

WISC-R
Grade 1/Year 2
Fast Track Project Technical Report
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SAS Scoring Program

Citations

Instrument

Sattler, J.M. (1992). *Assessment of children: Revised and updated third edition*. San Diego: Jerome M. Sattler.

Wechsler, D. (1974). *Manual for the Wechsler Intelligence Scale for Children-Revised*. San Antonio, TX: The Psychological Corporation, Harcourt Brace Jovanovich, Inc.

Reports

Rains, C. (2003). *WISC-R (Fast Track Project Technical Report)*. Available from the Fast Track Project website: <http://www.fasttrackproject.org>

Jones, D. (1999). *WISC-R (Fast Track Project Technical Report)*. Durham, NC: Duke University.

Data Sources

Raw: C2A_WISC, P2B

Scored: WSR2

I. Scale Description

Portions of the Wechsler Intelligence Scale for Children-Revised (WISC-R) were used in years 1 and 2 for all three cohorts to assess child intelligence in early elementary school. The WISC-R was developed by David Wechsler (1974) as a second version of the intelligence scale originally introduced in 1949. For the Fast Track Project, a "short form" of the WISC-R was used which included two of the ten subtests: Block Design (from the Performance module of the WISC) and Vocabulary (from the Verbal Ability module). The short form score was then converted into an Estimated IQ Score using methods provided by Sattler (1992).

II. Report Sample

These analyses were conducted on the first cohort on the high-risk control sample (n = 155) and the normative sample (n = 387, N = 463 with overlap) from the second year of the study. Thirty-two records were missing the entire measure. Eight respondents from the control sample (4 from Durham and 4 from Washington) were missing the entire measure and 25 respondents from the normative sample were

missing the entire sample (3 from Durham, 7 from Nashville, 3 from Pennsylvania, and 12 from Washington).

III. Scaling

Scoring tables from the WISC-R manual were used to create separate age-adjusted scores for the two subtests. Since test administration dates were not recorded when the WISC was given, date of administration from the Family Information Form (FIF) was used as an approximate interview date of the WISC as these two instruments were typically administered on the same day in year 1. Child age was calculated by subtracting date of birth from the FIF date of administration. Raw sum scores for the Vocabulary test (WSR2SVO) and the Block Design test (WSR2SBD) were converted into scaled scores, which were coded WSR2ZVO (for Vocabulary) and WSR2ZBD (for Block Design), and were adjusted for the child's age at the time of test administration. The scaling process was based on a norming population with a mean score of 10 and standard deviation of 3 on each subtest.

Estimated IQ Scores were created by combining the scaled Block Design and Vocabulary scores within year and then using tables provided by Sattler (1992, p.851) to convert to an IQ score (WSR2IQ), normed on a score with a mean of 100 and a standard deviation of 15.

IV. Differences between Groups

There were significant differences noted between the normative (excluding the overlap) and high-risk control sample for the all of the scores such that the respondents from the normative sample scored higher than the respondents in the high-risk control sample on all of the scores.

| Comparison of Means for Normative and Control for WISC-R Y2 | | | | | | | | |
|---|------------------------------------|-----------|---------|---------|---------|-----|---------|---------|
| Variable | Label | Normative | | Control | | DF | t Value | Pr > t |
| | | Mean | Std Dev | Mean | Std Dev | | | |
| WSR2IQ | Estimated IQ Score | 97.62 | 21.19 | 89.45 | 16.90 | 425 | -4.04 | <.0001 |
| WSR2SBD | WISC Block Design Summary Score Y2 | 13.10 | 9.33 | 10.02 | 7.53 | 428 | -3.46 | 0.0006 |
| WSR2SVO | WISC Vocabulary Summary Score Y2 | 17.98 | 5.78 | 16.54 | 4.59 | 428 | -2.63 | 0.0088 |
| WSR2ZBD | Age-Adjusted Block Design Score | 9.85 | 3.50 | 8.57 | 3.23 | 427 | -3.68 | 0.0003 |
| WSR2ZVO | Age-Adjusted Vocabulary Score | 9.52 | 3.39 | 8.48 | 2.87 | 426 | -3.17 | 0.0016 |

V. Recommendations for Use

The *Block Design Raw Score* was positively skewed for the high-risk control sample only. The *Block Design Raw Score*—normative sample, the *Vocabulary Raw Score*, the *Block Design Age-Adjusted Score*, the *Vocabulary Age-Adjusted Score*, and the *Year 2 Estimated IQ Score* were all normally distributed for both the normative and the high-risk samples.

