



Click to enable Adobe Flash Player.



Since 2002, 4 million visitors plus: hit counters search engine optimization service

## Appletcollection Vertical Menu java applet, Copyright 2003 GD

## USE OF THE TELLEGEN AND BRIGGS FORMULA TO DETERMINE THE DUMONT-WILLIS INDEXES (DWI-1 & DWI-2) FOR THE WISC-IV<sup>[1]</sup>

Some evaluators have expressed concern that the Full Scale IQ (FSIQ) of the WISC-IV comprises four subtests (40% of the total) that are relatively weak measures of general intellectual ability (Working Memory and Processing Speed: Digit Span, Letter-Number Sequencing, Coding, and Symbol Search) and only six (60%) subtests that measure higher-order intellectual abilities (Verbal Comprehension and Perceptual

Organization: Vocabulary, Similarities, Word Reasoning, Block Design, Matrix Reasoning, and Picture Concepts). Although the WISC-III<sup>2</sup> included four working memory and Processing Speed subtests, only two (20%) of them were included in the FSIQ, and there were eight Verbal Comprehension and Perceptual Organization subtests (80%). Preliminary clinical experience is suggesting to some evaluators that this shift in balance might be lowering FSIQ scores for children with above-average general intellectual ability and raising FSIQ scores for children with below-average general intellectual ability and raising FSIQ scores for children with below-average general intellectual ability and raising FSIQ scores for children with below-average general intellectual ability.

In this short paper, we provide two alternative composite scores, which are derived, respectively, from the three subtests that enter the VCI and the three subtests that enter the PRI and from the four subtests that enter the WMI and the PSI. We refer to these composites as the Dumont-Willis Indexes (DWIs) in order to distinguish them from the traditional ten-subtest Full Scale IQ, which includes both the six VCI and PRI subtests and the four subtests (i.e., Digit Span, Letter-Number Sequencing, Coding, and Symbol Search) that are not as highly correlated with verbal and non-verbal intelligence as are the six other Verbal and Perceptual subtests, and which load on independent factors in the four-factor solution of the WISC-IV. The Dumont-Willis Indexes separate the six subtests that are stronger measures of verbal and non-verbal intelligence from the other four subtests.

The DWI-1 score is a six-subtest composite that excludes subtests which load on the WMI and PSI.

The DWI-2 score is a four-subtest composite that includes subtests which load on the WMI and PSI.

Examiners may wish to report DWIs when the Verbal (VCI) and Perceptual (PRI) abilities are found to be close to one another yet significantly different from those of the Working Memory (WMI) or Processing Speed (PSI) abilities.

The tables for the DWIs are provided below. These tables were developed using the WISC-IV subtest intercorrelations (Table 5.1, page 51, *WISC-IV Technical and Interpretive Manual*) and the Tellegen and Briggs procedure<sup>[4]</sup>. Conceptually, the Dumont-Willis DWI-1 Index parallels the General Ability Index (GIA) developed by Prifitera, Weiss, and Saklofske<sup>[5]</sup> and by Tulsky, Saklofske, Wilkins, & Weiss<sup>[6]</sup> for the sum of scaled scores for the VCI and POI subtests of the WISC-III and WAIS-III. Unlike the DWI tables, the GIA tables are based directly on the WISC-III and WAIS-III normative data.

Similarly, the Dumont-Willis DWI-2 Index is based on the sum of scaled scores for the Digit Span and Letter-Number Sequencing (WMI) and Coding and Symbol Search (PSI) subtests. This score is very similar to Alan Kaufman's "third factor" [2] and "SCAD" [8] scores. It should be computed and considered only when the four WMI and PSI subtest scores are close to one another and substantially separate from the VCI and PRI subtests. In those cases, the DWI-1 and DWI-2 scores may be an efficient alternative means of summarizing the 10 WISC-IV core subtests, but they must never be confused with normative WISC-IV factor and IQ scores.

To use these tables, first calculate the Dumont-Willis Index 1 Sum of Scaled Scores (DWI-1 SSS) by adding the scaled scores for the following six subtests: Similarities, Vocabulary, Comprehension, Block Design, Picture Concepts, and Matrix Reasoning.

Second, calculate the Dumont-Willis Index 2 Sum of Scaled Scores (DWI-2 SSS) by adding the scaled scores for the following four subtests: Digit Span, Letter-Number Sequencing, Coding, and Symbol Search.

Find the resulting Dumont-Willis Index Sum of Scaled Scores in the column labeled "Sum of DWI-SSS" in the Tables below and read across the row to determine the DWI score, associated percentile rank, and 95% confidence interval (based upon the Standard Error of Estimate). Be sure to use the "DWI-1: VCI + PRI" table for the six Verbal Comprehension and Perceptual Reasoning subtests (you will see that a SSS of 60 equals a standard score of 100). Use the "DWI-2: WMI + PSI" table for the four Working Memory and Processing Speed subtests (you will see that a SSS of 40 equals a standard score of 100).

