



Psychological Stress tolerance and executive function in normal people and individuals with Obsessive-compulsive disorder and depression ¹

Leyla Tehrani^{*a}, Khadija Abolmaali ^b

^a M.A student of clinical psychology, Azad university of Rodehen, Rodehen, Iran

^b Assistant professor of educational psychology, Azad university of Rodehen, Rodehen, Iran

Article history:

Received 20 October 2014

Received in revised form 29 October 2014

Accepted 3 November 2014

Keywords:

Obsessive-compulsive disorder

Psychological Stress tolerance

Executive function

Depression

Abstract

The current study aimed to determine the differences between psychological Stress tolerance and executive function in normal people and individuals with Obsessive-compulsive disorder (OCD) and depression.

The population consists of OCD, depressed and normal people of Tehran. The study method was Causal-Comparative. Study sample includes 90 people with OCD, depression and normal people in Tehran (30 people each) which were selected by available sampling procedure. Beck depression inventory, the distress tolerance and obsessive- intellectual (MOCI) scale and Wisconsin test were employed for assessment of the variables. ANOVA and follow up test were used for data analysis.

Findings reveal that, there were significant differences in psychological tolerance stress and aspect of executive function in groups. ($p < 0.001$). Patients with OCD had significant deficiency in abstract thought, cognitive flexibility and improving efficiency with normal people. In addition, depressed people had got these deficiency which was a high difference ($ETA = 0.37$).

Due to the significant difference in Psychological tolerance stress and aspect of executive function in OCD, depressed and normal people it is necessary that the patient get an appropriate treatment by considering the psychological and aspect of executive function.

Please cite this article as:

Tehrani, L., & Abolmaali, Kh. (2014). Psychological Stress tolerance and executive function in normal people and individuals with Obsessive-compulsive disorder and depression. *International journal of education and applied sciences*, 1(6), 297- 303.

1 . This article has been extracted from Tehran's M.A. Thesis.

* **Corresponding author:** Email: leilatehraniazad@gmail.com

1. Introduction

Obsessive-compulsive disorder (OCD) was a common mental health problem. According to the Diagnostic and Statistical Manual, fifth edition (DSM-5) OCD ranked OCD as the fourth most common mental illness after phobia, substance abuse and major depression. (The American Psychiatric Association (APA, 2000; 2013).

The expansion rating and representative complexity of these mental disorders beside personal and social effects made theorizing researchers and clinicians to evaluate different aspects of disorders and theorized about pathology presentation and treatment but it was widely unknown. (Koçak, Nalçacı, Özgüven, Nalçacı, & Ergenç, 2010).

As report of The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) OCD was one of the frequently debilitating behavior disorders which were characterized by the intrusive obsessive thoughts, repetitive compulsive physical or mental acts. Obsessions were accompanied by unpleasant feelings of rumination thoughts continuing in spite of resistance carried out a prescribed behavior in order to reduce discomfort. Obsessive-compulsive was a disorder with these brilliant features: Thoughts impulses repetitive Images recurrent intrusive sexual (McKay et al., 2004).

Patients tended to spend a lot of ruminating and obsessive behavior. Depression was the other psychological disorder that characterized by the expression of hopelessness, lack of motivation, low self-confidence and pessimistic (Franklin, Conrad, Aldana & Hough, 2011).

Depression affects over 340 million people worldwide (Greden, 2001). Depression would be creating the second greatest burden of disease by 2020. Lifetime and twelve-month prevalence rates of major depressive episodes and dysthymia were approximately 2.9-12.6 (Kenny & Williams, 2007). Classified as a mood disorder, depression affected people very differently. Most people felt sad or depressed at times (Katon, Lin & Kroenke, 2007).

Based on the present current findings in Iran population the lifetime prevalence of depression

was 69.5-73percent (Montazeri, Sorbi, Ahmadi, & Yazdanpour, 2014). Women were more likely than men to suffer from depression. The most common symptoms of depression included; sadness, lack of interest and pleasure activities that used to be fun, hopeless or worthless, crying spells, feeling pervasive guilt, excessive loneliness, changing in sleep patterns and appetite, fatigue or low energy, suicide thoughts or attempts, low self-esteem. In course of a developing depression, it was common to be a wide variation in mood during the day but usually in the morning occurs on lower mood (Krystal, Thakur & Roth, 2008).

