12.5**
Short-term Memory (Gsm)	**20**		21.38	21.03	21.21	18.81	19.01	**10**
Numbers Reversed (MW)	**10**		27.56	27.11	27.34	24.25	24.50	**5**
Memory for Words (MS)	**5**		32.74	32.21	32.47	28.81	29.10	**2.5**
	2		38.92	38.29	38.60	34.24	34.60	**1**
	1		43.09	42.39	42.75	37.92	38.31	**.5**
	.1		55.12	54.22	54.67	48.50	49.00	**.05**

Age

	Percentage Obtaining given or greater discrepancy in either direction	2-3	4-5	6-8	9-13	14-19	20-39	Percentage Obtaining given or greater discrepancy in a specific direction
	50	10.55	11.80	13.42	13.09	12.42	11.89	**25**
	25	17.59	19.67	22.36	21.82	20.70	19.82	**12.5**
Visual Processing (Gv)	**20**	19.58	21.89	24.89	24.29	23.04	22.06	**10**
Spatial Relations (VZ, SR)	**10**	25.24	28.22	32.08	31.31	29.70	28.44	**5**
Picture Recognition (MV)	**5**	29.98	33.52	38.11	37.19	35.28	33.78	**2.5**
	2	35.64	39.85	45.30	44.21	41.94	40.15	**1**
	1	39.47	44.12	50.16	48.95	46.44	44.46	**.5**
	.1	50.48	56.44	64.16	62.61	59.40	56.87	**.05**

Age

	Percentage Obtaining given or greater discrepancy in either direction	2-3	4-5	6-8	9-13	14-19	20-39	Percentage Obtaining given or greater discrepancy in a specific direction
	50			12.42	12.84	12.07	11.98	**25**
	25			20.70	21.41	20.12	19.97	**12.5**
Auditory Processing (Ga)	**20**			23.04	23.83	22.39	22.23	**10**
Sound Blending (PC-S)	**10**			29.70	30.71	28.86	28.65	**5**
Auditory Attention (UR, US)	**5**			35.28	36.48	34.29	34.03	**2.5**
	2			41.94	43.37	40.76	40.46	**1**
	1			46.44	48.03	45.13	44.80	**.5**
	.1			59.40	61.43	57.73	57.30	**.05**

Age

	Percentage Obtaining given or greater discrepancy in either direction	2-3	4-5	6-8	9-13	14-19	20-39	Percentage Obtaining given or greater discrepancy in a specific direction
	50	12.25	12.07	12.25	12.51	12.51	11.80	**25**
	25	20.41	20.12	20.41	20.84	20.84	19.67	**12.5**
Long-term Retrieval (Glr)	**20**	22.72	22.39	22.72	23.20	23.20	21.89	**10**
Visual-Auditory Learning (MA)	**10**	29.28	28.86	29.28	29.91	29.91	28.22	**5**
Retrieval Fluency (FI)	**5**	34.79	34.29	34.79	35.52	35.52	33.52	**2.5**
	2	41.35	40.76	41.35	42.23	42.23	39.85	**1**
	1	45.79	45.13	45.79	46.76	46.76	44.12	**.5**
	.1	58.57	57.73	58.57	59.81	59.81	56.44	**.05**

		Age					
	Percentage Obtaining given or greater discrepancy in either direction	2-3	4-5	6-8	9-13	14-19	20-39	Percentage Obtaining given or greater discrepancy in a specific direction
	50		10.66	10.25	9.60	9.37	8.53	**25**
	25		17.76	17.08	16.00	15.62	14.22	**12.5**
Fluid Reasoning (Gf)	**20**		19.77	19.01	17.81	17.39	15.83	**10**
Concept Formation (I)	**10**		25.48	24.50	22.95	22.41	20.41	**5**
Analysis-Synthesis (RG)	**5**		30.27	29.10	27.26	26.62	24.24	**2.5**
	2		35.98	34.60	32.41	31.65	28.82	**1**
	1		39.84	38.31	35.89	35.04	31.91	**.5**
	.1		50.96	49.00	45.90	44.82	40.82	**.05**

		Age					
	Percentage Obtaining given or greater discrepancy in either direction	2-3	4-5	6-8	9-13	14-19	20-39	Percentage Obtaining given or greater discrepancy in a specific direction
	50		8.53	9.82	9.71	10.14	9.60	**25**
	25		14.22	16.36	16.18	16.90	16.00	**12.5**
Processing Speed (Gs)	**20**		15.83	18.21	18.01	18.81	17.81	**10**
Visual Matching (P)	**10**		20.41	23.48	23.22	24.25	22.95	**5**
Decision Speed (RA)	**5**		24.24	27.89	27.58	28.81	27.26	**2.5**
	2		28.82	33.16	32.79	34.24	32.41	**1**
	1		31.91	36.71	36.30	37.92	35.89	**.5**
	.1		40.82	46.96	46.44	48.50	45.90	**.05**

To use this table, find the column appropriate to the examinee's age. Locate the discrepancy that is just less than the one obtained by the examinee. The first column in that same row gives the percentage of the population obtaining discrepancies as large or larger than the located discrepancy.

For example, for 4-year-old examinees, a Visual Matching - Decision Speed discrepancy of 25 points would be found in approximately 2% to 5% of the population.

The method used to compute the discrepancy between scales that reflect the percentage of the population obtaining the discrepancy is as follow:

Discrepancy = Sd z square root(2-2rxy)

The first term is the standard deviation of the test (15), the second is the selected z value, and the last is the correlation between the two scales.

For example, for a 4-year-old child the discrepancy between the WJ III Visual Matching and Decision Speed tests that represents 5% of the population is

15 (1.96) square root(2-2(.66)) = 24.24

To download a copy of these tables, press here.

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A Difference That Eluded Someone on the WJ III®Achievement Test??

Beaker - Flask

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A Funny Thing Happened On the Way to the Forum!!

When we administer test to children (or adults for that matter) we expect that the scores we get will be derived from a representative norming sample. The **WJ III®** has a wonderfully large and diverse sampling but one must look closely and ask WHY?:

Why does a score get generated for a test on which the technical manual (Table A-1, page 115) reports no one in the sampling? And why, at the same time does the test NOT report scores for a test on which the same manual (page109) reports 150 children in the sample? Below is the proof:

BLACK indicates normative data at age 2
BLUE indicates no normative data at age 2

Score Report - COMPUSCORE VERSION 1.1b
Dumont, Kate (2 years old)
May 1, 2000

CLUSTER/Test	RAW	AE	EASY to DIFF		RPI	PR	SS(95% BAND)
Verbal Comprehension	-	2-2	<2-0	2-8	93/90	63	105 (84-126)
Visual-Auditory Learning	6-A	<3-0	<3-0	<3-0	-	-	-
Spatial Relations	1-A	2-6	2-3	2-9	99/90	94	123 (105-141)
Sound Blending	1	2-11	2-8	3-4	-	-	-
Concept Formation	1-A	2-9	<2-0	3-8	96/90	67	107 (88-125)
Visual Matching	1-1	2-8	<2-6	2-11	-	-	-
Numbers Reversed	1	5-0	4-11	5-1	-	-	-
Incomplete Words	1	2-5	2-1	2-10	98/90	86	116 (95-138)
Auditory Work Memory	1	3-6	<3-6	4-5	-	-	-
General Information	-	2-4	<2-0	2-9	96/90	64	106 (95-116)
Retrieval Fluency	1	<2-0	<2-0	2-2	78/90	27	91 (74-108)
Picture Recognition	1-A	<2-0	<2-0	<2-0	52/90	17	86 (70-101)
Auditory Attention	1	<2-0	<2-0	2-3	87/90	43	97 (80-115)
Analysis-Synthesis	1-A	5-3	4-5	5-10	-	-	-
Decision Speed	1	3-8	3-3	4-2	-	-	-

Memory for Words	1	<2-0	<2-0	2-0	78/90	37	95 (82-108)
Rapid Picture Naming	1	<2-0	<2-0	2-2	87/90	46	98 (88-109)
Planning	-	<3-0	<3-0	<3-0	-	-	-
Pair Cancellation	1	<5-0	<5-0	<5-0	-	-	-

OOPS!! GHOST NORMS?

Sound Blending	1	2-11	2-8	3-4	-	-	-

Norms but no score?

Auditory Attention	1	<2-0	<2-0	2-3	87/90	43	97 (80-115)

No norms but a score?

Dr. Ron McGee's COGNITIVE ABILITIES: IMPLICATIONS FOR ACHIEVEMENT

There is a link at the bottom of the page that allows one to download a Microsoft Word Rich Text Format (RTF) copy of these pages. We thank Dr. McGee for allowing us to post and for allowing the download link..

Caveat for use of recommendations

The recommendations listed in this handout are compiled from several different sources (e.g. workshops, articles, books, conversations) including but not limited to Dick Woodcock, Gary Hessler, Nancy Mather, Barb Wendling, Kevin McGrew, Fred Shrank and Ron McGhee. Recommendations are sorted by factors measured by the WJR and WJ III® Tests of Cognitive ability. They represent theoretical interventions, some of which have been validated through research while others have yet to be verified empirically. The study of aptitude/treatment interaction has taken a giant step forward with the publication of the WJ III®. For the first time, researchers can be confident that reliable and valid measures of many identified specific cognitive abilities (based upon current CHC Theory) are available, greatly improving the quality of research in this field. No doubt there will be modifications to the handout as new data is received. As with any source of information, recommendations in the handout may not generalize to every student in every setting. The handout is not a substitute for professional judgment.

Ron McGhee

Long-Term Retrieval

1. Provide intensive review, repetition, and over learning at each step.
2. Introduce only as many facts, words, etc., as the student is able to learn in a session.
3. Provide the student with lists, notes, or summaries that will help organization and, subsequently, facilitate recall. Make it a priority that good note taking is occurring.
4. Provide immediate feedback of results. This may be accomplished with small group instruction, programmed learning materials, or a microcomputer.
5. When introducing new information and skills, provide the student with pictures to look at or a way to visualize and form associations regarding what she/he is learning.
6. Ensure teachers understand that the student has a processing deficit in long-term recall and that this will affect several areas of achievement and not just one.
7. Modifications in instruction and assessment can help students with deficits in long-term retrieval.
8. Test skills more frequently; avoid long periods of time between presentation of information and assessment of retention.
9. Avoid fill in the blank or essay questions when possible; if not, allow for open book or open note testing.
10. Utilize multiple choice and/or matching testing formats when possible. Provide key formulas or operations at the top of the test.
11. Provide memory aiding devices at school: spell checkers, calculator, multiplication chart on desk, tape or video recording of lesson, notes,

or books.
12. Allow for review of information before presentation of new concepts or taking tests; mini study period.
13. Appreciate the fact that students can demonstrate mastery of important concepts besides taking a standardized skills test.

