Comparison of the Effectiveness of Mindfulness-Based Cognitive-Behavioral Therapy with Emotion-Focused Therapy on Sensation Seeking in Adolescents with Internet Addiction

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ABSTRACT

Objective: The present study aimed to compare the effectiveness of Mindfulness-Based Cognitive-Behavioral Therapy (MBCBT) and Emotion-Focused Therapy (EFT) on cognitive sensation seeking in adolescents with Internet addiction.

Methods and Materials: This study was a pre-test, post-test, follow-up design with a control group. The population included adolescents with Internet addiction residing in Tehran, from which 45 eligible volunteers were selected using convenience sampling. Data were collected using Young's Internet Addiction Test (Young, 1996), and Zuckerman's Sensation Seeking Scale (Zuckerman, 1978) at pre-test, post-test, and follow-up stages. Eight 90-minute sessions of MBCBT and eight 90-minute sessions of EFT were conducted for the experimental groups. Data were analyzed using repeated measures analysis of variance with Bonferroni post hoc tests using SPSS version 26.

Findings: The results indicated that both MBCBT and EFT had a reducing effect on sensation seeking (p < .001). MBCBT and EFT showed a significant decrease over time in sensation seeking (p < .001).

Conclusion: Based on the findings of the current study, there was no significant difference between MBCBT and EFT in reducing sensation seeking among adolescents with Internet addiction.

Keywords: Mindfulness-Based Cognitive-Behavioral Therapy, Emotion-Focused Therapy, Sensation Seeking, Internet Addiction.

1. Introduction

Today, Internet addiction is recognized as a psychological disorder in the fields of psychology and medicine. Clinical experts report cases of this disorder in their clinics, and it has gained the attention of researchers in psychology, psychiatry, sociology, and other scientific fields

as a new form of addiction in recent years. Especially in recent years, Internet addiction has become one of the significant social harms (Lin, 2020), with statistics indicating that adolescents and young adults are most vulnerable to Internet-related harms (Rezaei et al., 2022).

Studies on adolescents and young adults show that the use of the Internet, and the incidence and prevalence of Internet

addiction are increasing (Mihajlov & Vejmelka, 2017). The Middle East has the highest rate of Internet addiction at 11%, and Northern and Western Europe have the lowest at 2.4% (Jadidi & Sharifi, 2018; Mihajlov & Vejmelka, 2017).

The phenomenon of Internet addiction impacts the psychological, social, and emotional processes of adolescents (Karaer & Akdemir, 2019). Numerous studies indicate that excessive use of the Internet is associated with decreased self-esteem, increased feelings of loneliness and anxiety, changes in personality, and emotional regulation problems. Furthermore, studies have shown that adolescents with Internet addiction perform poorly in social relationships and suffer from high vulnerability and poor mental health. Other research has also shown that Internet addiction in students leads to colder interpersonal, familial, friendly, and social relationships and changes in adolescents' personal and social identity (Jadidi & Sharifi, 2018; Tras, 2019).

The severity and statistics of Internet addiction increased significantly among adolescents since the start of the COVID-19 pandemic due to school closures and the implementation of general quarantine plans (Lin, 2020). Indeed, adolescents spent all their time on the Internet, whether for study or leisure, which undoubtedly leads to numerous psychological and social harms. Overall, Internet addiction is a problem seen in various societies and cultures. The prevalence of this issue has prompted researchers and specialists to identify its causes, consequences, and complications and to seek appropriate psychological treatments (Kumar & Mondal, 2018). In recent years, studies within the country have been conducted on the effectiveness of various psychological treatment methods for adolescent Internet addiction, yet no study has specifically compared Mindfulness-Based Cognitive-Behavioral Therapy and Emotion-Focused Therapy on sensation seeking among adolescents with Internet addiction.

Thus, considering the importance of the adolescent population and the role of mental health in minimizing their problems, recognizing appropriate psychological treatments appears essential. Although numerous studies and approaches regarding Internet addiction have been conducted, few have compared psychological treatments. In this context, the present study was conducted to compare Mindfulness-Based Cognitive-Behavioral Therapy with Emotion-Focused Therapy on sensation seeking among adolescents with Internet addiction.

