

## Interpretive Report of WMS-IV Testing

### Examinee and Testing Information

Examinee Name	Client A	Date of Report	8/24/2009
Examinee ID		Years of Education	16
Date of Birth	4/24/1947	Home Language	<Not Specified>
Gender	Male	Handedness	<Not Specified>
Race/Ethnicity	White	Examiner Name	Examiner Z

Test Administered	WMS-IV (8/24/2009)	Age at Testing	62 years 4 months	Retest?	No
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WMS-IV Comments	Referred by family physician due to increasing memory loss over the past few years
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### Index Score Summary

Index		Index Score
Auditory Memory	AMI	87
Visual Memory	VMI	86
Visual Working Memory	VWMI	97
Immediate Memory	IMI	86
Delayed Memory	DMI	82

### Purpose for Evaluation

Client was referred for an evaluation by Dr. G, his physician, secondary to Neurological difficulties.

### Background

Client is a 62-year-old married male who lives with spouse/partner and has been for the past 32 years. He has 3 children.

Client achieved a degree from a 4-year university program.

Client has been diagnosed with hypertension and sleep disturbances. He is currently taking medication and/or receiving treatment for hypertension.

Client is currently retired. Previously, for 26 years Client was employed full-time as a(n) Manager. It is reported that his work performance was satisfactory.

### Test Session Behavior



Client arrived early for the test session accompanied by his spouse. His appearance was neat. He was oriented to person, place, time and situation.

## Interpretation of WMS–IV Results

Client was administered 10 subtests of the Adult battery of the Wechsler Memory Scale–Fourth Edition (WMS–IV), from which his index scores were derived. He was also administered the Brief Cognitive Status Exam (BCSE), an optional procedure measuring global cognitive functioning. Client’s scores on the WMS–IV indexes are discussed in the following sections of this report, as are discrepancies in performance across different modalities and categories of memory processes. In addition, specific strengths and deficits within modalities are discussed.

When interpreting performance on the WMS–IV, it is important to take into consideration factors that may have contributed to Client’s test performance, such as difficulties with vision, hearing, motor functioning, English language proficiency, and speech/language functioning. In addition, personal factors, such as physical illness, fatigue, headache, or factors specific to the testing session such as distractions or a lack of motivation, can affect performance on any given day. According to the information provided, some of the following issues may have affected Client’s performance. His difficulties with expressive language may have had a minimal effect on his performance on measures such as Logical Memory and Verbal Paired Associates that required him to express himself orally. Therefore, caution is recommended when interpreting these subtest scores and the index scores derived from them. His reported experience of family stress or conflicts at the time of the assessment appeared to have a minimal effect on his overall performance. Client’s history of above average academic performance should be kept in mind, as this may have had a positive influence on his performance on this assessment.

## Brief Cognitive Status Exam

The Brief Cognitive Status Exam (BCSE) evaluates basic cognitive functions through tasks that assess orientation to time, incidental recall, mental control, planning/visual perceptual processing, inhibitory control, and verbal productivity. Client’s global cognitive functioning, as measured by the BCSE, was in the Low Average range, compared to others, ages 45 to 69, with a similar educational background. This classification level represents 10–24% of cases within his age and education group. Functioning in this range is not typically associated with global impairments in cognitive functioning.

## Auditory Memory

The Auditory Memory Index (AMI) is a measure of Client’s ability to listen to oral information, repeat it immediately, and then recall the information after a 20 to 30 minute delay. Compared to other individuals his age, Client’s auditory memory capacity is in the Low Average range (AMI = 87, 95% Confidence Interval = 81-94) and exceeds that of approximately 19 percent of individuals in his age group.

However, it is important to note that the expressive language difficulties that Client appeared to experience during the assessment are suspected of having had a minimal effect on his ability to fully express his auditory memory capacity.

## Visual Memory



On the Visual Memory Index (VMI), a measure of memory for visual details and spatial location, Client performed in the Low Average range (VMI = 86, 95% Confidence Interval = 81-92). Client's visual memory capacity exceeds that of approximately 18 percent of individuals in his age group.

### **Modality-Specific Memory Strengths and Weaknesses**

Some individuals are better at recalling visual information than recalling auditory information, while for others the reverse is true. Compared to individuals with similar auditory memory capacity, Client's visual memory performance is in the Average range (25th percentile), indicating no significant difference between his levels of visual and auditory memory functioning. The interpretation of Client's modality-specific memory strengths and weaknesses should take into account the previously mentioned expressive language difficulties which may have affected his performance.