Auditory Processing

1. There is a clear association between reading achievement and ability to analyze and interpret sounds in words. In categorizing various phonemic awareness tasks, sound blending and oral phonemic segmentation (separately articulating the sounds of a word in the correct sequence) are the most essential and closely associated with early reading success.
2 Specific training in phonemic awareness appears to benefit elementary children.
3 Some students who perform poorly on STM also have trouble with auditory processing. In these cases, many of the recommendations for STM may be appropriate for the student (the most important being give clear, direct instructions for all tasks, limited in length and complexity).
4 Refer to the speech pathologist for a more comprehensive language assessment.
5 If phonological awareness training has been unsuccessful, recommend a nonphonic reading approach.
6. In severe cases, the school will need to excuse the student from foreign language requirement at the secondary level.
7 Provide visual outlines and graphic organizers for tasks involving listening.
8 Do not penalize the student for difficulties in reading, decoding, or spelling; provide separate grades for mechanics and content.
9 Allow extra time for reading, writing, and testing assignments. Reduce distractions (especially auditory ones) to a minimum during these activities.
10 Devise activities that reinforce the student's ability to discriminate between "real" and "silly" (nonsense) words.
11 For development of spelling skills, dictate short words with regular sound-symbol correspondence for the student to write. Pronounce words slowly so that the student can hear the separate phonemes. Have him/her pronounce each sound as she/he writes the letter or letter combinations.
12 When you speak, face the student, enunciate clearly, and have the student watch your mouth as the sounds are made. Pause between clauses or ideas. In the most extreme of cases, fit the student with an auditory trainer so that teacher's voice is amplified; this makes it easier for the student to focus on verbalizations rather than being distracted by background noise.
13 There is a correlation of moderate size between poor auditory processing and behavioral/ interpersonal problems (most likely related to poor pragmatics). Guidance counseling may be beneficial (especially in group setting).

Visual Processing

1 The research on the relationship between visual processing and reading achievement is not conclusive (as is the literature on auditory processing). Three factors usually emerge in the research: a reading factor, a visual-cognitive factor which includes skills requiring more cognitive involvement, and a visual differentiation factor, which includes skills that are more automatic.
2 In general, recommendations for visual processing include activities that increase awareness of spatial relationships and require visual thinking.
3 Provide practice with object assembly, construction of patterns, tracing, copying and drawing geometric patterns (all with constant feedback during and after the task). This type of remedial intervention is most effective during elementary years and

much less effective after fifth grade.
4 These students make errors on tasks involving reading diagrams, charts, and maps. Provide an assistant to help with this type of visual-data interpretation. Try to verbalize (summarize concepts using oral language) this information as much as possible. Provide the student with practice in the areas (ass this to normal homework schedule).
5 Provide more time for writing, math, and science assignments.
6 Reduce the number of problems on handouts (homework sheets) or provide a card for the student to use to cover extraneous information on the page.
7 Encourage (at home) the student to participate in activities that have elements of visual problem solving and manual manipulation, such as chess, checkers, guitar or piano, and puzzles. Don't expect high mastery of such activities (accept what ever level of proficiency the student achieves.)
8 Try to grade on content and final accuracy rather than errors made in copying, spelling, or creative writing along the way. Use a high-lighter (yellow) and mark the most important of these mistakes and have the student edit the work. This is important behavior modification.
9 In extreme cases, allow use of technology (computer, word processor, talking dictionary and calculator) when possible; this will reduce the opportunity for visual processing errors and allow for easier correction.

Short-Term Memory

1 Make sure teachers understand the importance of STM as a mediator in the chain of information processing. If STM is poor, this will act as an inhibitor in the application of reasoning, auditory and visual processing, and comprehension abilities.
2 Students with poor STM usually do not enjoy activities and attests that require listening.
3 Ensure that teachers understand poor STM will affect skill acquisition in many skill areas.
4 A hereditary component may exist in STM (stronger than other Gf-Gc areas) that may not be pliable beyond a certain point.
5 Deficits in STM in childhood are more likely to persist into adulthood than deficits in other Gf-Gc areas.
6 When giving instruction to the student, use brief simple sentences that are sequenced in the order of the tasks.
7 Repeat directions to this student making certain they are paying attention.
8 Write specific directions and assignments on the chalkboard for the student to copy. Provide the student with a copy of the notes of a student who is particularly good note- taker. This will allow the student to give his/her complete attention to the speaker.
9 Provide practice for the student in retelling events and stories (auditory), or a group of objects/pictures shown for five (5) seconds and then hidden from sight (visual). STM is a Gf-Gc ability that can be improved with such practice. In this manner, the student must come to learn that they have some responsibility in developing their own attending and memory skills.
10 Have a responsible peer assist with recording assignments for the student. Have the teacher take the responsibility to check an assignment notebook. In some cases, a parent or teacher will need to monitor the recording and completion of assignments (homeschool communication chart).
11 Seat the student in the front row of the classroom or a close to the teacher as possible to reduce distractions and increase his/her ability to attend to oral directions.
12 Students with poor STM must learn how to request and feel comfortable about requesting additional help or repetition of information they don't understand.
13 Do not forget that there are moderate to strong correlations between deficits in STM and language disorders. Refer for additional testing by the speech pathologist if STM tests particularly low.

Processing Speed

1 Place the emphasis in evaluation on accuracy rather than speed. Because the student has difficulty performing tasks rapidly under pressure, provide him/her with ample time to complete work or shorten the assignments (especially in math operations) so they can be accomplished within the allotted time.
2 Seat the student in the front row near the chalkboard for all copying activities.
3 Recommend visual tracking exercises or computer games that require rapid visual scanning.
4 Provide access to computer programs that target reading speed (Speed Reader). Do the same for math operations (Math Blaster).
5 When copying is necessary, do not require speech or accuracy.
6 Do not require the student to copy problems from his/her math or other textbooks. Instead, provide him/her with clear worksheets that contain only a few problems and plenty of white space.

Comprehension-Knowledge

1 Consult a speech/language pathologist for recommendations on oral language development and effective teacher approaches for the student.
2 Educate the student's teacher(s) as to the nature of the student's vocabulary deficit and how it will affect academic, social, and general classroom functioning. The student with low Gc is going to struggle in many different subject areas. There is no quick fix to this problem. If the low Gc score is due to a language disorder, it may take several years to correct. If the low Gc is indicative of lower ability/aptitude, this will be a chronic drag on skill acquisition. Lower standards may need to be applied if the Gc score is consistent with other Gf-Gc abilities (all within borderline-slow learner range). Provide an expectancy chart to the teacher showing prediction of achievement to the overall measure of "g".
3 Paraphrase information to the student using simplified language.
4 These students must develop better receptive and expressive vocabulary skills. Choose someone to work on it and see that it gets done. The regular education teacher can provide a structured-sequence reading vocabulary program. This should be continued grade to grade. Ask them to tell you the name of this program and ask to see the actual vocabulary development worksheets.
5 Remember that memory problems may interfere with vocabulary assignments.
6 Provide redundancy and repetition in teaching new concepts. Repeat important statements verbatim and explain the concept in a variety of ways.
7 When lecturing, present ideas in an organized and logical sequence. Keep the points as simple as possible and group related information. In the most extreme cases (severe language disorders), do not pair the student with a teacher who is hyper-verbal. 8 Remember that Gc (comprehension-knowledge) is highly influenced by cultural, environmental, and educational opportunities. At the same time, remember that Gc is single best predictor of performance in language arts. It is not appropriate to expect academic achievement beyond current levels of Gc and Gf. Work on these abilities concurrently with basic academic skills.

Fluid Reasoning

1 Research indicates that one of the most difficult areas for students with learning problems is that of abstract reasoning and

mathematics. Gf abilities are those most often described in the literature as representing “g”.
2 Encourage the use of manipulative to develop concepts.
3 Attempt to teach concepts in a concrete manner. Use concrete cues in all directions, telling the student exactly what to do at each step.
4 Require a considerable amount of over learning.
5 At the secondary level, help the student select courses that emphasize practical and experiential learning and do not require a high level of abstract reasoning.
6 Provide the student with a list of procedures to follow when working with tasks that involve problem solving.
7 Do not introduce abstract concepts until you are sure the student has mastered the prerequisite skills.
8 Even when the final solutions or answers are incorrect, provide the student with encouragement and praise for persistence in problem solving and attempts to discover a solution.
9 Remember that Gf abilities are ones that are most difficult to remediate beyond the student’s natural course of development. Most intervention activities designed to stimulate these abilities do not generalize to new tasks.

Quantitative Reasoning

1 Do not fail to consider quantitative ability as a cognitive factor. This is going to be confusing to teachers and parents. It is confusing to most psychologists.
2. Provide time for drill, drill, drill. Do not move on to new concepts until the student is at a 95% mastery level. Send practice problems home daily (but not too many and only on those skills at least at 80% mastery level).
3 Enforce working on memorization of basic math facts (adding and subtracting). This is best supplemented by parents. Tell them you expect them to work on these; accept no excuses.
4 If multiplication and division mastery is slow, place easy access charts on the student’s desk for quick reference.
5 Beginning at grade 4, encourage the student to use a calculator for all problem-solving activities. Hold off on use of the calculator for basic operations until 6th grade.
6 Be sure to check our processing speed. If this is weak as well, reduce work load or provide more time to finish the assignment.
7 Use concrete objects and manipulatives to teach all new concepts and to extend previously presented concepts.
8 Encourage parents and student to consider basic math classes in high school. The quantitative score on college entrance exams may be considerably lower than verbal.
9 Remediation in math is most effective with basic operations and less so with problem solving involving high level abstract-conceptual ideas (chemistry, physics, calculus, statistics, algebra). Understand that improvement in problem solving will be slow and at times, frustrating to both teacher and student.

