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Effectiveness of Paradox Therapy on Intolerance of Uncertainty in College Entrance Examination Students

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ABSTRACT

Objective: The current investigation was undertaken with the objective of assessing the efficacy of paradox therapy on the intolerance of uncertainty among students preparing for college entrance examinations.

Methods: The current inquiry was designed as a quasi-experimental study employing a pre-test-post-test framework with an accompanying control group. The statistical population for this research encompassed all college entrance examination candidates residing in boarding accommodations in Qom during the year 2024. A sample of 30 students was selected from the target population through purposive sampling and subsequently allocated randomly into two groups: one experimental group consisting of 15 participants and one control group comprising 15 participants. Data collection was facilitated utilizing the Intolerance of Uncertainty Questionnaire (IUS; Carlton et al., 2007) and the Test Anxiety Scale (TAS; Sarason, 1977). The experimental cohort underwent paradox therapy through a structured six-session intervention, with each session lasting a maximum of 45 minutes and occurring biweekly, while the control group did not receive any form of intervention. Data analysis was conducted using SPSS version 25, employing the univariate analysis of covariance statistical approach.

Results: The findings revealed that the level of intolerance of uncertainty in the experimental group exhibited a statistically significant reduction in comparison to the control group post-intervention relative to the pre-test assessments.

Conclusions: In summary, it can be deduced that paradox therapy constituted an effective intervention for ameliorating intolerance of uncertainty among students engaged in college entrance examinations.

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Introduction

Students represent one of the most valuable assets of any nation. Each year, a substantial number of students in Iran participate in the national university entrance examination, commonly referred to as the *Konkour*. Success in this highly competitive exam is often perceived as a determining factor for future life achievements and opportunities (Narimani & Miri, 2017). Therefore, efforts aimed at enhancing students' performance and eliminating obstacles to their success are of critical importance (Esmaeili et al., 2025).

During the final year of secondary education—commonly known as the *Konkour year*—students encounter numerous academic and psychological challenges. One of the most significant psychological barriers that may hinder their performance is intolerance of uncertainty (IU) (Javdan & Shahri, 2023; Shihata et al., 2016). This construct plays a pivotal role in the onset and maintenance of excessive worry. IU can be conceptualized as a cognitive bias that influences how individuals perceive, interpret, and respond to ambiguous situations at cognitive, emotional, and behavioral levels (Bavolar et al., 2023; Hosseini et al., 2024).

Intolerance of uncertainty is characterized by an individual's inability to endure ambiguous or unknown situations, which leads to biased interpretations, perceptions, and reactions in unstable contexts (Bredemeier et al., 2023; Wilson et al., 2023). Defined as a cognitive, emotional, and behavioral response to uncertainty, IU results in information-processing biases, increased threat appraisal, and diminished coping capabilities (Sahib et al., 2024; Satici et al., 2022). More specifically, IU is regarded as a personality trait comprising a set of negative beliefs about uncertainty. For instance, individuals with high IU may believe that uncertainty is distressing, that doubt about the future is intolerable, that unexpected events are inherently negative and should be avoided, and that uncertainty hinders effective action (Kothari et al., 2019; Morriss et al., 2021). Research has shown that individuals with high IU perceive ambiguous situations as more threatening than those with low IU, and it is hypothesized that IU may contribute both directly and indirectly to the experience of chronic pain (Andrews et al., 2023; Neville et al., 2021).

Given the psychological consequences associated with the *Konkour*, mental health professionals are increasingly seeking effective therapeutic interventions to support students' well-being during this critical period. One such intervention—Paradoxical Therapy—has received limited attention in this population despite its potential benefits. Paradoxical therapy consists of two main

components: (1) prescribing the very symptom or behavior that constitutes the problem, and (2) assigning this prescription within a specific timeframe and duration. This therapeutic approach was introduced by Besharat (2019) and has been successfully applied to a wide range of disorders recognized by the American Psychiatric Association including anxiety disorders, obsessive-compulsive and related disorders, trauma- and stressor-related disorders, and somatic symptom disorders (Besharat, 2019), as well as social anxiety disorder and marital conflicts (Besharat, 2019).