A limitation for using WSR1IQ is the absence of norms for children under age 6 (Sattler, 1992).¹ Since age-norming tables for the WISC-R have a lower limit of age 6 years, 0 months (age 6-0), scores for children under age 6 in the Fast Track Project were scaled based on the youngest age bracket available (age 6-0 to age 6-3). A substantial proportion of the year one cohort one sample -- 22% of the normative sample and 22% of the high-risk sample -- were under the age of 6.0 years, and thus have potentially

¹ Sattler (1992, p.142) also notes that norms for children between age 6-0 years and age 6-3 years were created by extrapolation instead of actually testing children in that age group; thus, norms for this age may be unreliable as well.

inappropriately scaled scores. The result of this in terms of distributions is a mild floor effect and heavier tail for the year one IQ scores.

Depending on the question being addressed, analysts may use the estimated IQ scores or the separate subtest, age-adjusted scores.

Analysts should also be aware of a problem with the administration of the WISC-R to the respondents. When the data were checked in 1999, Jones discovered that many of the data were collected erroneously, stating that, "With the WISC, this usually has to do with the interviewer stopping the test prematurely." Jones's report also notes other problems such as "irrecoverable missing items within the data." Finally, the instructions for the WISC were to stop administering a section of the measure when the child missed two or more in a row. These instructions do not appear to have always been followed. Analysts using these data should know that these problems are not found in the year 1, cohort 1 data but are found in the other available data (year 2—cohorts 2 and 3 and year 3—all three cohorts). The scoring program and the scored datasets for the WISC-R accommodate these problems by coding to missing the erroneously collected data.

VI. **Item and Scale Means and SDs**

WISC-R Normative Sample Items

| Variable | Label | N | Mean | Std Dev | Minimum | Maximum |
|----------|---------------------|-----|-------|---------|---------|---------|
| C2ABD1 | BD Design #1: 45" | 361 | 1.792 | 0.487 | 0.000 | 2.000 |
| C2ABD2 | BD Design #2: 45" | 361 | 1.740 | 0.571 | 0.000 | 2.000 |
| C2ABD3 | BD Design #3: 45" | 356 | 1.551 | 0.720 | 0.000 | 2.000 |
| C2ABD4 | BD Design #4: 45" | 351 | 2.558 | 2.591 | 0.000 | 7.000 |
| C2ABD5 | BD Design #5: 75" | 323 | 2.084 | 2.386 | 0.000 | 7.000 |
| C2ABD6 | BD Design #6: 75" | 253 | 2.024 | 2.311 | 0.000 | 7.000 |
| C2ABD7 | BD Design #7: 75" | 219 | 0.799 | 1.699 | 0.000 | 7.000 |
| C2ABD8 | BD Design #8: 75" | 191 | 1.298 | 2.157 | 0.000 | 7.000 |
| C2ABD9 | BD Design #9: 120" | 169 | 0.615 | 1.488 | 0.000 | 5.000 |
| C2ABD10 | BD Design #10: 120" | 162 | 0.074 | 0.541 | 0.000 | 4.000 |
| C2ABD11 | BD Design #11: 120" | 149 | 0.047 | 0.573 | 0.000 | 7.000 |
| C2AVO1 | Knife | 362 | 1.812 | 0.492 | 0.000 | 2.000 |
| C2AVO2 | Umbrella | 362 | 1.682 | 0.606 | 0.000 | 2.000 |
| C2AVO3 | Clock | 362 | 1.757 | 0.506 | 0.000 | 2.000 |
| C2AVO4 | Hat | 362 | 1.768 | 0.484 | 0.000 | 2.000 |
| C2AVO5 | Bicycle | 362 | 1.470 | 0.532 | 0.000 | 2.000 |
| C2AVO6 | Nail | 360 | 1.478 | 0.684 | 0.000 | 2.000 |
| C2AVO7 | Alphabet | 360 | 1.211 | 0.624 | 0.000 | 2.000 |
| C2AVO8 | Donkey | 360 | 1.108 | 0.795 | 0.000 | 2.000 |
| C2AVO9 | Thief | 360 | 1.383 | 0.904 | 0.000 | 2.000 |
| C2AVO10 | Join | 360 | 0.844 | 0.691 | 0.000 | 2.000 |
| C2AVO11 | Brave | 359 | 0.905 | 0.910 | 0.000 | 2.000 |
| C2AVO12 | Diamond | 356 | 0.978 | 0.836 | 0.000 | 2.000 |
| C2AVO13 | Gamble | 343 | 0.364 | 0.696 | 0.000 | 2.000 |
| C2AVO14 | Nonsense | 337 | 0.448 | 0.797 | 0.000 | 2.000 |
| C2AVO15 | Prevent | 321 | 0.069 | 0.347 | 0.000 | 2.000 |
| C2AVO16 | Contagious | 296 | 0.240 | 0.616 | 0.000 | 2.000 |
| C2AVO17 | Nuisance | 279 | 0.050 | 0.302 | 0.000 | 2.000 |
| C2AVO18 | Fable | 215 | 0.070 | 0.348 | 0.000 | 2.000 |
| C2AVO19 | Hazardous | 190 | 0.047 | 0.296 | 0.000 | 2.000 |
| C2AVO20 | Migrate | 161 | 0.025 | 0.222 | 0.000 | 2.000 |
| C2AVO21 | Stanza | 156 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO22 | Seclude | 138 | 0.014 | 0.170 | 0.000 | 2.000 |
| C2AVO23 | Mantis | 136 | 0.015 | 0.171 | 0.000 | 2.000 |
| C2AVO24 | Espionage | 134 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO25 | Belfry | 132 | 0.023 | 0.194 | 0.000 | 2.000 |
| C2AVO26 | Rivalry | 132 | 0.008 | 0.087 | 0.000 | 1.000 |
| C2AVO27 | Amendment | 132 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO28 | Compel | 132 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO29 | Affliction | 132 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO30 | Obliterate | 132 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO31 | Imminent | 132 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO32 | Dilatory | 134 | 0.000 | 0.000 | 0.000 | 0.000 |