### **Visual Working Memory**

On the Visual Working Memory Index (VWMI), a measure of his ability to temporarily hold and manipulate spatial locations and visual details, Client performed in the Average range (VWMI = 97, 95% Confidence Interval = 90-104). Client's visual working memory ability exceeds that of approximately 42 percent of individuals in his age group.

### **Specificity of Episodic Visual Memory Abilities Compared to Visual Working Memory Abilities**

Comparing episodic visual memory to visual working memory performance can help determine the relative influence of visual memory on visual working memory (e.g., to determine if a low VMI score is due to deficits in visual working memory or to episodic visual memory deficits). Compared to individuals with similar visual working memory capacity, Client's visual memory performance is in the Low Average range (16th percentile), indicating that his visual memory is lower than expected, given his level of visual working memory functioning.

### **Immediate and Delayed Memory**

The Immediate Memory Index (IMI) is a measure of Client's ability to recall verbal and visual information immediately after the stimuli is presented. Compared to other individuals his age, Client's immediate memory capacity is in the Low Average range (IMI = 86, 95% Confidence Interval = 80-93) and exceeds that of approximately 18 percent of individuals in his age group. On the Delayed Memory Index (DMI), a measure of the ability to recall verbal and visual information after a 20 to 30 minute delay, Client performed in the Low Average range (DMI = 82, 95% Confidence Interval = 76-90). Client's delayed memory capacity exceeds that of approximately 12 percent of individuals in his age group. However, it is important to note that the expressive language difficulties that Client appeared to experience during the assessment are suspected of having had a minimal effect on his immediate and delayed memory functioning.

### **Retention of Information**

Some individuals lose information between immediate and delayed recall, while others actually improve their memory performance over time. The overall amount of forgetting and consolidation that occurred between the immediate and delayed tasks is indicated by the level of Client's delayed memory performance given his immediate memory performance. Compared to individuals with a similar level of immediate memory capacity, Client's delayed memory performance is in the Low



Average range (16th percentile), indicating that his delayed memory is lower than expected, given his level of initial encoding.

## Specific Auditory Memory Abilities

### Auditory Forgetting and Retrieval Scores

The degree to which Client forgot the story details he learned during the immediate condition of Logical Memory I can be determined by comparing his delayed recall performance to that of others with a similar level of immediate recall (LM II Immediate Recall vs. Delayed Recall contrast scaled score = 7). This comparison indicates that Client displayed a higher than expected rate of forgetting, given his immediate memory performance.

The degree to which Client forgot the word associations he learned during immediate recall of Verbal Paired Associates I can be determined by comparing his delayed recall performance to that of others with a similar level of immediate recall (VPA II Immediate Recall vs. Delayed Recall contrast scaled score = 6). This comparison indicates that Client displayed a higher than expected rate of forgetting, given his immediate memory performance.

## Specific Visual Memory Abilities

### Visual Process Scores

Client's immediate memory for visual details is in the average range, while his delayed memory for visual details is below average (DE I Content scaled score = 10, DE II Content scaled score = 6). Although he is not likely to have difficulty recalling specific visual information soon after it is presented when compared to individuals his age, his ability to recall the information decreases over time more than is typical. When required to recall designs and their locations in a grid, Client's immediate memory for the locations of cards placed in the grid, regardless of his ability to recall the visual details of the cards, is below average, while his delayed memory for the locations is in the average range (DE I Spatial scaled score = 6, DE II Spatial scaled score = 11). Although he may have difficulty recalling spatial locations soon after they are presented when compared to individuals his age, his ability to recall the information may benefit from time for consolidation.

### Visual Forgetting and Retrieval Scores

Client's immediate recall of visual details is average when compared to others with similar levels of immediate spatial memory ability. His delayed recall of visual details is below average when compared to others with similar levels of delayed spatial memory ability. The degree to which Client forgot the visual details and spatial locations he learned during the immediate condition of the Designs subtest can be determined by comparing his delayed recall performance to that of individuals with a similar level of immediate memory (DE Immediate Recall vs. Delayed Recall contrast scaled score = 10). Based on this comparison, Client is able to recall visual details and spatial locations after a delay as well as expected, given his level of immediate recall.

