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Effectiveness of a paradoxical therapeutic approach on working memory performance and obsessive beliefs in individuals with obsessive-compulsive disorder

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Abstract

Purpose: This research was conducted with the aim of investigating the effectiveness of the paradoxical therapeutic approach on working memory performance and obsessive beliefs in individuals with obsessive-compulsive disorder.

Methodology: The current research design is a semi-experimental one with test and control groups with a pre-test and post-test design. The statistical population consisted of all people with obsessive-compulsive disorder who visited a health center in Qom in 2023.Among them, 40 people were selected based on the available sampling method. They were randomly assigned to experimental (20 people) and control (20 people) groups and answered the N-Back working memory test and the OBQ-87 obsessive beliefs questionnaire.Paradox therapy sessions were conducted for the experimental group in 6 sessions of 60 minutes each, and the data were analyzed using analysis of covariance with SPSS-26 software.

Findings: The results showed that the effects of the paradoxical therapeutic approach on working memory and obsessive beliefs were significant.The eta-squared coefficient also showed that 26% of the variation in working memory performance and 44% of the variation in motivational beliefs in people with obsessive-compulsive was explained by the categorical variable (experimental and control).

Conclusion: Therefore, the implementation of the paradoxical therapeutic approach is an effective way to improve the functioning of working memory and reduce the obsessive beliefs of OCD patients.

Keywords: paradoxical therapeutic approach, working memory, obsessive beliefs, obsessive-compulsive disorder.

Introduction

Obsession is a recurring belief or emotion and a conscious behavioral compulsion, and some of them include: counting, checking, or avoiding, and such behaviors increase anxiety in a person (Kasadi, Berdan and Gharmani, 2021).They create mental ruminations (Azizi et al., 2023) and it leads to confusion (Yarmohammadi et al., 2021; Bajil et al., 2021).

In other words, the main features of obsessive-compulsive disorder are delusions and subsequent intense repetitive behaviors (Arikan et al., 2020).Studies conducted in recent years have shown that obsessive-compulsive disorder is considered one of the most common mental disorders, with a prevalence between 1 and 3% (Monaco et al., 2020; Azarakhsh et al., 2020). 2021).

Lieberman et al. (2023) estimated that this disease reached 2% of the world population. Research results have shown that patients with obsessive-compulsive disorder are more focused on the actions of events than on the outcome (Cox et al., 2020).

Now, although today's world is very important to learn about mental illness, obsessive-compulsive has a long history.And throughout history, psychology has always been thought of because of its negative consequences and high morbidity.

Obsessive-compulsive disorders are associated with a decrease in human functioning and quality of life (Gamoron and Doron, 2023).Therefore, the subject of obsession has been extensively researched

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and many financial and human resources have been invested in this project.

Obsessive-compulsive disorder causes sufferers a lot of suffering, and these obsessions cause a loss of time and significant interruptions in normal and natural life processes, work tasks and social activities (Vasei, 2021; Jani, 2020; Burqai et al., 2019).

Results showed that obsessive-compulsive disorder is associated with memory impairment in such a way that this disorder has a destructive effect on this memory and disrupts its functioning (Shahabi et al., 2016).Working memory is a mental workspace for storing and manipulating information for immediate use (Qazizadeh, 2021).

Working memory is also defined as a set of mechanisms capable of keeping a small amount of information in an active state for use in ongoing cognitive tasks. This collection includes two storage subsystems and a centralized controller. Working memory capacity is closely related to reasoning ability and fluid intelligence (Karlsgot, 2015).

Working memory is a part of the memory system that uses knowledge to temporarily hold information in an active state for other operations. In fact, compulsive thoughts and actions become a problem for people with OCD, so that these people have difficulty suppressing or preventing thoughts or preventing actions that are reviewed in memory (Hinzel et al., 2018).

Sufferers are not always sure whether they have acted or not, and this uncertainty often leads to conflict with mental doubts or repetitive rituals (Sediq et al., 2020).Although so far many psychological treatments, such as the cognitive-behavioral approach, have been successful in improving obsessive-compulsive symptoms (Begdello and Gudari, 2021),However, these treatments still have weaknesses and there is a very high motivation to do research aimed at achieving effective treatments for this disease.

