



Psychological distress tolerance and executive function in normal people and individuals with Obsessive-compulsive disorder and depression¹

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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 statistical population of the study includes OCD, depressed and normal people. The study method was Causal-Comparative. Study sample includes 90 people with OCD, depression and normal people (30 people each) which were selected by purposive sampling procedure. Beck depression inventory, the distress tolerance and obsessive- intellectual (MOCI) scale and Wisconsin test were employed for assessment of the variables. MANOVA and follow up test were used for data analysis. Findings reveal that, there were significant differences in psychological tolerance distress 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.

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

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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 theses 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 69.5-73 percent (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 mode during the day but usually in the morning occurs on lower mood (Krystal, Thakur, 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. 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. 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. In general, executive functions indicate cognitive processes such as sustained attention and changes, dominant response inhibition, information maintenance in the working memory, and planned responses (Rao, Reddy, Kumar, Kandavel & Chandrashekar, 2008; Koçak et al., 2010). Scientific attention has increasingly been focused on distress

tolerance due to its potential role in the development and maintenance of multiple forms of psychopathology (Zvolensky, Bernstein, & Vujanovic, 2011; Brandt, Zvolensky, & Bonn-Miller, 2013) and as a transdiagnostic clinical target for intervention/prevention programs (Linehan, 1993). Distress tolerance reflects an individual's perceived or behavioral capacity to withstand experiential/subjective distress related to affective, cognitive, and/or physical states (e.g., negative affect, physical discomfort; Simon & Gaher, 2005; Zvolensky et al., 2011). Scholars have therefore suggested it is an individual difference factor for stress responsively and psychological vulnerability (Linehan, 1993). Conceptual models of distress tolerance suggest that the construct may be hierarchical in nature (Zvolensky, Vujanovic, Bernstein, & Leyro, 2010). Specifically, there may be one global "experiential distress tolerance" construct incorporating other, specific lower-order constructs (e.g., frustration intolerance, depressed mood intolerance; please refer to Figure One for an illustrative example from Zvolensky et al., 2010). McHugh and Otto (2012) have recently offered the perspective that distress tolerance can be domain-general while maintaining domain-specific properties.

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. Concerning the current research variables, it is revealed that cognitive defects, especially executive functions and distress tolerance level of depressed patients and patients with obsessive-compulsive disorder (OCD) are well-established in different research studies (Biringer, Lundervold, Stordal, Mykletun, Egeland, Bottlender & Lund, 2005; Paelecke-Habermann, Pohl & Lepow, 2005). According to the prevalence and impact of mental health disorders, this present study aims discovered differences on executive function and distress tolerance both group of OCD and normal people.

2. Method

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

2.1. Participants

Post-event casual-comparative research method was

conducted to carry out the study. The population included patients with obsessive-practical-compulsive- and depression disorder referred to three clinics in Tehran (2014), diagnosed as having depression and obsessive disorder by a psychiatrist and Maudsley and Beck Inventories. Normal individual samples were selected from among those who were roughly the same age and gender of the depressive and practical-compulsive obsessive groups. They were selected through clinical interviews; they did not record referring to a psychiatrist or psychologist, and/or having psychological disorders and brain damage, and none of their first-degree relatives were affected by mental illnesses. The sampling method was targeted. In the depressed patients group, only those were studied whose scores on the Beck Depression Inventory were more than 15. In the obsessive-compulsive disorder group, only those were studied, according to the Maudsley Inventory, whose scores were at least 1.5 standard deviation above the average level.

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 & 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 & 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, 2011).