Descriptions of executive function processes originally focused on the orchestration of basic cognitive process involved in the behavior management toward purposeful goals (Locascio, Mahone, Eason & Cutting, 2010). The basis of high level executive function included volition, purposeful thinking, planning, self-awareness, and self-care behaviors. Executive function was controlled by an area of the brain called the frontal lobe (Kuelz, Hohagen & Voderholzer, 2004). Executive function fairly precisely in temporal sequences of problem- solving phases issues that could difficulty creating a plan for getting from the beginning to the end (Assayag, Bernstein, Zvolensky, Steeves & Stewart, 2012). The evaluation process was consist of vigilance, awareness of problem, planning based on temporal phases of problem solving framework, capacity assessment in a cost- effective and efficient way, assessing one's performance and progress toward target, comparing results in given problem situation, finishing up the project, remember planning mind and use it again when face with similar problems (Rao, Reddy, Kumar, Kandavel & Chandrashekar, 2008; Koçak et al., 2010).

The neural circuit was responsible for Executive function which was provided the collation between the distinct reigns in frontal passage front with the cortical region and subcortical. The context of disease processes preferentially affected with subcortical like OCD that was as a result of the orbitofrontal circuit and also Executive function disorder was likely created of same results. Over the past two decades facts focused on significant

advances in the science of psychology biological and psychological factors was related to the possible causes of OCD. The evaluation of the relationship between brain activity and behavior performance indicated that OCD is a category of psychology order. According to the variables of metacognitive belief, there was a significant different between paint with OCD, depression and normal people. Recent studies have shown that executive function defects associated with paint with OCD and depression and the symptoms of illness can return even after treatment. Executive function was for cognitive processes such as sustained attention, holding details in the working memory self-directed planning.

Manteghi, Hebrani, Samari & Heydari (2010) in their study of wives of veterans it was shown that 42% of wives had mild depression, 26% had moderate depression and 8% had severe depression. Also 52% of them were suffering from severe caregiver burden and 14% had high EE.

It seemed that based on the literature review, defects in abstract ideas and thinking in adolescent development stages, cognitive flexibility were entirely consistent with the prior research on adults. In contrast, normal people achieved lower scores on measure of verbal response behavior and working memory. In the tower of London test, patients with OCD in comparison with borderline personality disorder acted the less sequence of moves. All research projects based on around variables, cognitive defects well-established in executive function and level of stress tolerance depressive patients and patients with OCD (Biringer, Lundervold, Stordal, Mykletun, Egeland, Bottlender & Lund, 2005; Paelecke-Habermann, Pohl & Leplow, 2005). According to the prevalence and impact of mental health disorders, this present study aims discovered differences on executive function and stress tolerance both group of OCD and normal people.

2. Method

The study was based on the Causal-Comparative (Ex-Post Facto) Research.

2.1. Subjects

A population included patients with OCD in practical and depression. Case studies were presented in three clinics in Tehran (2012). Sample organizations of the employees were selected as a normal group that was matched for age and education. A sampling frame was a representation of elements of the target population which was based on non- probability sampling. The patients with depression got higher than 15 in the BDI test and according to the personality inventory scores were at least 1.5 units higher than standard deviation for the patients with OCD.

2.2. Measurement

2.2.1. Maudsley compulsive inventory (MOCI)

The most widely used scales for evaluation of OCD symptoms. The questionnaires' mainly focused on a wide scope of problems related to the patients with OCD contains 30 questions Rachman and Hodgson (1980). Each question had two parts of correct and wrong response. Test has four subscales measuring consisted of five subtests; checking 9 items, slowness 11 items, cleaning 11 items, doubting subtest of the psychometric 7 items. According to the Ranchman the psychometric properties of the instrument were satisfied in terms of Dodgson investigation the convergent and divergent validity including test-retest reliabilities Norman, Davies, Malla, Cortese and Nicholson (1996).

2.2.2. Beck depression inventory

Beck depression inventory first proposed and published by Beck, Ward and Mendelson (1961) and then revised and copyrighted in 1978 (Beck, 1978). The long form and costly of the BDI indicated the severity of major depressive disorder. According to beck- report analysis of symptoms the concurrent validity scales was 0.79, test-retest reliability scales 0.67 (Beck, Steer & Carbin, 1388). Dobson and Mohammad Khani (2005) reported alpha coefficient of 0.92, coefficient of two-halves test of 0.89 and one- week- interval test- retest reliability of 0.94 for BDI.