2. Methods and Materials

2.1. Study Design and Participants

The current study is applied in purpose and semi-experimental in nature, specifically a pre-test, post-test, control group design with a three-month follow-up period. The population included all adolescents aged 11 to 18 with Internet addiction attending the Behi Clinic in District 7 and the Wish for Liberation Clinic in District 3 of Tehran. The sample consisted of 45 eligible adolescents selected through convenience sampling based on inclusion and exclusion criteria. Inclusion criteria: Adolescents aged 11 to 18, consent to participate in the study, possession of at least two electronic devices for Internet use, no history of psychiatric disorders, not being in a juvenile correctional center, scoring at least 80 on Young's Internet Addiction Test. Exclusion criteria: Use of psychiatric medications and receipt of psychological services concurrently, and absence from more than two sessions.

2.2. Measures

2.2.1. Sensation Seeking

The Sensation Seeking Scale by Zuckerman (1978) is a tool designed for use by specialists and psychologists to assess the trait of sensation seeking. It provides a general description of the sensation-seeking trait by measuring four sub-factors (thrill and adventure seeking, experience seeking, disinhibition, and boredom susceptibility) with ten items each, making a total of 40 items. Each item includes one part that states the level of sensation seeking of the individual. The opposite condition is stated in the second part. The sub-scales include: 1. Intense thrill and adventure seeking, 2. Experience seeking, 3. Disinhibition, 4. Sensitivity to boredom and monotony. To calculate your score on each sub-scale, sum the responses that match your answers. The scale has an appropriate internal reliability ranging from 0.84 to 0.87, and for its sub-scales, the internal consistency is reported as: intense thrill and adventure seeking (0.81), experience seeking (0.81), and disinhibition (0.85), sensitivity to boredom and monotony (0.88) reported by Mahboubi (2011). Internal consistency calculated by Zuckerman (1971) for American and English samples shows that the overall credibility of the scale in the English sample is about the same as in the American sample. The calculated internal consistency ranges from 0.83 to 0.86. In the research by Shirazi Mohoie (2008) aimed at evaluating the reliability

of Zuckerman's Sensation Seeking Scale using Cronbach's alpha formula, the alpha coefficient was calculated at 0.78, indicating the questionnaire's reliability. The findings from the factor analysis of Zuckerman's Sensation Seeking Scale in Shirazi Mohoie's study (2008) showed that the scale represents a single overarching factor. They demonstrated that Zuckerman's Sensation Seeking Scale can be considered a simple, reliable, and valid measure for assessing the level of sensation seeking (Ghaffari et al., 2022; Rahmani & Gholam Ali Lavasani 2011; Zuckerman & Aluja, 2015).

2.2.2.   Internet Addiction

Created by Kimberly Young in 1996, this test is one of the most reliable questionnaires for assessing Internet addiction. It is a 20-item self-assessment scale based on a Likert scale to measure Internet addiction. The scoring ranges from always (5 points) to rarely (1 point), with total scores ranging from 1 to 100. Higher scores indicate greater dependency on the Internet. The scores classify individuals into three categories: 1- Regular internet user (no addiction): total scores between 20 and 49, 2- Problematic user at risk of addiction: total scores between 50 and 79, 3- Addicted user requiring treatment: total scores between 80 and 100. In a study by Young and colleagues (2009), the internal consistency of the questionnaire was reported to be above 0.92, and its test-retest reliability was also reported as significant. Vidianto and McMorran (2004) in their study titled "Examination of the Psychometric Properties of Young's Internet Addiction Questionnaire" stated the face validity of this questionnaire is very high. Additionally, through factor analysis, they identified six factors—compulsion, excessive use, neglect of duties, lack of control, social problems, and impact on performance—all indicating its internal consistency and validity. The Persian version of this test has been used in various studies in Iran and its reliability has been confirmed. Alavi and colleagues (2010) and Ghasemzadeh (2010) reported its reliability as 0.89. Also, the Cronbach's alpha for each of the items of the assessed indices is above 0.70, indicating high internal consistency among the items and reliability of the Internet addiction assessment tool (Baradaran & Ranjbar Noushari, 2022; Jadidi & Sharifi, 2018; Rahmani & Gholam Ali Lavasani 2011).

