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Review Article

The WAIS-4 as a Supplementary Part of a Neurological Examination

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Abstract

An intelligence test is often a major part of any neurological examination. However, as tests as revised, clinicians are often unaware of changes in intelligence tests, and some clinicians have scanty knowledge of the content of most intelligence tests. This paper attempts to address this issue. In most neurological examinations, there is administered some sort of intellectual measure to ascertain the client's/patient's general functioning. As often happens, intelligence tests go thru revisions on occasion, and not all readers of neurological reports are familiar with the subtle nuances of various revisions.

Introduction

Further, it is important for those who are reviewing reports, to re-acquaint themselves with the various parts and subtests of the Wechsler Adult Intelligence Scale- 4th Edition (WAIS-4). The current WAIS-4 is for individuals from 16-0 to 90-11. It is individually administered according to the guidelines in the "Administration and Scoring Manual" and the manual and guidelines should be extensively reviewed before attempting to administer this test. A reliable dependable stopwatch is also needed and obviously, a quiet, room to minimize any distractions and disruptions. Individuals should practice on a colleague in order to ensure a swift administration of the test, while at the same time, allocating time for observation and the building of rapport at the beginning of the test. Rapport is important to establish, and the examiner should attempt to put the subject/client at ease, indicating that the testing can be stopped for a drink of water or bathroom break.

There are four main realms and each realm will be discussed with its subtests.

The Verbal Comprehension Realm

As with most intelligence tests, there are many aspects of what may referred to as the "Verbal realm" The main areas or subtests in the WAIS-4 are:

Similarities- In this subtest, the subject is asked to indicate verbally how two objects are alike or similar, or what they have in common. For example, an apple and a banana are both fruit, they taste good, they can be eaten and are objects found in the home. The two words that are presented to the client/patient become increasingly more intricate or difficult or complex. This enables an examination of one's abilities to work with abstract as well as complex intricacies.

Information- This is a subtest that directly or indirectly assess one's general information, that fund of knowledge, data, that most Americans have accumulated over their life-time. The questions begin quite quickly but become increasingly complex or esoteric.

This indirectly measures one's long term memory and indirectly their cultural literacy. This could reflect the individual's education, as well as their depth of reading. During this subtest, the clinician is attentive to the amount of time needed for the client to "retrieve" information or to grasp the instructions.

Vocabulary--Often a staple of most intelligence tests, Vocabulary assesses directly or indirectly the person's receptive and receptive language. During this subtest of course, skilled clinicians are able to listen to any strange or odd phrases. Obviously, if the client was born in another country and came to the United States as a youth, this factor would have to be taken into consideration. Some cultural and racial groups tend to be shy and this too must be recalled and discussed in terms of the final report.

Comprehension: Often referred to as common sense or social emotional intelligence, this subtest simply presents clients with a question that evaluates their logical and rational reasoning and thinking skills. The questions usually require some logical, systematic, rational, reasoning skills.

This is an optional subtest- but clinicians can glean some insights as to the thinking processes that occur.

Perceptual Reasoning

Block Design - This is a stable of most intelligence tests for many years. A number of blocks are made available to the client, a picture is presented, and the client has a certain amount of time to use the blocks in order to construct the model. This indirectly measures motivation, visual motor skills and responsiveness to external stimuli.

Matrix Reasoning---In this subtest--the examinee visually examines an incomplete matrix or series and then selects the picture that appropriately or correctly completes the series.

Visual Puzzles---In this particular subtest, the client is given a certain amount of time and then selects the 3 correct or most appropriate options that help to completely construct the puzzle.

Figure Weights (Optional) The subject is presented with a scale with missing weights and is asked to choose or indicate the response that will keep the scale balanced.

Picture Completion (Optional) In this subtest, the subject is asked to look at a picture and indicate what might be missing- the individuals obviously needs good visual skills and attention to detail. In this day and age of computers, the Internet and technology, one's attention to detail has become increasingly important- because even one misspelling can thwart and exasperate even the most intelligent individual. This optional test can also be used if one of the other tests are "spoiled" for whatever reason.

Working Memory

Digit span--Again, in most intelligence tests there is a small assessment of short-term immediate memory, as well as indirect measure. The client is given numbers, which become increasingly longer to assess their immediate recall, their immediate attention and concentration.

In the second half of the Digit Span assessment the client is asked to repeat numbers backwards- indicating their proclivity with working memory and short-term concentration, particularly when confronted with a difficult memory task. Often some individuals do much better with the Digits Forward than backward- as that requires less focus, attention and concentration.

