Graduate Journal of Counseling Psychology

Volume 1
Issue 1 *Spring 2008*

Article 11

3-1-2008

Development of the WAIS-III: A Brief Overview, History, and Description

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Abstract: The purpose of this article is to introduce the WAIS-III to junior level counseling psychology graduate students. The WAIS-III is referred to as the gold standard for intellectual assessment and the most commonly used test of intellectual abilities. Thus, students will likely administer this instrument utilize WAIS-III test results in their practica experiences. The current article provides an overview and description of the instrument as well as a brief history of its development and brief analysis of its psychometric properties.

The Wechsler Ault Intelligence Scale, currently in its third edition (WAIS-III; Wechsler, 1997), is the latest incarnation in a long line of comprehensive intelligence tests authored by David Wechsler. Since his death in 1981, the legacy he left the field of psychology has continued through the Psychological Corporation and Harcourt, publishers of the WAIS-III and wide variety of other Wechsler assessments, such as the Wechsler Test of Adult Reading (WTAR); Wechsler Abbreviated Scale of Intelligence (WASI), and Wechsler Intelligence Scale for Children, currently in its fourth edition (WISC-IV). The Psychological Corporation and Harcourt have made possible the manifestation of the WAIS-III, latest version of an internationally renowned assessment of intelligence. Major contributors to the development of the WAIS-III include the following project directors: Hsin-Yi Chen, Louise O'Donnell, Mark Ledbetter, David Tulsky, and Jianjun Zhu (Wechsler, 1997). The Wechsler scales have a long history, with the WAIS-III representing a vast improvement in psychometric properties and clinical utility.

Purpose of Article

The article was originally prepared as an assignment for a graduate level cognitive assessment course. The content was modified and reorganized in order to cogently describing the history, content, and utility of the WAIS-III. The intended audience is junior level graduate students in counseling psychology or related fields who are unfamiliar

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with, or who are interested in learning more about, this gold standard test of intelligence. Counseling psychology graduate students will likely come across WAIS-III assessment results in their coursework, professional readings, and practica settings. The current article is designed to provide junior level graduate students with a general overview, history, and description in order to increase their familiarity with the most wide used test of intelligence in the field of psychology.

History of WAIS Tests

The first version of the WAIS, titled *The Wechsler-Bellevue Intelligence Scale,* was published in 1939. This version was followed by the *Wechsler-Bellevue Form II* in 1946. It was subsequently revised and renamed *Wechsler Ault Intelligence Scale*, in 1955, which was followed by the *Wechsler Ault Intelligence Scale – Revised*, in 1981. Finally the WAIS-III was introduced in 1997. At the time of this writing, the WAIS is undergoing revision yet again. The WAIS-IV is due for publication in Fall 2008 (Harcourt, 2008a).

Alternate Forms

The WAIS-III is available in several versions and in many countries around the world. A version has been published in the United Kingdom (Harcourt Assessment, 2005b), and the instrument was been translated into a number of other languages, such as French (Gregoire, 2004), Spanish (Garcia, Ruiz, & Abad, 2004), and Dutch (Kessels & Wingbermuhle, 2001). A number of short forms (i.e., briefer versions of the instrument) have been introduced as well. Harcourt Assessment (2005a) has published the only official short version, titled the *Wechsler Abbreviated Scale of Intelligence* (WASI). The WAIS contains four subtests and is nationally standardized on the U.S. population. Several unofficial short forms have been proposed as well (e.g. Jeyakumar, Warriner, Raval, & Ahmad, 2004; Tam, 2004). These briefer versions have been criticized for lacking the psychometric power of the WASI.

Cost

The WAIS-III (United States version) complete kit, which includes the WAIS-III Administration and Scoring Manual, Technical Manual, the

Stimulus Booklet, 25 record forms, 25 response booklets, all relevant stimulus materials, and scoring templates is available from Harcourt Assessment for $978 (Harcourt Assessment, 2008b).