Several empirical studies have also supported the efficacy of paradoxical therapy in improving psychological outcomes. For example, it has been shown to reduce test anxiety and increase self-confidence among female students (Salehin et al., 2025), enhance ego strength and self-awareness (Tahernejad Javazm et al., 2022), and decrease worry (Mohammadi et al., 2020).

In recent years, higher education has become an integral aspect of life for many individuals in Iran. A majority of students aspire to secure high-status, socially valued occupations, which typically require academic achievement and successful completion of the *Konkour*. As a result, nearly one million families in Iran experience the psychological stress associated with the university entrance exam each year. From the beginning of the *Konkour* year until the announcement of the final results, its psychological impact persists in their daily lives. Given the substantial psychological burden that *Konkour* students face, the implementation of therapeutic and educational interventions aimed at strengthening their mental health is both necessary and urgent. Accordingly, the present study seeks to examine the effectiveness of paradoxical therapy in reducing intolerance of uncertainty among *Konkour* students. The central research question is as follows: Does paradoxical therapy significantly impact intolerance of uncertainty in Konkour students?

Material and Methods

This study employed a quasi-experimental design with a pretest-posttest control group format. The statistical population consisted of all university entrance exam (Konkour) students residing in dormitories in Qom during the 2023–2024 academic year. Based on Delavar's (2019) recommendation that a minimum of 15 participants per group is required in experimental designs, 30 participants were selected using purposive sampling and randomly assigned to experimental and control groups (15 in each group).

Inclusion Criteria

- Being a university entrance exam student (Konkour candidate)
- Providing informed consent for participation
- Exhibiting symptoms of test anxiety (i.e., scoring above the cutoff score on the Test Anxiety Scale)

Exclusion Criteria

- Absence in more than two intervention sessions
- Lack of cooperation
- Incomplete responses to research instruments

Instruments

Intolerance of Uncertainty Scale (IUS-12): This 12-item scale assesses individuals' reactions to ambiguous situations, consequences of uncertainty, and future control (Carleton et al., 2007). Responses are rated on a 5-point Likert scale from 1 (completely false) to 5 (completely true). The scale includes two subscales:

- Prospective Anxiety (discomfort with uncertainty)
- Inhibitory Anxiety (uncertainty-related inaction)

The internal consistency (Cronbach's alpha) was reported as 0.85 for each subscale and 0.91 for the total scale (Carleton et al., 2007). The Persian version showed high internal consistency in a student sample (N=238), with Cronbach's alpha coefficients of:

- 0.87 for Prospective Anxiety
- 0.84 for Inhibitory Anxiety
- 0.89 for the total score (Zemestani et al., 2022)

Convergent and discriminant validity were supported through correlations with the Beck Anxiety Inventory (BAI), Penn State Worry Questionnaire (PSWQ), Positive and Negative Affect Schedule (PANAS), and the Mental Health Inventory (MHI-28). Significant positive correlations were found between intolerance of uncertainty and anxiety, negative affect, and cognitive distress (ranging from 0.43 to 0.62, $p < .01$), and significant negative correlations with positive affect and psychological well-being (ranging from –0.41 to –0.57, $p < .01$) (Akbari et al., 2024).

Test Anxiety Scale (TAS): This 37-item true/false self-report instrument measures the psychological and physiological responses associated with test situations, before and after the

exam (Sarason & Sarason, 1990). It was validated in Iran by Shoahosseini and Baghaei (2019). The scoring range is 0–37, with the following cut-off scores:

- ≤12: Mild anxiety
- 13–20: Moderate anxiety
- 20: Severe anxiety

The reliability of the scale using Cronbach's alpha was:

- 0.94 for the total sample
- 0.92 for both male and female subsamples (Shoahosseini & Baghaei, 2019).

Concurrent validity was established through correlations with the Najjarian Test Anxiety Scale (1996) and Coopersmith Self-Esteem Inventory (1967). The Cronbach's alpha coefficient for the present study was 0.87, indicating high reliability.