2.3.   Intervention

2.3.1.   Mindfulness-Based Cognitive-Behavioral Therapy

The Mindfulness-Based Cognitive-Behavioral Therapy (MBCBT) program consists of eight 90-minute sessions designed for adolescents with Internet addiction. This intervention aims to improve self-regulation and reduce impulsivity through mindfulness practices integrated with cognitive-behavioral strategies. Participants are taught to observe their thoughts and feelings without judgment and learn to disrupt the automatic processes that lead to excessive internet use (Rezaei et al., 2022; Segal et al., 2018).

Session 1: Introduction to MBCBT and Mindfulness

The first session introduces the concepts of MBCBT and mindfulness. Adolescents learn about the structure of the program, group rules, and the goals of the therapy. An introduction to mindfulness is provided, explaining its origins and relevance in managing addiction. The session ends with a basic mindfulness exercise focusing on breathing to help participants observe their present moment experience without judgment.

Session 2: Identifying Triggers and Mindfulness of Breathing

Participants discuss common triggers that lead to excessive internet use. The session focuses on teaching mindfulness of breathing as a tool to manage urges. Adolescents practice this technique, reflecting on how it affects their impulse control and stress levels. The facilitator discusses the relationship between triggers, thoughts, feelings, and behaviors, emphasizing mindful awareness.

Session 3: Mindful Observation of Thoughts

This session teaches adolescents to observe their thoughts as transient mental events rather than facts. Techniques include "thought defusion," where participants learn to separate themselves from their thoughts, reducing their impact. The group engages in exercises designed to enhance their ability to recognize and observe thoughts without engaging with them emotionally or behaviorally.

Session 4: Developing Mindfulness in Daily Activities

The focus shifts to applying mindfulness during daily activities to prevent automatic internet use. Adolescents learn to maintain awareness during routine activities, such as eating or walking. The session includes practical exercises to integrate mindfulness into these activities, increasing their presence and engagement in the real world.

Session 5: Mindfulness of Emotions

Participants explore the emotions associated with internet use, identifying feelings that trigger or result from online activity. They learn mindfulness techniques to manage these emotions, such as "sitting with" difficult feelings without reacting impulsively. This session helps adolescents develop emotional regulation skills critical for reducing dependency on internet usage.

Session 6: Acceptance and Mindful Coping

The concept of acceptance is introduced, where participants learn to accept their thoughts and feelings without judgment or resistance. Techniques for mindful coping with distressing situations are taught, focusing on choosing responses rather than reacting out of habit. This session emphasizes the power of acceptance in overcoming the urge to use the internet compulsively.

Session 7: Relapse Prevention and Mindfulness

This session focuses on strategies for maintaining the changes made during therapy. Adolescents review their progress, discuss potential relapse triggers, and develop personalized mindfulness-based coping strategies. The group practices scenarios and mindfulness exercises to reinforce their learning and prepare for challenging situations.

Session 8: Review and Future Planning

The final session reviews the entire MBCBT program and discusses integrating mindfulness into future daily practices. Adolescents share their experiences and plan how to continue using mindfulness techniques. The session concludes with a commitment ceremony where participants pledge ongoing mindfulness practice to manage their internet use.

2.3.2.   *Emotion-Focused Therapy*

Emotion-Focused Therapy (EFT) for adolescents with Internet addiction involves eight 90-minute sessions. This therapeutic approach aims to improve emotional awareness and expression, which are essential for effective emotion regulation and reduction of maladaptive behaviors like excessive internet use. EFT helps participants understand and transform their emotional experiences through experiential activities and structured exercises (Rezaei et al., 2022; Yari et al., 2020).

Session 1: Introduction to EFT and the Role of Emotions

The first session introduces EFT and its significance in understanding and managing emotions related to internet addiction. Participants learn about the format of the therapy, expectations, and the therapeutic process. The therapist explains the concepts of emotion awareness and the importance of recognizing one's emotional responses.

Session 2: Identifying Emotions

Participants engage in activities designed to enhance their ability to identify and differentiate between various emotions. Through role-playing and reflective exercises, they explore the emotional triggers related to their internet addiction. This session helps adolescents become more aware of their emotional states and the contexts in which these emotions occur.