The degree to which Client forgot the details and relative spatial relationship among elements of the designs presented during the immediate recall of the Visual Reproduction subtest can be determined by comparing his ability to recall and draw the designs after a delay to that of individuals with a similar level of immediate ability (VR Immediate Recall vs. Delayed Recall contrast scaled score = 9).



Based on this comparison, Client is able to recall and draw this type of visual information after a delay as well as expected, given his level of immediate recall.

## Test Results Summary

Client is a 62-year-old male who completed the WMS-IV. Client was referred for an evaluation by Dr. G, his physician, secondary to Neurological difficulties. When reviewing Client's results, it is important to keep in mind the previously noted factors that may have affected his test performance.

Client was administered 10 subtests of the Adult battery of the WMS-IV. Client's global cognitive functioning as measured by the BCSE was in the Low Average range, compared to others ages 45 to 69 and of a similar educational background. Client's ability to listen to oral information and repeat it immediately, and then recall the information after a 20 to 30 minute delay is in the Low Average range. His memory for visual details and spatial location is in the Low Average range. His ability to temporarily hold and manipulate spatial locations and visual details is in the Average range. The influence of Client's visual memory on his visual working memory should be noted. Compared to individuals with similar visual working memory capacity, Client's visual memory performance is in the Low Average range, indicating that his visual memory is lower than expected, given his level of visual working memory functioning. Client's ability to recall verbal and visual information immediately after the stimuli is presented is in the Low Average range. His ability to recall verbal and visual information after a 20 to 30 minute delay is in the Low Average range. Client displayed a notable amount of forgetting between the immediate and delayed tasks of the WMS-IV. Compared to individuals with a similar level of immediate memory capacity, Client's delayed memory performance is in the Low Average range, indicating that his delayed memory is lower than expected given his level of initial encoding.

## Recommendations

Prior to commencing a task, Client should be reminded to think about what will be necessary in order to complete it, including all materials and steps required for task completion.

The A family is strongly encouraged to participate in family counseling, because Client's difficulties are causing stress for the entire family.

It is important that more structure be implemented in Client's life. Specific household responsibilities and routines are often helpful in this effort. These endeavors must be perceived by the individual as attempts to increase his involvement in the home and sense of self worth. The goal is to make him feel more valuable and significant within the home and family unit.

Client may benefit from keeping a daily record of his accomplishments by writing them in a journal.

It is important that Client understand that his work or academic difficulties are not related to his value as a person or family member.

Client's short-term memory and vocabulary skills could be improved at home while playing games that require memory, concentration, and recall of information.

Client may benefit from watching educational television programs.



Computer-assisted educational programs may be of benefit to Client. If he enjoys video games, learning can be integrated into this fun activity. Numerous commercial educational software packages exist to meet Client's needs.

Client may benefit from doing his written assignments with a word processor, if one is available at home. He should be encouraged to use words even if he is unsure of their spelling and allow the computer to spell-check the document. Once the misspelled words are identified, Client can add them to his problem word list or flashcards.

Client is encouraged to use a multi-sensory approach to learning. This means that he should use all of his senses in the learning process. For example, Client can write a word in large letters (as on a flash card), trace the letters with his finger, and spell the word on a typewriter or word processor. If a computer is available at home, he can also make a game of identifying misspelled words. For example, after Client types an assignment (either a word list or manuscript), he can compete with the machine in identifying the most misspelled words.

If a story is interesting to Client, but too difficult for him to read, it might be beneficial to tape-record brief passages from the story. Client can then follow along with the story's text while listening to the passage on tape. Client can repeat the process until he is able to read the text on his own.

Client is encouraged to begin a routine of reading aloud at a specific time each day. Reading materials should be at a comprehensible yet challenging level. These materials could be obtained at a public library.

Client could optimize his study time by eliminating distractions such as telephone calls, background noise (e.g., television, radio), and interruptions by family members or friends.

Those closest to Client should avoid setting unreasonable expectations or responsibilities for him. Client's goals should be well-defined, realistic, and attainable.

It is important that Client be provided with as stable an environment as possible.

The A family is encouraged to seek family counseling to help resolve the family issues that are causing stress for Client and the rest of the family. This stress may be related to his difficulties sitting still, attending, and concentrating at work or school.

The A family is encouraged to seek family counseling to help resolve the family issues that are causing stress for Client. This stress may be related to his irritable, argumentative, and/or aggressive behavior at school, work, or other public places.

Client may wish to consult a physician regarding possible medication for his current emotional difficulties.

