

ZURICH NEUROPSYCHOMETRIC TEST

OUTLINE AND DESCRIPTION OF RELEVANT TESTS & MEASURES

The Wechsler Adult Intelligence Scales – The Wechsler Adult Intelligence Scales, including the Wechsler Adult Intelligence Scale - 3 (WAIS-3) and the Wechsler Adult Intelligence Scale - 4 (WAIS-4), have played a critical role in our thinking about intelligence, are one of the most frequently used measures in neuropsychological batteries¹, are considered a core instrument that provides information about the overall level of intellectual functioning as well as the presence and/or absence of significant intellectual disability, and provide clues to altered functioning². The WAIS-3 and the WAIS-4 provide a number of specific index scores, which are summarised below:

- **Full Scale IQ (FSIQ)** – provides a measure of overall or general cognitive and intellectual ability.
- **The Verbal Comprehension Index (VCI)** – provides a measure of verbal expressive, verbal comprehension, and verbal reasoning abilities. It is useful in an overall assessment of language functioning and of the capacity to make sense of and communicate through language.
- **The Perceptual Organisation Index (POI)** – provides an indication of an individual's non-verbal reasoning, spatial processing, attentiveness to detail, and visual-motor integration/constructional skills. It is a measure of the ability to effectively apply logic, reasoning, and problem solving abilities to situations that do not necessarily rely on verbal abilities.
- **The Working Memory Index (WMI)** – provides information regarding an individual's ability to hold verbal and aurally presented information temporarily in memory for the purpose of using that information to perform a specific task. Working memory (ie. a higher level attentional ability) is an important prerequisite of many cognitive abilities in that inadequate working memory skills will likely affect an individual's ability to perform other mental operations efficiently.
- **The Processing Speed Index (PSI)** – provides a measure of an individual's ability to process simple or routine visual information quickly and efficiently and to perform tasks based on that information.

The Wechsler Memory Scales – The Wechsler Memory Scales, including the Wechsler Memory Scale – 3rd Edition (WMS-3) and the Wechsler Memory Scale – 4th Edition (WMS-4)

¹ Butler et al., "Neuropsychological Test Usage", *Professional Psychology: Research and Practice*, 1991, pages 510-512; Camara et al., "Psychological Test Usage: Implications in Professional Psychology", *Professional Psychology: Research and Practice*, 2000, pages 141-154; Lees-Haley et al., "Forensic Neuropsychological Test Usage: An Empirical Survey", *Archives of Clinical Neuropsychology*, 1996, pages 45-51; Rabin et al., "Assessment Practices of Clinical Neuropsychologists in the United States and Canada", *Archives of Clinical Neuropsychology*, 2005, pages 33-65.

² Lezak et al., *Neuropsychological Assessment –Fourth Edition*, 2004.

are considered to rank first among tests of memory functioning in neuropsychological evaluations³. The WMS-3 and the WMS-4 provide eight primary index scores that include:

- **The Auditory Immediate Index (AII)** – provides an indication of an individual’s ability to encode and store novel verbal information that has been orally presented and to retrieve that same information from memory after a brief (immediate) interval.
- **The Visual Immediate Index (VII)** – provides an indication of an individual’s ability to encode and store novel visual information and to retrieve that same information from memory after a brief (immediate) interval.
- **The Immediate Memory Index (IMI)** – provides an indication of an individual’s overall ability to encode and store novel information, including both verbal and visual information, and to retrieve that information from memory after a brief (immediate) interval.
- **The Auditory Delayed Index (ADI)** – provides an indication of an individual’s ability to retain novel verbal information in memory and to retrieve that same information from memory after a long (delayed) interval. The difference between an individual’s immediate and delayed memory capabilities is an indication of the amount of previously learnt information retained after an interval of time. Substantially lower delayed memory performance, relative to immediate memory capabilities, suggests a rapid rate of forgetting and/or retrieval difficulties.
- **The Visual Delayed Index (VDI)** – provides an indication of an individual’s ability to retain novel visual information in memory and to retrieve that same information from memory after a long (delayed) interval.
- **The Auditory Recognition Delayed Index (ARDI)** – provides an indication of an individual’s ability to remember via recognition auditory information after a long (delayed) interval.
- **The General Memory Index (GMI)** – provides an indication of an individual’s overall delayed memory capacity.
- **The Working Memory Index** – provides an indication of an individual’s ability to remember and manipulate both visually and orally presented information in short-term memory storage.