2.2.3. The Psychological distress tolerance scale

Distress scale (DTS) was developed by Simons

and Gaher (2005) in order to measure individual differences in the capacity of *Psychological* distress tolerance. DTS was a 5-item self-report measurement with four components; 1 -Ability tolerated emotion (tolerance) 2 -Level of attention absorbed by negative emotion and relevant interference with functioning(absorption) 3 - Assessment of the emotional situation as acceptable(appraisal)4 -Ability to regulate motion(regular)

Likert Scale was a five point scale which used to allow the individual to express how much they agree or disagree with a particular statement. Psychometric properties of a Persian-language version of the Beck Depression Inventory--Second edition: BDI-II-PERSIAN. 48 sample student volunteers from Firdausi University of Mashhad and Mashhad University of Medical Sciences (31 female, 17male) were participating in the study. In comparison of mean item scores, The BDI-II-Persian had high internal consistency (Cornbrash's alpha=0.87) and acceptable test-retest reliability of subscales was moderate (absorption 0.46(, appraisal0.56) and (regulation 0.58) (Alavi, 2007).

2.2.4. Wisconsin card sorting test (west)

WSCT was yield to determine an individual competence in abstract reasoning and ability to

change problem- solving strategies when needed (By Berg, 1948). Period skill of planning, organization, abstract reason, concept formation, certain cognitive function and maintain perseverative responses (PR) as well as non-perseverative responses (NPR)(Barceló, 2001).

Based on WSCT, total number of categories among Schizophrenia, bipolar disorder and normal people were (0.60) Rossi et al. (2000). And with details the Schizophrenia (0.49), bipolar disorder (0.40) and normal people was (0.90) so the differences between groups were too significant.

Performance on the WSCT was contrasted among samples of schizophrenia, mood-disorder, and traumatically brain injured patients could get the results from deficiencies in different cognitive process. So findings indicated that acceptable performance on WSCT could not be interpreted in isolation as an index of fro table lobe damage (Rempfer, Hamera, Brown & Bothwell, 2006).

3. Results

Data analysis of project was based on discussion and interpretation that showed the effect of four variables of perceived stress tolerance and executive function and normal group with the significant differences between three groups.

Table1. Descriptive characteristics of variables

Variable	group	Mean	Standard deviation
Psychological Stress tolerance	(OCD)	34.57	5.68
	depressed	31.01	7.16
perseverative errors	normal	40.60	9.01
	(OCD)	5.57	1.14
Number of category	depressed	6.03	1.18
	normal	4.23	1.11
Wrong response	(OCD)	3.43	0.77
	depressed	4.20	0.66
	normal	5.80	0.84
	(OCD)	21.93	2.04
	depressed	19.30	1.17
	normal	16.90	2.84

The table above showed the results of the descriptive elements of psychological

questionnaires capital Confidence with mean components of groups.

Table2. Box's Test of Equality of Covariance Matrices

Box's Test	F	Sig.
11.36	1.13	0.06

Box's M test was a significant value indicates inequality but the *F*-Statistic was based on a either unequal covariance matrices to determine comparison of unrestricted test. which variables contributed to the variance

Table3. Multivariate analysis of variance or multiple analyses of variance (MANOVA)

Index	Value	F	DF	Sig.
Pillai's trace	0.92	18.44	8	0.001
Wick's lambda	0.23	22.80	8	0.001
Hoteling T-square	2.56	27.57	8	0.001
Roy's greatest root	2.36	50.26	4	0.001

It was important to realize that the one-way MANOVA was an omnibus test statistic and could not determine which specific groups were significantly different from each other; it only indicate that at least one group was different. MANOVA does whether group means differ significantly for any of the variables.

Table4. The means for the three groups

	Variable	SS	df	MS	F	Sig.	effect size
Group	Stress tolerance	836.8	2	418.4	7.62	0.001	0.14
	perseverative errors	55.01	2	27.5	20.5	0.001	0.32
	Number of category	87.47	2	43.74	74.67	0.001	0.63
	Wrong response	380.02	2	190.1	41.68	0.001	0.48

Variables have been shown to be related to the SDM process executive function scales, and more evaluate significant differences LCD variable screening ranked 14, 32, 63 and 48. For outcomes were used.