Estimates of overall abilities calculated in this way should always be clearly identified as DWI scores in both text and tables of reports. These scores must not be confused with the Full Scale IQ, although they may be more useful estimates of intellectual ability in some cases, for example, for some gifted children and for some children with relative weaknesses in working memory and/or processing speed. For the latter group, the DWIs may help avoid Dumont and Willis's Mark Penalty,<sup>[9]</sup> the depression of a measure of intelligence by a low score on a measure of a student's specific weakness. Other children may score significantly higher on the WMI and PSI indices than on the VCI and PSI indices, which may mask important difficulties with conceptual thinking if the FSIQ is used without the DWIs.

We hope these tables prove useful until Prifitera, Tulsky, Saklofske, Weiss, and/or Wilkins provide us with normative data. (for an update see the additional comments on the use of the DWI1 and DWI2 found at: Using the DWI or GIA

[1] Wechsler, D. (2003). Wechsler Intelligence Scale for Children (4<sup>th</sup> ed.) (WISC-IV). San Antonio, TX: The Psychological Corporation.

[2] Wechsler, D. (1991). Wechsler Intelligence Scale for Children (3<sup>rd</sup> ed.) (WISC-III). San Antonio, TX: The Psychological Corporation.

[3] Wechsler, D. (2003). WISC-IV Technical and Interpretive Manual. San Antonio, TX: The Psychological Corporation.

[4] Tellegen, A., & Briggs, P. (1967). Old wine in new skins: Grouping Wechsler subtests into new scales. *Journal of Consulting Psychology*, 31, 499-506.

[5] Prifitera, A., Weiss, L. G., & Saklofske, D. H. (1998). WISC-III in context. In A. Prifitera & D. H. Saklofske (Eds.) WISC-III clinical use and interpretation: Scientist-practitioner perspectives (pp. 1-38). San Diego: Academic Press.

[6] Tulsky, D. S., Saklofske, D. H., Wilkins, C., & Weiss, L. G. (2001). Development of a General Ability Index for the Wechsler Adult Intelligence Scale–Third Edition. Psychological Assessment, 13, 566-571.

[7] Kaufman, A. S. (1979). Intelligent testing with the WISC-R. New York: Wiley Interscience.

[8] Kaufman, A. S. (1994). Intelligent testing with the WISC-III. New York: Wiley Interscience.

[9] Willis, J. O. & Dumont, R. P. (2002, pp. 131-132). *Guide to identification of learning disabilities* (3<sup>rd</sup> ed.). Peterborough, NH: authors. [http://alpha.fdu.edu/psychology]

## **DUMONT-WILLIS INDEX 1 (DWI-1: VCI+PRI)**

Sum of DWI-		Percentile	95% Confid	dence Range	Si	um of DWI-		Percentile	95% Confid	95% Confidence Range	
1 SSS	DWI-1 Score	Rank	Min	Max		1 SSS	DWI-1 Score	Rank	Min	Max	
6	41	1	38	49		61	101	53	95	107	
7	42	1	39	50		62	102	55	96	108	
8	43	1	40	51		63	103	58	97	109	
9	44	1	41	52		64	104	61	98	110	
		1									
10	45	1	42	53		65	105	63	99	111	
11	46	1	43	54		66	107	66	101	112	
12	48	1	44	55		67	108	68	102	113	
13	49	1	45	57		68	109	70	103	114	
14	50	1	46	58		69	110	73	104	115	
15	51	1	47	59		70	111	75	105	116	
16	52	1	48	60		71	112	79	106	117	
17	53	1	49	61		72	113	81	107	118	
18	54	1	50	62		73	114	82	108	119	
19	55	1	51	63		74	115	84	109	120	
20	56	1	52	64		75	116	86	110	120	
20	57	1	53	65		76	117	87	111	121	
		1									
22	58	1	54	66		77	119	88	112	124	
23	60	1	56	67		78	120	90	113	125	
24	61	1	57	68		79	121	91	114	126	
25	62	1	58	69		80	122	92	115	127	
26	63	1	59	70		81	123	93	116	128	
27	64	1	60	71		82	124	95	117	129	
28	65	1	61	72		83	125	95	118	130	
29	66	1	62	73		84	126	96	119	131	
30	67	1	63	74		85	127	96	120	132	
31	68	2	64	75		86	128	96	121	133	
32	69	2	65	76		87	129	97	123	134	
33	71	2	66	77		88	131	97	124	135	
34	72	3	67	79		89	132	98	125	136	
35	73	3	68	80		90	133	98	126	137	
36	74	4	69	81		91	134	99	127	138	
37	75	4	70	82		92	135	99	128	139	
38	76	5	71	83		93	136	99	129	140	
39	77	6	72	84		94	137	99	130	141	
40	78	7	73	85		95	138	99	131	142	
41	79	8	74	86		96	139	99	132	143	
42	80	9	75	87		97	140	99	133	144	
43	81	10	76 70	88		98	142	99	134	146	
44	83	12	78	89		99	143	99	135	147	
45	84	13	79	90		100	144	99	136	148	
46	85	14	80	91		101	145	99	137	149	
47	86	16	81	92		102	146	99	138	150	
48	87	18	82	93		103	147	99	139	151	
49	88	19	83	94		104	148	99	140	152	
50	89	23	84	95		105	149	99	141	153	
51	90	25	85	96		106	150	99	142	154	
52	91	27	86	97		107	151	99	143	155	
53	92	30	80 87	98		107	152	99 99	145	156	
54	93	32	88	99		109	154	99	146	157	
55	95	34	89	101		110	155	99	147	158	
56	96	37	90	102		111	156	99	148	159	
57	97	39	91	103		112	157	99	149	160	
58	98	42	92	104		113	158	99	150	161	
59	99	45	93	105		114	159	99	151	162	
60	100	50	94	106		115	160	99	152	163	
						116	161	99	153	164	
						117					
							162	99	154	165	
						118 119	163 164	99	155	166 168	
							101	99	156	400	