³ Borum and Grisso, “Psychological Test Use in Criminal Forensic Evaluations”, *Professional Psychology: Research and Practice*, 1995, pages 465-473; Camara et al., “Psychological Test Usage: Implications in Professional Psychology”, *Professional Psychology: Research and Practice*, 2000, pages 141-154; Lees-Haley et al., “Forensic Neuropsychological Test Usage: An Empirical Survey”, *Archives of Clinical Neuropsychology*, 1996, pages 45-51; Rabin et al., “Assessment Practices of Clinical Neuropsychologists in the United States and Canada”, *Archives of Clinical Neuropsychology*, 2005, pages 33-65.

The Rey Auditory Verbal Learning Test (RAVLT) – The RAVLT is a widely used test requiring memory for a list of unrelated words⁴ presented aurally. It is sensitive to neurological impairment⁵, laterality of brain damage⁶, and memory deficits in a variety of patient groups⁷, and provides useful information regarding potential exaggeration or embellishment of memory complaints⁸.

The Benton Visual Retention Test – 5th Revision (BVRT-5) – The BVRT-5 is a task requiring concentration and memory for a series of geometric designs⁹ that also provides useful information regarding visual perception and visuo-constructive abilities. It provides both an Expected Number Correct score and an Error Score that reliably predict cognitive impairment.

The Wisconsin Card Sorting Test (WCST) – The WCST is considered a measure of executive functioning¹⁰ in that it requires strategic planning, organised searching, the ability to use environmental feedback to shift cognitive set, goal-oriented behaviour, and the ability to modulate impulsive responding¹¹. It is the most commonly used measure to assess complaints of executive dysfunction¹², bearing in mind that executive functions are somewhat separable and that different executive functions contribute differently to various complex executive tasks¹³ (Miyake, Emerson et al., 2000; Miyake, Friedman et al., 2000).

The Controlled Of Word Association Test (COWAT) – The COWAT is a widely used word generation task that evaluates spontaneous production of words under restricted search conditions, and is sensitive to cerebral impairment, particularly of the frontal lobes¹⁴.

⁴ Lezak et al., *Neuropsychological Assessment – Fourth Edition*, 2004; Spreen and Strauss, *A Compendium of Neuropsychological Tests – Second Edition*, 1998.

⁵ Powell et al., "Assessment of Brain Impairment with the Rey Auditory-Verbal Learning Test", *Archives of Clinical Neuropsychology*, 1991, pages 241-249.

⁶ Kilpatrick et al., "Degree of Left Hippocampal Atrophy Correlates with Severity of Neuropsychological Deficits", *Seizure*, 1997, pages 213-218.

⁷ Simard et al., "Impact of Executive Dysfunctions on Episodic Memory Abilities in Patients with Ruptured Aneurysms of the Anterior Communicating Artery", *Brain and Cognition*, 2003, pages 354-358; Stefanova et al., "Serial Position Learning Effects in Patients with Aneurysms of the Anterior Communicating Artery", *Journal of Clinical and Experimental Neuropsychology*, 2002, pages 687-694.

⁸ Boone et al., "Comparison of Various RAVLT Scores in the Detection of Noncredible Memory Performance", *Archives of Clinical Neuropsychology*, 2005, pages 301-319; Lezak et al., *Neuropsychological Assessment – Fourth Edition*, 2004; Strauss, Sherman and Spreen, *A Compendium of Neuropsychological Tests – 3rd Edition*, 2006, pages 805-806.