Client should have a highly organized, structured environment to keep his daily affairs in order. For example, Client should be encouraged to use appointment books, calendars, and written 'to-do' lists.



Verbal strategies may help Client stay focused on the task at hand. For example, Client may find it beneficial to verbalize steps that he will use to complete a daily routine (e.g., bathing) or an assigned task.

Visual strategies may help Client stay focused on the task at hand. For example, Client may find it beneficial to use color coding, checklists, visual reminders, and notes.

During meetings and gatherings, Client should sit in the front of the room and use self-talk to stay focused on the information being presented.

To complete extensive or complex tasks, Client should be trained to break down these larger tasks into shorter, simpler tasks with feasible deadlines.

An assisted living environment may be necessary due to Client's significant difficulties with memory and daily functioning.

Constant or almost-constant supervision should be considered due to Client's post-recovery difficulties.

Client appears to be functioning sufficiently to be involved in a group home or other facility where independence is encouraged.

Client may benefit from using associative linkages when encoding information. By linking new information to what has been previously learned, he may be able to gain a more global understanding of the information and improve recall.

When Client first encounters new information, he should link it in as many ways as possible to already known information. This strategy creates several avenues for remembering the information later.

Client should be encouraged to use external memory sources such as lists, date books, calendars, and pocket-size recorders for information that must be remembered.

Teaching Client "self-cueing" strategies may help facilitate his retrieval of information.

Tests for Client should be structured so that they require recognition rather than recall of information. They should be structured in multiple choice or other selected-response formats, rather than in extended short-answer and essay. Test formats such as these will assist him in retrieving previously learned information.

Client should be encouraged to use a "memory book" that would include information such as his daily schedule; important names, addresses, and phone numbers; personal information; medication schedule; and due dates of monthly bills.

This report is valid only if signed by a qualified professional:

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## Score Report

### Brief Cognitive Status Exam Classification

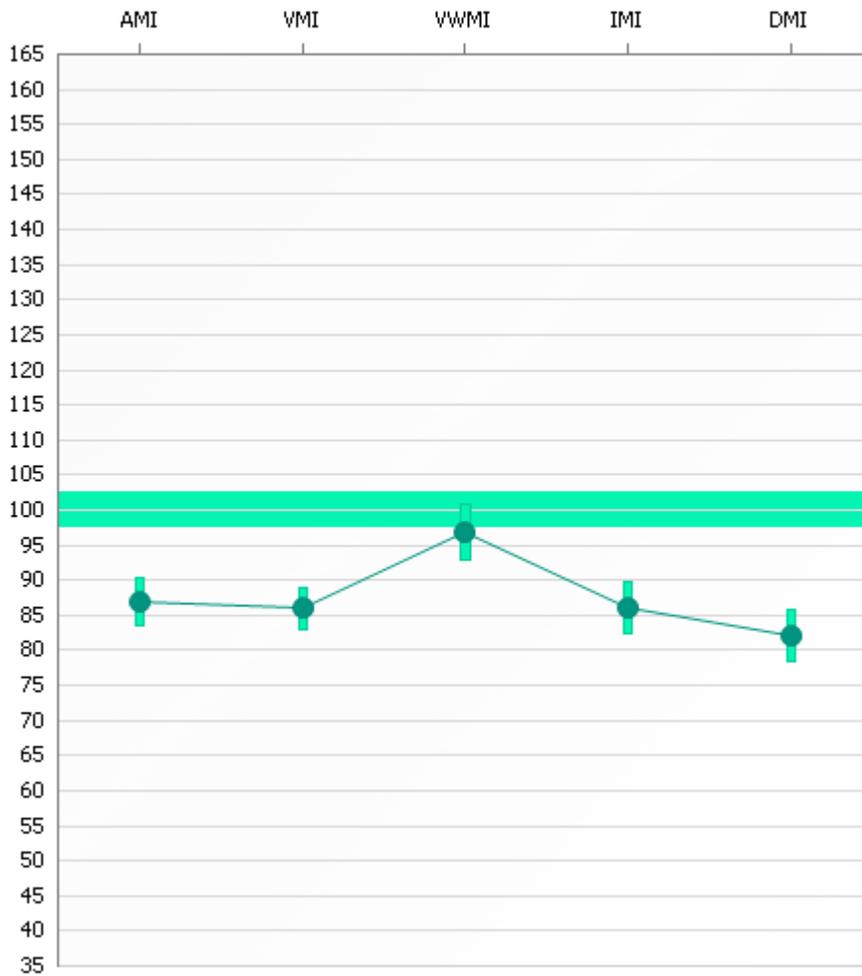
Age	Years of Education	Raw Score	Classification Level	Base Rate
62 years 4 months	16	52	Low Average	22.1