So, this study was conducted to determine the effectiveness of a paradoxical therapeutic approach on working memory performance and beliefs in individuals with OCD.Therefore, the present study was conducted with the aim of determining the effectiveness of a paradoxical therapeutic approach on working memory activity and beliefs in individuals with OCD in order to successfully implement an effective treatment approach. To improve the condition of patients suffering from obsessive-compulsive symptoms. And take effective steps to reduce the negative effects of this disease.

Paradoxical therapy is a treatment method for mental health disorders that is theoretically rooted in psychodynamic and systemic theories, but in practice relies on behavioral techniques (Beshart, 2017) and its effects have been observed in several studies. (Zheng et al., 2016).This therapeutic approach consists of two parts, which are: paradox and schedule (Nooran Ghadimi, Shafiabadi, Khodabakhshi Kolayi, & Asgari, 2019).

Therefore, the patient receives the same symptoms (paradox) and the patient is forced to check these symptoms at certain times according to the therapist's instructions. In this therapeutic approach, the two techniques are prescribed together and the principle of inseparability applies to them (Beshart, 2017).

This therapeutic approach has been validated for a wide range of anxiety disorders, intellectual-pragmatic obsessions and related disorders, stress and trauma disorders, and physical symptoms (Beshart, 2016).

The results of paradoxical therapy have been very effective, and one of the unique advantages of the paradoxical model of psychotherapy is that it is very simple and short-term.

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This feature reduces the possibility of patient abandonment and is even economical for them (Beshart, 2019; Dehaqan et al., 2023). Therefore, the main problem of this study was to evaluate the effects of a paradoxical therapeutic approach on working memory performance and obsessive-compulsive beliefs in people with OCD.

Research method

The current research method is semi-experimental with test and control groups with a pre-test-post-test design. In this research, the statistical population was all people suffering from obsessive-compulsive disorder who referred to medical centers in Qom city in 2022.

Using the available sampling method, 40 people were selected and randomly assigned to experimental (20 people) and control (20 people) groups.

The criteria for entering the research were: informed consent – diagnosis of obsessive-compulsive disorder – action based on diagnostic questionnaire. Also, the exclusion criteria were: absence of more than one session from therapy sessions – incomplete answers to questionnaires.

Tool

N-Back working memory test: This test was first introduced by Wayne Kirchner in 1958.This test is used to evaluate working memory and is one of the most widely used culture-related tools.In this experiment, a series of visual stimuli appear on a computer screen and subjects are asked to press a key if each stimulus matches the previous one. And if it doesn't match, press z on your keyboard. In this task, individuals must remember information about a single stimulus. The reliability of this test was stated as 0.90 by Wayne Kirchner, and it was confirmed by the Institute of Neurology to measure the frontal area (Oreki et al., 2015).

Obsessive Beliefs Questionnaire: This question was taken from the original version of the OBQ-87 Obsessive Beliefs Test and contains 44 questions. This question includes ineffective and delusional beliefs about "responsibility/assessing risk and threat, optimism/desire for certainty and confidence, and the importance of control thinking.".

This questionnaire was administered to a non-clinical population, and the validity and reliability results showed that the test had an internal reliability of 0.80 and a test reliability of 0.92.

In Sika et al.'s (2004) study, the psychometric properties of the obsessive beliefs questionnaire were based on Cronbach's alpha coefficient of 0.92. The binomial coefficient with the title of modified correlation was 0.94.

In order to check the validity and reliability of the Persian version of the test, Shams et al. (2004) reported the internal consistency of the test to be 0.92 and the reliability coefficient to be 0.84.

Paradox therapy sessions included 6 60-minute sessions, in which the members of the experimental group attended weekly sessions, one session every week. The summary of the meetings is described below:

First part) Purpose and content: Introduction and initial discussion, description of the objectives of the intervention and number of sessions, brief review of the general framework of the sessions, first description of the paradoxical therapeutic approach and its fundamental principles.