⁹ Strauss, Sherman, and Spreen, *A Compendium of Neuropsychological Tests – Third Edition*, 2006, pages 691-701.

¹⁰ Heaton et al., *Wisconsin Card Sorting Test (WCST) Manual, Revised and Expanded*, 1993.

¹¹ Strauss, Sherman and Spreen, *A Compendium of Neuropsychological Tests – 3rd Edition*, 2006, pages 526-545.

¹² Rabin et al., "Assessment Practices of Clinical Neuropsychologists in the United States and Canada", *Archives of Clinical Neuropsychology*, 2005, pages 33-65.

¹³ Miyake et al., "The Unity and Diversity of Executive Functions and their Contributions to Complex Frontal Lobe Tasks: A Latent Variable Analysis", *Cognitive Psychology*, 2000, pages 49-109.

¹⁴ Henry and Crawford, "A Meta-Analytic Review of Verbal Fluency Performance in Patients with Traumatic Brain Injury", *Neuropsychology*, 2004, pages 621-628; Rabin et al., "Assessment Practices of Clinical Neuropsychologists in the United States and Canada", *Archives of Clinical Neuropsychology*, 2005, pages 33-65; Strauss, Sherman, & Spreen, *A Compendium of Neuropsychological Tests - Third Edition*, 2006, pages 499-526.

The Rey-Osterrieth Complex Figure Test (RCFT) – The RCFT¹⁵ is a widely used test¹⁶ that permits assessment of a variety of cognitive processes including planning, organizational skills, and problem-solving strategies, as well as perceptual motor and episodic memory functions.

The Trail Making Test (TMT) – The TMT¹⁷ is a widely used measure of attention, visual scanning, visuo-motor speed, and mental flexibility.

The Boston Naming Test – 2 (BNT-2) – The BNT-2 is a widely used test of confrontation naming ability¹⁸.

The Peabody Picture Vocabulary Test – 3rd Edition (PPVT-3) – The PPVT-3 is designed to assess receptive vocabulary, or listening comprehension for the spoken word (in standard English), and is one of the oldest and most commonly used standardised tests (Stockman, 2000).

The Barona and Chastain Demographic Formula (BCDF) – The BCDF is a widely used method that allows for the estimation of premorbid intellectual abilities based upon factors such as level of education and previous job status¹⁹.

The National Adult Reading Test-2nd Edition (NART-2) – The NART-2 is also a frequently used method for estimating premorbid intelligence that involves a task that is relatively resistant to acquired cognitive dysfunction²⁰.

The Test of Memory Malingering (TOMM) – The TOMM is a symptom validity test, a commonly used paradigm for assessing the validity of concentration and memory complaints,²¹ that involves a systematic method for discriminating between credible and non-credible complaints of concentration and/or memory impairment, and is particularly sensitive to malingered impairment as even severely brain damaged patients would be expected to perform well on this task²². It possesses sufficient validity to meet the Daubert criteria for admissibility of scientific evidence in the courtroom²³ and provides estimates of effort on neuropsychological testing that take into account genuine neuro-cognitive disturbance²⁴,

¹⁵ Strauss, Sherman, & Spreen, *A Compendium of Neuropsychological Tests – Third Edition*, 2006, pages 811-841.

¹⁶ Camara et al., "Psychological Test Usage: Implications in Professional Psychology", *Professional Psychology: Research and Practice*, 2000, pages 141-154; Rabin et al., "Assessment Practices of Clinical Neuro-psychologists in the United States and Canada", *Archives of Clinical Neuropsychology*, 2005, pages 33-65.

¹⁷ Strauss, Sherman, & Spreen, *A Compendium of Neuropsychological Tests – Third Edition*, 2006, pages 655-677.

¹⁸ Lezak et al., *Neuropsychological Assessment – Fourth Edition*, 2004, pages 511-513; Rabin et al., "Assessment Practices of Clinical Neuropsychologists in the United States and Canada", *Archives of Clinical Neuropsychology*, 2005, pages 33-65.