2.2.4. Wisconsin card sorting test (west)

WCST 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 WCST, total number of categories among Schizophrenia, bipolar disorder and normal people were (0.60). 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 (Rossi, Arduini, Daneluzzo, Bustini, Prosperini & Stratta, 2000). Other research groups have shown that clinically differentiate between psychiatric conditions and neurological groups (for example, schizophrenia, mood disorders, and head injury) by WCST problem .which may this is due to dysfunction of the frontal lobe is involved in all groups (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. The table 1 showed the results of the descriptive elements of psychological questionnaires capital Confidence with mean components of groups. Box's M test was a significant value indicates either unequal covariance matrices to determine which variables contributed to the variance inequality but the F-Statistic was based on a comparison of unrestricted test (Box's $M= 11.36$, $F= 1.13$, $P= 0.06$). 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 (Wilks' $\Lambda=0.23$, $F=22.80$, $P= 0.001$). MANOVA does whether group means differ significantly for any of the variables. Variables have been shown to be related to the SDM process executive function scales, and variable screening ranked 14, 32, 63 and 48. For more evaluate significant differences LSD outcomes were used.

Table1. Descriptive statistics and MANOVA results

Variable	group	M	SD	SS (df=2)	MS	F	Sig.	effect size
Psychological distress tolerance	(OCD)	34.57	5.68	836.8	418.4	7.62	0.001	0.14
	depressed	31.01	7.16					
	normal	40.60	9.01					
preservative errors	(OCD)	5.57	1.14	55.01	27.5	20.5	0.001	0.32
	depressed	6.03	1.18					
	normal	4.23	1.11					
Number of category	(OCD)	3.43	0.77	87.47	43.74	74.67	0.001	0.63
	depressed	4.20	0.66					
	normal	5.80	0.84					
Wrong response	(OCD)	21.93	2.04	380.02	190.1	41.68	0.001	0.48
	depressed	19.30	1.17					
	normal	16.90	2.84					

Table2. Results of LSD test in variable of executive function scales

		Variable	Mean difference	SD	sig.
preservative errors	normal	depressed	-1.80	0.29	0.000
		OCD	-1.46	0.29	0.000
	depressed	OCD	0.33	0.29	0.26
classes	normal	depressed	1.60	0.19	0.000
		OCD	2.36	0.19	0.000
	depressed	OCD	0.76	0.19	0.000
wrong answers	normal	depressed	-2.40	0.55	0.000
		OCD	-5.03	0.55	0.000
	depressed	OCD	-2.63	0.55	0.000

The relevant results included the statistically significant difference. As it is obvious from the results, except for the difference between OCD and depressed group ($\text{sig} = 0.26$) in variable of preservative, all mean values are significant two by two ($p < 0.01$). 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 distress tolerance and notable differences in performance between patients with OCD, depressed and control group. The data analysis showed that significant effects of four different variables of perceived psychological stress tolerance scale and executive function (preservative 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. Results have indicated that there is no significant difference between OCD and depressed groups in terms of preservative variable. On the other hand, preservative indicates lack of flexibility of individuals. High number of classes

indicates improved efficiency. Number of classes in normal individuals is more than it in depressed individuals and OCD group has the lowest classes. According to the result depressed people have higher Psychological distress tolerance and executive function than Obsessive-compulsive disorder people because, OCD people have different problem such as difficulty in throwing things out from their mind but this is not the case with normal people and depressed people (Declodt & Stein, 2010). In other side These activities occur to such a degree in Obsessive-compulsive disorder people that the person's daily life is negatively affected and Often they take up more than an hour a day (American Psychiatric Association, 2013). Angelakis, Gooding, Tarrier and Panagioti (2015) in line with the present finding believes that Obsessive-compulsive disorder (OCD) people has nearly always more mental disorder than normal and depressed people and , they feel the need to check things repeatedly, have certain thoughts repeatedly or feel they need to perform certain routines repeatedly. Although normal and depressed people have some inefficiencies in their behavior but the case in OCD people is more intensive and they have less psychological distress tolerance. So these People are unable to control either the thoughts or the activities. So they are mostly psychologically distressed and depressed and their Psychological distress tolerance and executive function is affected by their Common activities include hand washing, counting of things, and checking to see if a door is locked.