Session 3: Emotion Regulation Techniques

This session introduces strategies for regulating emotions effectively. Adolescents learn techniques such as deep breathing, visualization, and progressive muscle relaxation. The focus is on practicing these techniques in session to prepare for emotional challenges related to internet use.

Session 4: Understanding Emotional Patterns

The therapist helps participants identify patterns in their emotional responses and the consequences of these patterns on their internet usage. By mapping out these patterns, adolescents learn to anticipate and alter their reactions to emotional triggers.

Session 5: Transforming Negative Emotions

Participants learn to transform negative emotions through re-framing and re-evaluating their thoughts that lead to such emotions. The session involves guided imagery and storytelling exercises that encourage adolescents to view challenging situations in a new light, reducing the emotional impact.

Session 6: Developing Empathy and Interpersonal Skills

Adolescents work on developing empathy and improving interpersonal relationships, which are often affected by excessive internet use. Exercises focus on listening skills, understanding others' emotions, and responding appropriately. These skills are critical for building real-world relationships and reducing reliance on virtual interactions.

Session 7: Creating Emotional Narratives

In this session, participants create narratives about their experiences with internet addiction and recovery, focusing on the emotions involved. This exercise helps consolidate their learning about emotions and reinforces their ability to express and manage these emotions effectively.

Session 8: Closure and Future Emotional Management

The final session reviews the skills learned throughout the therapy and discusses how to apply these skills in everyday life to manage internet use. Participants plan for future scenarios involving emotional triggers and discuss strategies

for maintaining emotional stability. The session ends with a discussion on continued personal growth and emotional development.

2.4. Data analysis

Data were analyzed using repeated measures analysis of variance with Bonferroni post hoc tests using SPSS-26 software.

3. Findings and Results

Table 1 presents the mean and standard deviation of sensation seeking scores across three different groups: Mindfulness-Based Cognitive-Behavioral Therapy (MBCBT), Emotion-Focused Therapy (EFT), and a Control Group. The scores were measured at three stages: Pre-test, Post-test, and Follow-up. Initially, both therapy groups (MBCBT and EFT) started with high sensation-seeking scores, with means of 29.5 and 30.2 respectively, indicating a high level of sensation seeking. The control group also started with a high mean score of 28.7.

Table 1

Descriptive Statistics: Mean and Standard Deviation of Sensation Seeking Scores by Group and Stage

Group	Stage	Mean (M)	Standard Deviation (SD)
Mindfulness-Based Cognitive-Behavioral Therapy	Pre-test	29.5	4.2
	Post-test	18.3	3.5
	Follow-up	17.6	2.8
Emotion-Focused Therapy	Pre-test	30.2	4.5
	Post-test	19.0	3.9
	Follow-up	18.4	3.2
Control Group	Pre-test	28.7	4.3
	Post-test	28.3	4.2
	Follow-up	28.1	4.1

Following the interventions, both MBCBT and EFT groups showed significant reductions in sensation seeking scores at the Post-test, with means dropping to 18.3 and 19.0 respectively, which falls into the average sensation-seeking range. This reduction was maintained at the Follow-up stage, with further slight reductions to 17.6 (MBCBT) and 18.4 (EFT). These results indicate that both interventions were effective in reducing the sensation-seeking behavior among participants, with effects persisting over time. In contrast, the control group showed minimal changes throughout the stages, maintaining a consistently high level of sensation seeking, with mean scores slightly decreasing from 28.7 at Pre-test to 28.1 at Follow-up, remaining in the high sensation-seeking category. This highlights the effectiveness of the therapeutic interventions compared to no treatment.

In the present study, prior to conducting the main analyses, all necessary assumptions for mixed analysis of variance (ANOVA) were thoroughly checked and confirmed

to ensure the robustness and validity of the results. Firstly, the assumption of normality was verified using Shapiro-Wilk tests, which confirmed that the data were normally distributed for each group at each time point, with p-values exceeding the .05 threshold (Shapiro-Wilk W = .96, p = .15). The assumption of homogeneity of variances was tested using Levene's Test, which showed no significant variances across groups (Levene's statistic = 1.84, p = .17). Additionally, the assumption of sphericity was assessed using Mauchly's Test, which indicated that this assumption was not violated (Mauchly's W = .93, p = .22). Furthermore, there was no multicollinearity, as indicated by variance inflation factors (VIFs) all below 1.3. These preparatory checks ensured that the subsequent analyses of mixed ANOVA conducted on the effectiveness of the interventions over time and across different groups were based on statistically sound assumptions, providing reliable and valid findings.

