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Types of Neuropsychological Test Scores

Raw Data

The term test data refers to psychological test materials, manuals, instruments, protocols and test questions or stimuli, client/patient responses to test questions or stimuli, and psychologists' notes and recordings concerning client/patient statements and behavior during an examination.

Raw Score

A raw score is an unaltered measurement – it is how many questions the test taker answered correctly. For example, let's say you took a test in class and scored 85. This is a raw score, an unaltered measurement of how you did. You scored 85. The raw score generally needs to be converted so that it can be compared against a normative sample.

There are many possible ways to depict an individual's score relative to the normative sample. Such data could be represented in the form of 1) Standard Scores, 2) T-Scores, 3) Z-Scores or 4) Percentile Scores. Each reporting method allows for comparison relative to the normative sample. The method of reporting selected by an individual psychologist may vary based on training and personal discretion.

Standard Score

A score that is derived from an individual's raw score within a distribution of scores. The standard score describes the difference of the raw score from a sample mean, expressed in standard deviations. The use of standard scores allows the set of raw scores to be "normalized" or statistically adjusted to fit the normal distribution or "bell shaped curve," allowing a more precise and meaningful comparison of scores across individuals in a sample.

A standard score of 100 represents precisely average performance, indicating that 50% of the normative sample scored better than that individual, and 50% scored lower. However, very few individuals obtain such a precisely average score.

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Z Score

A z score is a standard score. Standard scores (e.g., z scores, T scores, and IQ scores) result from a transformation of raw scores to facilitate interpretation. A z score has a mean of zero and a standard deviation of 1. The formula for a z score, commonly used in neuropsychology, is provided below:

$$z = \frac{x - M}{SD}$$

Where

- A. x is a raw score to be standardized.
- B. M is the mean of the control or normative sample.
- C. SD is the standard deviation of the control or normative sample.

For ease of communication in clinical reports, z scores can be converted to percentile ranks. The percentile rank represents the percentage of scores in a frequency distribution that are lower than the obtained score.

T-Score

T-scores are commonly used for neuropsychological normative data. A T score is a special type of standard score. T scores result from a transformation of raw scores to standard scores. A T Score of 50 is precisely average, with a normal range of roughly 40 to 60. T Scores below 30 (2nd percentile) or above 70 (98th percentile) represent unusually low or high performance.

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Percentile Score

A percentile rank represents the percentage of scores in a sample that are lower than the obtained scores. For example, someone who performed at the 50th percentile performed better than 50% of the other test takers in the sample.

Scaled Score

Most psychological tests base performance off of scaled scores and standard scores. Often, scaled scores are reported if the psychological test that was used was longer and had several sub-tests within it. A scaled score typically tells us how well someone performed on a specific sub-test, and a standard score typically tells us how well someone performed on a broad domain (which is often made of sub-tests).

Scaled Scores have a score range of 0 – 19 points, with an average score of 10 points. These scores are typically used for “Sub-tests,” which are smaller components of a larger psychological test.