Educational Implications Based on WJ-R Cognitive Tests

Long-Term Retrieval (Glr)

- relationship to basic reading skills, i.e. sound/symbol association – word recognition (also to basic writing skills, spelling)
- also to accurate “word” or “information” finding – the “I know it but can’t think of it” phenomena
- mathematics: recall/utilization of basic facts for efficient calculation

Methodologies:

- neurological impress for learning sight vocabulary
- multisensory exercises for development of reading skills
- lang-aud rehearsal reading
- semantic webbing of new concepts
- number fact “families” for math
    - resource sheets (for process/or procedures such as math)
    - poor readers being taught by phonics do poorly
    - attention-concentration distractibility level interference
    - low frustration level interference
    - persistence in problem solving pays off
    - perceptual analysis and synthesis
    - strategies for storing information
    - studies thoroughly for an exam or quiz but has difficulty retrieving precise answers on the exam or quiz
    - has difficulty on math calculation tests which are timed, but is noticeably more successful on untimed tests
    - may tend to use general descriptors/words in written language such as “those,” “them,” “something”
    - socially does not quickly, at ease retrieve a person’s name, must make some association which is not automatic
    - needs much practice and repetition (over learning) for associative learning (e.g. ABCs) to become more automatic
    - may need help with cognitive learning strategies
    - difficulty recalling math facts
    - difficulty answering question in class regarding earlier presented material
    - difficulty answering comprehension questions relating to detail and sequence of events
    - inconsistent performance (A’s and F’s)
    - difficulty completing work started later in day covering material presented earlier
- student falsely accused of “not being motivated”
- difficulty blending sounds in reading process and “holding” sounds to recognize the word
- difficulty answering questions related to currently presented material
- “absent minded”?

Problems:

- listen and follow directions
- reading with whole word approach

Recommend:

    - require more teach and reteach
    - need to be taught learning strategies
    - word retrieval problems – language problems
    - aphasic
    - cultural
    - difficulty with symbolic learning – math symbols, alphabetic symbols
    - fluency in reading/writing may be weak
    - may have difficulty with concept formation or just label learning for concepts
    - may demonstrate word retrieval problems
    - may have difficulty with expressive language tasks
    - strong or weak retrieval of stored information
    - VA – AV differentiation
- teach a strategy of thinking of related bits of information
- teach a strategy of learning by capitalizing on the associations – teacher should point out or help student discover associations
- problems with incidental learning unless tried to context or experience
- problem getting information in to Gc knowledge base
- stress other systems for compensation
- word finding problems?
- long-term retention of learned material – inability to retrieve that information over time
- may need accommodations or compensatory strategies within their learning program, i.e. rehearsal strategies, association building if Glr is poor
- if Glr is good, one might utilize to compensate for other deficits
- filter out word-finding difficulties
- not able to retrieve content for tests
    - not able to organize directions to perform tasks
    - teach visualization techniques
    - teach meta cognitive strategies and task analysis
    - teach paraphrasing and listening skills
    - can’t follow simple directions
    - can’t gate out competing stimuli
    - may need to have compensatory strategies for retrieval
- may be diagnostically significant in diagnosis of hyperactivity
- may need to change instructional approach from auditory-visual to some other input and output approaches
- implications for ability to self-correct
- low Glr – long processing time (poor classroom test performance)
- difficulty making associations for particularly language-related learning (reading, spelling)
- Usually associates with expressive language disorders like word finding difficulties
- need more verbal/visual rehearsal to effectively retrieve

• ex: doing fractions after not working with them for a year – succeeding in programs which use a “spiral approach” rather than “mastery learning” approach

Short-Term Memory (Gsm)

• most obviously relating to language acquisition
• basic reading skills such as phonics/decoding
• spelling
• listening comprehension to the extent that details or information cannot be compensated for through Gc – for example when needing to listen to novel (i.e. content specific) information which is unfamiliar to the listener in terms of prior knowledge
• math – learning new sequential processes

Methodologies:

• Gc strategies to enhance associational learning
• “chunking” or limiting quantity
• mnemonics – prompts or visual link-ups for associations/retention
• be sure eye contact is present before presenting information
• use auditory or visual clues/cues to get attention before presenting information
• low on Gsm – were they better at sentences than words? – if yes, then present information in context rather that as separate units of information – e.g. math facts or vowel sounds would be learned more easily if presented in context rather than as separate, unassociated facts
• difficulty on traditional spelling test, not able to remember due to amount of information. Need to cue to specific term
• must be able to maintain attention to a sustained/adequate amount of time
• require the student repeat the information given, rehearse/model until the student gets it
• use visual cues and imagery associated with the oral language
• develop rehearsal strategies
• teach them learning strategies (rehearsal, etc)
• give short, concise, simple, oral directions
• augment oral presentations with visual aids and demonstrations
• ask student to rephrase oral directions - to check to see of they understood it
• kids may show problems with following verbal directions
• may have difficulty with all aspects of learning since information may not be held long enough to be placed in long-term memory
• may benefit from attentional cues to focus attention
• chunking strategies
• rehearsing
• note taking
• can’t hold to store content-need for visual to stabilize auditory memory
• auditory problems related to language

- meaningful data-contextual/experiential
- depending on subtest weaknesses choose information/teaching techniques that are more contextual – rely on meaning
- consider needs for strategies
- try to assess background information to see if emotional-social can impact
- weakness: may affect long-term retrieval processing, storage, retention of learning material
- may need accommodations and compensatory strategies (see Glr)
- not able to follow instructions
- teach listening skills
- use multi-sensory approach
- visual stimulus with oral directions
- teach note-taking skills
- can't remember auditorially presented materials
- may have implications for speech/language therapist in terms of receptive language skills
- has difficulty in encoding information
- implications for instructional presentation of length of language-related materials
- implications for vocabulary development and its relationship to language comprehension
- implications for teaching a rehearsal/chunking/visualization strategy for improvement of Gsm
- use small bits at a time and then build
- use of a tape recorded in class (older students) to catch all information – effective note taking
- I see attentional problems as obvious classroom signs of this so for some more structured presentation and practice are helpful
- student will need lots of repetition for new information
- teacher will need to insure student is attending – may need to use multisensory methods

Processing Speed (Gs)

- automaticity/fluency in reading (and rare) accuracy>frustration and shut-down for tasks
- writing production and fluency of written language
- math calculation/percept accuracy with details

Methodologies:

- time flexibility and allowances (i.e. waivers for standardized tests like SAT's)
- additional prompts for information details and focus of attention to salient points/issues
- scanning and searching speed inhibited greatly by distractibility – ADD kids have great difficulty with this – may just give up

Remediation

- cut number of stimuli presented at once; allow more time for task completion; cut tasks down to smaller units use something (paper) to mask stimuli not involved in immediate task
- teach relaxation techniques
- teach 5-step problem solving strategies (Miechenbaum)
- kids who don't turn in their homework or schoolwork often low in processing speed and writing fluency with significantly higher writing samples and Gc
- very sensitive to quantity of visual/graphic information, need to reduce quantity or increase allowed time (i.e. copy, fluency in reading)
- difficulty in rapid recognition of visual/graphic similarities/differences (shapes, numbers, forms)
- may have trouble doing academic tasks that require sustained attention
- may need time limits removed from work
- don't pressure to do "quickly"
- may need to explain/present things at a more deliberate pace
- difficulty completing timed tasks
- error analysis: accuracy, speed, scanning, organization
- weakness: slow performance in achievement areas
- remediation: compensatory strategies, special learning materials
- strength would enhance fluency in decoding tasks (reading and math – freeing cognitive resources for higher order comprehension and problem solving
- may need additional time to perform tasks
- slow work
- completion
- added time to complete tasks
- ADHD responsiveness to _____ therapy
- motor skill problems – use of computer
- may be intolerant
- may be behavioral problem
- may be cultural, personality
- direct questions to the student
- avoid timed tasks
- cut assignments down
- implications for attention to detail
- implications for motivation
- implications for learning style, i.e. rote versus higher cognitive
- implications for visual learning skills
- problems in working under time constraints
- attentional problems associated often translates to work production time problems in the classroom
- by-passing – allow more time to finish, limit number of items on an assignment
- may be quickly frustrated if they process slowly and more information is piled on and on. Can have behavioral implications

- teacher may need to limit amount of work assigned
- work with student to improve speed – time tests based on how many problems they complete within a time period – work to increase these

Auditory Processing (Ga)

- poor performance argues against phonics instruction for reading – use a visual approach like whole word or an integrated approach using multi-model methods
- ability to process unfamiliar words during a lecture, words not previously learned
- problems on tasks which require rapid recognition of sounds
- difficulty with phonetic reading activities
- difficulty with beginning spelling skills development
- methodologies to be chosen need to incorporate knowledge of the other factors (Glr, Gs, Gc) that relate to these same skills – not enough room here to elaborate – phonetic methods are so well documented (ad nauseum)
- obviously related to phonetic reading and spelling skills
- listening comprehension/language and vocabulary acquisition
- ability to work with settings with competing noises (selective listening discrimination and attention)
- closely related to development early reading
- may indicate to teach or not to teach phonetically
- problems would show in spelling and writing
- reading fluency – and therefore reading comprehension may be affected
- ESL? Difficulties
- hearing acuity – check ears
- listening skills
- check oral language development
- ear infections?
- deficit in word attack skills
- implications for identifying alternative learning channels other than auditory
- particularly if language comprehension is good tend to have a hard time learning by an auditorally-based (phonics only) method – they don't discriminate sounds well
- use of a mix of methods heavy on tactile/visual presentation with the auditory stimulus helps shore up the weakness, while using a (suppose) strength in visual; use a whole language approach in addition to address the comprehension
- insure student is attending to instructions
- have student repeat instructions back
- keep auditory distraction to a minimum
- increase use phonics approach for reading and writing (strong)
- decrease use language experience approach

Visual Processing (Gv)

- look at Gv/Ga comparison – see where strong modality is – use strengths to plan instruction – strong visual skills: have child employ visual strategies to recall information, visual associations, whole word reading instruction, outlining words, sports
- does not rapidly/fluently cope with large quantities of visual/graphic information – slow readers
- difficulty on rapid sound/symbol processing – matchings
- difficulty on copying tasks
- may not rapidly recognize “whole” words
- may have trouble with math (visualizing number lines, etc)
- augment demonstrations of visual presentations with verbal/oral explanation
- teach kids to “talk through” when working on visual tasks
- content specific issues (i.e. reading graphs/maps or in geometry)
- picture recognition with relationship to Glr might infer some strategies and relationship to acquisition of sight vocabulary and spelling
- eyes checked for acuity
- use a visual cue for a child with strength
- teach to strength
- provide concrete representations so visualizing is not necessary initially – then move to that
- ex: use manipulatives – for math concept development – move to visualizing without the manipulatives
- visual strengths: use charts, diagrams to illustrate relationships in problem solving, or reading – to assist in more concrete organization, less auditory if that’s a problem
- helpful in analyzing visual imagery skills
- may be related to higher cognitive abilities related to visual processing
- could help to focus on career direction science versus humanities, academic versus art

Comprehension/Knowledge (Gc)

- limited word knowledge affecting all aspects of comprehension
- word choice in written language limited
- problems here should be referred perhaps to a speech/language pathologist for more definitive identification of problem
- indicator for higher education success despite decrease in mathematics or reading achievement can store data – needs compensatory strategies or accommodations
- kids have trouble comprehending much of what they read (don’t have background information)
- need “horizon expansion” activities (read to them, field trips to zoo, etc)
- possibly could use language experience approach to reading
- can see a pervasive impact across all academic areas

