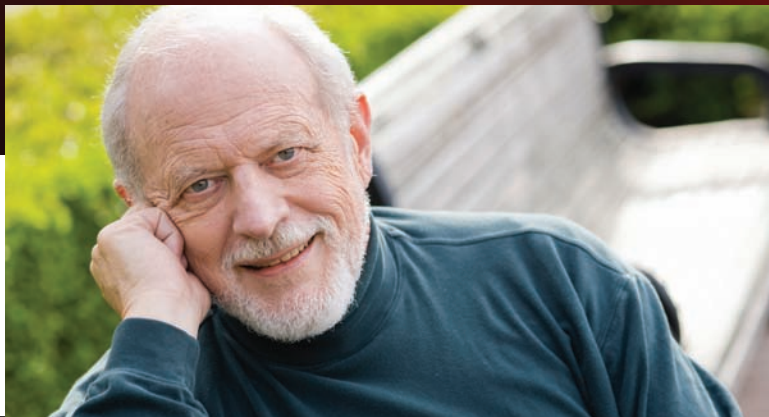




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FOR WAIS®-IV AND WMS®-IV

# **Advanced Clinical Solutions**

## *Demographic Adjustment Case Studies*



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# Advanced Clinical Solutions

## Demographic Adjustment Case Studies

### Case Study 1

Client Q is a 62-year-old White male with 21 years of education, who was referred by his family physician for neurological evaluation due to increasing memory loss over the past few years. His wife confirms that he seems more forgetful and has missed appointments and failed to pay bills on time. Other family members note that, although Client Q was very intelligent, he seemed to be declining in his intellectual skills. Neurological evaluation and brain imaging were inconclusive, and Client Q was referred for neuropsychological testing.

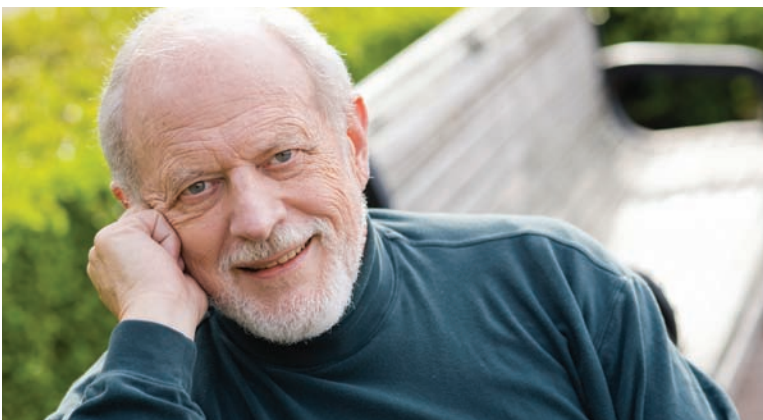


Figure 5.1 presents the results of the WAIS®-IV and WMS®-IV administered during the evaluation. Both age-adjusted and full demographically adjusted scores are provided in the report. The age-adjusted scores indicate that Client Q has above average verbal skills compared to age peers. His visual-perceptual and working memory abilities are in the average range and are generally consistent with his verbal abilities. Processing speed was in the low average range and was a relative weakness, compared to his overall problem-solving

skills. Subtest scores indicated generally average abilities, with the lowest score obtained on Symbol Search. No composite score was at or less than one standard deviation below the mean. Of the subtest scores, only Symbol Search was one standard deviation below the mean.

On the WMS-IV age-adjusted scores, Client Q demonstrated average visual working memory ability and low average visual and verbal memory. His immediate and delayed recall were also in the low average range. At the subtest level, he scored in the average range on all measures except Logical Memory II, Verbal Paired Associates II, and Designs I, which were in the low

### Demographically Adjusted Score Report

Examinee Name Client Q Date of Report 11-11-09

#### WAIS-IV Full Demographically Adjusted Composite Score Summary

Composite	Age Adjusted		Full Demographically Adjusted		
	Composite Score	Percentile Rank	T Score	Percentile Rank	Qualitative Description
Verbal Comprehension	110	75	40	16	Low Average
Perceptual Reasoning	104	61	41	18	Low Average
Working Memory	105	63	42	21	Low Average
Processing Speed	86	18	35	7	Mild Impairment
Full Scale	103	58	37	10	Mild Impairment
General Ability	107	68	39	14	Mild Impairment

