# Correlates of Memory Complaints and Personality, Depression, and Anxiety in a Memory Clinic

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**Abstract-** The aim of the study was to find whether there is an association between subjective memory complaint and memory impairment and probable underlying psychological conditions. A total of 90 patients with subjective memory complaint enrolled in this study. Short history and demographic information were obtained and then the patients underwent memory and mental health assessments, using Wechsler Memory Scale (WMS), Hospital Anxiety and Depression Scale (HADS) and Minnesota Multiphasic Personality Inventory (MMPI) test tools. The mean age of the participants was 52.31 ± 17.97. Forty patients out of 90 (44.4%) were male. The prevalence of depression, anxiety and memory impairment was 10%, 12.2%, and 28.8%, respectively. Memory impairment has only shown a significant association with the presence of anxiety disorder according to the HADS findings (*P*=0.001). Regarding the MMPI, considerable differences were observed in the average grade of hysteria among patients with and without memory impairment: 8.38 ± 2.27 vs. 4.35 ± 1.96. There was also significant statistical association between the average score of depression on the MMPI in patients with and without memory impairment that were 13.7 ± 3.33 and 8.31 ±3.86, (*P*=0.03). The result of the current study shows that underlying psychological conditions such as anxiety, depression, and histrionic personality are associated with memory impairment.



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**Keywords:** Memory complaint; Memory impairment; Personality

## Introduction

Behavioral learning is the influence of some present experiences on the individuals' conduct. Memory refers to the neuronal changes that stem from experiences. Memory and learning could not be measured directly. They could be understood via the specific changes in behavior. Memory impairment and amnesic periods are often considered to be one of the signs of aging (1).

Healthy elderly often complain of forgetfulness in their daily activities (2). Memory complaints are not often associated with actual memory impairments (14,18,30). Sometimes, memory complaints are considered to be a sign of cognitive impairment or dementia (3). The elderly, who complain of their memory, often worry that such memory problems might lead to degenerative disorders such as dementia (2,17).

Various studies have reported high prevalence of memory complaints and the linear increase in this prevalence in age groups above 65 years (15,27,29). This might be because over the last decade Alzheimer's and the related diseases have been the center of attention.

Amnesia is the partial or complete inability to remember the previous experiences and perceptions. It could result from organic or psychological conditions. Impairment in neuronal physiology, which is seen in organic amnesia, is a result of degenerative changes, trauma, etc. Organic memory impairment is related to the defect in registration and preservation, especially of the recent memory. Psychological amnesia, however, is accompanied by a pause in recalling experiences as a result of underlying psychological conditions. An amnesic event will probably be psychological if it happens without any changes in the level of consciousness (1).

In many patients, change in memory function is noticed with the increase in age. As physicians and scientists pay more and more attention to Alzheimer's and dementia, patients, too, take more notice of age-

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related memory changes. As the patients get older, they are more likely to suffer from memory impairment. In the United States around 40% of adults above 65 years suffer from age-related memory impairment, of which only 1% is diagnosed with dementia each year (8). Another type of memory impairment, which is more serious than age-related problems, is the mild cognitive impairment. The defect in memory is often serious but not so serious that it would impair the individual's function. Such patients could manage to live on their own. Approximately 10% of adults above 65 years suffer from this problem and each year 15% of them are diagnosed with Alzheimer's (9).

Various studies have stated some other contributory factors rather than age, such as gender, educational level, and depression symptoms in memory complaints and memory impairment in actual memory testing. According to the available data, women have reported more complaints; besides, there was an association between low educational level and more memory complaints and more decrease in memory function (15). The presence of depression symptoms or depressive disorders has been proved to be related to different levels of memory complaint (18,23). Moreover, personality traits have been in association with memory complaint (24,25). The aim of the present study was to provide actual evaluation of memory in patients with memory complaints and find the influence of psychological factors such as mental health and personality traits on such complaints.