WISC-R Control Sample Items

| Variable | Label | N | Mean | Std Dev | Minimum | Maximum |
|----------|---------------------|-----|-------|---------|---------|---------|
| C2ABD1 | BD Design #1: 45" | 147 | 1.714 | 0.549 | 0.000 | 2.000 |
| C2ABD2 | BD Design #2: 45" | 147 | 1.701 | 0.602 | 0.000 | 2.000 |
| C2ABD3 | BD Design #3: 45" | 144 | 1.451 | 0.774 | 0.000 | 2.000 |
| C2ABD4 | BD Design #4: 45" | 144 | 1.896 | 2.308 | 0.000 | 7.000 |
| C2ABD5 | BD Design #5: 75" | 130 | 1.638 | 2.248 | 0.000 | 7.000 |
| C2ABD6 | BD Design #6: 75" | 101 | 1.277 | 2.006 | 0.000 | 7.000 |
| C2ABD7 | BD Design #7: 75" | 80 | 0.525 | 1.405 | 0.000 | 5.000 |
| C2ABD8 | BD Design #8: 75" | 70 | 0.971 | 1.818 | 0.000 | 6.000 |
| C2ABD9 | BD Design #9: 120" | 65 | 0.508 | 1.371 | 0.000 | 5.000 |
| C2ABD10 | BD Design #10: 120" | 65 | 0.062 | 0.496 | 0.000 | 4.000 |
| C2ABD11 | BD Design #11: 120" | 61 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO1 | Knife | 147 | 1.810 | 0.487 | 0.000 | 2.000 |
| C2AVO2 | Umbrella | 147 | 1.714 | 0.585 | 0.000 | 2.000 |
| C2AVO3 | Clock | 147 | 1.728 | 0.518 | 0.000 | 2.000 |
| C2AVO4 | Hat | 147 | 1.748 | 0.508 | 0.000 | 2.000 |
| C2AVO5 | Bicycle | 147 | 1.476 | 0.501 | 1.000 | 2.000 |
| C2AVO6 | Nail | 147 | 1.449 | 0.664 | 0.000 | 2.000 |
| C2AVO7 | Alphabet | 147 | 1.122 | 0.618 | 0.000 | 2.000 |
| C2AVO8 | Donkey | 147 | 1.027 | 0.758 | 0.000 | 2.000 |
| C2AVO9 | Thief | 147 | 1.327 | 0.938 | 0.000 | 2.000 |
| C2AVO10 | Join | 147 | 0.789 | 0.695 | 0.000 | 2.000 |
| C2AVO11 | Brave | 147 | 0.823 | 0.904 | 0.000 | 2.000 |
| C2AVO12 | Diamond | 145 | 0.697 | 0.758 | 0.000 | 2.000 |
| C2AVO13 | Gamble | 145 | 0.269 | 0.556 | 0.000 | 2.000 |
| C2AVO14 | Nonsense | 142 | 0.359 | 0.718 | 0.000 | 2.000 |
| C2AVO15 | Prevent | 135 | 0.015 | 0.121 | 0.000 | 1.000 |
| C2AVO16 | Contagious | 124 | 0.153 | 0.526 | 0.000 | 2.000 |
| C2AVO17 | Nuisance | 115 | 0.087 | 0.364 | 0.000 | 2.000 |
| C2AVO18 | Fable | 95 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO19 | Hazardous | 78 | 0.026 | 0.226 | 0.000 | 2.000 |
| C2AVO20 | Migrate | 67 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO21 | Stanza | 66 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO22 | Seclude | 62 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO23 | Mantis | 58 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO24 | Espionage | 58 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO25 | Belfry | 58 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO26 | Rivalry | 58 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO27 | Amendment | 58 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO28 | Compel | 58 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO29 | Affliction | 58 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO30 | Obliterate | 58 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO31 | Imminent | 58 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2AVO32 | Dilatory | 58 | 0.000 | 0.000 | 0.000 | 0.000 |

