

The Impact of Cognitive Analytic Therapy on Need for Cognition and Sense of Purpose in Depression: A Four-Month Follow-Up Study

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ABSTRACT

To evaluate the effectiveness of Cognitive Analytic Therapy (CAT) in enhancing Need for Cognition and Sense of Purpose among individuals with depression. This randomized controlled trial involved 30 participants diagnosed with depression, recruited from mental health clinics in Tehran. Participants were randomly assigned to either the intervention group (receiving CAT) or the control group (receiving standard care), with 15 participants in each group. The intervention consisted of twelve 45-60 minute sessions over three months. Outcome measures included the Need for Cognition and Sense of Purpose, assessed at pre-intervention, post-intervention, and four-month follow-up using standardized tools. Data were analyzed using ANOVA with repeated measures and Bonferroni post-hoc tests via SPSS version 27. The intervention group showed significant improvements in Need for Cognition (Pre-intervention: $M = 32.45$, $SD = 4.21$; Post-intervention: $M = 45.62$, $SD = 3.88$; Follow-up: $M = 43.89$, $SD = 4.10$) compared to the control group (Pre-intervention: $M = 33.12$, $SD = 4.50$; Post-intervention: $M = 34.67$, $SD = 4.37$; Follow-up: $M = 34.01$, $SD = 4.29$). Similarly, Sense of Purpose scores improved significantly in the intervention group (Pre-intervention: $M = 28.34$, $SD = 5.22$; Post-intervention: $M = 42.15$, $SD = 4.92$; Follow-up: $M = 40.78$, $SD = 5.03$) compared to the control group (Pre-intervention: $M = 29.12$, $SD = 5.30$; Post-intervention: $M = 30.47$, $SD = 5.10$; Follow-up: $M = 30.02$, $SD = 5.01$). ANOVA results indicated significant main effects for time and group and significant interaction effects between time and group for both variables ($p < .001$). Cognitive Analytic Therapy (CAT) significantly enhances Need for Cognition and Sense of Purpose in individuals with depression, with improvements sustained at a four-month follow-up. These findings highlight CAT's potential as a comprehensive therapeutic approach for treating depression and promoting long-term cognitive and motivational well-being.

Keywords: Cognitive Analytic Therapy, Depression, Need for Cognition, Sense of Purpose, Randomized Controlled Trial.

1. Introduction

Depression affects millions of people worldwide, contributing to substantial personal and societal burdens. It is characterized by persistent sadness, loss of interest in activities, and various cognitive impairments, including difficulties in concentration, decision-making, and memory. These cognitive deficits not only exacerbate depressive symptoms but also hinder recovery and overall quality of life (Fadipe et al., 2023; Ntakirutimana, 2023). Moreover, the sense of purpose, which provides individuals with direction and meaning in life, is often compromised in those suffering from depression, leading to further emotional and cognitive decline (Windsor et al., 2015).

Cognitive Analytic Therapy (CAT) is an integrative therapeutic approach that combines elements of cognitive therapy and psychoanalytic principles to address maladaptive cognitive and behavioral patterns. CAT aims to help individuals understand and modify these patterns, fostering more adaptive ways of thinking and behaving. This therapy is particularly effective in treating complex and chronic mental health conditions, including depression (Corbridge et al., 2017; Einy & Narimani, 2019; Einy et al., 2019; Kazemi et al., 2011; Martin et al., 2021; Rafi & Prabalkumari, 2022; Ryle & Kerr, 2020).

CAT's theoretical framework posits that early life experiences shape individuals' cognitive and emotional responses, leading to the development of problematic patterns that persist into adulthood. These patterns, known as "reciprocal roles," are internalized and replayed in current relationships and behaviors, contributing to psychological distress (Rafi & Prabalkumari, 2022). By mapping out these patterns and understanding their origins, individuals can gain insight into their behavior and learn to adopt healthier responses.

Cognitive interventions have long been recognized for their effectiveness in treating depression. Cognitive Behavioral Therapy (CBT), for instance, has been extensively studied and shown to reduce depressive symptoms by challenging and modifying negative thought patterns (Chen et al., 2006). Similarly, CAT incorporates cognitive restructuring techniques to help individuals identify and change maladaptive thoughts, thus alleviating depressive symptoms (Crits-Christoph et al., 2010). Moreover, CAT's focus on understanding the historical and relational context of these patterns provides a comprehensive approach to treatment (Hunot et al., 2010).

The Need for Cognition refers to an individual's tendency to engage in and enjoy effortful cognitive activities. Enhancing this need can lead to improved cognitive functioning and greater resilience to depressive symptoms. Previous studies have shown that cognitive interventions can increase cognitive engagement and problem-solving skills, thereby reducing depressive symptoms (Haeffel & Kaschak, 2018). CAT, with its emphasis on cognitive and relational understanding, can potentially enhance the Need for Cognition by encouraging individuals to actively engage in reflective and analytic thinking (Bishop et al., 1986).

Sense of Purpose, on the other hand, provides individuals with a sense of direction and meaning in life, which is crucial for psychological well-being. Depression often erodes this sense of purpose, leading to feelings of emptiness and hopelessness. Interventions that foster a sense of purpose can significantly improve mental health outcomes by providing individuals with motivation and goals to strive towards (Lewis & Hill, 2021). CAT's integrative approach, which addresses both cognitive and relational aspects, can help individuals rediscover and cultivate their sense of purpose (Pfund et al., 2022).

