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Research Article

MEMORY IN OBSESSIVE-COMPULSIVE DISORDER

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ABSTRACT
The Aim of the present study was to examine the effect of Memory in the obsessive- compulsive disorder (checker and washer). Participants were 90 individuals aged between 20-50, sixty (thirty checkers, thirty washers) drawn from a psychiatric and psychology clinic and thirty from the normal population. These three groups were assessed by measures of obsession, compulsion and Memory. In the present study, the performance of the three groups did not differ significantly in case of memory as measured by Wechsler Memory Scale (WMS).

Keywords: *Memory; Obsessive-compulsive Disorder*

INTRODUCTION
It was initially thought that the repetitive thoughts and behaviors of OCD reflected impaired memory functioning as patients were simply unable to recall that they had already checked the stove, or washed their hands. Investigations into memory functioning in OCD to date instead suggest that this failure of memory is perhaps secondary to organizational deficits, implicating executive dysfunction as a primary contributor to the OCD profile
Purcell et al. (1998a, 1998b) reported deficits in spatial memory in OCD impaired recognition of spatial locations, with relatively preserved recall and recognition of visual patterns in OCD, questions the role of verbal mediation strategies in visual memory tasks. This apparently poor use of visual representations in patients with OCD may be a consequence of over reliance on verbal strategies that are more easily applied to pattern characteristics than to spatial location.
Muller and Roberts (2005) recommended, although given the nature of symptomatology in OCD, it has been long thought that deficits and biases in memory and attention may be a key aspect of psychopathology of this disorder, but cognitive biases/deficits in the domain of memory and attention appear to be associated with OCD and it is possible (though largely untested) that these cognitive anomalies are distinct from those seen in other anxiety disorders.
Cougle *et al.,* (2007) examined both perception of memory *ability* and *confidence* in *recollections* in obsessive-compulsive checkers across range of situations, obsessive and non-obsessive. They found OC checkers reported poorer perception of memory ability than other groups (anxious and non-clinical). OC checkers also reported lower confidence in recollections compared to other groups. Omori *et al.,* (2007) found that a significant correlation between the general memory score and the inhibition score exists only among the checkers, supporting the view that inhibition regulates episodic memory in the checking subtype of OCD. Olley and Sachdev (2007) in a review article, recollected that decision making as a cognitive construct as related to OCD has not received greater attention in the neuropsychological literature. On the basis of emerging literature they suggest that it is a potential area of dysfunction and one that warrants further investigation as it may assist in enhancing our understanding of the pathophysiology of OCD.

MATERIALS AND METHODS
Method
Participants
A sample of ninety individuals aged between 20-50. Sixty drawn from a psychiatric and psychology clinic and thirty from the normal population were the participants of this study. Out of sixty individuals selected from clinic, thirty patients had predominantly checking problems, and the other thirty patients

had predominantly washing problems. The remaining thirty participants were without any known psychiatric problems. The participants with the checking problems constituted the checker group, those with the washing problems constituted the washer group and those with no known identified psychiatric problems constituted the normal control group in the present study.

Procedure

All participants in the OCD groups were outpatients at clinical psychology centers, namely the two centers of ShahidBeheshti University of Medical Sciences (SBUMS) in Tehran, Iran. They were diagnosed according to DSM-IV-TR criteria, using the Structured Clinical Interview (SCID-I: First *et al.,* 1996; Persian Version Translation and Cultural Adaptation of Questionnaire, Sharifi *et al.,* 2007).

All participants completed self-report questionnaire given to them. Questionnaire was administered individually. A trained psychologist interviewed participants using the required clinical interview measures. Then, theWechsler Memory Scale (WMS) was carried out. Data collection concluded with filling out of report WMS by participants.

Instruments

Yale–Brown Obsessive Compulsive Scale (Y-BOCS)

A self-report version of the semi-structured interview Y-BOCS is designed to identify the severity of obsessive and compulsive behaviors. The self report version shows high parallel forms of validity with the interview version, r =.97.

All participants completed the Persian Translation and Cultural Adaptation of YBOCS by Malaqutie *et al.,* ()[1]. This instrument showed high internal consistency α =.91 and with the Maudsley Obsessive Compulsive Inventory (correlations r =.77).

Wechsler Memory Scale (WMS): The present study used WMS (Wechsler, 1973) because it measures immediate and delayed verbal and visual memory as well as attention/concentration. The weighted sum of scores of general memory of the WMS and score of every subtest were used for analysis.

This was designed by David Wechsler (1945) and renewed (1973). The Wechsler Memory Scale (WMS) provides subtest and composite scores that assess memory and attention functions using both auditory and visual stimuli. There are now seven Primary Indexes. They are as follows:

Test 1 comprises of six simple questions of ***Personal and Current Information*** for example, "How old are you", "Who is the President of the U.S.", etc. The test discriminates very little or not at all between normal or even near-normal subjects. It was included because of its usefulness in the examination of subjects with special defects like aphasics and subjects who are senile.