In addition, although a desired situation is available in both depressed and OCD people but the activities of OCD people are mostly associated with tics, anxiety disorder, and an increased risk of suicide (Grant, 2014). Furthermore, there appears to be some more genetic components with identical twins in Obsessive-compulsive disorder people (Goodman, Grice, Lapidus & Coffey, 2014) comparing normal and depressed people more often affected than non-

identical twins in Risk factors include a history of child abuse or other stress inducing event. Some cases have been documented to occur following infections. The diagnosis is based on the symptoms and requires ruling out other drug related or medical causes. (Doron, Szepeswol, Karp & Gal, 2013) .Rating scales such as Yale–Brown Obsessive Compulsive Scale can be used to assess the severity. Other disorders with similar symptoms include: anxiety disorder, major depressive disorder, eating disorders, tic disorders, and obsessive–compulsive personality disorder. Wrong answers of OCD cases were more than depressed cases and normal cases had lowest wrong answers and this indicates that normal cases are mainly focused on answering questions correctly instead of having anxiety and giving wrong answers and hence, they can give correct answers. Obtained results from the study indicate that the difference between groups is significant (effect with mean value of 0.37). On the other hand, a core element of depression is disappointment. In fact, disappointment can cause sense of lack tolerance of situation and escaping from specific situations. Studies have emphasized role of some events such as negative events of life that have key role in reasoning, period and advancement. Therefore, depressed people can't face difficulties logically because of having sense of disappointment, since neither situation is stressful to the extent of their mind and nor their beliefs on the situations are positive and efficient beliefs and ideas (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 [In Persian].
- 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.
- American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders (DSM-5®)*. American Psychiatric Pub.
- Angelakis, I., Gooding, P., Tarrier, N., & Panagioti, M. (2015). Suicidality in obsessive compulsive disorder (OCD): A systematic review and meta-analysis. *Clinical psychology review*, 39, 1-15.
- 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.
- Brandt, C. P., Zvolensky, M. J., & Bonn-Miller, M. O. (2013). Distress tolerance, emotion dysregulation, and anxiety and depressive symptoms among HIV+ individuals. *Cognitive therapy and research*, 37(3), 446-455.
- Decloedt, E. H., & Stein, D. J. (2010). Current trends in drug treatment of obsessive–compulsive disorder. *Neuropsychiatric disease and treatment*, 6, 233-242.
- 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.
- Doron, G., Szepeswol, O., Karp, E., & Gal, N. (2013). Obsessing about intimate-relationships: Testing the double relationship-vulnerability hypothesis. *Journal of behavior therapy and experimental psychiatry*, 44(4), 433-440.
- 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.

- Goodman, W. K., Grice, D. E., Lapidus, K. A., & Coffey, B. J. (2014). Obsessive-compulsive disorder. *Psychiatric Clinics of North America*, 37(3), 257-267.
- Grant, J. E. (2014). Clinical practice: Obsessive-compulsive disorder. *The New England Journal of Medicine*, 371 (7), 646-53.
- 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.
- Linehan, M. M. (1993). Skills training manual for treating borderline personality disorder. In M. M. Linehan (Ed.). *Diagnosis and Treatment of Mental Disorders*. New York, NY, US: Guilford Press.
- 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 [In Persian].
- McHugh, R., & Otto, M. W. (2012). Refining the measurement of distress intolerance. *Behavior Therapy*, 43(3), 641-651.
- 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 [In Persian].
- Montazeri, N., Sorbi, M, H., Ahmadi, S. M., & 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., & Lepow, 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.
- Rossi, A., Arduini, L., Daneluzzo, E., Bustini, M., Prosperini, P., & Stratta, P. (2000). Cognitive function in euthymic bipolar patients stabilized schizophrenic patients, and healthy controls. *Journal of psychiatric research*, 34(4), 333-339.
- 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.
- Zvolensky, M. J., Bernstein, A., & Vujanovic, A. A. (2011). *Distress Tolerance: Theory, research, and clinical applications*. New York, NY US: Guilford Press.
- Zvolensky, M. J., Vujanovic, A. A., Bernstein, A., & Leyro, T. (2010). Distress tolerance: Theory, measurement, and relations to psychopathology. *Current Directions in Psychological Science*, 19(6), 406-410.