Table5. Variance analysis of metacognitive beliefs among groups

Variable	SS	df	MS	F	sig.	effect size	power
group	3997.6	2	1998.8	16.14	0.001	0.001	0.99
error	10767	87	123.7				
total	572042	90					

The relevant results included the statistically significant difference ($P = 0.37$). The influence of continuous variables of preservative errors and cognitive flexibility performance in OCD patients were the poorer than depression and normal people achieved the greater cognitive flexibility values. In other words, variables of preservative errors indicated poorer WCST performance and less cognitive flexibility. So high effects of mood on the number of categories, reflected a problem of cognitive flexibility. Numbers of categories were much worse than the depression and normal people remembered relevant exposures more accurately. Also wrong responses were ranked as the same. Our findings demonstrated that patients with OCD showed deficits in cognitive flexibility, abstract thinking and improvement efficiency and

usually followed by a less-inspiring performance.

4. Discussion

The purpose of study conducted to compare the psychological stress tolerance and notable differences in performance between patients with OCD, depressed and control group in Tehran. The data analysis showed that significant effects of four different variables of perceived psychological stress tolerance scale and executive function (perseverative errors, number of category and wrong responses) between three groups. Results showed that patients with OCD had the poorer cognitive flexibility performance than depressed and normal people had the greater cognitive flexibility. On the other hand perseverative errors were leading the lack of cognitive flexibility and number of category. With regard to the executive functioning, there was a significant large effect for group on total number of category completed on the WCST. On the test for attention, patients with OCD made significantly more wrong responses and more missed responses than depressed and normal people answer more correct responses. So according to the data analysis differences were statistically significant ($p < 0.37$) (Gothelf, Aharonovsky, Horesh, Carty & Apter, 2004).

One of most important things were eventually had to learn about managing distress was that the symptoms and person's typical response to them most often fuel a vicious cycle of events. Vicious cycles of self-defeat also occurred unhealthy relationship, especially disrupt characters. But whether one struggle with stress, it would be behoove to take note of the vicious cycle that often fuel your difficulties and committed to break them at the earliest and weakest points (Mesbah & Abedian, 2006).

References

- Alavi, Kh. (2011). Dialectical behavior therapy .effective methods based on the fundamental components of mindfulness, distress tolerance, and emotional regulation on symptoms of depression. *Journal of Fundamentals of Mental Health*, 2(50), 124-35.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual disorders*. 4ed. Washington DC.
- American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders (DSM-5®)*. American Psychiatric Pub.
- Assayag, Y., Bernstein, A., Zvolensky, M. J., Steeves, D., & Stewart, S. S. (2012). Nature and role of change in anxiety sensitivity during NRT-aided cognitive-behavioral smoking cessation treatment. *Cognitive behaviour therapy*, 41(1), 51-62.
- Barcelo, F., (2001). Does the Wisconsin Card Sorting Test (WCST) Measure Prefrontal Function? *The Spanish Journal of Psychology* 1, 79-100.
- Beck, A. T., Steer, R. A., & Carbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical psychology review*, 8(1), 77-100.
- Beck, A. T., Ward, C., & Mendelson, M. (1961). Beck depression inventory (BDI). *Arch Gen Psychiatry*, 4(6), 561-571.
- Beck, A.T. (1978). *Depression Inventory*. Center for Cognitive Therapy, Philadelphia.
- Berg, E. A. (1948). A simple objective technique for measuring flexibility in thinking. *The Journal of general psychology*, 39(1), 15-22.
- Biringer, E., Lundervold, A., Stordal, K., Mykletun, A., Egeland, J., Bottlender, R., & Lund, A. (2005). Executive function improvement upon remission of recurrent unipolar depression. *European Archives of Psychiatry and Clinical Neuroscience*, 255(6), 373-380.
- Dobson, K., & Mohammad Khani, P. (2005). A psychometric coordinates of Depression Inventory 1-2-in patients with major depressive disorder. *Quarterly of Rehabilitation, Special Issue, Mental illness*, 29 (8), 88-83.
- Franklin, D., Conrad, P., Aldana, G., & Hough, S. (2011, March). Animal tlatoque: attracting middle school students to computing through culturally-relevant themes. In *Proceedings of the 42nd ACM technical symposium on Computer science education* (pp. 453-458). ACM.
- Gothelf, D., Aharonovsky, O., Horesh, N., Carty, T., & Apter, A. (2004). Life events and personality factors in children and adolescents with obsessive-