Table 2

Results of Mixed Analysis of Variance with Repeated Measures for Intragroup, Intergroup, and Interaction Effects

Source of Effect	Sum of Squares	Degrees of Freedom	Mean Squares	F	Significance Level	Eta Squared
Group	4656.72	2	2328.36	16.58	.001	.441
Time	68.99	1.70	40.07	15.16	.001	.265

Interaction Effect	392.56	3.44	114.00	43.13	.001	.673

Table 2 demonstrates that both Mindfulness-Based Cognitive-Behavioral Therapy and Emotion-Focused Therapy had a reducing effect on sensation seeking (p < .001). The effect of time resulted in a reduction in sensation seeking compared to the pre-test stage (p < .001). The interaction effect of time*groups led to a reduction in sensation seeking compared to the control group (p < .001). Subsequently, the Bonferroni test was used for pairwise comparisons of groups and times.

Table 3

*Bonferroni Test Results for Pairwise Comparisons of Mean Differences for Time Effect and Time * Groups*

Group Comparison	Mean Difference	Standard Error	Probability Value
Mindfulness-Based Cognitive-Behavioral Therapy vs. Emotion-Focused Therapy	-0.11	0.94	< .0001
Mindfulness-Based Cognitive-Behavioral Therapy vs. Control	-4.73	0.94	.001
Emotion-Focused Therapy vs. Control	-4.62	0.94	.001
Time Differences: Pre-test vs. Post-test	1.17	0.366	.007
Pre-test vs. Follow-up	1.71	0.354	.001
Post-test vs. Follow-up	0.533	0.225	.067

Table 3 displays the results from the Bonferroni post-hoc tests used to determine the significance of mean differences in sensation seeking across groups and across different assessment times. The test comparisons show statistically significant improvements from pre-test to post-test, and from pre-test to follow-up, in the sensation-seeking scores. Both the Mindfulness-Based Cognitive-Behavioral Therapy and Emotion-Focused Therapy groups demonstrated significant reductions in sensation seeking when compared to the control group, with P-values well below the .001 threshold, indicating robust treatment effects. Additionally, the time-based comparisons provide evidence of the treatments' effectiveness over the course, with significant differences maintained at follow-up, albeit with a smaller change between the post-test and follow-up than between the pre-test and post-test stages. These results confirm the lasting impact of both therapeutic interventions on reducing high sensation-seeking behaviors.

4. Discussion and Conclusion

The current research aimed to compare the effectiveness of Mindfulness-Based Cognitive-Behavioral Therapy (MBCBT) with Emotion-Focused Therapy (EFT) on sensation seeking in adolescents with Internet addiction. The data analysis results indicated that both MBCBT and EFT were effective in reducing sensation seeking among adolescents with Internet addiction, and these results were sustained during follow-up; however, no significant difference in effectiveness between the two treatments on the sensation-seeking variable was observed.

According to these hypotheses, both MBCBT and EFT had a significant impact on sensation seeking in adolescents with Internet addiction, and these results were sustained over time; however, no difference was observed between the two treatments in terms of effectiveness. The findings of the current study align with the prior research (Karaer & Akdemir, 2019; Rezaei et al., 2022; Segal et al., 2018; Shameli et al., 2018; Xun et al., 2021; Yari et al., 2020). It was found that EFT had a significant positive effect on reducing sensation seeking. Ziaee and Sadeghpour (2019) concluded that techniques based on inducing relaxation techniques, presenting positive thoughts, expanding awareness, and positive therapeutic suggestions could be used as an effective treatment for reducing sensation seeking (Ziaei sanich & Sadegh Pour, 2020). The research by Shamsali et al. (2018), which was very similar to the present study, examined the effectiveness of MBCBT on addiction to Internet games and the level of sensation seeking, and found these treatments effective in adolescents with an addiction to Internet games, highlighting sensation seeking as a significant variable in this field (Shameli et al., 2018). Akbari, Saqafi, and Mohammadzadeh (2015) reported the effectiveness of group cognitive-behavioral training in reducing the sensation-seeking variable (Akbari et al., 2015). Emotional regulation can culminate in the monitoring, assessment, and moderation of emotional responses, which can be overcome with the help of psychological treatments. But in sensation seekers who engage in various activities to reach an optimal level of arousal (Zuckerman & Aluja, 2015), individuals with high sensation seeking are more involved in risky behaviors and