Task: Ask the patient to bring a written note of their treatment goals, what they want to achieve, and what they need to do to achieve it.

Second session) Objectives and contents: Design of the treatment plan, use of primary engineering methods, construction and synthesis.

Task: perform the prescribed tasks, rebuild and experience the symptoms of the disease within the prescribed period.

Third session) Purpose and content: the extension of paradoxical activities, the

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following activities of the previous stages, the confirmation of the degree of renovation management and the experience of problems.
Task: Determine the number of times to do the exercises of the paradoxical therapy program three times a day at the appointed time.
Fourth session) Purpose and Content: To focus on another mechanism; Breaking the link between symptoms and anxiety until a third mechanism is established, changing the symptoms for the patient and the system that contains him.
Task: continue the homework and complete the paradoxical treatment program at the specified times.
Fifth session) Purpose and content: Using the fourth mechanism; strength, helping conflicts with the paradoxical program by recognizing the disconnect between symptoms and anxiety.
Task: continue the homework and complete the paradoxical treatment program at the specified times.
Sixth session) Purpose and content: following up on assignments, summarizing all sessions, answering questions and ending the sessions by conducting tests (Beshart, 2018).

Results

Table 1: Descriptive findings

Post-test		Pre-test			The dependent variables
The standard deviation	Mean	The standard deviation	Mean	Group	
۵/۰۶	۱۷/۹۵	۴/۷۸	۱۳/۶۰	Experimental group	Working memory
۳/۸۴	۱۴/۴۰	۵/۵۵	۱۵/۰۵	Control group	
۱۳/۱۸	۱۰۱/۲۰	۱۱/۵۲	۱۴۱/۲۰	Experimental group	Obsessive Beliefs
۱۴/۳۴	۱۴۵/۶۰	۱۰/۲۶	۱۴۹/۱۵	Control group	

According to the data in Table 1, the OCD patients in the experimental group achieved higher results in the post-test phase compared to the pre-test phase on the working memory performance variable.
Also, their obsessive belief scores decreased in the post-test phase compared to the pre-test phase. Consequently, the application of the independent variable, the paradoxical therapeutic approach, in the experimental group caused changes in the functioning of the working memory and obsessive beliefs of people suffering from obsessive-compulsive symptoms.
Examining the hypotheses of the analysis of variance, the results of the Levin tests showed that the working memory performance index, the false belief index did not show significant differences between the

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experimental groups and the two control groups.

Table 2: Levin's test

Sig	Second degree of freedom	First degree of freedom	Levin statistics	Variable
۰/۸۷۷	۳۸	۱	۰/۰۲۴	Working memory function
۰/۵۷۳	۳۸	۱	۰/۳۲۳	Obsessive Beliefs

On the other hand, the results of the Shapiro-Wilk test showed that the statistical value calculated for the variables of working memory performance and obsessive beliefs in the pre-test was not significant.

Table 3: Shapiro-Wilk test

Sig	Degree of freedom	Shapiro-Wilk statistic	Variable
۰/۰۶۹	۱	۰/۹۴۹	Working memory function
۰/۱۰۹	۱	۰/۹۵۲	Obsessive Beliefs

According to the confirmation of the statistical assumptions, the data was analyzed. The results of covariance analysis showed that the linear combination of working memory performance scores and obsessive beliefs was significant with a score of F=19.476 and significance level=0.001.

Table 4: Multivariate covariance analysis

Eta squared	Sig	DF error	DF hypothesis	F	Value	Test
۰/۵۲۷	۰/۰۰۰۱	۳۵	۲	۱۹/۴۷۶	۰/۵۲۷	Pillai's Trace
۰/۵۲۷	۰/۰۰۰۱	۳۵	۲	۱۹/۴۷۶	۰/۴۷۳	Wilks Lambda
۰/۵۲۷	۰/۰۰۰۱	۳۵	۲	۱۹/۴۷۶	۱/۱۱۳	Hotelling's Trace
۰/۵۲۷	۰/۰۰۰۱	۳۵	۲	۱۹/۴۷۶	۱/۱۱۳	Roy's Largest Root

In addition, the coefficient related to the square shows that 52.7% of the variance in the participants' working memory performance variables and critical beliefs was determined by the classification variable (experimental group and control).