### Index Score Summary

Index	Sum of Scaled Scores	Index Score	Percentile Rank	95% Confidence Interval	Qualitative Description
Auditory Memory	31	AMI 87	19	81-94	Low Average
Visual Memory	31	VMI 86	18	81-92	Low Average
Visual Working Memory	19	VWMI 97	42	90-104	Average
Immediate Memory	32	IMI 86	18	80-93	Low Average
Delayed Memory	30	DMI 82	12	76-90	Low Average

## Index Score Profile

## Index Scores and Standard Error of Measurement



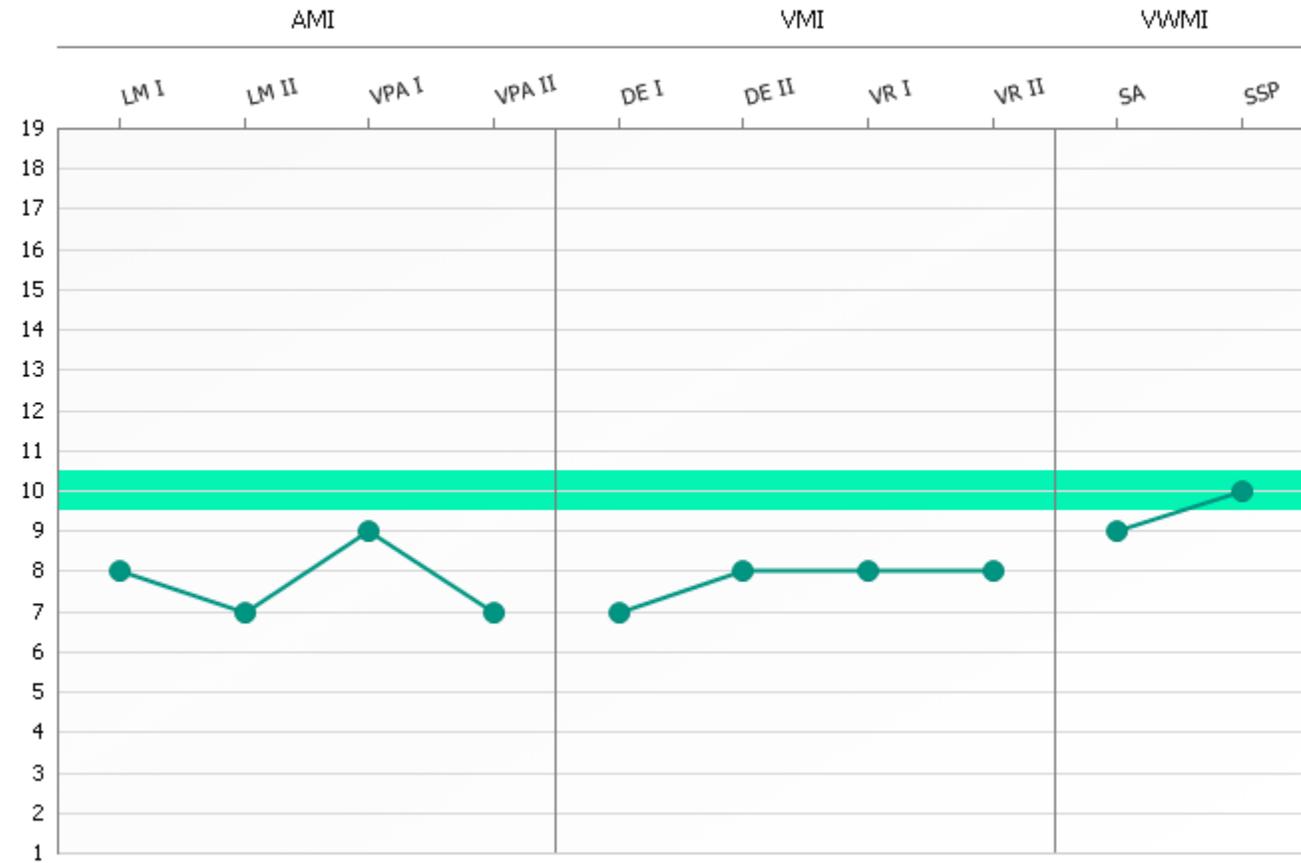
Index	Score	SEM
AMI	87	3.35
VMI	86	3
VWMI	97	3.97
IMI	86	3.67
DMI	82	3.67

The vertical bars represent the standard error of measurement (*SEM*).