- compulsive disorder and other anxiety disorders. *Comprehensive Psychiatry*, 45(3), 192-198.
- Greden, J. F. (2001). The burden of recurrent depression: causes, consequences, and future prospects. *Journal of Clinical Psychiatry*, 62, 5-9.
- Katon, W., Lin, E. H., & Kroenke, K. (2007). The association of depression and anxiety with medical symptom burden in patients with chronic medical illness. *General hospital psychiatry*, 29(2), 147-155.
- Kenny, M. A., & Williams, J. M. G. (2007). Treatment-resistant depressed patients show a good response to mindfulness-based cognitive therapy. *Behavior research and therapy*, 45(3), 617-625.
- Koçak, O. M., Nalçacı, E., Özgüven, H. D., Nalçacı, E. G., & Ergenç, İ. (2010). Evaluation of cognitive slowing in OCD by means of creating incongruence between lexicon and prosody. *Psychiatry research*, 179(3), 306-311.
- Krystal, A. D., Thakur, M., & Roth, T. (2008). Sleep disturbance in psychiatric disorders: effects on function and quality of life in mood disorders, alcoholism, and schizophrenia. *Annals of Clinical Psychiatry*, 20(1), 39-46.
- Kuelz, A. A., Hohagen, F., Voderholzer, U. (2004). Neuropsychological performance in obsessive compulsive disorder: A critical review. *Biological Psychology*, 65, 185-236.
- Locascio, G., Mahone, E. M., Eason, S. H., & Cutting, L. E. (2010). Executive dysfunction among children with reading comprehension deficits. *Journal of Learning Disabilities*, 43(5), 441-54
- Manteghi, A., Hebrani, P., Samari, A. A., Heydari, A. S. (2010). Level of expressed emotion, depression and caregiver burden in wives of veterans admitted in psychiatric ward and their relationship with readmissions. *Journal of Fundamentals of Mental Health*, 12(1), 410-419
- McKay, D., Abramowitz, J. S., Calamari, J. E., Kyrios, M., Radomsky, A., Sookman, D., ... & Wilhelm, S. (2004). A critical evaluation of obsessive-compulsive disorder subtypes: symptoms versus mechanisms. *Clinical psychology review*, 24(3), 283-313.
- Mesbah, N., & Abedian, A. (2006). The Relationship of Stress and Hopelessness among Students Residing in Dormitories. *Iranian Journal of psychiatry and Clinical psychology*, 12(2), 154-159.
- Montazeri, N., Sorbi, M, H., Ahmadi, SM., & Yazdanpour Sh. (2014). Comparison of depression, anxiety and stress between athletic and non-athletic elderly in 2013. *Quarterly scientific Journal of rehabilitation Medicine*, 3(3), 15-22 [In Persian].
- Norman, R. M., Davies, F., Malla, A. K., Cortese, L., & Nicholson, I. R. (1996). Relationship of obsessive-compulsive symptomatology to anxiety, depression and schizotypy in a clinical population. *British Journal of Clinical Psychology*, 35(4), 553-566.
- Paelecke-Habermann, Y., Pohl, J., & Leplow, B. (2005). Attention and executive functions in remitted major depression patients. *Journal of affective disorders*, 89(1), 125-135.
- Rachman, S. J., & Hodgson, R. J. (1980). *Obsessions and compulsions*. Prentice Hall.
- Rao, N. P., Reddy, Y. J., Kumar, K. J., Kandavel, T., & Chandrashekar, C. R. (2008). Are neuropsychological deficits trait markers in OCD?. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 32(6), 1574-1579.
- Rempfer, M., Hamera, E., Brown, C., & Bothwell, R. J. (2006). Learning proficiency on the Wisconsin Card Sorting Test in people with serious mental illness: What are the cognitive characteristics of good learners?. *Schizophrenia research*, 87(1), 316-322.
- Simons, J. S., & Gaher, R. M. (2005). The Distress Tolerance Scale: Development and validation of a self-report measure. *Motivation and Emotion*, 29(2), 83-102.