Table No. 5: Univariate covariance analysis

Eta squared	Sig	F	Mean square	Df	Sum of squares	Source of changes	Variable
۰/۴۵۹	۰/۰۰۰۱	۳۰/۵۱۵	۴۴۹/۴۱۷	۱	۴۴۹/۴۱۷	Pre-test effect	Working memory
۰/۲۶۴	۰/۰۰۱	۱۲/۹۳۷	۱۹۰/۵۳۱	۱	۱۹۰/۵۳۱	Treatment effect	
			۱۴/۷۲۸	۳۶	۵۳۰/۱۹۷	Error	
				۴۰	۱۱۵۷۱/۰۰۰	Total	

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۰/۱۹۲	۰/۰۰۶	۸/۵۶۰	۴۹۲۸/۱۹۰	۱	۴۹۲۸/۱۹۰	Pre-test effect	**Obsessive Beliefs**
۰/۴۴۷	۰/۰۰۰۱	۲۶/۸۳۵	۱۵۴۴۹/۳۵۸	۱	۱۵۴۴۹/۳۵۸	Treatment effect	
			۵۷۵/۷۱۶	۳۶	۲۰۷۲۵/۷۷۴	Error	
				۴۰	۶۵۵۳۷۸/۰۰۰	Total	

Univariate analysis of variance showed a significant effect of paradoxical treatment approach on changes in working memory performance and motivational beliefs. The eta-squared correlation coefficient also showed that 26.4% of the variance in working memory performance and 44.7% of the variance in affective-motivational beliefs in people with panic disorder were explained by the group variable (experimental group and control group).

These results indicate that implementation of the independent variable, i.e., the paradoxical treatment approach, improved working memory performance and reduced the amount of participants' beliefs.

Discussion and conclusion

The results of the data analysis showed that the application of the paradoxical therapeutic approach improved the functioning of working memory and reduced the number of obsessive beliefs of the participants.

This finding is consistent with Dehaqin et al. (2023) and Baro et al. (2022) on the positive effects of a paradoxical treatment program in reducing obsessive beliefs and intellectual-pragmatic obsessions.

The results of this study are also consistent with Mohammadi et al. (2019) as they also showed that paradoxical planning therapy is an effective intervention to reduce OCD and related symptoms.

In paradox therapy, a person is forced to think about their unwanted and disturbing thoughts and feelings according to a certain schedule. Through paradoxes in the form of time management and symptom prescriptions, he reconstructs and experiences the symptoms of his disorder through grammatical techniques.

This problem resulted in a stress-free encounter with these symptoms, gradually ending the conflicts between the institution and the obsessive command that led to the pathological symptoms during my reign. And a person can reduce their obsessive thoughts (Beshart, 2017).

The method of Paradox Therapy, which uses two parts of the Paradox program and a schedule, can reduce many obsessive thoughts. In this method, the patient is prescribed the same symptoms of the disease (paradox) and the patient is forced to take these symptoms at certain times according to the therapist's instructions.

Using a paradox therapy program can reduce and heal a person's dysfunctional cognitions through the time program and the paradox. In this therapeutic approach, the therapist prescribes exercises for people suffering from compulsions using a schedule and compulsions (paradoxical obsession).

Based on these, he can generate compulsions himself at predetermined times. According to the results of this study, Nika et al. (2020) also showed that the paradox program was effective in reducing rumination.

Therefore, the paradoxical psychotherapy approach, which uses a combination of principles and basic concepts of psychodynamic, cognitive and behavioral theories, targets OCD symptoms in a very short time, decisively and quickly. And by focusing on spontaneous obsessive thoughts or forced obsessive behaviors, it reduces them (Beshart, 2019).

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This study also has limitations. One of the limitations of this study was the lack of follow-up tests, which makes the question of persistence of treatment effects unclear. Also, the generalization of the results has its limits, since this study was conducted in the city of Qom in 2022 with only 40 people with OCD.

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