Methodologies

- experiential enhancement
- webbing/mapping (directly) of new concepts to old

- "whole language" programs often play into this ability
- low scores – enrichment activities especially involving rich use of language – exploratory learning strongly linked with language input/output
- predictor of achievement
- knowledge base facilitates comprehension reading and oral lectures
- comprehension problems may be lack of Gc rather than "comprehension" problem per se
- weakness: language impairment, environmental deprivation
- good to identify ESL's progress
- read more
- field trips, TV, films, videos
- language problems – instruction needs to be more visual or manipulative
- develop associations between words/phrases and pictorial/situational meaning
- vocabulary development
- use of general descriptors in general communication skills due to limited vocabulary
- lack of interest/motivation academically especially for older students
- foundation of knowledge from which further learning is based
- relevant to identification of vocabulary problems
- useful in identifying receptive and expressive language problems
- useful in identifying language comprehension problems
- may be sensitive to cultural experiences and cultural differences in language reception and expression

Fluid Reasoning (Gf)

- predictor of problems with algebra or math problems
- may do well in statistics – geometry, etc.
- good for career lawyer, etc. (reasoning)
- creative writing?
- kids have trouble with abstract/conceptual thinking, learning
- need more direct instruction (can't learn rules, etc. on their own)
- will have trouble with math and every rule-bound systems of reading
- need more concrete approaches to learning (e.g. using objects, meaningful material, etc.)
- establishing a curriculum that probes and enhances connective reasoning and strategies as opposed to rote drill activities – for example – use of manipulatives or concrete instances to illustrate abstract concepts. Actual methods are as varied as the subject area and age/grade of subject
- application skills (reading comprehension, math reasoning and cognitive calculation skills – fractions, place value)
- written language tasks for novel assignments (i.e. comparative essays)
- can be taught – problem solving strategies; may have to be shaped with concrete manipulatives
- will have difficulty with transfer and generalization of learning
- may do better with rote learning tasks

- good to identify ESL's ability
- task-analyze information
- verbalize problem solving
- teach review, drill to mastery
- for weaker students – use high interest, low vocabulary materials
- not fast on his/her feet when required to cope with situation not common or everyday experiences
- creative writing and new and unique applications of learning information/vocabulary
- communication skills may be heavily reliance on concrete descriptions
- need to develop applicative strategies for mathematics concepts
- useful in identifying a student's ability to correct after feedback
- ability to use reasoning skills in a new learning situation
- useful in identifying a nonverbal learning problem
- useful in identifying learning efficiency in a task requiring higher-order cognitive abilities

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WOODCOCK JOHNSON® III

Woodcock-Johnson Tests of Cognitive Abilities (WJ III®) Richard W. Woodcock, Kevin S. McGrew & Nancy Mather, Riverside Publishing, 2001

Unlike many individual ability tests, the WJ III® Tests of Cognitive Abilities are explicitly designed to assess a student's abilities on many specific McGrew, Flanagan, and Ortiz Integrated Cattell-Horn-Carroll Gf-Gc (CHC) "cognitive factors," not just a total score or a few factors. Each of seven tests in the Standard Battery is designed to measure one factor. The Extended Battery offers 7 more tests to make two for each factor. There are 3 Standard and 3 Extended tests that contribute to additional Clinical Clusters. Tests can also be combined into a General Intellectual Ability (GIA Std) score of 7 or 14 tests (GIA Ext) and into several Cognitive Categories. Examiners are permitted to select the tests they need to assess abilities in which they are interested for a particular student. The WJ III® was normed on 8,818 children and adults (4,783 in grades kindergarten through 12) in a well-designed, national sample. The same persons also provided norms for the WJ III® tests of academic achievement, so the ability and achievement tests can be compared directly, and cognitive and achievement tests can be combined to measure CHC factors.

The description below are not the "official" descriptions provided by the WJ III® manual.

Comprehension-Knowledge (Gc)

1. Verbal Comprehension. Naming pictures, giving ant-- or synonyms for spoken words, and completing oral analogies.
11. General Information. Answering "where" and "what" factual questions.

Long-Term Retrieval (Glr) **[note - "long-term" can be as short as several minutes]**

2. Visual-Auditory Learning. The student is taught rebus symbols for words and tries to "read" sentences written with the symbols.
12. Retrieval Fluency. The student tries to name as many things as possible in one minute in each of three specified categories, e.g., fruits.

Visual Processing (Gv)

3. Spatial Relations. The student tries to select by sight alone, from many choices, the fragments that could be assembled into a given geometric shape.
13. Picture Recognition. The student is shown one or more pictures and then tries to identify it or them on another page that includes several similar pictures

Auditory Processing (Ga)

4. Sound Blending. The student tries to identify words dictated broken into separate sounds.
14. Auditory Attention. The student tries to recognize words dictated against increasingly loud background noise..

Fluid Reasoning (Gf)

5. Concept Formation. For each item, the student tries to figure out the rule that divides a set of symbols into two groups.
15. Analysis-Synthesis. The student tries to solve logical puzzles involving color codes similar to mathematical and scientific symbolic rules.

Processing Speed (Gs)

6. Visual Matching. As quickly as possible for three minutes, the student circles two identical numbers in each row of six numbers.
16. Decision Speed. As quickly as possible for three minutes, the student tries to find the two pictures in each row that are most similar conceptually (e.g., sundial and stopwatch).

Short-Term Memory (Gsm)

7. Numbers Reversed. Repeating increasingly long series of dictated digits in reversed order.
17. Memory for Words. The student tries to repeat dictated random series of words in order.

Additional Tests

8. Incomplete Words. The student attempts to recognize words dictated with some sounds omitted. *Ga.*
9. Auditory Working Memory. The student tries to repeat randomly dictated words and numbers (e.g., cow 9 up 3 5) with the words first and then the numbers in the order they were dictated. This test also measures *Gsm* or working memory or division of attention.
10. Visual-Auditory Learning – Delayed. The student tries again to "read" sentences written with the rebuses learned in Visual-Auditory Learning. There are norms from one half-hour to 8 days. This is an additional measure of *Glr.*
18. Rapid Picture Naming. The student tries to name simple pictures as quickly as possible for 2 minutes. This test measures *Gs* and naming facility or Rapid Automatized Naming RAN)
19. Planning. The student tries to trace a complex, overlapping path without lifting the pencil, retracing any part of the path, or skipping any part. *Gf* and *Gv* are involved in this test.
20. Pair Cancellation. The student tries scans rows of pictures and tries, as quickly as possible for 3 minutes to circle each instance in which a certain picture is followed by a certain other picture (e.g., each cat followed by a tree). This test also measures *Gs.*

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THE LEADER IN GLOBAL EDUCATION
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WOODCOCK JOHNSON® III

Woodcock-Johnson Tests of Achievement (WJ III®)
Richard W. Woodcock, Kevin S. McGrew & Nancy Mather, Riverside Publishing, 2001.

The WJ III® measures a great many aspects of academic achievement with a wide variety of relatively brief tests. Many of these achievement tests can be used with the WJ III® Tests of Cognitive Abilities to assess a student's abilities on many specific McGrew, Flanagan, and Ortiz Integrated Cattell-Horn-Carroll Gf-Gc (CHC) "cognitive factors." Examiners are permitted to select the tests they need to assess abilities in which they are interested for a particular student. The WJ III® was normed on 8,818 children and adults (4,783 in grades kindergarten through 12) in a well-designed, national sample. The same persons also provided norms for the WJ III® tests of academic achievement, so the ability and achievement tests can be compared directly, and cognitive and achievement tests can be combined to measure CHC factors.

The description below are not the "official" descriptions provided by the WJ III® manual.

1. Letter-Word Identification	naming letters and reading words aloud from a list.
2. Reading Fluency	speed of reading sentences and answering "yes" or "no" to each.
9. Passage Comprehension	orally supplying the missing word removed from each sentence or very brief paragraph (e.g., "Woof," said the _____, biting the hand that fed it.").
13. Word Attack	reading nonsense words (e.g., plurp, fronkett) aloud to test phonetic word attack skills.
17. Reading Vocabulary	orally stating synonyms and antonyms for printed words and orally completing written analogies (e.g., elephant : big :: mouse : ____).
7. Spelling	writing letters and words from dictation.
8. Writing Fluency	writing simple sentences, using three given words for each item and describing a picture, as quickly as possible for seven minutes.
11. Writing Samples	writing sentences according to directions; many items include pictures; spelling does not count on most items.
16. Editing	orally correcting deliberate errors in typed sentences.

18. Spelling of Sounds	written spelling of dictated nonsense words.
22. Punctuation and Capitalization	formal writing test of these skills.
5. Calculation	involves arithmetic computation with paper and pencil.
6. Math Fluency	speed of performing simple calculations for 3 minutes.
10. Applied Problems	are oral, math "word problems," solved with paper and pencil.
18. Quantitative Concepts	oral questions about mathematical factual information, operations signs, etc.
3. Story Recall	the student answers oral questions about stories that were dictated to the student.
4. Understanding Directions	the student follows oral directions to point to different parts of pictures.
12 Story Recall – Delayed	the student answers questions about the stories heard earlier.
14. Picture Vocabulary	the student points to named pictures or names pictures.
15. Oral Comprehension	the student provides anto- or synonyms to spoken words and completes oral analogies (e.g., elephant is to big and mouse is to ___)
19. Academic Knowledge	oral questions about factual knowledge of science, social studies, and humanities.
21. Sound Awareness	rhyming, deletion, substitution, and reversing of spoken sounds.

List of Frequently Asked Questions

ete Battery

ion of this page may be available. If we don't have any information please do check back u

oring Reading Fluency in the *WJ III Tests of Achievement*, why isn't the score calculated acting the number correct from the number attempted? Because we score the test by ng the number incorrect from the number correct, it seems like students are being l for guessing?

you score false basals and ceilings?

20, Form A, is a response of "35" correct? I know that it isn't listed as correct, but I have ral people insist it is a correct response.

tional test books, manuals and software sets be purchased separately?

Q score be derived from the WJ III?

audio cassettes for the WJ III taped tests available on CD-ROM?

e be new editions of the interpretive resources for the WJ III?

an RPI?

21D, Sound Awareness: Reversal, the tape ends after Sample D. Is this a problem with ette?

t preview the WJ III before I buy?

J III very different from the WJ-R?

ores are available for the tests and clusters?

the AE's and GE's on the WJ III Test Records different than the scores on the core report?

21D, Sound Awareness: Reversal, when presenting the words in item 4 - 9, does the r simply say the word (pat) OR the word and the sound (pat - /p/a/t/) as given in the tems?