Figure 5.1 Demographically Adjusted Scores for Client Q



Figure 5.1 Demographically Adjusted Scores for Client Q

### Analysis

#### WAIS-IV Full Demographically Adjusted Subtest Score Summary

Subtest	Age Adjusted		Full Demographically Adjusted		
	Scaled Score	Percentile Rank	T Score	Percentile Rank	Qualitative Description
Similarities	11	63	36	8	Mild Impairment
Vocabulary	12	75	42	21	Low Average
Information	13	84	47	38	Average
Block Design	9	37	39	14	Mild Impairment
Matrix Reasoning	11	63	39	14	Mild Impairment
Visual Puzzles	12	75	51	54	Average
Digit Span	10	50	40	16	Low Average
Arithmetic	12	75	46	35	Average
Symbol Search	7	16	35	7	Mild Impairment
Coding	8	25	37	10	Mild Impairment

#### WMS-IV Full Demographically Adjusted Index Score Summary

Index	Age Adjusted		Full Demographically Adjusted		
	Index Score	Percentile Rank	T Score	Percentile Rank	Qualitative Description
Auditory Memory	87	19	35	7	Mild Impairment
Visual Memory	86	18	33	4	Mild to Moderate Impairment
Visual Working Memory	97	42	38	12	Mild Impairment
Immediate Memory	86	18	32	4	Mild to Moderate Impairment
Delayed Memory	82	12	32	4	Mild to Moderate Impairment

### Analysis

#### WMS-IV Full Demographically Adjusted Subtest Score Summary

Subtest	Age Adjusted		Full Demographically Adjusted		
	Scaled Score	Percentile Rank	T Score	Percentile Rank	Qualitative Description
Logical Memory I	8	25	35	7	Mild Impairment
Logical Memory II	7	16	34	6	Mild to Moderate Impairment
Verbal Paired Associates I	9	37	44	27	Low Average
Verbal Paired Associates II	7	16	37	10	Mild Impairment
Designs I	7	16	36	8	Mild Impairment
Designs II	8	25	41	18	Low Average
Visual Reproduction I	8	25	34	6	Mild to Moderate Impairment
Visual Reproduction II	8	25	38	12	Mild Impairment
Spatial Addition	9	37	39	14	Mild Impairment
Symbol Span	10	50	41	18	Low Average



average range. Memory functioning is relatively weaker than general intellectual functioning. Of the memory indexes, only the Delayed Memory Index was at or below one standard deviation below the mean. In addition, three subtests were at or below one standard deviation below the mean. When the WMS-IV results were combined with the WAIS-IV, there was one composite and four subtests at least one standard deviation below the mean. There were no scores at or below 1.5 standard deviations below the mean.

The profile based on age-adjusted scores suggests a weakness in processing speed and memory, but most of Client Q's scores are average with very few scores below average. Compared to his age peers, he is functioning within normal limits on most measures with the exception of the processing speed and memory indexes, which suggests Client Q may have mild cognitive impairment. Since the examinee was described as very high functioning in the past, the current cognitive performance may represent a decline in his abilities. Full demographic norms were applied to determine if his current cognitive functions were consistent with examinees with similar demographic characteristics.

On the WAIS-IV, Client Q's verbal, visual-perceptual, and working memory abilities were in the low average range, compared to individuals of similar background. His processing speed was in the mildly impaired range as were two measures of general cognitive functioning. Of the six composites, four were at least one standard deviation below the mean. Of the 10 WAIS-IV subtests, three were in the average range, and five were in the mild impairment range. Six of the 10 subtests were at least one standard deviation below the mean. The scores suggest general problem-solving deficits rather than a specific problem with processing speed.

On the WMS-IV, Client Q's auditory memory and visual working memory were in the mildly impaired range compared to individuals of similar background. All the index scores were in the mild to moderate impairment ranges, suggesting general memory deficits. At the subtest level, only 3 of the 10 scores were in the low average range with the other scores showing mild impairment. Compared to his demographic peers, Client Q has general memory deficits.

Considering the WAIS-IV and WMS-IV together, Client Q had nine composite scores at least one standard deviation below the mean, with five at or below 1.5 standard deviations below the mean. At the subtest level, he had 13 scores at least one standard deviation below the mean and four scores at or below 1.5 standard deviations from the mean. Using these scores with the diagnostic statistics reported earlier, it would appear that there is a high probability that this profile reflects impaired cognitive functioning.

The results of the application of the demographic norms confirm the family's impression that Client Q has lost some cognitive functioning. Overall, he is performing similar to other adults his age, with some processing speed and memory weaknesses. However, when demographic norms are used, a more generalized cognitive impairment becomes evident. Client Q's profile is likely abnormal, and it may indicate mild cognitive impairment, Probable Dementia of the Alzheimer's Type, or potentially some other neurological disorder. The examiner made a diagnosis of mild cognitive impairment and scheduled additional testing in 6 months.