WAIS-III Test Structure

The WAIS-III provides a variety of summary scores regarding test-takers' intellectual abilities, including raw scores and standard scores. Intelligence quotients (commonly referred to as "IQs") and Index scores are standardized scores with a mean of 100 and a standard deviation of 15. The WAIS-III yields three IQ scores (Verbal IQ, Performance IQ, and Full Scale IQ) and four Index scores (Verbal Comprehension, Perceptual Organization, Working Memory, and Processing Speed). IQ and Index scores are comprised of certain subtests.

Scaled scores are also standardized with a mean of 10 and a standard deviation of three. Scaled scores are provided for each subtest. Raw scores are simply the sums of scores for each subtest. Raw scores are computed into standard scores in order to compare abilities across subtests, indices, and IQs.

The WAIS-III contains 14 subtests, although not all contribute to IQ or Index scores. The subtests are: Picture Completion, Vocabulary, Digit Symbol–Coding, Similarities, Block Design, Arithmetic, Matrix Reasoning, Digit Span, Information, Picture Arrangement, Comprehension, Symbol Search, Letter-Number Sequencing, and Object Assembly (Wechsler, 1997). Subtests are grouped into two categories: Verbal and Performance scales (see Table 1). Picture Arrangement and Comprehension subtest scores contribute to IQ scores but not Index scores. Symbol Search and Letter-Number Sequencing subtest scores contribute to Index scores, but not IQ scores. Object Assembly is an optional subtest and is not included in the standard computation of either the IQ scores or the Index scores, although completion of this subtest allows for a richer representation of the examinee's abilities. Alternatively, it can substitute for a spoiled Performance subtest (Wechsler, 1997). A spoiled subtest is one in which the score is unable to be used (i.e., calculated with IQ or Index scores) because of conditions external to the test taking procedures (e.g., a fire alarm sounds during the administration of block design. Standardized procedures do not allow for repetition of test items. Therefore, block design is dropped and object assembly may take its place).

Administration Time

Administration time varies depending on which subtests are administered, which in turn varies according to the type of scores needed (i.e. traditional IQ scores and/or Index scores). Administration time for the entire assessment is approximately 75-110 minutes (Wechsler, 1997). Clinicians often need to maximize time and consider reimbursement costs from managed care companies, which may be unwilling to pay for extensive testing. Omitting certain subtests (i.e., Comprehension, Object Assembly, and Picture Arrangement) will still permit calculation of (prorated) Verbal, Performance, and Full Scale IQs as well as all four Indices.

Description of Subtests

Picture Completion. Picture Completion contains 25 items. The examinee views a picture and then either points to or names the important feature missing from the picture (Wechsler, 1997).

Vocabulary. Vocabulary contains 33 items The examinee provides oral definitions for words presented (Wechsler, 1997).

Digit Symbol–Coding. For Digit-Symbol–Coding, the examinee is shown a series of symbols that are paired with numbers. Using a key, the examinee draws each symbol under its corresponding number, within a 120-second time limit (Wechsler, 1997).

Similarities. Similarities contains 19 items, which are pairs of words. The examiner presents the words orally, and the examinee is asked how the two objects or concepts are alike (Wechsler, 1997).

Block Design. Block Design contains nine test items which are nine different designs. The examinee is asked to replicate models or pictures of two-color, six-sided blocks, progressing in difficulty from two-block designs to nine-block designs (Wechsler, 1997).

Arithmetic. Arithmetic contains 20 arithmetic problems. For this subtest, the examinee is presented with arithmetic word problems to be

solved without the use of pencil or paper. The examinee responds orally within a given time limit (Wechsler, 1997).

Matrix Reasoning. Matrix Reasoning contains 26 items. The subtest consists of four types of nonverbal reasoning tasks: pattern completion, classification, analogy, and serial reasoning. The examinee views a matrix from which a section is missing, and from five response options identifies the missing piece (Wechsler, 1997).