Procedure

To ensure ethical compliance, participants were informed that their identities would remain anonymous and data would be used solely for research purposes. An introductory session was held, during which informed consent and demographic questionnaires were distributed. Each participant was assigned a unique code. Following participant selection and random assignment, pretests were administered to both groups. The experimental group received six sessions of paradoxical intervention therapy, each lasting a maximum of 45 minutes, held biweekly. The control group did not receive any intervention during this period. After the intervention, posttests were administered to both groups. The intervention followed the Paradoxical Therapy Protocol developed by Besharat (2019), the validity and reliability of which have been confirmed by faculty members at the University of Tehran. A summary of the paradoxical therapy sessions is presented in Table 1.

Table 1. Summary of the paradoxical therapy sessions

Session	Content
1	Social phase of the interview: includes greetings; points that are usually made during introductions, such as employment status; and, if necessary, raising specific family and social issues. Problem phase of the interview: reason for referral and detailed description of problem(s) or disorder(s) by client/patient and possible companions; description of the treatment plan by the therapist and determination of treatment goals; prescribing appropriate tasks for the client/patient to perform between sessions (usually and as a minimum task, paradoxical schedule)
2	Behavioral analysis: A complete description of how to perform the tasks prescribed in the previous session; possible difficulties and limitations in performing the tasks for the client/patient; consequences of performing the tasks from the perspective of the client/patient and possible companions; estimation of the percentage of possible therapeutic changes by the client/patient; possible need to continue the previous tasks alone (for example, continuing to perform the tasks with a lower dose/number - according to the principle of the decreasing trend of the prescribed tasks) or together with new tasks (for example, prescribing a paradoxical schedule in the context of other symptoms).

3	Behavioral analysis: A complete description of how to perform the tasks prescribed in the previous session; the consequences of performing the tasks from the perspective of the client/patient and possible companions; an estimate of the percentage of possible therapeutic changes by the client/patient; the possible need to continue the previous tasks (for example, continuing to perform the tasks with a lower dose/number - according to the principle of the decreasing trend of the prescribed tasks); prescribing the first complementary technique if needed (according to the principle of anxiety reduction in the PTC model, the client/patient is required not to make any effort to reduce symptoms from the current level).
4	Behavioral analysis: A complete description of how to perform the tasks prescribed in the previous session; the consequences of performing the tasks from the perspective of the client/patient and possible companions; an estimate of the percentage of possible therapeutic changes by the client/patient; the possible need to continue the previous tasks (for example, continuing to perform the tasks with a lower dose/number - according to the principle of decreasing the prescribed tasks); prescribing a second complementary technique if needed (according to the principle of anxiety reduction in the PTC model, the client/patient is asked to maintain symptoms at the current level).
5	Behavioral analysis: A complete description of how to perform the tasks prescribed in the previous session; The consequences of performing the tasks from the perspective of the client/patient and possible companions; An estimate of the percentage of possible therapeutic changes by the client/patient; Announcement of the end of the treatment period if the treatment goals are achieved or continuation of sessions until the treatment goals are fully achieved. Description of the client/patient's self-treatment plan in the future (this plan is explained to the client/patient in the final session)
6	-١ Expressing the necessity of practicing acquired skills during work progress and acquired skills assessment sessions, 2- Conducting follow-up phase tests, 3- Checking the possibility of recurrence and additional explanations

Ethical Considerations

All ethical principles were strictly observed, including confidentiality of responses, informed consent, and the right to withdraw from the study at any point. Data were analyzed using SPSS version 25 and univariate analysis of covariance (ANCOVA).

Results

The present study was conducted on 30 female university entrance exam (Konkour) students, who were randomly assigned to two groups: experimental and control (15 participants in each group). Table 2 presents the age characteristics of the participants in both groups.

Table 2. Demographic Findings by Experimental and Control Groups

Variable	Category	Experimental	Percentage	Control	Percentage
Age	Under 17 years	3	20	2	13.30
	18 years	5	33.30	5	33.30
	Above 18 years	7	46.70	8	53.30

As shown in Table 2, in the experimental group, 3 participants (20%) were under 17 years old, 5 participants (33.3%) were 18 years old, and 7 participants (46.7%) were over 18 years old. In the control group, 2 participants (13.3%) were under 17, 5 participants (33.3%) were 18 years old, and 8 participants (53.3%) were over 18 years old. Table 3 presents the descriptive statistics for the research variables.