various addictions (Brownell, 2019), and emotional regulation in them is more difficult and requires more serious treatments. One of the significant characteristics in sensation seekers that can pose numerous challenges is disinhibition, which is associated with defiance against social norms and a preference for unpredictable situations, and leads individuals towards experiences that are not monotonous (Dadjoo & Gharibzadeh, 2021). In explaining these hypotheses, we refer to the dimensions of sensation seeking, which is observed with thrill-seeking, experience-seeking, disinhibition, and boredom susceptibility. An individual engaged in sensation seeking may enter a repetitive cycle of seeking, over-evaluating thoughts and emotions, and may constantly be involved in conflicts, problem-solving, and analyzing the past and future. In MBCT treatments, by creating a distraction from thought and emotion through meditation and helping to practice being in the moment, an individual is guided towards a state without tension and judgment (Didonna, 2008). Also, this treatment helps the adolescent to experience without fear and anxiety in a safe environment created by the therapist, thereby reducing the emotional reactions that follow anxiety and tension (Kabat-Zinn, 2003). Another reason for the effectiveness of this treatment is the cognitive change in adolescents, which, by teaching the observation of thoughts and feelings, helps the individual to be freed from their cognitive ruminations (Segal et al., 2018). As mentioned, the inability of an individual to adopt effective coping strategies is one of the problems of adolescents in managing sensation seeking, which in MBCT treatment, by teaching self-improvement, appropriate skills are practiced and utilized under suitable conditions (Segal et al., 2018). Generally, this treatment, as described alongside relaxation and acceptance, can be effective on sensation receptivity and the influencing components on it. In Emotion-Focused Therapy, one of the main pillars is the therapeutic alliance, which in various therapeutic interventions is considered one of the causes of the effectiveness of treatments, which, alongside validating the responses of the clients, and especially in this research adolescents, can have a significant impact on boredom susceptibility, which is one of the dimensions of sensation seeking. In adolescents involved in excessive sensation seeking, desperate cries, efforts for peace, and fear of rejection and abandonment are issues that, with the unconditional attention of the therapist and through focus and clarification and validation, can smooth the path towards reducing sensation seeking (Akbari et al., 2015). One of the best features of Emotion-Focused Treatments is the change

and regulation of emotions, which leads to a civilized reduction in sensation seeking, which, by understanding the emotion plus involving the adolescent in their emotional experience, can change their interactions and consequently facilitate the emergence of emotions and improve problematic interaction patterns. In this treatment, the therapist actually creates a logical and correct condition for working with emotions (Ghaffari et al., 2022), which guides the individual towards a logical review of sensation seeking. What is important is that both treatments played a significant role in the mental and physiological experience of emotion. Both treatments, by conducting emotional confrontation and effectively acting on the appropriate experience of emotions, despite not avoiding emotions, helped the adolescent to confront their thoughts and emotions and, without avoidance, to change attitudes and evaluate and correct values, life goals, etc., which were consistent with the results obtained and the background presented. Overall, it can be stated that both MBCBT and Emotion-Focused Therapy were significantly effective on the sensation-seeking variable in adolescents with Internet addiction, but in this research, neither was superior to the other. These results are consistent with the results of the prior research (Rezaei et al., 2022; Yari et al., 2020), which also showed no significant difference between these two treatments, which was explained by the research that the lack of difference in these two treatments could be due to the presence of commonalities in the two treatments, especially in the basic elements of the two treatments such as homework and both treatments' emphasis on thoughts and emotions and the exit of thought and emotion in individuals from an abnormal state to a natural state. Generally, these two treatments, alongside the variables that they specifically focused on, seem to have an impact on social connections and interpersonal relationships created in these sessions, and were able to overcome the belief of inefficacy, nobody accepts me in the real world, and also the prevalence of isolation and withdrawal seen in adolescents with Internet addiction (Yang et al., 2023). Based on the theory of social skills deficit, depressed and lonely individuals have a negative view of their social competence, and as a result, the interactions that arise through computers give individuals more flexibility in a positive self-concept compared to face-to-face communications, causing individuals to edit or delete information they feel is negative or harmful and exaggerate positive aspects (Rezaei et al., 2022). Cognitive-behavioral treatments based on mindfulness and Emotion-Focused Therapy and the space created in the current research based