## Materials and Methods

This study was a cross-sectional one. Sampling was simple and non-random. The study was conducted on patients who referred to the memory clinic of Roozbeh Hospital and Iran Alzheimer's Society complaining of memory impairment. The inclusion criteria were: a basic educational level in order to read and write, physical and mental ability required to enter the study, and the patients' consent. Having obtained their consent, the details of their memory impairment and information regarding demographic characteristics, the Wechsler memory test was performed on the patients in order to determine whether or not their memory was functioning normally. The Wechsler test includes seven parts: The person's awareness of personal and everyday matters, awareness of time and place, mind control, logical memory, repeating digits and repeating digits backwards, visual memory and associate learning. Following that, regardless of the way the memory functioned, the HADS questionnaire was prepared and the MMPI test (short form) was carried out in order to evaluate mental health, depression level, anxiety, as well as personal profile of each patient.

Scoring the MMPI questionnaire is performed for eight clinical scales including: hypochondriasis (Hy) depression (D), hysteria (Hs), psychopathic deviate (Pd), paranoia (Pt), psychasthenia (PI), schizophrenia (Sc) and hypomania (Md) and three mental scales including: lie detecting and inferiority complex. The data obtained from the questionnaires were processed using the statistical software SPSS version 15 and were defined according to central statistical indices. Then Chi-square test, Independent T-test, Pearson cohesion test and regression tests were used to analyze the data.

## Results

The patients under study consisted of 90 people (40 men (44.4%) and 50 women (55.6%)) with the average age of 52.31 ± 17.97. As for their marital status 13 (14.4%) people were single, 62 (68.9%)people married, 5 (5.6%) divorced and 10 (11.1%)were widowed. 30 (33.3%) people were educated up to junior high school level, 17 (18.9%) people were illiterate, 17 (18.9%) had university education and 26(28.9%) people held high school diploma.

Among the patients in this study, 70 (77.8%) did not have any history of mental disorders, 16(17.8%) suffered from severe depression, 2 (2.2%) suffered from OCD, one person suffered from bipolar disorder (1.1%) and one person suffered from psychotic disorder.

Eleven (12.2%) people of those in this study had undergone medical treatment, 8 (8.9%) people had medical as well as psychiatric treatment and 71 people (78.9%) had not received any treatment at all. Moreover, 46 people (51.1%) did not have any history of heart condition, 30 (33.3%) people did have a history of heart problem, 2(2.2%) people suffered from cancer and 12(13.3%) participants had diabetes.

The mean overall score of patients on the Wechsler Scales was 74.8 ± 16.77, with the lowest score being 55 and the highest being 143. Considering the overall score in this study, 28.8% of the patients suffered from memory impairment, and 71.2% were healthy.

The mean L score of the patients was 1.66 ± 1.34, their mean F-score was 3.83 ± 2.61, their mean K score was 6.96 ± 3.82, their mean Hs score was 6.37 ± 2.05, their mean D score was 12.01 ± 3.86, their mean Hy score was 11.66 ± 4.19, their mean Pd score was 6.59 ± 2.86, their mean Pa score was 5.40 ± 2.32, their mean Pt

score was 8.71 ± 2.91, their mean Sc score was 7.70 ± 3.17 and their mean Ma score was 3.46 ± 1.72.

According to the HADS questionnaire, the mean overall score of the patients in this study was 14.34 ± 6.44, the mean depression score was 7.30 ± 3.98, and the mean anxiety score was 6.93 ± 4.03. According to the HADS scales, 9 (10%) people suffered from depression and 11 (12.2%) people had anxiety disorder. Five (5.6%) patients who suffered from depression and 6 (6.7%), of those who suffered from anxiety, had memory impairment. In this study, the patients' sex, educational level, marital status, previous family history, and background diseases did not prove to be associated significantly with memory impairment. The only item that was statistically significant to memory impairment was the patients' personality disorder (*P*.value=0.03). And also the overall memory score of the patients on the Wechsler Scales and their age, their score of the HADS questionnaire, their depression and anxiety score of the HADS did not have any statistical significance.

In analyzing the association between suffering from anxiety (according to the HADS Scales) and the scores on the Wechsler Scale, the only statistical significance was observed in the mean scores of visual memory on the Wechsler Scale in both those with and without anxiety (*P*=0.05) (Table 1).