Table 3. Descriptive Statistics of Intolerance of Uncertainty Scores in the Research Groups

Group	Variable	Pretest		Posttest	
		Mean	SD	Mean	SD
Control	Intolerance of uncertainty	31.60	4.70	30.70	7.80
Paradoxical therapy		32.40	6.40	25.40	7.50

According to the results in table 3, the mean scores for intolerance of uncertainty in the paradoxical therapy group improved from the pre-test to post-test stage, compared to the control group. To examine the effect of paradoxical therapy on intolerance of uncertainty across the pre-test and post-test phases, a univariate analysis of covariance (ANCOVA) was conducted. Prior to the analysis, the assumptions of ANCOVA were tested.

- Levene's test confirmed the assumption of homogeneity of variances for the intolerance of uncertainty variable (F = 3.161, p = 0.085).
- Kolmogorov–Smirnov test showed that the distribution of scores was normal ($p > .05$).
- Box's M test indicated that the assumption of homogeneity of covariance matrices was also met (F = 1.09, p = 0.214, Box's M = 27.38).

Additionally, the assumption of homogeneity of regression slopes was assessed and found to be non-significant (F = 1.28, p = 0.313), indicating that the ANCOVA assumption was met. Therefore, it was appropriate to proceed with univariate ANCOVA for this analysis. The final output from SPSS is presented in Table 4.

Table 4. Results of Univariate ANCOVA

Variable	Source	SS	DF	MS	F	P	Effect size
Paradoxical therapy	Group	62.99	1	62.99	2.52	0.028	0.253

The ANCOVA results indicated that, after controlling for the pre-test scores, the effect of group membership (experimental vs. control) on post-test scores of intolerance of uncertainty was statistically significant (F = 2.523, p = 0.028). This suggests that paradoxical therapy accounted for more than 25% of the variance in post-test intolerance of uncertainty scores.

Discussion

The present study aimed to determine the effectiveness of paradoxical therapy on intolerance of uncertainty among university entrance exam (Konkour) students. Based on the results, the mean scores of intolerance of uncertainty in the paradoxical therapy group improved in the post-test

compared to the pre-test and relative to the control group. Therefore, it can be concluded that paradoxical therapy was effective in improving intolerance of uncertainty in Konkour students. This finding is consistent with the results of previous studies in related areas, including test anxiety and self-confidence in female students (Salehin et al., 2025), ego strength and self-knowledge (Tahernejad Javazm et al., 2022), and reducing worry (Mohammadi et al., 2020).

One possible explanation for this result is that, through the reconstruction and artificial re-experiencing of symptoms, individuals are exposed to a new reality. Although the symptoms remain, the bitter anxiety typically associated with them is no longer present. When a behavior or symptom no longer triggers anxiety, it ceases to be pathological. Thus, the link between the symptom and anxiety is broken.

A key advantage of the paradoxical therapy model is that it eliminates all anxiety related to a given situation—which is the core of most psychological disorders—immediately and without causing distress to the patient. The central mechanism in paradoxical therapy is the removal of anxiety, and any therapeutic approach that achieves this can be considered both effective and practical (Besharat, 2019).

In this treatment method, negative thoughts are initially guided to occur intentionally, for instance, three times per day, and then gradually the frequency is reduced. Another rationale behind using paradoxical therapy is to help regulate and control intrusive thoughts—so they are no longer unpleasant and involuntary, but rather become consciously recalled and managed by the individual.

When the therapist employs paradoxical therapy and does not suppress these thoughts and behaviors, they are instead intentionally summoned according to the therapist's structured plan, not arbitrarily or undisciplined. This structured exposure diminishes their disruptive power.

In summary, the results indicate that paradoxical therapy is effective in reducing intolerance of uncertainty among Konkour students. As such, this therapeutic approach can be considered a practical, efficient, and applicable intervention in mental health centers and clinics to support the well-being of students preparing for the university entrance exam.

Among the limitations of this study is the use of a purposive sampling method. Therefore, it is recommended that future research use random sampling techniques to enhance the generalizability of the findings. Additionally, the present study was limited to university entrance exam students,

which may restrict the application of its results to other populations. Hence, future studies are encouraged to replicate this research among other student or non-student groups.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by the ethics committee of Islamic Azad University. The patients/participants provided their written informed consent to participate in this study.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection, and analysis. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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