¹⁹ Barona and Chastain, *International Journal of Clinical Neuropsychology*, 1986, **8**, pp 169-172.

²⁰ Nelson and Willison, *National Adult Reading Test: Test Manual – Second Edition*, 1991; Spreen and Strauss, *A Compendium of Neuropsychological Tests – Second Edition*, 1998.

²¹ Rogers, *Clinical Assessment of Malingering and Deception – Second Edition*, 1997; Sweet, *Forensic Neuropsychology*, 1999.

²² Tombaugh, *The Test of Memory Malingering*, 1996; Spreen and Strauss, *A Compendium of Neuropsychological Tests – Second Edition*, 1998; Rees, Tombaugh, and Boulay, "Depression and the Test of Memory Malingering", *Archives of Clinical Neuropsychology*, 2001.

²³ Vallabhajosula and van Gorp, "Post-Daubert Admissibility of Scientific Evidence on Malingering of Cognitive Deficits", *Journal of the Academy of Psychiatry and the Law*, 2001, pages 207-215; Tombaugh, "The Test of Memory Malingering in Forensic Neuropsychology", *Journal of Forensic Neuropsychology*, 2002, pages 69-96.

²⁴ Tombaugh, *The Test of Memory Malingering*, 1996; Tombaugh, "The Test of Memory Malingering in Forensic Neuropsychology", *Journal of Forensic Neuropsychology*, 2002, pages 69-96.

age²⁵, level of education²⁶, language and cultural background²⁷, depression²⁸, even in severe forms²⁹, anxiety³⁰, psychosis³¹, medical conditions affecting energy levels³², and level of pain³³.

The Word Memory Test (WMT) – The WMT³⁴ is also a symptom validity test that is commonly used to assess the validity of memory complaints through the immediate and delayed recognition of twenty semantically linked word-pairs. As with the TOMM, the WMT has the appearance of being more difficult than is actually the case, with even severely brain impaired individuals performing well on this task³⁵. Moreover, as with the TOMM, the WMT has a strong research and normative basis that satisfies the Daubert criteria for admissibility of scientific evidence in the courtroom³⁶ and provides estimates of effort on neuropsychological testing that take into account genuine neuro-cognitive disturbance³⁷, age³⁸, intelligence and educational level³⁹, gender⁴⁰, mood disorders, such as depression⁴¹, anxiety⁴², medical conditions affecting energy levels⁴³, and elevated levels of pain⁴⁴.

²⁵ Tombaugh, "The Test of Memory Malinger (TOMM): Normative Data from Cognitively Intact and Cognitively Impaired Individuals", *Psychological Assessment*, 1997, pages 260-268.

²⁶ Gervais et al., "A Comparison of WMT, CARB, and TOMM Failure Rates in Non-Head Injury Disability Claimants", *Archives of Clinical Neuropsychology*, 2004, pages 475-487; Tiechner and Wagner, "The Test of Memory Malinger (TOMM): Normative Data from Cognitively Intact, Cognitively Impaired, and Elderly Patients with Dementia" *Archives of Clinical Neuropsychology*, 2004, pages 455-464.

²⁷ Constantinou and McCaffrey, "Using the TOMM for evaluating Children's Efforts to Perform Optimally on Neuropsychological Measures", *Child Neuropsychology*, 2003, pages 81-90.

²⁸ Rees, Tombaugh, and Boulay, "Depression and the Test of Memory Malinger", *Archives of Clinical Neuropsychology*, 2001.

²⁹ Ashendorff et al., "The Effects of Depression and Anxiety on the TOMM in Community-Dwelling Older Adults", *Archives of Clinical Neuropsychology*, 2004, pages 125-130; Rees et al., "Depression and the Test of Memory Malinger", *Archives of Clinical Neuropsychology*, 2001, pages 501-506.