't the WJ III be hand-scored?

a T-score?

a z-score?

lanning Test, are incomplete or unattempted segments errors?

e the qualifications necessary to administer the WJ III?

an NCE?

stered the *WJ III Tests of Cognitive Abilities* over two days. On the first day I entered a ne Date of Testing field. On the second day, when I administered Visual-Auditory g (a test with a Date of Testing field), the WJ III Compuscore would not let me enter that e but kept defaulting to the first date of administration. Why?

re the 3 tests that comprise the BIA chosen?

ing the Compuscore, I don't always get the PR/SS correspondence that I expect. For , why did a reported percentile rank of 49 yield a standard score of 100? Shouldn't a score of 100 be equivalent to percentile rank of 50?

ch is private training?

the difference in score between the 2-minute and the 7-minute version of Writing Fluency *J III Test of Achievement*?

pe of training do we need?

re be correlations between the WJ-R and the WJ III?

ning, a test in the*WJ III Tests of Cognitive Abilities* is the subject allowed to correct his or er by erasing?

J-R now obsolete?

the Bateria-R be used with the WJ III?

u give all of the tests on the WJ III?

have a Subject Data Record available for the WJ III like the one you provided in the WJ-uscore binder?

o I enter an X in the *WJ III Compuscore and Profiles Program* scoring software?

ect has articulation problems, does that affect his/her score on a test like Sound Blending?

acement page going to be sent for page 68 of the Understanding Directions test in the Battery?

run-on sentence scored on Writing Samples?

alize subjects for errors in spelling in the Writing Samples test?

ried to enter the date of testing in the WJ III Compuscore, the numbers all ran together ldn't go into the month, day, and year fields correctly.

Changes In WJ Tests and Random Comments

WJ III®Cognitive Tests "Voted off the Island," As Kevin McGrew Puts It

- **Memory for Names** [Goodbye, Jawf, whichever way your sash should go.]
- Separate **Picture Vocabulary, Oral Vocabulary,** and **Verbal Analogies** in the Cognitive Battery, now Verbal Comprehension subtests. There is now a 44 item Picture Vocabulary in the ACH Battery.
- **Listening Comprehension**. Now **Oral Comprehension** in the ACH Battery.
- **Sound Patterns** (e.g., "doolooWHEEP DOOloowheep")
- **Cross Out** (there goes a nice assessment of one possible aspect of ADHD). It was too redundant with Visual Matching and has been replaced by Decision Speed, which may be more valuable.
- **Memory for Sentences**. It was too redundant with Memory for Words. I will miss the comparison, though, which often highlighted a strength or weakness in oral language when Sentences was much higher or lower than Words. Also, Memory for Sentences is a mixed measure, assessing mostly *Gc* (LD) in younger kids and *Gsm* (MS) in older kids and adults – handy for clinicians, but messy for the McGrew, Flanagan, and Ortiz Integrated Cattell-Horn-Carroll Gf-Gc Cross-Battery Approach.
- **Visual Closure** can still be found in the K-ABC and children's magazines.

New WJ Cognitive Tests

- **Retrieval Fluency**: naming as many things as possible in each of three categories as fast as possible for one minute each. This is similar to several old neuropsychological tests. It is part of *Glr*.
- **Delayed Recall of Visual-Auditory Learning** can now be done as little as half-hour after the initial test (although we still like it as the only test on the market we have seen with a recall interval of a week). Delayed scores are obtainable only as z scores. A negative z indicates that the delayed score was less than predicted and a positive z indicates that the delayed score was higher than predicted from the subject's initial recall score. Scores between -1.00 (PR=16) and +1.00 (PR=84) may be considered "within normal limits." To show z scores in the Score Report, select the Options tab in the software menu and then the Report Options tab. The Additional Score Column allows selection of the type of score to be reported in the last column of the Score Report. Choose "z score" and click OK

Clarification from Dr. McGrew regarding the Delayed Recall Scores on the WJ III®:

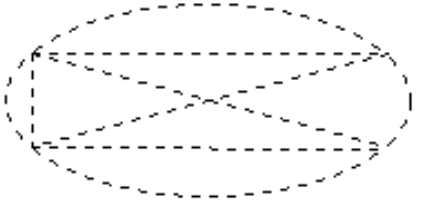
All WJ III® DR test scores are based on a new set of procedures not previously used in the WJ-R DR tests. A person's DR performance is compared to others with (a) the same age or grade, (b) the same delay interval, AND, (c) others who had the same INITIAL score. Part (c) is new. A person's DR performance takes into account their

initial level of performance (a feature that is just one more reason for computer scoring).

Conceptually you need to think of the WJ III® DR scores as discrepancy scores...much like ability-achievement discrepancy scores. An "expected" level of performance on a DR test is generated (which is based on their initial score, age or grade, and delay interval). The person's actual DR performance is then compared to the "expected" DR performance. This is much like an ability-achievement discrepancy.

The reporting of the WJ III® DR scores only in the z-metric makes it clear to the user that these are indeed a different form of score. They are a discrepancy score....between the DR performance expected and the DR performance obtained. The z-scores can be interpreted just like the SD scores for the other types of WJ III® discrepancies.

- **Decision Speed** asks you to scan each row of simple pictures and circle the two that are most similar conceptually, e.g., aardvark and anthill or fork and spoon. Most of the decisions are easy – it is a speed test.
- **General Information** has two subtests. **Where** asks, e.g.: "Where would you find a WISC kit?" "Where would you find a crayon?" **What** asks, e.g., "What would you do with a WISC kit?" "What would you do with a pencil?" No score can be obtained for the separate parts, only for the total.
- **Planning** asks you to trace all the lines in each figure, starting wherever you mark an 8 , without skipping any lines and without retracing any of your previous tracing. The test is not timed, which makes it pretty easy for anyone with good attention and adequate *Gv*. The easel provides a color-coded scoring guide. Each color constitutes a complete segment. The colors do NOT specify an order, only which lines are part of the same segment. It is essential that evaluators refer to the guide since some segments may include only 1 line (worth 1 point) while another segment may include 2 or 3 lines yet be equal to only 1 point. Subjects may trace the designs with their fingers but ONLY if this is the subject's idea. The examiner must not give any tips or guidance about strategies to use in solving the planning items.



- **Pair Cancellation** shows rows of many little pictures. You are told to circle each instance of a certain picture followed by a certain other picture and only those instances. Score is the number of correctly circled pairs within the time limit. Popular on neuropsychological batteries.
- **Auditory Working Memory** asks you to repeat dictated words and digits (e.g., cow 7 5 up 9 tree 3) with the words first and the digits next, both in the order they were dictated. Partial credit is given for either the words or the digits in correct order as long as the words are attempted first.
- **Auditory Attention**. As Kevin McGrew says, the 1973 Goldman-Fristoe-Woodcock Auditory Skills Test Battery was ahead of its time. This is the test of recognizing spoken words (e.g., "Point to 'map.'") on four-picture, multiple-choice pages with interference from increasingly loud background noise (a loud cafeteria tape recorded and played backwards). As on the GFW, the student is first taught the names used for the pictures.
  Despite the fact that all tape recorded tests were normed with the child hearing the tape through headphones, some examiners will be tempted to administer the taped tests without this device. This particular test, requiring the child to distinguish spoken words with "taped" interference noise, seems highly susceptible to other, extraneous noises. This, if not all taped tests, SHOULD be given using headphones.
- **Rapid Picture Naming** is just what you would expect. Another neuropsychological measure.

New or Changed WJ Achievement Tests

- Even more explicit than in the WJ-R® is the combination of WJ III® COG and ACH tests to do a complete McGrew, Flanagan, and Ortiz Integrated Cattell-Horn-Carroll (CHC) *Gf-Gc* Cross-Battery Approach or to explore completely a CHC factor.
- **Usage** score from **Dictation** was voted off. **Spelling** and **Punctuation & Capitalization** are now two separate tests, replacing **Dictation** so we need no longer write "writing from Dictation" in our reports.
- **Science, Social Studies** and **Humanities** are now one test, **Academic Knowledge**, also treated as a cluster.
- **Reading Fluency**, potentially very valuable, has been added, but may be too complex a task for the purpose because of the comprehension and yes/no decision-making demands (Suanne Bickum 10/24/00).
- **Math Fluency** has been added, completing the new Academic Fluency cluster.
- **Story Recall** and **Story Recall-Delayed** for you Babcock and WRAML fans. See note above on Delayed Recall scores.
- **Spelling of Sounds**. Prof. McGrew is again correct: the Goldman-Fristoe-Woodcock was ahead of its time.
- **Understanding Directions** At last a test to measure exactly what we expect children to be able to do in school and an improvement over the subtest dropped when the DTLA-2 was revised into the DTLA-3..
- **Writing Evaluation Scale** is a one-page, checklist procedure for evaluating other samples of the student's writing.
- **Picture Vocabulary** is now part of the Achievement Battery (see above).

Other Changes and Notes

- There is no hand-scoring option. You can look up "estimated" age- and grade-equivalent scores right on the record form, as on WJ-R, but these are just that - "estimates." The exact equivalents are obtained only by using the scoring software. First-printing protocols contain errors on 6 tests, which are corrected in a separate sheet sent out by Riverside and in later printings.
- The total Cognitive Score (**General Intellectual Ability** or **GIA**) is now based on the *g* loadings of the various tests at each age level, rather than a simple total.
- The WJ III® Cognitive also allows for a Brief Intellectual Ability score (**BIA**) composed of only 3 tests.
- **RPI** (Relative Proficiency Index) replaces the RMI (Relative Mastery Index). RPI is a score that predicts a person's degree of proficiency in comparison to age or grade peers. It describes the quality of the performance or functionality. A subject's performance is compared to the point at which average students in the comparison group (either age or grade) would perform similar tasks with 90% proficiency - something similar to the Snellen Eye Chart that produces results comparing the person to the average proficiency of a 20/20 sighted person. A person with 20/60 eyesight sees at 20 feet what a normally sighted person sees at 60 feet. An RPI of 60/90 suggests that the person performs a particular task with 60% proficiency while persons from a similar age- or grade-comparison would perform at 90% efficiency.
- **CALP** [Cognitive-Academic Language Proficiency (Cummins, 1984)] can now be reported. It, like the Delayed Recall scores, must be specifically chosen from the option menu. Since the computer software allows you to choose only one additional score at a time (e.g., z, T, NCE, CALP), if you wish to see more than one score you must use at least the print preview twice, a task that is very easy to do.
- **Predicted Achievement** measures have been refined.
- **Interpretive Options**, including many kinds of discrepancy, abound and are explained in some detail in the WJ III® Manuals.
- The WJ III® Manuals contain genuinely useful information about testing students with various disabilities and disadvantages.
- Richard Woodcock's **Diagnostic Worksheet** is essentially unchanged and still useful. There have been some additions made to the

worksheets by Drs. Kevin McGrew and Randy Floyd. The WJ III® Excel Template has incorporated those additions.

