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**The Wechsler Intelligence Scales**

**Overview**

The Wechsler intelligence scales were developed by Dr. David Wechsler, a clinical psychologist with Bellevue Hospital. His initial test, the **Wechsler-Bellevue Intelligence Scale** , was published in 1939 and was designed to measure intellectual performance by adults. Wechsler constructed the WBIS based on his observation that, at the time, existing intelligence tests for adults were merely adaptations of tests for children and had little face validity for older age groups.

Since 1939, three scales have been developed and subsequently revised, to measure intellectual functioning of children and adults. The **Wechsler Adult Intelligence Scale-III** (WAIS-III) is intended for use with adults. The **Wechsler Intelligence Scale for Children-III** (WISC-III) is designed for children ages 6 - 16, while the **Wechsler Preschool and Primary Scale of Intelligence-R** (WPPSI-R) is designed for children age 4 - 6 1/2 years.

**Definition of Intelligence**

Wechsler defined intelligence as an individual's ability to adapt and constructively solve problems in the environment. It is significant that Wechsler viewed intelligence not in terms of **capacity** , but rather, in terms of **performance** . That is, the Wechsler scales are not purported to measure one's quantity of intelligence, but instead measures one's intellectual performance. The rationale for conceptualizing intelligence as a performance variable is that it does not really matter how much intelligence one has, in order to adapt to the environment. What matters is how well one uses his/her intelligence. Also, since intellectual capacity cannot be seen nor its existence concretely verified, it cannot be reliably measured. Performance can be measured and, thus, should be the focus of the test. Although Wechsler has written much to support this position, other intelligence developers have taken essentially the same position regarding the nature of intelligence. Most major intelligence tests, such as the Stanford-Binet, the Peabody Picture Vocabulary Test, and the Guilford Intelligence Scales, are grounded in the view of intelligence tests as performance measures.

The Wechsler scales, like the Binet and other tests, measure intellectual performance as a multidimensional construct. This means that, rather than conceptualizing intelligence as a single characteristic, the tests contain numerous scales assessing qualitatively different types of intellectual functioning. The notion of multidimensional intelligence is certainly not new in cognitive psychology; in the 1920s, Thurstone and Spearman viewed intelligence as consisting of several components. However, in contrast to earlier multidimensional views, current intelligence tests view intelligence not as specific abilities emanating from a "general" intellectual capacity (e.g., general S with many specific "s" factors), but as different types of intelligence, each type being of equal adaptive importance.

**Administration and Scoring**

The procedures for administering and scoring the three Wechsler scales are similar. Each test has two batteries of subtests grouped into two general areas: 1) Verbal scales; and 2) Performance scales. The Verbal scales measure general knowledge, language, reasoning, and memory skills, while the Performance scales measure spatial, sequencing, and problem-solving skills.

The tests are administered to individual examinees by trained examiners, using a complex set of test materials. Testing requires approximately ninety minutes. Raw scores on each test are converted to standard scores with a mean of 10 and a standard deviation of 3. Scale scores in the Verbal battery are summed and converted to a Verbal IQ score; the same is done for the Performance scale scores which yield the Performance IQ score. In turn, the Verbal and Performance IQ scores are summed and converted to obtain the Full Scale (overall) IQ score. The Verbal, Performance, and Full Scale IQ scores are **normative** IQs, having a mean of 100 and a standard deviation of 15. Full Scale scores beyond 130 place an individual in the superior or "gifted" range. Scores between 120-129 are classed as "very high." Scores between 110-119 are "bright normal." Classifications of other scores are as follows: 90-109, average; 85-89, low average; 70-84,

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borderline mental functioning, @50-69, mild mental retardation; 35- @49, moderate retardation; 20-34, severe retardation; below 20 to 25, profound retardation.

In addition, the WISC-III and WAIS-III include supplementary **Index Scales** that provide measures of verbal comprehension, perceptual organization, processing speed, and working memory. The index scores also have means of 100 and standard deviations of 15.

The manual includes procedures for determining if the examinee's performance includes areas of strengths or weaknesses. Essentially, a given test or index score must deviate from other test/index scores, or from the Verbal, performance, or overall test means by given amounts, in order for the score to be considered a significant departure from his or her performance on the other tests.

**The WAIS-III**

The WAIS-III is the 1997 revision of the test originally published in 1955 and first revised in 1981. The WAIS-III contains the following scales:

**Verbal Scales**

1. **Information** : 28 items on a variety of information adults have presumably had opportunities to acquire in our culture. No specialized or academic information included; however, some of the items cover quite sophisticated information.

2. **Comprehension** : 18 items that require examinee to explain what should be done in certain circumstances, the meaning of proverbs, why certain societal practices are followed, and so forth. The test measures practical judgement, common sense, and the ability to understand and adapt to

social customs. Score on each item varies (0-2 pts) according to the degree to which the response describes the most pertinent aspects of the question.

3. **Arithmetic** : 20 arithmetic problems similar to those encountered in elementary math courses. Problems are administered orally and must be solved without paper and pencil. In addition to math knowledge, test measures concentration and systematic problem-solving ability.

4. **Similarities** : 19 items requiring examinee to describe how two given things are alike. Score on each item varies according to the degree to which the response describes a general property primarily pertinent to both items in the pair. Measures concrete, functional, and abstract concept formation.