³⁰ Ashendorff et al., "The Effects of Depression and Anxiety on the TOMM in Community-Dwelling Older Adults", *Archives of Clinical Neuropsychology*, 2004, pages 125-130.

³¹ Duncan, "The Impact of Cognitive and Psychiatric Impairment or Psychotic Disorders on the Test of Memory Malinger (TOMM)", *Assessment*, 2005, pages 123-129.

³² Tombaugh, *The Test of Memory Malinger*, 1996, pages 33-45.

³³ Etherton et al., "The Impact of Cognitive and Psychiatric Impairment or Psychotic Disorders on the Test of Memory Malinger (TOMM)", *Assessment*, 2005, pages 123-129; Gervais et al., "A Comparison of WMT, CARB, and TOMM Failure Rates in Non-Head Injury Disability Claimants", *Archives of Clinical Neuropsychology*, 2004, pages 475-487.

³⁴ Green et al., "Detecting Malinger in Head Injury Litigation with the Word Memory Test", *Brain Injury*, 1999, pages 813-819; Green et al., "The Word Memory Test and the Validity of Neuropsychological Test Scores", *Forensic Neuropsychology*, 2002, pages 97-124.

³⁵ Green and Faro, "Word Memory Test Performance in Children", *Child Neuropsychology*, 2003, pages 189-207; Green et al., "Detecting Malinger in Head Injury Litigation with the Word Memory Test", *Brain Injury*, 1999, pages 813-819; Green et al., "Effort has a Greater Effect on Test Scores than Severe Brain Injury in Compensation Claimants", *Brain Injury*, 2001, pages 1045-1060; Green et al., "The Word Memory Test and the Validity of Neuropsychological Test Scores", *Forensic Neuropsychology*, 2002, pages 97-124; Williamson et al., "Evaluation Effort with the Word Memory Test and Category Test – or not; Inconsistencies in a Compensation Seeking Sample", *Journal of Forensic Neuropsychology*, 2003, pages 19-44.

³⁶ Hartman, "The Unexamined Lie is a Lie Worth Fibbing; Neuropsychological Malinger and the Word Memory Test", *Archives of Clinical Neuropsychology*, 2002, pages 709-714.

³⁷ Green et al., "The Word Memory Test and the Validity of Neuropsychological Test Scores", *Forensic Neuropsychology*, 2002, pages 97-124.

³⁸ Green and Faro, "Word Memory Test Performance in Children", *Child Neuropsychology*, 2003, pages 189-207; Green, "Green's Word Memory Test for Microsoft Windows", Green's Publishing Inc, 2003; Green et al., "The Word Memory Test and the Validity of Neuropsychological Test Scores", *Forensic Neuropsychology*, 2002, pages 97-124.

NEUROPSYCHOLOGICAL/PSYCHOMETRIC TEST SCORE CRITERIA

Zurich Active defines cognitive impairment based on the severity levels indicated below:

Defined term	Definition
Severe cognitive impairment	Total and permanent deterioration or loss of cognitive capacity supported by neuropsychometric testing* with test scores of below average reading in all of the following domains: <ul style="list-style-type: none"> • Intelligence • Attention • Memory • Language • Visuo-spatial • Executive functioning
Moderate cognitive impairment	Total and permanent deterioration or loss of cognitive capacity supported by neuropsychometric testing* with test scores of below average reading in at least 4 of the following domains: <ul style="list-style-type: none"> • Intelligence • Attention • Memory • Language • Visuo-spatial • Executive functioning
Mild cognitive impairment	Total and permanent deterioration or loss of cognitive capacity supported by neuropsychometric testing* with test scores of below average reading in at least 2 of the following domains: <ul style="list-style-type: none"> • Intelligence • Attention • Memory • Language • Visuo-spatial • Executive functioning

³⁹ Green et al., "The Word Memory Test and the Validity of Neuropsychological Test Scores", *Forensic Neuropsychology*, 2002, pages 97-124; Green, "Green's Word Memory Test for Microsoft Windows", Green's Publishing Inc, 2003.