## **DUMONT-WILLIS INDEX-2 (DWI-2: WMI+PSI)**

Sum of DWI- 2 SSS	DWI-2 Score	Percentile Rank	95% Confidence Range		Sum of DWI-		Percentile	95% Confidence Range	
			Min	Max	2 SSS	DWI-2 Score	Rank	Min	Max
4	38	1	35	47	41	102	53	96	107
5	40	1	37	48	42	103	58	98	109
6	42	1	38	50	43	105	63	99	111
7	43	1	40	51	44	107	66	101	112
8	45	1	42	53	45	109	70	102	114
9	47	1	43	55	46	110	75	104	116
10	49	1	45	56	47	112	79	106	117
11	50	1	47	58	48	114	81	107	119
12	52	1	48	60	49	115	84	109	121
13	54	1	50	61	50	117	87	111	122
14	55	1	52	63	51	119	88	112	124
15	57	1	53	65	52	121	91	114	125
16	59	1	55	66	53	122	93	116	127
17	61	1	56	68	54	124	95	117	129
18	62	1	58	70	55	126	95	119	130
19	64	1	60	71	56	127	96	121	132
20	66	1	61	73	57	129	97	122	134
21	67	1	63	75	58	131	97	124	135
22	69	2	65	76	59	133	98	125	137
23	71	2	66	78	60	134	99	127	139
24	73	3	68	79	61	136	99	129	140
25	74	4	70	81	62	138	99	130	142
26	76	5	71	83	63	139	99	132	144
27	78	6	73	84	64	141	99	134	145
28	79	8	75	86	65	143	99	135	147
29	81	10	76	88	66	145	99	137	148
30	83	12	78	89	67	146	99	139	150
31	85	14	79	91	68	148	99	140	152
32	86	18	81	93	69	150	99	142	153
33	88	19	83	94	70	151	99	144	155
34	90	23	84	96	71	153	99	145	157
35	91	27	86	98	72	155	99	147	158
36	93	32	88	99	73	157	99	149	160
37	95	34	89	101	74	158	99	150	162
38	97	39	91	102	75	160	99	152	163
39	98	45	93	104	76	162	99	153	165
40	100	50	94	106					

To download template press here.

[1] Wechsler, D. (2003). Wechsler Intelligence Scale for Children (4<sup>th</sup> ed.) (WISC-IV). San Antonio, TX: The Psychological Corporation.

<sup>[2]</sup> Wechsler, D. (2003). *WISC-IV Technical and Interpretive Manual*. San Antonio, TX: The Psychological Corporation.

[3] Tellegen, A., & Briggs, P. (1967). Old wine in new skins: Grouping Wechsler subtests into new scales. *Journal of Consulting Psychology*, 31, 499-506.

<sup>[4]</sup> Prifitera, A., Weiss, L. G., & Saklofske, D. H. (1998). WISC-III in context. In A. Prifitera & D. H. Saklofske (Eds.) WISC-III clinical use and interpretation: Scientist-practitioner perspectives (pp. 1-38). San Diego: Academic Press.

[5] Kaufman, A. S. (1979). Intelligent testing with the WISC-R. New York: Wiley Interscience.

[6] Kaufman, A. S. (1994). Intelligent testing with the WISC-III. New York: Wiley Interscience.

[7] Willis, J. O. & Dumont, R. P. (2002, pp. 131-132). *Guide to identification of learning disabilities* (3<sup>rd</sup> ed.). Peterborough, NH: authors. [http://alpha.fdu.edu/psychology]