- The "Supplemental" tests are now "Extended," but still essentially diagnostic.
- There are now a lot of tests related to current research on reading, including measures of phonological awareness and Rapid Automatized Naming (RAN). Spelling of Sounds and Selective Attention (cafeteria noise) have been borrowed and updated from the Goldman-Fristoe-Woodcock.
- There are now more post-high-school grade norms.

Caveats

- The **Pronunciation Key** does not distinguish between voiced and unvoiced /th/ (the and thin).
- Correct answers in languages other than English are acceptable, which is theoretically a grand idea, but practically complicated, e.g., cheval, caballo, cavalo, cavallo, Pferd, and •ó•••• would all be acceptable alternatives to "horse," but you could fool us.
- Scoring oral responses requires, we think, as much clinical judgment as on the WISC, and there is, we think, less guidance. The Manual tells you, in all else fails, to balance 1 and 0 ratings on successive, questionable responses, but we'd still like to see a little more explanation and a few more examples for some items.
- We are, of course, terrified of the exclusive reliance on computer scoring without printed norms tables. We understand and appreciate the excellent reasons for computer scoring, and the scoring sophistication made possible by the computer, but John Henry probably could have recited the virtues of the steam drill. Stay in warm, personal contact with the person who actually orders tests for you, as that is probably the person who will receive revised scoring disks and notifications of scoring-program changes.
  Because of the inability to "check" the scores you obtain in a manual, be sure to look at all computer generated scores carefully. Computer software has been known to become corrupted. If you have any questions or concerns, be sure to err on the side of caution. Be sure to select the "raw score" option so you can make certain you have entered all raw scores correctly.
- There are tons of new scoring and interpretation options. We think the WJ III® ACH is the most sophisticated achievement test now on the market. The sophistication of the test requires equal sophistication in the selection of tests, selection of scoring options, and interpretation. Do not play "interpretation roulette," particularly when it comes to discrepancy procedures. Do not go "data mining" (running analysis after analysis until you get a result you want). Understand the different procedures used and generated by the software and use the one that best matches your, or your district's, policy, procedures, and understanding and the individual referral questions.
- Basal and ceiling rules are essentially optional. If your clinical judgment (not just your respect for the laws of chance) makes you think there are potential misses below the basal or hits above the ceiling, you are supposed to go for them and take the lowest basal and highest ceiling. This procedure is reminiscent of the much-maligned rule on the K-ABC Faces and Places (remember the Martin Luther King, Jr. item?). With our reality bias, we think this is fundamentally a sound idea, but it will introduce some inter-examiner variability.
- A necessary trade-off for the comprehensiveness of the achievement battery is the brevity of each individual test. The manual recommends interpretation at the cluster, rather than the test level. As diagnosticians, we would still prefer longer tests so we had enough items for more analysis. We think we will need to go, for example, to other, longer word lists to find enough oral reading errors to allow us to determine what's up with those reading errors.
- The powerful prediction procedures will lead the thoughtless to under-identify learning disabilities. The specific achievement aptitude measures practically serve as measures of a "disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, or to do

mathematical calculations." Therefore, the lack of a significant difference between aptitude and achievement not only does NOT rule out a learning disability, it actually increases the chances that there is a learning disability. Please see the excellent explanation by Mather & Schrank (2001). The lack of a significant discrepancy between predicted and actual achievement might point to apedagogia, dyspedagogia, or one of the rule-out circumstances in the federal definition of a specific learning disability [Sec. 300.7(c)(10(ii); Sec. 300.541(b)(2)].

- We still do not think that the easy-difficult range is based on the student's actual range of easy and difficult items, but simply on the student's obtained score. We would prefer to use the grade equivalent for the highest item passed before the first error and the highest item passed on the test to mark off the student's functional range.
- Otherwise, don't use age- and grade-equivalent scores at all. http://alpha.fdu.edu/psychology/oat_cereal.htm.
- Keep posted at www.riverpub.com/support/updates.htm , http://home.att.net/~gfgc/index.htm , and http://alpha.fdu.edu/psychology/

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SOME AGE-EQUIVALENT-SCORE CHANGES

y Score	Visual-Auditory Learning		Sound Blending		Concept Formation		Visual Matching		Numbers Reversed		Incomplete Words		Analysis-Synthesis		Memory for Words	
	Age Equiv.		Age Equiv.		Age Equiv.		Age Equiv.		Age Equiv.		Age Equiv.		Age Equiv.		Age Equiv.	
	R	III	R	III	R	III	R	III	R	III	R	II	R	III	R	III
1	25^{98}	>19	4-0^{7}	2-11	4-0^{48}	2-8	4-0^{13}	4-4	4-1	5-0	2-5	2-0^{39}	4-6	4-6	4-0^{1}	<2-0
5	25^{77}	>19	4-0^{39}	3-10	5-8	5-2	4-0^{50}	4-9	5-5	5-8	3-4	2-7	5-6	5-9	4-0^{1}	3-0
10	25^{51}	12-3	4-7	5-1	6-11	6-5	4-10	5-4	8-8	8-2	4-6	3-6	6-2	6-5	4-0^{21}	4-3
15	11-5	9-4	5-8	7-4	8-4	7-4	5-7	6-0	16-6	15-8	6-2	4-7	7-1	7-1	7-7	7-8
20	8-2	8-1	7-5	11-11	10-2	8-5	6-5	6-8	26^{91}	>22	9-5	5-9	8-8	8-6	26^{85}	>23
25	7-7	7-3	13-10	>26	12-10	10-4	7-5	7-5	26^{99}		19	7-6	13-1	13-2	26^{99}	>23
30	7-1	6-9	26^{92}		28^{54}	13-10	8-3	8-3	26^{99}		>33	17-2	31^{39}	>20		
35	6-8	6-3			28^{96}	18-9	9-3	9-3				30^{91}	31^{99}			
40	6-3	5-11				>21	10-7	10-6				30^{99}				
45	5-11	5-7					12-7	12-2								
50	5-8	5-4					17-2	14-11								
55	5-4	5-1					28^{58}	>23								
60	5-1	4-10					28^{87}	>23								
65	4-10	4-7														
70	4-7	4-5														

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WOODCOCK JOHNSON® III

SOME ITEM CHANGES

Test	Was	Changes
l Comprehension	5 Picture Vocabulary	Syn., Ant., & Anal. were 79 items, now 48.
	13 Oral Vocabulary	Pic. Voc. was 58 items, now 23 plus 44 on ACH.
	21 Verbal Analogies	
2 Visual-Auditory Learning	8	Still 7 sets, but 25 fewer words.
3 Spatial Relations	19	Was 33 all-or- nothing, now 81 points for 33 items.
4 Sound Blending	11	Still 33 items; a few are changed.
5 Concept Formation	14	Added 5 new items at bottom; 35 --- 40.
6 Visual Matching	3	Added new, lower level. Now lighter print.
7 Numbers Reversed	17	Appears to be the same.
8 Incomplete Words	4	Dropped 1 word, added 5, changed order.
10 Visual-Auditory Delayed	16	Was test on words; now corrections given for phrases & sentences.
13 Picture Recognition	12	Dropped items 5, 9, 14, 21, 23, 24 & changed order.
15 Analysis-Synthesis	7	1 change in 35 sets of items.

17 Memory for Words 9 Dropped last 3 items; now 24 items up to 7 words.

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SOME AGE-EQUIVALENT-SCORE CHANGES

Raw Score	Writing Fluency		Passage Comprehension (+ 4 on WJ III®)		Applied Problems		Writing Samples (1.1b amendment) Items 1-5/6		Writing Samples (1.1b amendment) Items 1-10/12		Word Attack (+3 on WJ III®)	
	Age Equivalent		Age Equivalent		Age Equivalent		Age Equivalent		Age Equivalent		Age Equivalent	
	R	III	R	III	R	III	R	III	R	III	R	II
1	6-9	5-9	5-9	5-6	2-2	<2-0	5-11	5-5	5-10	5-5	6-3	6-9
5	7-8	6-10	6-5	6-2	3-3	3-3	6-8	6-8	6-6	6-5	7-3	7-5
10	8-8	8-4	7-2	6-9	4-2	4-3			7-1	7-7	8-1	8-1
15	9-10	10-1	8-1	7-4	5-3	5-3			7-7	9-11	8-10	8-11
20	11-7	12-1	9-5	8-1	6-4	6-2					11-2	11-1
25	14-10	15-7	11-4	9-4	7-7	7-5					29^{54}	15-5
30	28^{73}	>20	15-5	12-8	9-3	9-1					29^{99}	>21
35	28^{98}		25	24	11-2	10-8						
40	28^{99}		30^{95}	>31	13-11	12-3						
45					18-2	14-4						
50					24^{62}	18-1						
55					24^{91}	>28						
60					24^{99}							

WOODCOCK JOHNSON® III

SOME ITEM CHANGES

Test	Was (is)	Changes
1 Letter-Word Identification	22 (1)	Was 57 items; now 76; 2 additional pre-reading & 17 more words
5 Calculation	24 (3)	Was 58 items; now 45; still has advanced math.
7 Spelling 22 Punctuation & Capital.	26 (5) Dictation	Was 56 items; now 36 P&C and 59 Spell. No usage.
8 Writing Fluency	35 (14)	Still 7 minutes.
9 Passage Comprehension	23 (2)	Was 43 items; now 47; added 4 rebus items.
10 Applied Problems	25 (4)	Was 60 items; now 63.
11 Writing Samples	27 (6)	Still 30 items. A few new items and changed order.
13 Word Attack	31 (10)	Was 30 items; now 32. 3 new one-letter items
14 Picture Vocabulary.	COG 6	Was 58 items; now 44 (+ 23 in COG).
15 Oral Comprehension	COG 20	Was 38 items; now 34.
16 Editing	34 (13) Proofing	Was 36 items; now 34. No part scores.
17 Reading Vocabulary	32 (11)	Was 34 Synonyms & 35 Antonyms. Now 26 each + 21 Analogies.
18 Quantitative Concepts	33 (12)	Was 48 items; now 34 concepts & 23 no. series.
19 Academic Knowledge	28 – 30 (7 – 9)	Was 143 items; now 78.