**Case Study 2**

Client E is a 34-year-old White female who completed 10 years of education. In the late summer of 2008, Client E was in a minor motor vehicle accident and suffered a mild traumatic brain injury. She lost consciousness for approximately 10 minutes with no post-traumatic amnesia. In the emergency room, she was treated for cuts and bruises. She was diagnosed with a mild concussion and her Glasgow Coma Scale was 15. No brain imaging was ordered, and she was released after 2 hours.



Subsequent to her accident, her husband became concerned that she seemed more forgetful than in the past. After a few weeks, he asked her to talk to her physician although she had not noticed any changes in cognitive functioning and had returned to work without incident. Her physician noted that she seemed distracted during the evaluation but otherwise noted nothing unusual in her presentation. Additional testing was ordered to assuage her husband's concerns.

Figure 5.2 presents Client E's WAIS<sup>®</sup>-IV and WMS<sup>®</sup>-IV age-adjusted and education-adjusted scores. Her WAIS-IV age-adjusted composite scores indicate that she performs in the low average to average range compared to her age peers. Her index scores are consistent with low average to average general problem-solving skills without significant variability across abilities. At the subtest level, she has low average to average abilities across cognitive domains. She has no composite scores at or below one standard deviation below the mean and only two subtest scores met that criterion.

<b>Demographically Adjusted Score Report</b>					
Examinee Name	Client E		Date of Report	11-10-09	
<b>WAIS-IV Education Adjusted Composite Score Summary</b>					
Composite	Age Adjusted		Education Adjusted		
	Composite Score	Percentile Rank	T Score	Percentile Rank	Qualitative Description
Verbal Comprehension	89	23	51	54	Average
Perceptual Reasoning	90	25	48	42	Average
Working Memory	86	18	46	34	Average
Processing Speed	94	34	52	58	Average
Full Scale	87	19	49	46	Average
General Ability	88	21	49	46	Average

Figure 5.2 Demographically Adjusted Scores for Client E

Figure 5.2 Demographically Adjusted Scores for Client E (continued)

**Analysis**

**WAIS-IV Education Adjusted Subtest Score Summary**

Subtest	Age Adjusted		Education Adjusted		
	Scaled Score	Percentile Rank	T Score	Percentile Rank	Qualitative Description
Similarities	8	25	50	50	Average
Vocabulary	7	16	49	46	Average
Information	9	37	56	73	Above Average
Block Design	8	25	47	38	Average
Matrix Reasoning	8	25	49	46	Average
Visual Puzzles	9	37	52	58	Average
Digit Span	8	25	49	46	Average
Arithmetic	7	16	46	34	Average
Symbol Search	9	37	51	54	Average
Coding	9	37	53	62	Average

**WMS-IV Education Adjusted Index Score Summary**

Index	Age Adjusted		Education Adjusted		
	Index Score	Percentile Rank	T Score	Percentile Rank	Qualitative Description
Auditory Memory	85	16	44	27	Low Average
Visual Memory	87	19	47	38	Average
Visual Working Memory	80	9	43	24	Low Average
Immediate Memory	84	14	46	34	Average
Delayed Memory	84	14	44	27	Low Average

**Analysis**

**WMS-IV Education Adjusted Subtest Score Summary**

Subtest	Age Adjusted		Education Adjusted		
	Scaled Score	Percentile Rank	T Score	Percentile Rank	Qualitative Description
Logical Memory I	7	16	45	31	Average
Logical Memory II	8	25	47	38	Average
Verbal Paired Associates I	7	16	44	27	Low Average
Verbal Paired Associates II	8	25	47	38	Average
Designs I	9	37	53	62	Average
Designs II	7	16	43	24	Low Average
Visual Reproduction I	8	25	48	42	Average
Visual Reproduction II	8	25	47	38	Average
Spatial Addition	7	16	46	34	Average
Symbol Span	6	9	43	24	Low Average



On the WMS<sup>®</sup>-IV age-adjusted scores, she performed in the low average range on all the indexes. These results indicate general memory functions are consistent with overall intellectual ability. At the subtest level, she consistently performs in the low average to average range. She had four index scores at least one standard deviation below the mean on the WMS-IV and five subtest scores at that criterion. Using age-adjusted scores, Client E has relatively low memory skills compared to age peers although her memory is similar to her overall ability level. When her WMS-IV results were combined with her WAIS<sup>®</sup>-IV scores, she had four composite and seven subtest scores at least one standard deviation from the mean.

The examiner considered that her low education level may be the reason why her scores were generally low. He used education-adjusted scores to determine if her cognitive functioning was consistent with her background. After the adjustment, her WAIS-IV composite scores were in the average range. This indicates that her general problem solving skills are consistent with her background and likely does not represent a decline in functioning. At the subtest level, her scores were also in the average to above average range. No scores on the WAIS-IV were at or below one standard deviation below the mean, indicating average cognitive functioning, considering her educational background.