Digit Span. Digit-Span has two subsections: Digits Forward and Digits Backward; each contains eight items. On both, the examiner reads a series of number sequences in which the examinee is required to repeat the sequence in either forward or reverse order (Wechsler, 1997).

Information. For Information, the examinee responds orally to a series of questions about factual information. This subtest is designed to assess general knowledge about common people, places, objects, and events (Wechsler, 1997).

Picture Arrangement. Picture Arrangement consists of 11 items. Each item consists of a set of picture cards that tell a story. The cards are presented to the examinee out of order, and the examinee rearranges the cards to create the story in proper sequence, within a specified time limit (Wechsler, 1997).

Comprehension. Comprehension contains 18 items. The examinee responds orally to a series of questions that require solutions to everyday problems or understanding of concepts or social practices (Wechsler, 1997).

Symbol Search. Symbol Search contains 60 items. For this subtest, the examinee visually scans two groups of symbols (a target group and a search group) and indicates if either of the target symbols matches any of the symbols in the search group. The examinee responds to as many items as possible within a 120-second time limit (Wechsler, 1997).

Letter-Number Sequence. For Letter-Number Sequence, the examiner reads a combination of numbers and letters and the examinee is asked to recall the numbers first in ascending order, then the letters in alphabetical

order. There are seven items with each item containing 3 strings of numbers and letters (Wechsler, 1997).

Object Assembly. Object Assembly contains five object assembly puzzles. The examinee is presented with puzzle pieces that, when properly assembled, form common objects (Wechsler, 1997).

Standardization Group and Norms

The standardization group for the WAIS-III included a stratified sample of 2,450 individuals spanning the ages of 16 to 89 years. Stratification was also employed on the following domains: gender, race/ethnicity, educational level, and geographic region, and was based on information gathered from the 1995 U.S. Bureau of the Census (Psychological Corporation, 1997).

Age. The standardization sample was divided into 13 groups. Each group contained 200 participants, except for the 80-84 age group, which included 150 participants, and the 85-89 age group, which had 100 participants (Psychological Corporation, 1997). These extended age norms represent an enhancement from prior version of the WAIS.

Gender. The standardization sample consisted of an equal number of males and females in each age group, from age 16 through 64. The 80-84 and 85-89 age groups included more women than men, although this was consistent with U.S. Census data (Psychological Corporation, 1997).

Race and ethnicity. The categories *White, African American, Hispanic*, and *other* were used for racial and ethnic demographic labels. For each age group in the standardization sample, the proportion of each racial/ethnic category was based on data from the 1995 U.S. Bureau of the Census (Psychological Corporation, 1997).

Educational level. The standardization sample was stratified according to five education levels based on the number of years of school completed. The categories included: equal to or less than eight years, nine to 11 years, 12 years, 13-15 years, and equal to or more than 16 years (Psychological Corporation, 1997).

Geographic region. The standardization sample was stratified geographically by dividing the United States into four major regions, as indicated by the 1995 U.S. Bureau of the Census: Northeast, North Central, South, and West. The number of participants from each region was proportionate to the population as indicated in the 1995 Census report (Psychological Corporation, 1997).

Exclusionary criteria. A number of criteria were defined to serve the purpose of excluding individuals from the standardization sample, including color blindness, uncorrected hearing loss, uncorrected vision impairment, current treatment for substance dependence, consumption of more than three alcohol beverages on more than two nights a week, seeing a doctor or other professional for memory problems, upper extremity disability that would effect motor performance, any period of unconsciousness for five minutes or more, head injury resulting in hospitalization for more than 24 hours, a medical or psychiatric condition that could potentially affect cognitive functioning, and currently taking antidepressants, antianxiety or antipsychotic medication (Psychological Corporation, 1997).