## Primary Subtest Scaled Score Summary

Subtest	Domain	Raw Score	Scaled Score	Percentile Rank
Logical Memory I	AM	21	8	25
Logical Memory II	AM	14	7	16
Verbal Paired Associates I	AM	27	9	37
Verbal Paired Associates II	AM	6	7	16
Designs I	VM	50	7	16
Designs II	VM	45	8	25
Visual Reproduction I	VM	29	8	25
Visual Reproduction II	VM	16	8	25
Spatial Addition	VWM	10	9	37
Symbol Span	VWM	22	10	50

## Primary Subtest Scaled Score Profile



## Process Score Conversions

### Visual Memory Process Score Summary

Process Score	Raw Score	Scaled Score	Percentile Rank	Cumulative Percentage (Base Rate)
DE I Content	35	10	50	-
DE I Spatial	11	6	9	-
DE II Content	24	6	9	-
DE II Spatial	13	11	63	-

## Subtest-Level Differences Within Indexes

### Auditory Memory Index

Subtest	Scaled Score	AMI Mean Score	Difference from Mean	Critical Value	Base Rate
Logical Memory I	8	7.75	0.25	2.64	>25%
Logical Memory II	7	7.75	-0.75	2.48	>25%
Verbal Paired Associates I	9	7.75	1.25	1.90	>25%
Verbal Paired Associates II	7	7.75	-0.75	2.48	>25%

Statistical significance (critical value) at the .05 level.

### Visual Memory Index

Subtest	Scaled Score	VMI Mean		Critical Value	Base Rate
		Score	Difference from Mean		
Designs I	7	7.75	-0.75	2.38	>25%
Designs II	8	7.75	0.25	2.38	>25%
Visual Reproduction I	8	7.75	0.25	1.86	>25%
Visual Reproduction II	8	7.75	0.25	1.48	>25%

Statistical significance (critical value) at the .05 level.

### Immediate Memory Index

Subtest	Scaled Score	IMI Mean		Critical Value	Base Rate
		Score	Difference from Mean		
Logical Memory I	8	8.00	0.00	2.59	>25%
Verbal Paired Associates I	9	8.00	1.00	1.82	>25%
Designs I	7	8.00	-1.00	2.42	>25%
Visual Reproduction I	8	8.00	0.00	1.91	>25%

Statistical significance (critical value) at the .05 level.

### Delayed Memory Index

Subtest	Scaled Score	DMI Mean		Critical Value	Base Rate
		Score	Difference from Mean		
Logical Memory II	7	7.50	-0.50	2.44	>25%
Verbal Paired Associates II	7	7.50	-0.50	2.44	>25%
Designs II	8	7.50	0.50	2.44	>25%
Visual Reproduction II	8	7.50	0.50	1.57	>25%

Statistical significance (critical value) at the .05 level.

### Subtest Discrepancy Comparison

Comparison	Score 1	Score 2	Difference	Critical Value	Base Rate
Spatial Addition – Symbol Span	9	10	-1	2.74	85.9

Statistical significance (critical value) at the .05 level.

### Subtest-Level Contrast Scaled Scores

#### Logical Memory

Score	Score 1	Score 2	Contrast Scaled Score
LM Immediate Recall vs. Delayed Recall	8	7	7

#### Verbal Paired Associates

Score	Score 1	Score 2	Contrast Scaled Score
VPA Immediate Recall vs. Delayed Recall	9	7	6

### Designs

Score	Score 1	Score 2	Contrast Scaled Score
DE I Spatial vs. Content	6	10	12
DE II Spatial vs. Content	11	6	5
DE Immediate Recall vs. Delayed Recall	7	8	10

### Visual Reproduction

Score	Score 1	Score 2	Contrast Scaled Score
VR Immediate Recall vs. Delayed Recall	8	8	9

## Index-Level Contrast Scaled Scores

### WMS-IV Indexes

Score	Score 1	Score 2	Contrast Scaled Score
Auditory Memory Index vs. Visual Memory Index	87	86	8
Visual Working Memory Index vs. Visual Memory Index	97	86	7
Immediate Memory Index vs. Delayed Memory Index	86	82	7