**Table 1. The descriptive statistics of the scores of the Wechsler Scales in the patients with and without anxiety**

| Wechsler Scale | Anxiety | Number | Percentage | Std. Deviation | Mean | *P*-value |
|---|---|---|---|---|---|---|
| **Total Number of Wechsler Memory Scale** | **no** | 79 | 88.06 | 1.876 | 16.672 | 0.606 |
| | **yes** | 11 | 85.45 | 5.475 | 18.157 | |
| **General Information Score of Wechsler** | **no** | 79 | 4.97 | 0.147 | 1.310 | 0.217 |
| | **yes** | 11 | 4.82 | 0.444 | 1.471 | |
| **Orientation Number** | **No** | 79 | 4.09 | 0.144 | 1.283 | 0.65 |
| | **yes** | 11 | 3.82 | 0.483 | 1.601 | |
| **Mind Control Score** | **no** | 79 | 3.80 | 0.256 | 2.278 | 0.644 |
| | **yes** | 11 | 4.91 | 0.563 | 1.868 | |
| **Logical Memory Score of Wechsler** | **no** | 79 | 6.01 | 0.275 | 2.447 | 0.158 |
| | **yes** | 11 | 6.41 | 0.563 | 1.868 | |
| **Repeating Digits** | **No** | 79 | 7.20 | 0.292 | 2.594 | 0.238 |
| | **Yes** | 11 | 7.27 | 1.010 | 3.349 | |
| **Associate Learning** | **No** | 79 | 7.21 | 0.391 | 3.473 | 0.763 |
| | **Yes** | 11 | 8.50 | 1.164 | 3.860 | |
| **Visual Memory Score** | **no** | 79 | 6.57 | 0.367 | 3.261 | 0.05 |
| | **Yes** | 11 | 8.73 | 1.153 | 3.823 | |

In analyzing the association between suffering from depression (according to the HADS Scales) and the scores of the Wechsler Scale, the only statistical significance was observed in the mean scores of digit repeating on the Wechsler Scale in both those with and without depression (*P*.value=0.03) (Table 2).

**Table 2. The descriptive scores of the Wechsler in the patients with and without depression**

| Wechsler Scale | Depression | Number | Percentage | Std. Deviation | Mean | *P*-value |
|---|---|---|---|---|---|---|
| **Total Number of Wechsler Memory Scale** | **no** | 81 | 86.78 | 1.770 | 15.929 | 0.070 |
| | **Yes** | 9 | 96.44 | 7.443 | 22.328 | |
| **General Information Score of Wechsler** | **No** | 81 | 4.98 | 0.149 | 1.341 | 0.766 |
| | **Yes** | 9 | 4.78 | 0.401 | 1.202 | |
| **Orientation Number** | **No** | 81 | 4.05 | 0.148 | 1.331 | 0.717 |
| | **Yes** | 9 | 4.11 | 0.423 | 1.269 | |
| **Mind Control Score** | **No** | 81 | 3.81 | 0.247 | 2.220 | 0.737 |
| | **Yes** | 9 | 5.00 | 0.799 | 2.398 | |
| **Logical Memory Score of Wechsler** | **No** | 81 | 5.91 | 0.260 | 2.340 | 0.928 |
| | **Yes** | 9 | 7.44 | 0.801 | 2.404 | |
| **Repeating Digits** | **No** | 81 | 7.09 | 0.303 | 2.730 | 0.30 |
| | **Yes** | 9 | 8.33 | 0.624 | 1.871 | |
| **Associate Learning** | **no** | 81 | 7.23 | 0.400 | 3.596 | 0.345 |
| | **yes** | 9 | 8.61 | 0.881 | 2.643 | |
| **Visual Memory Score** | **no** | 81 | 6.67 | 0.365 | 3.283 | 0.584 |
| | **yes** | 9 | 8.33 | 1.374 | 4.123 | |

In the present study, depression (according to the HADS Scales) was not significantly associated with the existence or lack of memory impairment (*P*.value=0.603); but it was significantly related to anxiety (according to the HADS Scales) (*P*.value=0.001).

The mean hysteria score of the patients in the MMPI was 8.38 ±2.27 in the patients suffering from memory dysfunction and was 4.35 ± 1.96 in those with normal memory, and this was statistically significant (*P*.value=0.05). Moreover, the mean depression score of the patients on the MMPI in the patients suffering from memory dysfunction was 13.7 ± 3.33 and in those with normal memory was 8.31 ± 3.86, and this also had statistical significance (*P*.value=0.03). The mean anxiety score of the patients in the HADS Scale in the patients with memory dysfunction was 4.067 ± 0.837 and in those without memory dysfunction was 3.71 ± 0.465, and this was also statistically significant (*P*.value = 0.001) (Table 3).