Limitation. Although the WAIS-III/WMS-III Technical Manual provides tables which compare the standardized samples with the U.S. population data according to the 1995 Census report, it is not reported whether or not there are *statistically significant differences.*

Basis for Item Selection

WAIS-III test items have been modified from the previous version. First, all WAIS-R subtests and items were reviewed for potential bias, datedness, content relevance, and clinical utility. Experts evaluated the items in terms of content and potential bias. Along with these reviews, item statistics and item bias analyses were used to identify biased and outdated items, which were rewritten or deleted. Retained items were tested out during pilot studies. Then, for a nationwide tryout, 446 participants were recruited via a stratified sampling technique. An oversampling of 162 African American and Hispanic examinees was used to identify and remove items that were potentially culturally biased toward these groups (Psychological Corporation, 1997). Although many test items were retained, compared to the previous version, several of the

WAIS-III subtests have more items. For example, The WAIS-III Similarities subtest retains 11 of the 14 items in the WAIS-R version, and eight new items were added, for a total of 19 test items. Although the pool of items is larger, the number of test items actually administered to examinees does not differ significantly (Wechsler, 1997).

History/Background of Instrument

Intelligence testing began during the 19th century, the first of which was developed by Sir Frances Galton, whose interest lay is examining gifted people. At the turn of the 20th century, Alfred Binet developed a measure of intelligence with the purpose of selecting children for school within the Paris school system. Lewis Terman adapted and translated Binet's intelligence test for use in the United States. As the United States entered the World War in 1917, there was a strong need for a method of selecting and placing recruits. To meet the needs of the military, Arthur Otis helped to develop a group administered IQ test, titled the *Army Alpha*, a test containing verbal content similar to Binet's intelligence test. Shortly after, the *Army Beta* test was constructed for the purpose of testing the intelligence of non-English speaking immigrants. The *Army Beta* test included non-verbal tasks, such as Picture Completion, Picture Arrangement, Digit Symbol, and Mazes. Many of these are still used in contemporary intelligence tests (Kaufman & Lichtenberger, 1999).

It was during World War I that David Wechsler came onto the scene of intelligence testing. His approach to intelligence testing gave equal weight to the *Army Alpha* and *Army Beta* systems (Kaufman & Lichtenberger, 1999). Wechsler's original intelligence test (and the WAIS-III's great great-grandfather), was titled the *Wechsler-Bellevue Intelligence Scale*. It was the first intelligence test to incorporate both verbal and performance scales (Kaufman & Lichtenberger, 1999; Psychological Corporation, 1997). The *Wechsler-Bellevue Form II* evolved from its former incarnation; it was the first to employ standard scores (called Deviation IQ), instead of the mental age/chronological age formula, to calculate IQ. In addition, Wechsler's insistence that people should be assessed on both the Verbal and Performance scales deviated from the popular and professional opinion during that time. He was also the first to introduce subtest score profiles, as well as producing three IQ scores instead of one. Discrepancies between Verbal and Performance IQs got the people's attention, and served to provide understanding to theory surrounding

fluid versus crystallized intelligence, and brain functioning. In fact, the Wechsler intelligence tests became so popular that they replaced the *Stanford-Binet* as the "King of IQ." They are the preferred IQ tests according to both clinical psychologists and graduate level instructors (Kaufman & Lichtenberger, 1999).

Wechsler's Concept of Intelligence

Wechsler defined intelligence as "the capacity to act purposefully, to think rationally, and to deal effectively with his environment" (Wechsler, 1944, p. 3, as cited in Kaufman & Lichtenberger, 1999; Psychological Corporation, 1997). According to Psychological Corporation (1997), Wechsler viewed intelligence as a multidimensional construct, consisting of both general aptitude and specific abilities, the latter of which are composed of elements which are quantitatively different, yet contribute to general ability as a whole. He believed intelligence should be measured by both verbal and performance tasks, although later in his career, he began to explore other factors related to intelligence (e.g. the ability to perceive and respond to social, moral, and aesthetic values).