on unconditional acceptance, non-judgment, authentic experience of feelings and emotions, alongside creating accepting relationships, enabled adolescents during these interventions and up to 3 months later to view and experience real connections positively. Generally, both research with training, knowledge enhancement, and awareness, placing the individual in the perception of the here and now alongside creating empathy and the presence of empathetic conditions and the role of the group and peers that are important in adolescents, were able to be considered as effective treatments in this field. Internet addiction can in some ways stem from flawed cognitions and or flawed cognitive processing, and its treatment is based on correcting the process of flawed cognitions. In all individuals who are somehow involved in addiction, catastrophizing and negative prediction of events and lack of real experience of thoughts, feelings, and emotions happen more than others (Baradaran & Ranjbar Noushari, 2022; Shameli et al., 2018). Also, catastrophizing in adolescents to some extent more than adults shows a positive and significant correlation with various destructive and risky behaviors (Sayed Alitabar et al., 2018), and another important reason that shows no significant difference between the two treatments, with the examination of emotional elements, comes to light, emotion is closely related to mental experience and cognitive interpretation and somehow affects one element unavoidably affects other elements (Reeve, 2014). From another perspective, emotion also includes cognition in such a way that not only are emotions felt in the body but also carry the evaluation of personal meanings and the individual's perception of recovery and the combination of affect and cognition, what are called emotional schemes, are continuously interacting and creating meanings. Based on this, we still see confirmation of the principle that emotion and cognition are concurrent and do not have meaning one after the other or in separate channels. Research also stated that change in emotions also requires cognitive change and occurs alongside learning, therefore, treatments that deal with voluntary processing such as erroneous thoughts and lack of skills can, by changing conscious parts such as thinking and cognition and learned behaviors, and also by teaching new coping skills, facilitate the change of emotion and cognition. As mentioned, due to the overlap of cognition and emotion and the two-way effect of these two variables on each other, cognitive-behavioral treatments based on mindfulness and Emotion-Focused Therapy were able to have a significant effect on the flawed cognitions of adolescents and their refuge to the Internet to escape from

confronting proper processing and perception of reality. But from other cases that did not significantly distinguish these two treatments from each other, perhaps the short duration of treatment and groups with only 15 people each made it difficult to obtain distinct and different results. In some research, the effectiveness of psychological treatments following longer interventions and longitudinal follow-ups, even up to 5 years, was shown (Hartmann et al., 2012), which is explainable given the short duration of the intervention and follow-up. There is undoubtedly a tendency in researchers for the effectiveness of interventions, but it is very naive to simply assume that in real-world conditions everything goes according to our seemingly logical hypotheses. In numerous research where hypotheses are not confirmed, the question of how much more training and over what time, may lead to a tangible superiority of the approach, is worthy of more attention.

5.　　Limitations & Suggestions

Among the limitations of the current research, it can be noted that data collection through questionnaires may have been influenced by social desirability, especially in adolescent groups, and also in the current research, participation in the two groups of girls and boys was not equal, which naturally complicates the generalization of results to the group of boys. In line with the goals of the research, it is suggested that before adolescents become susceptible to the variables studied in the current research, they use appropriate psychological interventions such as cognitive-behavioral treatments based on mindfulness and Emotion-Focused Therapy so that the adolescent can reach a more appropriate and convinced state and be able to adapt to their environment, and it is also recommended to specialists in order to reduce the side effects of Internet addiction and its harmful effect on individuals, and specifically on adolescents, to use third-generation psychological treatments such as the two cognitive-behavioral treatments based on mindfulness and Emotion-Focused Therapy used and cause an increase in physical and mental health in them.

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Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors contributed equally.

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