Wechsler Intelligence Scale for Children (WISC-IV)

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Introduction

The Wechsler Intelligence Scale for Children (WISC-IV) is an intellectual ability assessment that is administered to children between the ages of six and 16. The WISC-IV does more than merely provide IQ scores. It presents important and necessary information regarding a child’s cognitive functioning level. The test is often times used to help identify potential learning disabilities in children, as well as to determine if a child may be considered as “gifted.” The WISC-IV cannot be used to measure extreme intelligence IQ scores below 40 and above 160 points; however, it is considered a very useful tool to determine a child’s intelligence.

The test was originally developed in 1949 by David Wechsler and was based on an adult intelligence test, known as the Wechsler Adult Intelligence Scale (WAIS). It has since been revised in 1974, 1991, and 2003, with the most recent version being the WISC-IV. It takes approximately 60 to 90 minutes to complete the test with a pencil and paper version or web-based version. Ideally, the test is administered in one session. However, if there are time restrictions or the child starts showing signs of fatigue, it can be carried out over several sessions. As a way of ensuring consistency, the administrator reads out the instructions for each section verbatim. The starting point of the test is determined by the child’s age. If a child receives a perfect score on the first two items, known as the basal, the administrator may continue as is. However, if this is not the case, the administrator asks the items in reverse order until a perfect score on two items is achieved. Additionally, if a child answers a specified number of incorrect
items in a row for a particular subtest, known as the ceiling, the administrator then moves on to the next subtest.

Wechsler believed that intelligence can be measured through many different content areas and skills. Thus, the test has multiple sections in order to get a better understanding of a child’s overall intelligence. The WISC-IV measures different aspects of intelligence and provides five scores based on them. The five different scores are listed as follows: *Verbal Comprehension Index (VCI)*, *Perceptual Reasoning Index (PRI)*, *Working Memory Index (WMI)*, *Processing Speed Index (PSI)* and *Full Scale IQ (FSIQ)*.

The WISC-IV *VCI* is primarily a measure of a child’s ability to interpret information, incorporate knowledge, and express their thoughts verbally. This index is composed of Vocabulary, Similarities, and Comprehension subtests. Information and Word Reasoning are supplemental subtests that may be administered for additional information or as a replacement for one of the core subtests. The *PRI* involves assessing a child’s ability to examine a problem and, non-verbally and fluidly create solutions. It consists of Block Design, Picture Concepts, and Matrix Reasoning. Picture Completion is the supplemental subtest. The *WMI* measures a child’s ability to memorize, store, and alter information to produce a result. The core subtests for this index are Digit Span and Letter Number Sequencing. The Arithmetic subtest is used as supplemental information. The *PSI* involves the ability to effectively and efficiently focus on, process, and order visual information. Its core subtests include Coding and Symbol Search, with Cancellation being an optional test. Lastly, but most importantly, the *FSIQ* score is derived from combining the scores of the four previously mentioned indices. It is generally the first score to
be examined when interpreting a child’s profile, as this a way of viewing their overall thinking and reasoning skills (Flanagan & Kaufman, 2009).

The WISC-IV is known to be a reliable test. Evidence of the reliability of this test includes the split half-method and test-retest reliability. According to the split half method, the reliability for the subtests range from 0.79 to 0.90, indicating high reliability. According to test-retest, the reliability ranges from 0.76 to 0.92, depending on the subtest. In other words, children’s scores have been found to be highly consistent over time. The WISC-IV also demonstrates significant validity. Specifically, children taking the WISC-IV have scored very similarly on other intelligence tests for children, demonstrating convergent validity. Such tests include the Wechsler Preschool and Primary Scale of Intelligence (WPPSI-III), the Wechsler Adult Intelligence Scale (WAIS-III), the Wechsler Abbreviate Intelligence Scale (WASI), the Wechsler Individual Achievement Test (WIAT-II), and the Children’s Memory Scale (CMS). The test items were reviewed by an expert panel and altered by getting feedback from test participants to clarify confusing sections of the test. These recommendations were incorporated into the test to further establish its validity (Niolon, 2013).

Interpretation

The WISC-IV score report contains useful information regarding a child’s intellectual ability. When looking at the score report, the first chart is comprised of the Composite Scores Summary. This chart contains several columns of data, which is separated between the five main indices. The first column represents the Sum of Scaled Scores, which is calculated by adding up the scaled scores of the subtests. For example, the $VCI$ has three subtests: Similarities, Vocabulary, and Comprehension. If a child were to receive a scaled score of 12, 13, and 12,
respectively, then the Sum of Scaled Score for the $VCI$ would be 37. The second column represents the Composite Score, which is the standardized Sum of Scaled Score. The Composite Score can be used to determine where a child stands in comparison to a national normative sample, which, like most intelligence tests, has a mean of 100 and a standard deviation of 15. The third column represents the Percentile Rank, which is used to determine a child’s rank in the national comparison. For example, if a child was in the 60th percentile that means that the child scored higher than 60 out of 100 children. The fourth and last column indicates the 95% Confidence Interval, which is a band or range of scores within which the child’s “true” score can be found. For instance, a child earned a $VCI$ score of 112, with a 95% confidence interval range from 105 to 118. This means that there is a 95% chance that this child’s “true” score falls between this 105 and 118 range. The final column gives a description of the child’s ability in terms of normative data with the indicators, “Low Average,” “Average,” and “High Average.”

In order to examine how a child did on each subtest, the parent should refer to the Subtest Scores Summary tables. This section of the score report gives a breakdown by index and by subtest. It also gives information regarding raw scores, scaled scores, test age equivalence, and percentile rank. The raw scores are simply the total number of points earned on each subtest. However, these scores carry with them no meaning because they are not norm referenced. Thus, in order to compare the child’s level of functioning to the general population’s, the raw scores must be converted to scaled scores. The test age equivalents represent the average age in years and months at which a given total raw score is typical. For example, a raw score of 26 on the Similarities subtest corresponds to a test age equivalent of 13 years and 10 months. These test age equivalents are provided in the *WISC-IV Administration and Scoring Manual*. Even though
this particular information may be useful, it should be interpreted with caution. The test age equivalents provide little information on a child’s position comparative to peers of the same age. For example, Jane, aged 11 years and 3 months, received a test age equivalent of 10 years and 10 months on the Digit Span subtest. It may appear that Jane performed poorly on this subtest, but her raw score of 16 is in the average range of functioning for other children her age. In addition, the test age equivalents may not be equivalent across the subtests. For instance, a child’s percentile rank for two subtests may differ significantly even though the test age equivalents are the same (Weiss et al., 2006). Lastly, the percentile rank is used as an indication of the child’s intellectual ability for each subtest in comparison to the national averages.

In conclusion, it is understandable why the WISC-IV is such a widely used assessment when it comes to determining a child’s overall cognitive ability level. However, like with any test, the viewers must always be careful in the way they understand the results. Any child may score slightly higher or lower on any given day, as a result of their motivation, attention, interests, and opportunities for learning. It is important to keep in mind that these additional skills a child possesses and uses in order to achieve success cannot be easily evaluated by standardized tests.
References