Kaufman and Lichtenberger (1999) purport that the development of the Wechsler tests was not based on theory, except for, perhaps, general intelligence theory. Instead, Wechsler applied his clinical skills and experience, as well as his extensive statistical training in development of the scales for his intelligence tests (Kaufman & Lichtenberger, 1999; Wechsler, 1997). However, extensive theoretical perspectives have been applied to the Wechsler scales, the nature of the tests, and the meaning of their scores.

The subtests Wechsler selected for his tests tap many different mental abilities such as abstract reasoning (e.g., Similarities), verbal skills (e.g., Vocabulary), and processing speed (e.g., Digit-Symbol Coding, Symbol Search). Wechsler recognized that his intelligence scales sampled an individual's abilities, and that individuals vary in the development of their intellectual functioning. As a result, individuals have unique cognitive profiles characterized by various strengths and weaknesses (Psychological Corporation, 1997).

The WAIS-III continues in the same tradition of measuring abilities based on Verbal and Performance scales, each producing an IQ score, as well as a global form of intelligence, measured by the Full Scale IQ score, although improvements were made in the revision process. The major

change in the WAIS-III from its previous version is the addition of four Index scores. During its development, it was hypothesized that the WAIS-III subtests would load of four factors: Verbal Comprehension, Working Memory, Perceptual Organization, and Processing Speed. Results from exploratory and confirmatory factor analyses supported the four-factor model hypothesis. Research on the WAIS-R produced only a three-factor model (Kaufman & Lichtenberger, 1999). The addition of the fourth factor provides further information about individuals' unique strengths and weaknesses with regard to intellectual functioning.

ADMINISTRATION AND INTERPRETATION

Qualifications

Administration and interpretation of standardized tests, such as the WAIS-III, requires formal graduate or professional training in psychological assessment. In addition, test users (i.e., test administrators) should have training and experience in the administration and interpretation of the specific instrument being utilized. Furthermore, they should have sufficient experience working with individuals whose ages, linguistic backgrounds, and clinical, cultural, and educational histories are similar to those of the individuals that they will be testing (Wechsler, 1997). Additionally, test users should be familiar with the American Psychological Association's (APA) *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education 1999), and APA's *Ethical Standards and Code of Conduct* (APA, 2002) as these standards and guidelines relate to psychological assessment.

Test Materials

The WAIS-III test kit includes several materials to guide the test user in its administration and interpretation. The WAIS-III Administration and Scoring Manual (Wechsler, 1997), provides clear instruction on the organization and application of the assessment as well as information regarding (1) current revisions; (2) derivation of raw, scaled, Index, and IQ scores; (3) general principles of test use and sequence of subtest administration; and (4) scoring directions. The Technical Manual includes

information regarding standardization and norm development, reliability and validity data, and interpretative considerations. Also, the Stimulus Booklet and Block Design, Picture Arrangement, and Object Assembly subtests are clearly labeled. Scoring templates for Symbol Search and Digit-Symbol Coding are also included. The Administration and Scoring Manual explain the scoring process using the templates (included). As a criticism, the test developers should have included pictorial examples of scoring subtests with more complicated procedures.

Test Bias

The standardization of the normative group was statistically rigorous, employing a stratified sampling method across several domains.

Age. The age range has been extended through 89 years of age, in contrast from the previous version, which was standardized on individuals up to age 74. As the age to which people are living increases and the number of older adults living grows, it is necessary to have tests which can provide information (e.g. IQ scores) to these individuals relative to their normative group. Additionally, items which have been judged to be chronologically remote for younger examinees were revised or deleted (Psychological Corporation, 1997). These refinements provide evidence for the minimization of age bias in the WAIS-III.

Race and ethnicity. The process of including African Americans and Hispanics for the purpose of seeking out and deleting culturally biased items was impressive. However, there was limited information about the racial/ethnic composition of the *other* category. WAIS-III scores should be interpreted with caution when test-takers are from cultural groups not represented or underrepresented in the WAIS-III standardized group.