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WOODCOCK JOHNSON® III

Some Interesting Reading and Spelling Measures and Comparisons from the WJ III®

Reading

accuracy in reading single words aloud from a list	Letter-Word Identification ACH
accuracy in reading nonsense words aloud (phonetic word attack)	Word Attack ACH
speed of reading sentences and answering "yes" or "no" to each	Reading Fluency ACH
reading vocabulary: antonyms, synonyms, and analogies	Reading Vocabulary ACH
passage comprehension: supplying missing words in sentence	Passage Comprehension ACH

Oral Vocabulary

picture vocabulary: pointing to named pictures and naming pictures	Picture Vocabulary ACH
verbal comprehension: naming pictures, synonyms, antonyms, & analogies	Verbal Comprehension COG

Oral vs. Reading Comparisons

verbal comprehension: naming pictures, synonyms, antonyms, & analogies	Verbal Comprehension COG
reading vocabulary: antonyms, synonyms, and analogies	Reading Vocabulary ACH
supplying the missing word in each dictated sentence or paragraph	Oral Comprehension ACH
passage comprehension: supplying missing words in sentences	Passage Comprehension ACH

Rebus Learning

learning and "reading" rebus symbols for words	Visual-Auditory Learning COG
"reading" the previously learned rebus symbols xx later on surprise retest	VAL Delayed COG

Phonological and RAN Tests

identifying words dictated with sounds separated (k - a - t = cat)	Sound Blending COG
identifying words dictated with sounds omitted (my row own = microphone)	Incomplete Words COG
sound awareness: rhyming, deletion, substitution, and reversal	Sound Awareness ACH
speed of naming things in three specific categories for one minute each	Retrieval Fluency COG
speed of naming simple pictures of familiar objects	Rapid Picture Naming COG

Nonsense or Low-Frequency Words

accuracy in reading nonsense words aloud (phonetic word attack)	Word Attack ACH
spelling of sounds: writing dictated nonsense words	Spelling of Sounds ACH

Real vs. Nonsense or Low-Frequency Words

spelling: prewriting & writing letters; writing dictated words	Spelling ACH
spelling of sounds: writing dictated nonsense words	Spelling of Sounds ACH
accuracy in reading single words aloud from a list	Letter-Word Identification ACH
accuracy in reading nonsense words aloud (phonetic word attack)	Word Attack ACH

Different Aspects of Memory

barely meaningful numbers	Numbers Reversed COG
individually meaningful words in sequence but no context	Memory for Words COG
meaningful stories with context	Story Recall ACH
rapid retrieval	Rapid Picture Naming COG short-term
learning and retrieval	Visual-Auditory Learning COG
intermediate-term retrieval	VAL-Delayed COG
intermediate-term retrieval – meaningful with context	Story Recall-Delayed ACH
long-term retrieval fluency	Retrieval Fluency COG
long-term retrieval capacity	General Information COG
[NB: it is retrieval only if the examinee knew it initially.]	Academic Knowledge ACH
	Verbal Comprehension COG
	Picture Vocabulary ACH
working memory	Numbers Reversed COG
	Auditory Working Memory COG
attention, concentration, sequencing, language processing, and memory	Understanding Directions ACH
visual memory	Picture Recognition COG

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WOODCOCK JOHNSON® III

WJ III® Excel© Computer Template© by Ron Dumont and John Willis

This Microsoft Excel© template is a supplement to the *WJ III® Compuscore Program* that comes with the test itself. It has a number of worksheets available, including sheets for the cognitive tests and sheets for the achievement tests. Below is a picture of the WJ III® Cognitive input page. *Achievement pages are similar.*

Name: h

Age (yr.m): 13.8
Date analyzed: 4/01

WJ-III Cognitive Subtest Standard Scores

VComp	VAL	Sp Rel	Snd Bld	Con Form	Vis M	Num Rev	Inc W	Aud Wk M	VAL del z
90	91	106	102	81	85	105	93	94	1

Gen Inf	Ret Fl	Pic Rec	Aud Att	An/Syn	Dec Spd	Mem Wds	Rp Pic Nm	Plan	Pr Cancel
83	114	96	89	84	102	89	83	99	85

On all sheets, use the tab key to move throughout the template. Only cells that require input can be accessed. The entire template is protected to prevent the over-writing of any formulae. Once the required data are entered, use the scroll keys to navigate within a template or the tabs at the bottom of the templates to move between the templates.

WJ-III COG | WJ-III COG Chart | Cog. Grps by Lvl | CHC Diag. Wrksht

WJ-III ACH | WJ-III ACH Chart | Ach. Grps by Lvl | Test Combos

The Cognitive Sheet places scores into their respective CHC groupings (see below)

Comprehension-Knowledge (Gc)	122	93 PR	113 to 131	Average to Very Superior
Verbal Comprehension (LK, LD)	117	87 PR	106 to 128	Average to Very Superior
General Information (K0)	124	95 PR	112 to 136	High Average to Very Superior
Short-term Memory (Gsm)	68	2 PR	58 to 78	Very Low to Low
Numbers Reversed (MW)	78	7 PR	67 to 89	Very Low to Average
Memory for Words (MS)	73	4 PR	59 to 87	Very Low to Low Average
Auditory Working Memory (MW)	84	14 PR	75 to 93	Low to Average

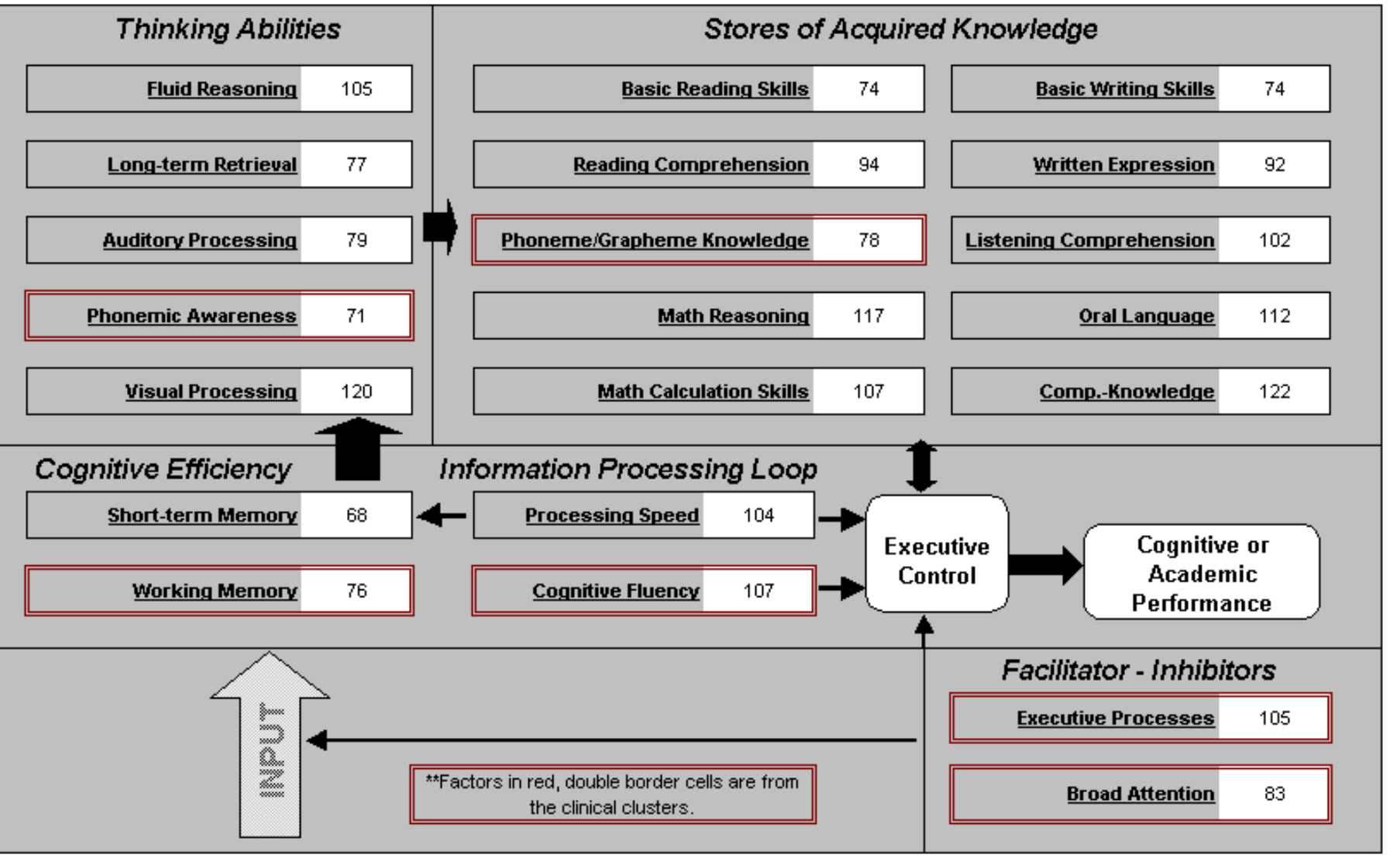
s well as placing the scores according to the Clinical Clusters.

Phonemic Awareness	71	3 PR	60 to 82	Very Low to Low
Sound Blending (PC-S)	74	4 PR	62 to 86	Very Low to Low Average
Incomplete Words (PC-A)	76	5 PR	62 to 90	Very Low to Low Average
Working Memory	76	5 PR	67 to 85	Very Low to Low Average
Numbers Reversed (MW)	78	7 PR	67 to 89	Very Low to Average
Auditory Working Memory (MW)	84	14 PR	75 to 93	Low to Average

Scores are automatically grouped by level

		CHC Factors	Cognitive Performance and Clinical Clusters
Very Superior	>130		
Superior	121-130	Gc	Verbal Ability
High Average	111-120	Gv	
Average	90-110	Gf Gs	Cognitive Fuency Executive Processes GIA Thinking Ability
Low Average	80-89		Broad Attention Cognitive Efficiency
Low	70-79	Glr Ga	Phonemic Awareness Working memory
Very low	55-69	Gsm	
	<55		

Scores are also placed in a Diagnostic Worksheet to further aid in interpreting the test



Finally, scores are places into intuitive grouping.

Some Interesting Reading/Spelling Measures and Comparisons from the WJ III®

Reading		
accuracy in reading single words aloud from a list	**72**	Letter-Word Identification ACH
accuracy in reading nonsense words aloud (phonetic word attack)	**80**	Word Attack ACH
speed of reading sentences and answering "yes" or "no" to each	**86**	Reading Fluency ACH
reading vocabulary: antonyms, synonyms, and analogies	**97**	Reading Vocabulary ACH
passage comprehension: supplying missing words in sentencesPassage	**93**	Comprehension ACH
Oral Vocabulary		
picture vocabulary: pointing to named pictures and naming pictures	**113**	Picture Vocabulary ACH
verbal comprehension: naming pictures, synonyms, antonyms, & analogies	**117**	Verbal Comprehension COG

To download the template press here.