⁴⁰ Green et al., "The Word Memory Test and the Validity of Neuropsychological Test Scores", *Forensic Neuropsychology*, 2002, pages 97-124.

⁴¹ Rohling et al., "Depressive Symptoms and Neurocognitive Test Scores in Patients Passing Symptom Validity Tests", *Archives of Clinical Neuropsychology*, 2002, pages 205-222.

⁴² Green, "Green's Word Memory Test for Windows – Manual", Revised June 2005, pages 33-37.

⁴³ Gervais et al., "Effort Testing in Patients with Fibromyalgia and Disability Incentives", *Journal of Rheumatology*, 2001, pages 1892-1899; Green, "Green's Word Memory Test for Windows - Manual", Revised June 2005, page 48; Van der Werf et al., "Abnormal Neuropsychological Findings are not Necessarily a Sign of Cerebral Impairment", *Neuropsychiatry, Neuropsychology, and Behavioural Neurology*, 2000, pages 199-03.

⁴⁴ Green et al., "The Word Memory Test and the Validity of Neuropsychological Test Scores", *Forensic Neuropsychology*, 2002, pages 97-124.

Where permanency is defined as irreversible and present for a minimum of 6 months and expected to show no improvement or reversibility, whilst on optimal therapy, if appropriate.

Deterioration of functioning would need to be evidenced by higher estimates of premorbid function as demonstrated by higher than below average scores on the BCDF and NART-2.

Intelligence – For the purpose of this definition, below average intelligence shall be defined as a WAIS-3/WAIS-4 FSIQ age-corrected Scale Score of 75 or below, allowing for a percentile rank equivalent of 5% of the population or less.

Attention – For the purpose of this definition below average attention shall be defined as an age-corrected WMI score of 75 or below, allowing for a percentile rank equivalent of 5% of the population or less, on both the WAIS-3/WAIS-4 and WMS-3/WMS-4, as well as at least one of the following:

- An Expected Number Correct score of 4 or less and/or an Error Score of 8 on the BVRT-5.
- A raw score of 4 or less on both Trial 1 and Trial 6 of the RAVLT.
- A raw score that is below the 10th percentile for age and level of education for Part B of the TMT and below the 20th percentile on Part A.

Memory – For the purpose of this definition, below average memory functioning shall be defined as a below average IMI and/or GMI score on the WMS-3/WMS-4 which is equal to a age-corrected Scale Score of 75 or below, as well as at least one of the following:

- An Expected Number Correct score of 4 or less and/or an Error Score of 8 on the BVRT-5.
- A Trial 1 - 5 Total Score and/or a Delayed Recall Score on the RAVLT that is at least 1.5 standard deviation points below the mean (average) for the individual's age, using Schmidt's widely used norms (Schmidt, 1996; Strauss et al., 2006, page 786).
- A CFR 3 minute recall score that is at least 1.5 standard deviation points below the mean (average) for the individual's age.

Language – For the purpose of this definition, below average language functioning, assuming that English is the primary language of the individual, shall be defined as a WAIS-3/WAIS-4 VCI age-corrected Scale Score of 75 or below, allowing for a percentile rank equivalent of 5% of the population or less, and/or a BNT Total Number Correct score that is at least 1.5 Standard deviation points below the mean (average) for the individual's age, and/or A PPVT-3 age determined standard score equivalent of 75 or below.

Visuo-spatial – For the purpose of this definition, below average visuo-spatial functioning shall be defined as a WAIS-3/WAIS-4 POI age-corrected Scale Score of 75 or below, allowing for a percentile rank equivalent of 5% of the population or less as well as at least one of the following:

- A WAIS-3/WAIS-4 PSI age-corrected Scale Score of 75 or below.
- An Expected Number Correct score of 4 or less and/or an Error Score of 8 on the BVRT - 5.
- RCFT copy score that is at least 1.5 standard deviation points below the mean (average) for the individual's age.