5. **Digit Span** : Two parts, Digits forward and digits backwards. Examinee required to repeat 3 - 9 digits forward and 2 - 9 digits backwards. Measures short-term memory, attention, and concentration..

6. **Vocabulary** : 66 words of increasing difficulty are presented orally and visually. Examinee required to define the words. Score (0-2) based on sophistication of definition. Measures verbal knowledge and concept formation.

7. **Letter-Number Sequencing** (Optional Test): Examiner presents combinations of letters and numbers, from 2 to nine letter-number combinations. Examinee must repeat each series by, first, repeating the numbers in ascending order, then the letters in alphabetical order (e.g., 9-L-2-A; correct response is 2-9-A-L). Measures "working memory," the ability to simultaneously recall and organize stimuli of different, similar types. This also is a standard test on the Wechsler Memory Scale-III.

**Performance Scales**

8. **Coding-Digit Symbol** : Numbers 1 - 7 are paired with symbols on a key presented to examinee. Examinee has 120 seconds to go through a grid of 90 numbers and place the correct symbol above each number. Measures visual-motor speed and complexity, motor coordination. There are two additional, optional extensions of the coding test that measure the examinees skills in learning the coding process after completing the initial task.

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9. **Picture Completion** : 25 cards, each containing a picture having a part missing. Examinee must identify the missing part. Measures ability to observe details and recognize specific features of the environment (I.e., whole to part discrimination). Also measures performance in deliberately focusing attention.

10. **Block Design** : Perhaps the butt of more jokes than any other WAIS scale! Included in the test are nine red and white square blocks and a spiral booklet of cards showing different color designs that can be made with the blocks. The examinee must arrange the blocks to match the design formed by examiner or shown on cards. In addition to being scored for accuracy, each item is

scored for speed as well. Measures spatial problem-solving and manipulative abilities, and part to whole organization.

11. **Picture Arrangement** : Eleven items. Each item consists of 3 to 6 cards containing pictures. The examinee must arrange the pictures from left to right to tell the intended story. Again, both accuracy and speed are scored. Partial credit is given for alternate, but less commonly given arrangements to some items.
Measures nonverbal reasoning and sequencing skills, and grasp of social cause and effect (also known as social intelligence).

12. **Matrix Reasoning** : A new test on the WAIS-III. Examinee is presented with a series of design with a part missing. Examinee chooses the missing part that will complete the design, from five choices. Measures nonverbal analytical reasoning.

13. **Object Assembly** (Optional Test): Four items, each item being a "cut up" object, like a puzzle. Examinee must correctly assemble the parts of the puzzle. Measures visual-motor problem-solving and organizational abilities, and visual anticipation skills.

14. **Symbol Search** (Optional test): Examinee must match one or two symbols shown on the left column with the same symbol/s in the right column of each page in the supplemental test booklet. Measures organization accuracy and processing speed

**The WISC-III**

Originally, the WISC (1950) was a downward extension of the Wechsler-Belleview test to children. A revision, the WISC-R, was published in 1974. The WISC-III was published in 1992. Most of the scales in the WISC-III are similar to those in the WAIS-R. Like the WAIS-III, administration alternates a Verbal scale and a Performance scale. Also, whereas Digit Span is always given in the WAIS-R, it is an optional test in the WISC-R (it may be substituted for any one of the other Verbal scales, if the other scale cannot be administered due to an examinee's handicap or because administration of a scale was disrupted). Also, a Mazes subtest may be substituted for the Coding test on the Performance scale. Order of administration of the tests is as follows:

1. Picture Completion; 2) Information; 3) Coding; (4) Similarities; 5) Picture Arrangement; 6) Arithmetic; 7) Block Design; 8) Vocabulary; 9) Object Assembly; 10) Comprehension; 11) Symbol Search (Optional); 12) Digit Span (Optional); 13) Mazes (Optional).

**The WPPSI-R**

The WPPSI was introduced in 1967 as an adaptation of the WISC to preschool children and an alternative to the Stanford-Binet. Like the WISC-R, the WPPSI tests are administered in alternating order (Verbal-Performance) and yield scale, Verbal, Performance, and Full Scale IQ scores. Tests, in order of administration, are:

1. Information; 2) Animal House; 3) Vocabulary; 3) Picture Completion; 5) Arithmetic; 6) Mazes; 7) Similarities; 8) Geometric Design; 9) Comprehension; 10) Block Design.

The Animal House test is a substitute for the WISC-R Coding test and the WAIS-R Digit Symbol test. The test consists of a board, at the top of which is a key containing pictures of a cat, fish, chicken, and dog.

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Below each animal on the key is a colored cylinder (the child is told that the cylinder is the animal's house). The rest of the board contains pictures of each animal with a hole underneath. The child is given twenty colored cylinders and told to give each animal a house the same color as the house for that animal in the key. Speed and accuracy are scored.

The Geometric Designs test requires the little flowers to copy ten simple designs on paper using a colored pencil. Again, speed and accuracy are scored.

In addition, there is an alternative test for the Verbal scale. The Sentences test is similar to the Digit Span test, but requires the child to repeat sentences after the examiner. The test may be substituted for another Verbal test, to compensate for a specific handicap or when administration of another test is disrupted.

Source: http://www.iupui.edu/~flip/wechsler.html