Language. The WAIS-III is available in several other languages. Test translations should be informed by both language and culture. The WAIS-III Administration and Scoring Manual, and the Technical Manual did not provide psychometric properties on the other language versions of the WAIS-III, but they are likely contained in those other language versions. If other language versions were developed with the same level of detail as the United States version, one can assume that language bias has been minimized to a satisfactory degree.

Other forms of bias. The WAIS-III does not include normative group statistics regarding sexual orientation or religiosity. It is not known whether people of various sexual orientations or religious affiliation were over- or under-sampled. Similar to members of other ethnic and cultural groups, care must be taken when generalizing findings to members of groups not identified in the normative sample.

Reliability

Split-half and test-retest reliability. The reliability of each WAIS-III subtest (with the exception of the Digit-Symbol Coding and Symbol Search subtests) was calculated using the split-half reliability method (Psychological Corporation, 1997). Because the Digit-Symbol Coding and Symbol Search subtests are timed subtests, the test-retest reliability method was used instead. Reliability scores were calculated for each of the 13 age groups, with an average reliability score across age groups calculated via Fisher's *z* transformation. Average subtest reliability scores range from .70 to .93 (see Table 2).

Reliability coefficients of the WAIS-III IQ scores and Index scores are also calculated to measure internal consistency using the formula recommended by Guilford (1954) and Nunnally (1978) according to the Psychological Corporation (1997). Reliability of average IQ scores range from .94 – .98; reliability of average Index scores range from .88 – .96 (see Table 2). Overall, the WAIS-III has higher reliability coefficients than the WAIS-R (Psychological Corporation, 1997).

Inter-rater reliability. Inter-scorer agreement for most WAIS-III subtests was high, with averages in the high .90s. However, some subtests required more judgment in scoring. For example, the three verbal subtests were selected for further reliability investigation. Inter-rater reliability coefficients for these subtests were .95 for Vocabulary, .93 for Similarities, and .91 for Comprehension (Psychological Corporation, 1997).

Validity

Content validity. The goal of the content revision process for the WAIS-III was to increase content validity. Comprehensive literature searches were conducted to identify content validity issues with the

WAIS-R, and new items were reviewed by several clinical, school, and neuropsychologists. In addition, an independent panel of psychological assessment experts reviewed the WAIS-R with the purpose of improving the content (Psychological Corporation, 1997). Overall, the developers thoroughly increased WAIS-III content validity.

Concurrent validity. Evidence for concurrent validity is based on correlations of the WAIS-III with other tests aimed at measuring intelligence. For example, correlations between WAIS-III and WAIS-R ranged from .76 – .90 for Verbal subtests, .50 – .77 for Performance subtests, and .93 – .94 for IQ scores. Correlations between the WAIS-III and the *Wechsler Intelligence Scale for Children, Third Edition* (WISC-III) ranged from .73 – .83 for Verbal subtests, .45 – .80 for Performance subtests, and .78 – .88 for IQ scores. Correlations between the WAIS-III IQ scores and the WIAT composite scores were mostly high, ranging from .53 – .81. Correlations were lower when the WAIS-III was compared with the Standard Progressive Matrices (SPM). With regard to the SPM scores, WAIS-III IQ score correlations ranged from .49 – .79. Index scores from .25 – .65. Correlations between WAIS-III IQ scores and *Stanford-Binet Intelligence Scale – Fourth Edition* (SB-IV) composite scores were high, ranging from .78 – .89. With the exception of the WAIS-III Processing Speed Index score (r = .07), correlations between Index scores and SB-IV composite scores were in the high .80s (Psychological Corporation, 1997). Generally, concurrent validity is high for the WAIS-III.