WISC-R Normative Sample Scores

| Variable | Label | N | Mean | Std Dev | Minimum | Maximum |
|----------|------------------------------------|-----|--------|---------|---------|---------|
| WSR2SBD | WISC Block Design Summary Score Y2 | 361 | 12.343 | 9.125 | 0.000 | 53.000 |
| WSR2SVO | WISC Vocabulary Summary Score Y2 | 361 | 17.521 | 5.600 | 0.000 | 43.000 |
| WSR2ZBD | Age-Adjusted Block Design Score | 360 | 9.528 | 3.529 | 1.000 | 19.000 |
| WSR2ZVO | Age-Adjusted Vocabulary Score | 360 | 9.236 | 3.321 | 1.000 | 19.000 |
| WSR2IQ | Estimated IQ Score | 359 | 95.496 | 20.666 | 0.100 | 157.000 |

WISC-R Control Sample Scores

| Variable | Label | N | Mean | Std Dev | Minimum | Maximum |
|----------|------------------------------------|-----|--------|---------|---------|---------|
| WSR2SBD | WISC Block Design Summary Score Y2 | 147 | 10.020 | 7.532 | 0.000 | 35.000 |
| WSR2SVO | WISC Vocabulary Summary Score Y2 | 147 | 16.537 | 4.590 | 6.000 | 29.000 |
| WSR2ZBD | Age-Adjusted Block Design Score | 147 | 8.571 | 3.229 | 1.000 | 17.000 |
| WSR2ZVO | Age-Adjusted Vocabulary Score | 146 | 8.479 | 2.873 | 1.000 | 17.000 |
| WSR2IQ | Estimated IQ Score | 146 | 89.452 | 16.895 | 51.000 | 141.000 |

VII. Subscale Correlations

WISC-R Full Sample Scores

| Pearson Correlation Coefficients Prob > r under H0: Rho=0 Number of Observations | | | | | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | WSR2SBD | WSR2SVO | WSR2ZBD | WSR2ZVO | WSR2IQ |
| WSR2SBD WISC Block Design Summary Score Y2 | 1.000 430 | 0.407 0.000 429 | 0.939 0.000 429 | 0.374 0.000 427 | 0.794 0.000 427 |
| WSR2SVO WISC Vocabulary Summary Score Y2 | 0.407 0.000 429 | 1.000 430 | 0.379 0.000 428 | 0.943 0.000 428 | 0.775 0.000 427 |
| WSR2ZBD Age-Adjusted Block Design Score | 0.939 0.000 429 | 0.379 0.000 428 | 1.000 429 | 0.399 0.000 427 | 0.844 0.000 427 |
| WSR2ZVO Age-Adjusted Vocabulary Score | 0.374 0.000 427 | 0.943 0.000 428 | 0.399 0.000 427 | 1.000 428 | 0.821 0.000 427 |
| WSR2IQ Estimated IQ Score | 0.794 0.000 427 | 0.775 0.000 427 | 0.844 0.000 427 | 0.821 0.000 427 | 1.000 427 |