Executive Functioning – For the purpose of this definition, below average executive functioning shall be defined as a “Number of Categories Completed” score and/or a “Failure to Maintain Set” score that is below the 16th percentile for the individual’s age on the WCST and/or at least two of the following:

- A “Perseverative Responses” score on the WCST that is at or below the 5th percentile for the individual’s age.
- A CFR copy raw score that is below the 10th percentile for the individual’s age.
- A COWAT Total score that is below the 10th percentile for the individual’s age and level of education.
- A raw score that is below the 10th percentile for age and level of education for Part B of the TMT and/or below the 10th percentile on Part A.

Exclusionary criteria include:

- A raw score of 18 or below on Trial 1 of the TOMM and/or a raw score of 44 or below on either Trial 2 or the Retention Trial of the TOMM.
- 82.5% correct or below on any one of the IR, DR, or Consistency Scores of the WMT.
- At least two/three of the following:
 - A WMS-3 Rarely Missed Index (RMI) score⁴⁵ of 136 or more⁴⁶.
 - A WMS-3 Faces 1 subtest raw score of 30 or less⁴⁷.
 - Failure to recall the first three words of the list on all learning trials of the RAVLT⁴⁸.
 - A recognition score lower than free recall scores on the RAVLT.
 - A WAIS-3/WAIS-4 Digit Span subtest standard score that is 5 or more standard score points below the Vocabulary subtest score⁴⁹.
 - A “Failure to Maintain Set” score on the WCST of 3 or more.
 - Documented scores and/or behaviour that do not make clinical sense.

⁴⁵ Killgore & Della Pietra, “Using the WMS-III to Detect Malingering: Empirical Validation of the Rarely Missed Index (RMI)”, *Journal of Clinical and Experimental Neuropsychology*, 2000, pages 762-771.

⁴⁶ Miller et al., “Brief Screening Indexes for Malingering: A Confirmation of Vocabulary Minus Digit Span from the WAIS-111 and the Rarely Missed Index from the WMS-111”, *The Clinical Neuropsychologist*, 2004, pages 327-333.

⁴⁷ Glassmire et al., “Using the WMS-111 Faces Subtest to Detect Malingered Memory Impairment”, *Journal of Clinical and Experimental Neuropsychology*, 2003, pages 465-481.

⁴⁸ Bernard, “The Detection of Faked Deficits on the Rey Auditory-Verbal Learning Test”, *Archives of Clinical Neuropsychology*, 1991, pages 81-88; Suhr., “Malingering, Coaching, and the Serial Position Effect”, *Archives of Clinical Neuropsychology*, 2002, pages 415-424.

⁴⁹ Etherton et al., “Reliable Digit Span is Unaffected by Laboratory Induced Pain: Implications for Clinical Use”, *Assessment*, 2005, pages 101-106; Iverson & Tulsky, “Detecting Malingering on the WAIS-III”, *Archives of Clinical Neuropsychology*, 2003 pages 1-9; Miller et al., “Brief Screening Indexes for Malingering: A Confirmation of Vocabulary Minus Digit Span from the WAIS-111 and the Rarely Missed Index from the WMS-111”, *The Clinical Neuropsychologist*, 2004, pages 327-333; Millis, Ross, and Ricker, “Detection of Incomplete Effort on the Wechsler Adult Intelligence Scale-Revised: A Cross Validation”, *Journal of Clinical and Experimental Neuropsychology*, 1998, pages 167-173; Mittenburg et al., “Identification of Malingered Head Injury on the Wechsler Adult Intelligence Scale-Revised”, *Professional Psychology: Research and Practice*, 1995, pages 491-498; Trueblood, “Qualitative and Quantitative Characteristics of Malingered and Other Invalid WAIS-R and Clinical Memory Data”, *Journal of Clinical and Experimental Neuropsychology*, 1994, pages 597-607.