Predictive validity. Predictive validity of the WAIS-III (or assessment instruments in general) varies depending on the variable(s) one wants to predict. Predictions about future behavior using intelligence testing should be made with caution. The IQ score obtained from the WAIS-III captures one's present ability and functioning (i.e., a snapshot in time). IQ scores change over time and across test administrations. With that in mind, the WAIS-III can assist in diagnosing certain conditions, such as mental retardation, giftedness, or neurological impairment (Psychological Corporation, 1997). However, before making diagnoses, assessors should utilize consult a variety of sources of information (e.g., neuroimaging, psychodiagnostic tests, and clinical observations). Diagnosis should no be based on the WAIS-III (or any single instrument) alone.

Construct validity. According to the Psychological Corporation (1997), numerous sources of evidence based on several studies support the construct validity of the WAIS-III.

Convergent and discriminant validity. Evidence for convergent and discriminant validity (typically used to establish construct validity) validity was based on correlations between WAIS-III subtests, IQ scales, and Index scores. All subtests are related to general intelligence (AKA *g* factor. High correlations between most subtests support the *g* factor theory. Additionally, some subtests are more correlated with each other than other subtests. That is, Verbal subtests have higher correlations with other Verbal subtests than they do Performance subtests, which intuitively makes sense. A less distinct pattern was found in the Performance subtests (Psychological Corporation, 1997).

Factor Analyses

Exploratory and confirmatory factor analyses were conducted during the development of the WAIS-III. Exploratory analyses were conducted to examine the effects of adding or deleting subtests. Confirmatory factor analyses were performed to test various structural models. Subtests were tested to fit one, two, three, four, and five factor models, with the four-factor model having the best goodness of fit. The result was the establishment of the four Indices: Verbal Comprehension, Perceptual Organization, Working Memory, and Processing Speed. The WAIS-III was the first edition to introduce Index scores, which were not available on previous versions (Psychological Corporation, 1997).

CONCLUSION

The WAIS-III has several favorable features. There is great diversity among the subtests, which aim at assessing various aspects of intellectual functioning. Statistically speaking, the reliability and validity of this instrument are strong. Practically, the assessment appears easy to administer, the guide books appear easy to follow, and the materials and the subtest items seem like they would be interesting and maybe even enjoyable to administer. One drawback is the administration time, which is quite lengthy, even using truncated formats. In addition, the test is very structured, requiring 100% of the administrator's attention. Moreover, the

WAIS-III is fairly expensive. At the same time, the WAIS-III is the "King of IQ" and the most popular intelligence assessment instrument, It has utility for counselors and psychologists working in a variety of settings, including colleges, community clinics, and hospitals. Even for those who do not administer the WAIS-III, knowledge of the assessment is important for counseling psychology students who will likely encounter assessments results (most likely using the WAIS-III) for clients they serve.

REFERENCES

American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (1999). *Standards of educational and psychological testing*. Washington, DC: American Educational Research Association.

American Psychological Association. (2002). Ethical principles of psychologists and code of conduct 2002. American Psychologist, 57, 1060-1073.

Garcia, L. F., Ruiz, M. A., Abad, F. J. (2003). Estructura factorial de la version espanola del WAIS-III. *Psicothema, 15*(1), 155-160.

Gregoire, J. (2004). Factor structure of the French version of the Wechsler Adult Intelligence Scale-III. *Educational & Psychological Measurement, 64*, 463-474.

Harcourt Assessment. (2005a). *Wechsler Abbreviated Scale of Intelligence*. Retrieved September 17, 2005, from http://harcourtassessment.com/haiweb/Cultures/en-US/Products/Product+Detail.htm?CS_ProductID=015-8981-502&CS_Category=CognitionIntelligence&CS_ Catalog= TPC-USCatalog

Harcourt Assessment. (2005b). Wechsler Adult Intelligence Scale – 3rd UK Edition (WAIS- III^{UK}) [Electronic Version]. *2005 psychological assessment catalog* (pp. 54). Jordon Hill, Oxford: Harcourt UK. Retrieved September 17, 2005 from http://www.heinemann.co.uk/shared/Resources/NonSecure/0000000/psychologicalcat2005.pdf