Arithmetic--Mathematical problems are verbally presented, and the client is asked to mentally manipulate the number and ascertain the correct answer. Arithmetic is part of the "Working Memory" index as many of the arithmetic processes rely on mental manipulation of facts, data, numbers and the like.

Letter Number Sequencing- Here, subjects are given a sequence of letters, numbers and each set is verbally administered. This is an optional test. The letters and numbers start small, but increase, as the subject demonstrates their skills and competence in this area. This subtest can also be substituted if one of the other subtests were spoiled or deemed invalid for whatever reason.

Processing Speed: The speed with which one "processes" or copes or deals with incoming information. Some individuals are capable of learning large amounts of new information and absorbing it quite rapidly, other individuals need to have new information very gradually presented.

Symbol Search This subtest requires the subject to visually scan and mark out similar and dissimilar items. Some of the symbols are squares, some angular items such as "L". There are a number of demonstration items to ensure that the client/subject know exactly what to do in terms of the required time frame.

Cancellation: In this subtest, the subject is required to mark certain specific shapes on a form. The subject may be shown a circle or a square or a diamond or some other figure such as a sign (+) and ask to identify or "make a mark" thru the same sign out of a larger number of various marks and signs. This indirectly tests concentration, ability to understand and follow directions, and ability to complete a task under time constraints. Some people work in a slow meticulous careful manner whereas other individuals approach the task in a rapid, intense fashion.

Coding: This subtest directly and indirectly measures visual attention, concentration and the ability to perform certain rote repetitive tasks under time constraints. A series of numbers are aligned with a series of symbols- such as ^, *, @, &, and after a demonstration and sample the subject/client is asked to do several rows of these under time constraints.

Some additional insights:

The protocol of the WAIS-4 is well organized and there is a section for the examiner to indicate any behavioral observations.

There is a sheet or part of the protocol which allows for various comparisons.

For example, a clinician can compare

VCI--PRI (Verbal Comprehension Index (which is comprised of the scaled scores from Similarities, Vocabulary and Information) - to Perceptual Reasoning Index--which is comprised of the scores from Block Design Matrix Reasoning and Verbal Puzzles.

VCI- WMI- (Verbal Comprehension--Similarities to Vocabulary and Information to Working Memory Index - which is Digit Span - Forward and Backwards) and Arithmetic

VCI- Verbal Comprehension (Similarities, Vocabulary, Information) to PSI- (Symbol Search and Coding)

PRI-(Perceptual Reasoning- comprised of Block Design Matrix Reasoning and Verbal Puzzles to WWM (Digit Span and arithmetic)

PRI (Perceptual Reasoning (comprised of Block Design Matrix Reasoning - PSI (Processing Speed Index- which is comprised of Symbol Search and Coding).

WMI- PSO (Working Memory Index- comprised of Digit Span and Arithmetic) and Processing Speed Index -comprised of the subtests of Symbol Search and Coding)

There is also a section for clinicians to compare the mean or average score- for each one of the subtest scores.

As part of the protocol booklet there is a record form for behavioral observations which include: Referral source, or presenting complaint (if known). Often presenting complaints are vague and nebulous, often quite specific.

Language- There is space for examiners to indicate if the client/subject was an ELL (English Language Learner) or if the subject was a native American.

Physical Appearance. (This allows the examiner to describe the overall appearance of the subject - tall, thin, obese, etc)

Vision/Auditory/Motor Problems (if they were wearing glasses or had a hearing aid- or had cerebral palsy or some other issue such as a cane or walker).

Attention and Concentration- The clinician can focus on the subject's attention, focus skills, as well as concentration to some of the more difficult items.

Attitude toward Testing--Some individuals are hesitant to enter the testing room and some do not even want to be participating in any type of assessment. Some realize their shortcomings and do not want them reiterated to others.

Affect/mood- Throughout the examination the clinician examiner should be attentive to any mood swings, or depressive issues or anxiety .

Unusual behaviors (Verbalizations - such as perseverations, stereotypical movements, and their reactions to success, failure and or frustration)

Summary and conclusions

This paper has just attempted to provide an overall assessment of the WAIS-4, typically part of the full neurological examination. The main areas were reviewed and sub-areas explored and their relevance to global overall functioning.

Acknowledgement

None.

Conflict of Interest

No conflict of interest.

References

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