Test 2 consists of asking five simple questions like "what year is this", "what day of the month is it", etc. They are designed to test the subject's immediate ***Orientation*****.** Like Test 1, it contributes little as discriminate to the total score, but was included for reasons similar to those mentioned for the use of Personal and Information items.

Test 3 ***Mental Control*** consists of three sub-items, i.e. counting backwards from 20 to 1, repeating the alphabet, and counting by threes. Its value lies primarily in highlighting cases of organic brain disease that are not too far gone but are difficult to defect when using simple rote memory items.

Test 4 ***Logical Memory***, is based on two memory passages; similar to the memory selection of the Stanford-Binet design, and similarly scored. The subject's score is the average of the number of ideas, which he produces correctly on both passages. The test is intended to measure immediate recall of logical material.

Test 5 is the familiar ***Memory Span*** for digits, both forwards and backwards. The series used are those employed in Wechsler's Bellevue Intelligence Scale, except that the maximum number of digits used in the series is limited to 8 and 7, respectively.

Test 6 is a test of ***Visual Reproduction,*** which requires the subject to draw from memory, simple geometric figures exposed for a period of 10 seconds. Two of the figures are taken from those used in the Army Performance Scale (World War I) and the third is the well-known pair of Alfred-Binet test.

Test 7, labeled ***Association Learning***, consists of 10 paired associates, some easy and some hard, which the subject is required to learn in three trials. The items included have been derived from the paired-associate list originally used by Wechsler in his study of the retention defect in Korsakoff psychosis.
All participants completed the Persian Translation and Cultural Adaptation of WMS by Oranghi (1381). This instrument showed internal consistency of α =.79, and test-retest correlation of r = .85. WMS covered different age groups.

RESULTS AND DISCUSSION

Results

ANOVA was conducted to compare the three groups with respect to Obsession,Compulsion and Wechsler Memory Scale.

Obsession and Compulsion: Table 3.1 clearly indicates significant group differences on both obsessions and compulsions as measured by the Y-BOCS. With respect to obsessions, a significant main effect of group was noted, F (2, 87) = 214.30, p< .001. Post-hoc HSD tests were conducted to identify specific between-group differences. Results revealed that the washer group scored significantly higher than the checker group, which in turn scored significantly higher than the normal control group. Significant main effects of group were also observed with respect to compulsions, F (2, 87) = 152.95, p< .001. Post-hoc tests, however, revealed a different pattern of group differences, where the checker group scored significantly higher than the washer group, which in turn scored significantly higher than the normal control group.

Table 3.1: Comparison of the checker, washer, and the normal control groups on obsessions and compulsions as measured by Y-BOCS

Variable	Checker (n = 30)		Washer (n = 30)		Normal control (n = 30)		F (2,87)	Significant post hoc (α = 0.05)
	M	SD	M	SD	M	SD		
Y-BOCS (Obsessions)	9.10	2.56	14.10	3.17	1.13	1.13	214.30***	Ng<Chg<Wag
Y-BOCS (Compulsions)	10.27	1.92	8.83	3.36	0.63	0.92	152.95***	Ng<Wag<Chg

Note: *Ng = Normal Group; Chg = Checker Group; Wag = Washer Group* ***p< 0.001*

Further, a significant main effect of group was noted with respect to total mean scores on Y-BOCS, F (2, 87) = 283.75, p< .001. Post-hoc HSD tests revealed that the washer group scored significantly higher than the checker group, which in turn scored significantly higher than the normal control group (Table 3.2).

Table 3.2: Comparison of the checker, washer, and the normal control groups on total scores obtained on Y-BOCS

Checker (n = 30)		Washer (n = 30)		Normal control (n = 30)		F(2,87)	Significant post hoc (α = 0.05)
M	SD	M	SD	M	SD		
19.37	3.58	22.80	5.07	1.17	1.33	283.75***	Ng<Chg<Wag

Note: *Ng = Normal Group; Chg = Checker Group; Wag = Washer Group*
****p< 0.001*

Overall, it can be seen from Tables 3.1 and 3.2 that with respect to obsessions, compulsions, and the total mean scores, both the washer and the checker groups scored significantly higher than the normal control group. However, with respect to obsessions and the total score on Y-BOCS, the washer group scored significantly higher than the checker group whereas considering compulsions, the checker group scored significantly higher than the washer group.

Wechsler Memory Scale (WMS)

ANOVA was conducted to compare the three groups with respect to memory as indicated by their total score obtained on Wechsler Memory Scale (WMS). No significant main effect of group was found, i.e., the performance of the three groups did not differ significantly in case of memory as measured by WMS. The total mean scores obtained on WMS are represented in Table 3.3.