Hacourt Assessment. (2008a). *Wechsler Adult Intelligence Scale—Fourth Edition (WAIS–III).*Retrieved February 17, 2008 from http://harcourtassessment.com/HAIWEB/Cultures/en-us/Productdetail.htm?Pid=015-8980-808&Mode=summary

Harcourt Assessment. (2008b). *Wechsler Adult Intelligence Scale—Third Edition (WAIS–III).*Retrieved February 17, 2008 from http://harcourtassessment.com/HAIWEB/Cultures/en-us/Productdetail.htm?Pid=015-8980-727&Mode=detail&Leaf=avpproducts

Jeyakumar, S. L. E., Warriner, E. M., Raval, V. V., & Ahmad, S. A. (2004). Balancing the need for reliability and time efficiency: Short forms of the Wechsler Adult Intelligence Scale-III. *Educational & Psychological Measurement, 64*(1), 71-87.

Kaufman, A. S., & Lichtenberger, E. O. (1999). *Essentials of WAIS-III assessment.* New York: Wiley.

Kessels, R. P., Wingbermuhle, P. A. (2001). The Dutch version of the WAIS-III: A measure of intelligence and cognitive functioning. *Nederlands Tijdschrift voor de Psychologie en haar Grensgebieden, 56*, 227-230.

Psychological Corporation. (1997). *Wechsler Adult Intelligence Scale–Third Edition, and Wechsler Memory Scale–Third Edition technical manual*. San Antonio, TX: Author.

Tam, W-C. C. (2004). The utility of seven-subtest short forms of the Wechsler Adult Intelligence Scale-III in young adults. *Journal of Psychoeducational Assessment, 22*(1), 62-71.

Wechsler, D. (1997). *WAIS-III administration and scoring manual*. San Antonio, TX: Psychological Corporation.

APPENDIX A

Table 1: *WAIS-III Subtests* (Source: Wechsler, 1997)

Verbal Subtests*	Performance Subtests**
2. Vocabulary[a]	1. Picture Completion[b]
4. Similarities[a]	3. Digit Symbol–Coding[d]
6. Arithmetic[c]	5. Block Design[b]
8. Digit Span[c]	7. Matrix Reasoning[b]
9. Information[a]	10. Picture Arrangement
11. Comprehension	12. Symbol Search[d]
13. Letter–Number Sequencing[c]	14. Object Assembly

* Verbal IQ subtests; ** Performance IQ subtests; [a] Verbal Comprehension subtests; [b] Perceptual

Organization subtests; [c] Working Memory subtests; [d] Processing Speed subtests

APPENDIX B

Table 2: *WAIS-III IQ, Index, and Subtest Average Reliability Coefficients, Calculated with*

Fisher z calculated with Transformation (Psychological Corporation, 1997).

IQs	r_{xx}[a]
Verbal IQ	.97
Performance IQ	.94
Full Score IQ	.98

Indices	r_{xx}[a]
Verbal Comprehension Index	.96
Perceptual Organization Index	.93
Working Memory Index	.94
Processing Speed Index	.88

Subtest	r_{xx}[a]
Vocabulary	.93
Similarities	.86
Arithmetic	.88
Digit Span	.90
Information	.91
Comprehension	.84
Letter–Number Sequencing	.82
Picture Completion	.83
Digit Symbol–Coding	.84
Block Design	.86
Matrix Reasoning	.90
Picture Arrangement	.74
Symbol Search	.77
Object Assembly	.70

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Marc Silva obtained a Bachelor of Science degree in psychology from the University of Central Florida and is currently in his fourth year of the Counseling Psychology PhD program at Marquette University. His clinical and research interests include (1) psychological assessment; (2) PTSD; and (3) masculinity and its relationship to mental health, healthcare utilization, and help seeking. His career goals include providing psychological services to veterans in a VA hospital setting, conducting applied research aimed at improving mental and behavioral health among male veterans, and supervising psychology trainees.