Please send me an email if you download the template. I will be happy to answer any questions you may have. Please do not distribute the template to anyone else.

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Test 23 Butterfly Ballot 1

Basal: *Item 1*
Time Limit: *30 seconds*

If not using a stopwatch, be ashamed of yourself.

End time: ____ __ __
– Start time: ____ __ __
= Time: ____ __ __

"Mark all the color names in the correct circles as quickly as you can."

Score 1 point for each correct choice.

RED ä **0**
0 ã **WEST**
HOUSE ä **0**
0 ã **PALM**
BLUE ä **0**
0 ã **BEACH**
WHITE ä **0**
0 ã **BUSH**
IN ä **0**
0 ã **RACE**

Test 23 Butterfly Ballot

Scoring Table

Encircle row for the Number Correct

Number Correct	AE (Est.)*	GE (Est.)*
0	>55-0	>18.0
1	55-0	>18.0
2	54-11	>18.0
3	54-10	>18.0
4	54-9	>18.0
5	54-8	>18.0
6	54-7	>18.0

FRUIT	ä	**0**		
		0	ã	**RED**
ORANGE	ä	**0**		
		0	ã	**PUCE**
TEST	ä	**0**		
		0	ã	**GORE**
HOT	ä	**0**		
		0	ã	**VIOLET**
BLACK	ä	**0**		
		0	ã	**VOTE**
TWIST	ä	**0**		
		0	ã	**GREEN**
YELL	ä	**0**		
		0	ã	**GRASS**
YELLOW	ä	**0**		
		0	ã	**GROPE**
GREEN	ä	**0**		

7	54-6	>18.0
8	54-5	>18.0
9	54-4	>18.0
10	54-3	>18.0
11	54-2	>18.0
12	54-1	>18.0
13	54-0	>18.0
14	53-11	>18.0
15	53-10	>18.0
16	53-9	>18.0
17	53-8	>18.0
18	53-7	>18.0

*AE and GE are estimates of the precise values provided by the software scoring program.

		0	ã	**GRAPE**
MYSELF	ä	0		
		0	ã	**ECRU**
ANIMAL	ä	0		
		0	ã	**BLUE**
SETTLE	ä	0		
		0	ã	**HUE**
WHITE	ä	0		
		0	ã	**HARP**
MAPLE	ä	0		
		0	ã	**INDIGO**
GRAB	ä	0		
			ã	**MOOD**

Number Correct (0-18)

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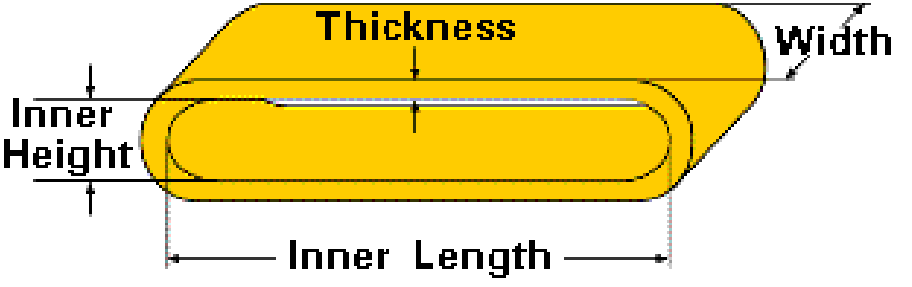
WJ III™ Easel Attachment

Official (We hope™©®±) Dumont™©®±-Willis™©®± Woodcock-Johnson® Easel Attachment™©®±

(Elastic Band).

Have you lost, misplaced, or broken the WJ III™ Easel Attachment™©®±? Worry no more! Your problems are over. You can order directly from us the new and improved Official (We hope™©®±) Dumont™©®±-Willis™©®± Easel Attachment™©®±. Let no one fool you - size does matter. Below is a schematic of our product.



For versatility, none can compare. Look what other uses you may have for the

Official (We hope™©®±) Dumont™©®±-Willis™©®± Woodcock-Johnson® Easel Attachment™©®±

(Elastic Band)

Tables to Aid in the Interpretation of the *Woodcock Johnson - Revised Cognitive Battery*

Ron Dumont Ed.D, NCSP, John O. Willis Ed.D., Joe Janetti, NCSP

Base rate data were computed from a sub-sample of the standardization sample of the *Woodcock Johnson - Revised Cognitive Battery*. This sub-sample consisted of all 3,130 children (1568 female, 1562 male) , ages 6 to 18 (m = 11.6 sd = 3.5) in grades 1 through 12 (m = 6.11 sd = 3.5) administered the subtests of the WJ-R COG. **(John and Ron thank Drs. Richard Woodcock and Kevin McGrew for the very generous granting of access to portions of the WJ-R standardization data and for the kind permission to post these results.)**

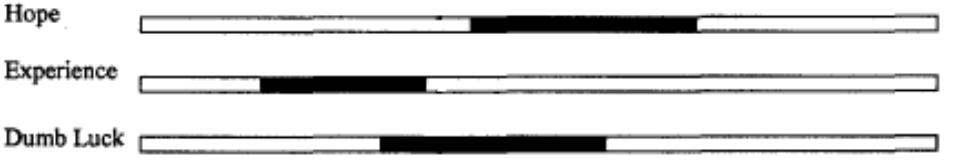
Examiners often are interested in knowing if the difference between two test scores is significant. Applying one of several discrepancy analysis procedures usually does this. Examiners can analyze score or cluster differences obtained on particular tests (e.g., they can compare the WJ-R COG Memory for Words subtest score to the Memory for Sentences subtest score or compare the Fluid Ability Cluster score to the Crystallized Ability Cluster score). Some procedures for comparing scores within tests are described here.

Confidence Bands

Test scores are never perfectly accurate. Lucky or unlucky guesses, lapses of attention, and other factors mean that the same person would almost never get exactly the same score on a test twice in a row. A confidence band around a score tells how scores on that test are likely to vary by pure chance.

If the confidence bands on two scores overlap, there probably is not a significant difference between the two scores. On another day the higher and lower scores might have been reversed.

If the confidence bands on two scores do not overlap, and if both scores are probably valid, there probably is a significant difference between the two scores. On another day, the higher and lower scores would probably have still been the higher and lower scores, respectively.



In the example above, there is a triumph of Hope over Experience, but neither is significantly different from Dumb Luck.

Base-rate

Base-rate refers to the prevalence or frequency of a particular occurrence or event within a population. Awareness of relevant base-rate data allows an evaluator to determine the diagnostic utility of a particular sign. Although a particular relevant comparison may reach some level of statistical significance, it is always necessary to determine if the statistical difference is a usual or an unusual one. Base-rate information provides just such data.

Testing the Difference of Scores within the Same Test

One can test the differences between any 2 of the 21 WJ-R COG subtests and/or between any of the 7 WJ-R COG composites associated with the McGrew, Flanagan, and Ortiz integrated Carrol/Cattell-Horn Gf-Gc model. The first step in conducting a discrepancy analysis between two WJ-R COG subtest scores is to calculate the actual difference between the scores in question. This is computed by subtracting the lower test standard score from the higher test standard score. The next step is to determine if the amount of point difference is large enough to be of any interest. We describe two methods that can be used to examine within-test difference scores for importance. The first examines the statistically significant difference between two test scores; the second examines whether or not the difference is large enough to be considered clinically useful.

Statistical Significance

The first step in examining difference between scores is to see if the difference is beyond that which would be expected by chance alone. Anastasi and Urbina (1997) provide a formula to help determine how large a Difference Score **must** be in *order to be statistically significant. This formula has been adapted to read:*

$$\text{Significant Difference Score} = SD*Z*\text{Sqrt}[2-(r1+r2)]$$

where, *SD* = standard deviation of the two scores, Z = statistical significance level, r1 = reliability of the first score, and r2 = reliability of the second score.

All subtests and composites of the WJ-R have a standard deviation of 15. For our purposes, the significance level at .05 was employed, which is represented on the z-distribution table as 1.96. Table 7.1 of the Woodcock manual (Woodcock, R. W., & Mather, N. (1989). WJ-R Tests of Cognitive Ability -- Standard and Supplemental Batteries: Examiner's Manual. In R. W. Woodcock & M. B. Johnson, Woodcock-Johnson Psycho-Educational Battery--Revised. Chicago: Riverside Publishing Co.) (p 117) provides the median internal consistency reliability coefficients for the WJ-R COG subtests and composites across the standardization sample ages. Thus, we can use the formula to determine the minimal Difference Score required for significance for all subtest and composite combinations.

When considering score differences, one should consider the true meaning concerning differences between two test scores that are not significant at a desired level. If the difference is due to chance, then for all practical purposes, the difference should be thought of as being zero. There is no real meaning to saying something is "almost significant." Therefore, when making comparisons among WJ-R COG subtests and composites, differences that are not significant at the .05 level should be interpreted to mean that the examinee demonstrated equal abilities in the abilities measured by the subtests or composites.

If two test scores are significantly different from one another, one still cannot assume that the differences are unusual enough to be clinically useful (i.e., that the differences are rare enough to be of value). To help determine how severe the discrepancy must be to be considered clinically useful, frequency tables were created from the standardization sampling.

Method

To create the tables for significant differences, the following formulas were utilized:

Significance level for multiple comparisons: The Davis (1959) formula used to compute the deviations from the average that are significant at the desired level of significance. That formula is:

SQRT(SUM(∑SEmT2)/n2+((n-2/n)*SEmI2))*Bonferroni Correction

∑SEmT2= Sum of the Standard Errors of Measurement Squared for all subtests included in the comparison.
n= the total number of subtests in the comparison.
SEmI2= The Standard Error of Measurement Squared for the individual subtest in question.
Bonferroni Correction= The adjustment made for alpha slippage due to multiple comparisons and set at 95% confidence.

Links to the tables and descriptions of how to use them are below:

Between tests: For individual test strength or weakness, compared to all other tests: determine the mean of the 7, 14, or 21 tests administered. Subtract the obtained score of the desired test from the total mean. If the absolute value of the resulting number is greater than the "Significance level" value in appropriate column, the test may be considered a strength or a weakness.

7 Subtest comparison	14 Subtest comparison	21 Subtest comparison

Clusters (1): To determine between-cluster strengths and weaknesses, compared each cluster score to the mean of all the clusters combined.

Between Cluster comparisons

Clusters (2): To determine BCA-cluster strengths and weaknesses, compared each cluster score to the BCA.

BBCA Cluster comparisons

Within-clusters: Cluster scores are determined from the individual scores of either 2 (14 test administration) or 3-4 (21 test administration) tests. To compare within-cluster test differences, determine the differences between each subtest comparison within the cluster and use the appropriate "Difference score" from the table.

Within-Cluster comparisons