**Table 3. The descriptive scores of anxiety, depression and total in patients in terms of HADS Scale in two groups with and without memory impairment**

| HADS Scale | Memory Function | Number | Percentage | Std. | Mean | *P*-value |
|---|---|---|---|---|---|---|
| total score of HADS | Memory Impairment | 26 | 17.50 | 1.251 | 6.377 | 0.567 |
| | Normal Memory | 64 | 13.06 | 0.757 | 6.055 | |
| Depression score of HADS | Memory Impairment | 26 | 8.77 | 0.771 | 3.933 | 0.923 |
| | Normal Memory | 64 | 6.70 | 0.483 | 3.866 | |
| Anxiety score of HADS | Memory Impairment | 26 | 8.73 | 0.837 | 4.067 | 0.01 |
| | Normal Memory | 64 | 6.20 | 0.465 | 3.717 | |

## Discussion

In some studies, one-third of the outpatients above 75 have been reported to suffer from memory dysfunction (1). Other studies, however, have indicated such complaints in 31% of the elderly without cognitive impairment (19). A study conducted by Tobiansky and his colleagues, revealed that 25% of a group of the elderly who lived in London suffered from memory impairment (20), whereas a report issued by Bolld and his colleagues stated that only a small percentage (19%) of the people in the age range of 39-89 had not had any memory complaints (5). Various studies have emphasized the linear increase in memory impairment in people above 65 years (43% of people aged 65-74, 51% of people aged 75-84 and 88% of people aged 85 and above) (8). In the study carried out by Bolld and his colleagues memory disorder was observed only in 19% of the 500 people being studied (aged 39-89).

In the present study memory dysfunction was only detected in 28.8% of the patients under study with the average age of 52.31 ± 17.97, and there was no statistical significance between memory impairment and the patients' age (*P*.value = 0.727). Like many other similar studies, in the present study more women and with higher average age compared to men (54.9 vs. 48.98) referred to the memory clinic complaining of memory problems. However, suffering from memory impairment did not have statistical significance in two genders (*P*.value = 0.795), and neither was significant association between sex, age, previous family history (unlike the study done by Bolld and his colleagues (5) in which the few number of people with family history may be overlooked), and patients' marital status (in line with Hanin's study (16)) and memory impairment (*P*.value≥ 0.05).

The patients with the educational level up to junior high school reported the highest number of memory complaints. Considering there was no significant association between memory impairment and the patients' educational level, this could indicate that highly-educated people, who study books over a long period and those with occupations that demand more mental activity, are less likely to suffer from memory problems at a younger age. The findings of the previous studies emphasized the point that mental disorders might precipitate memory problems (19-20 and 21-23), for instance, BMD personality disorder might cause

memory problems (7-8). In this study two participants suffered from OCD (2.2%), 1 (1.1%) person suffered from BMD and one person suffered from psychotic disorder; and there was significant association between memory dysfunction and mental problems. Moreover, in several studies, suffering from depression was related to memory complaints (7-8,15,19) and the existence of depression symptoms or depression disorder was also related to different levels of memory complaints (4,16). In the present study, according to the HADS Scales, 9 participants had depression and 11 participants had anxiety disorder; among which 5 depressed patients (5.6% of all patients) and 6 anxious patients suffered from memory impairment. This study revealed that only anxiety was related to memory impairment, and depression was not related to memory impairment, which was in contrast to the findings of a study conducted by Richard and his colleagues (7). Furthermore, in the study carried out by Tobiansky, the MMPI was significantly related to depressed personality (5). In Hanin's study, memory complaints were related to personality disorders such as depressed personality (16). Consistent with Hanin's study, memory dysfunction according to the Wechsler Scale, was significantly associated with anxiety and depression in this study.

The result of this study reveals that suffering from personality disorders and anxiety might cause memory impairment. For this reason, it is necessary that measures be taken to have the patients who suffer from personality disorder and anxiety under control to protect them from memory impairment.

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