Table 3.3: Comparison of the checker, washer, and the normal control groups on memory quotient as measured by Wechsler Memory Scale (WMS)

Checker (n = 30)		Washer (n = 30)		Normal control (n = 30)		F(2,87)	Significant post hoc (α = 0.05)
M	SD	M	SD	M	SD		
105.73	12.44	106.77	13.67	112.90	15.74	NS	Ng>Wag>Chg

Note: *Ng = Normal Group; Chg = Checker Group; Wag = Washer Group*

Further, the three groups were also compared on the various dimensions of WMS. While no significant main effect of group was found in case of personal information, orientation, logical memory or immediate recall, digits, visual representation, and associate learning, a significant main effect of group was found in case of mental control, $F(2, 87) = 5.65$, $p < .001$. This was followed by Post-hoc Tukey HSD tests, which revealed that while both the washer and checker groups scored significantly lower than the normal control group, no significant difference was found between the washer and checker groups in case of mental control. The mean scores obtained on the various dimensions of WMS are represented in Table 3.4.

Table 3.4: Comparison of the checker, washer, and the normal control groups on the various dimensions of Wechsler Memory Scale (WMS)

S. No.	Dimensions of WMS	Checker (n = 30)		Washer (n = 30)		Normal control (n = 30)		F(2,87)	Significant post hoc (α = 0.05)
		M	SD	M	SD	M	SD		
1.	Personal Information	5.73	0.58	5.77	0.56	5.87	0.43	NS	Ng>Wag>Chg
2.	Orientation	4.90	0.30	4.93	0.25	4.97	0.18	NS	Ng>Wag>Chg
3.	Mental Control	6.67	1.53	7.43	1.54	7.97	1.42	5.65**	Ng>Wag>Chg
4.	Logical Memory or Immediate Recall	10.47	3.58	11.43	4.37	11.95	3.36	NS	Ng>Wag>Chg
5.	Digits	10.50	1.92	11.03	2.00	11.90	2.18	NS	Ng>Wag>Chg
6.	Visual Reproduction	10.40	2.32	9.40	1.95	9.97	2.31	NS	Chg>Ng>Wag
7.	Associate Learning	16.20	3.85	15.73	3.06	15.43	2.80	NS	Chg>Wag>Ng

Note: *Ng = Normal Group; Chg = Checker Group; Wag = Washer Group*
***p< 0.01*

Discussion

Tuna *et al.,* (2005) showed that memory confidence problems of the obsessive-compulsive disorder patients are not limited to already recalled information but extended to confidence in their ability to remember currently un-recallable information in an easier future task [feeling-of-knowing (FOK) judgments]. Such meta-cognitive beliefs may partly be responsible for memory deficits in obsessive-compulsive disorder patients (OCs).

Cougle *et al.,* (2007), examined both perception of memory *ability* and *confidence* in *recollections* in obsessive-compulsive checkers across range of situations, obsessive and non-obsessive. They found that OC checkers reported poorer perception of memory ability than other groups (anxious and normal control). OC checkers also reported lower confidence in recollections compared to other groups. Omori *et*

al., (2007) found that a significant correlation between the general memory score and the inhibition score exists only among the checkers, supporting the view that inhibition regulates episodic memory in the checking subtype of OCD.

According to Olley and Sachdev (2007) decision making as a cognitive construct as related to OCD has not received greater attention in the neuropsychological literature. On the basis of emerging literature they suggest that it is a potential area of dysfunction and one that warrants further investigation as it may assist in enhancing the understanding of the pathophysiology of OCD.

Nedeljkovic and Kyrios (2007) supported the proposal that a general decreased confidence in a range of domains of cognitive ability is related to OC symptoms. The findings further suggested that, while meta-memory is also related to mood, anxiety, and other OCD-relevant beliefs, confidence in memory may independently contribute to OCD, and especially to checking symptom.

Hermans *et al.,* (2007) observed that: a) patients suffering from OCD showed less confidence in attention and memory than a clinical and a normal control group, b) that confidence in attention was uniquely related to checking behavior, and c) that repeated checking caused increased levels of distrust in attention. In addition, it was observed that cognitive distrust while performing OCD-related actions not only extends to attention, but also to perception. It is argued that research on metacognition in OCD should move beyond the study of memory. Gloster *et al.,* (2008) indicated that patients' retrospective recall of OCD symptoms was fairly accurate; they consistently overestimated the magnitude of OCD symptom co-variation with non-OCD facets (e.g., sleep duration, contemporaneous stress level, etc). Findings suggested that even when recall of OCD symptom was accurate, patients may be inaccurate in estimating symptom co-variation. Zhang *et al.,* (2008) reported the severely, not moderately, ill subgroup of OCD patients showed an impaired conscious recollection of previously presented words, which suggested an impairment of working memory capacity in these patients. The findings were interpreted as consistent with a dysfunction in the frontal and cingulated cortex underlying the etiology of this disorder.

Cuttler and Graf (2008) suggested that checkers' increased experience with prospective memory failures leads them to distrust their ability to perform certain tasks and triggers intrusive doubts about not completing other tasks. When the individual attempts to recall retrospectively performing the task they cannot or do not trust the memory trace, ultimately resulting in the compulsion to check. In this way prospective and retrospective memory deficits likely work together to produce and maintain checking compulsions.

In the light of the above discussion it can be concluded that the present findings are in line with the existing research.

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