Empirical studies have demonstrated the effectiveness of CAT in treating various psychological disorders, including depression. For instance, a randomized controlled trial comparing CAT with other therapeutic approaches found that CAT significantly reduced depressive symptoms and improved overall functioning (Lockwood et al., 2004). Additionally, CAT has been shown to be effective in addressing the relational and historical aspects of psychological distress, providing a comprehensive treatment framework (Mohammadkhani et al., 2016).

Furthermore, CAT's emphasis on collaborative and reflective practice enhances its efficacy. By involving clients in the therapeutic process and encouraging them to actively participate in mapping out their cognitive and behavioral patterns, CAT fosters a sense of agency and empowerment (Ntakirutimana, 2023). This collaborative approach is particularly beneficial for individuals with depression, as it helps them regain control over their thoughts and behaviors, leading to improved mental health outcomes (Westra, 2004).

Depression remains a major public health concern, necessitating effective therapeutic interventions. Cognitive Analytic Therapy, with its integrative approach, offers a promising avenue for treating depression by addressing both cognitive and relational factors. This study aims to evaluate the effectiveness of CAT in enhancing Need for Cognition and Sense of Purpose, contributing to the growing body of

evidence supporting the use of CAT in clinical practice. By fostering cognitive engagement and a sense of purpose, CAT can help individuals with depression achieve lasting improvements in their mental health and overall well-being.

2. Methods and Materials

2.1. Study Design and Participants

This study employs a randomized controlled trial (RCT) design to evaluate the effectiveness of Cognitive Analytic Therapy (CAT) on Need for Cognition and Sense of Purpose in individuals with depression. The participants, comprising 30 individuals diagnosed with depression, were recruited from mental health clinics in Tehran. The inclusion criteria required participants to be between 18 and 65 years old, have a clinical diagnosis of depression based on DSM-5 criteria, and provide informed consent. Exclusion criteria included severe psychiatric comorbidities, current participation in another form of psychotherapy, and significant cognitive impairments. Participants were randomly assigned to either the intervention group (receiving CAT) or the control group (receiving no additional intervention beyond standard care), with each group consisting of 15 participants. Follow-up assessments were conducted four months post-intervention to evaluate the long-term effects.

2.2. Measures

2.2.1. Need for Cognition

The Need for Cognition Scale (NCS), developed by John Cacioppo and Richard Petty in 1982, is a widely used tool for measuring an individual's tendency to engage in and enjoy effortful cognitive activities. The NCS consists of 18 items rated on a 5-point Likert scale ranging from "extremely uncharacteristic" to "extremely characteristic." Higher scores indicate a greater need for cognition. The scale has demonstrated strong reliability and validity in various studies {Al-Hamouri, 2011 #32485; Hosseini, 2017 #45397; Keller, 2019 #28849; Luong, 2017 #32468; McClaren, 2017 #10957; Zare, 2015 #32454}.

2.2.2. Sense of Purpose

The Purpose in Life (PIL) Test, created by Viktor Frankl in 1963 and revised by Crumbaugh and Maholick in 1969, assesses an individual's sense of meaning and purpose in life. The PIL Test includes 20 items, each rated on a 7-point Likert scale. Higher scores reflect a stronger sense of

purpose. The PIL Test has been validated across numerous populations and has shown good reliability and validity {Lewis, 2021 #46229; Pfund, 2022 #46224; Windsor, 2015 #46228} {Cai, 2022 #36179}.

2.3. Intervention

2.3.1. Cognitive Analytic Therapy

The intervention for this study involves twelve 45-60 minute sessions of Cognitive Analytic Therapy (CAT), designed to enhance Need for Cognition and Sense of Purpose in individuals with depression. CAT is an integrative therapeutic approach that combines cognitive and analytic techniques to help patients understand and change problematic patterns of behavior and thinking {Corbridge, 2017 #3158; Einy, 2019 #24002; Einy, 2019 #45057; Kazemi, 2011 #3162; Martin, 2021 #3168; Rafi, 2022 #45783; Ryle, 2020 #3171}.

Session 1: Introduction and Assessment

The first session involves establishing rapport with the client, explaining the CAT approach, and conducting a comprehensive assessment of the client's current cognitive and emotional state. This session also includes setting therapeutic goals and expectations for the intervention.

Session 2: Understanding the Problem

In this session, the therapist helps the client to articulate and understand their specific problems and symptoms of depression. The therapist introduces the concept of mapping out patterns of behavior and thinking that contribute to their distress.

Session 3: Identifying Triggers

The focus of the third session is to identify specific triggers that exacerbate the client's depressive symptoms. This involves discussing recent events or thoughts that have led to increased feelings of depression and mapping these onto the patterns discussed previously.

Session 4: Recognizing Patterns

This session involves a deeper exploration of the recurring patterns of behavior and thinking. The therapist helps the client recognize how these patterns have developed over time and how they maintain the cycle of depression.

Session 5: Formulation of Target Problems

The therapist and client collaboratively develop a written formulation of the client's problems, detailing the origins, triggers, and maintenance of their depressive symptoms. This formulation serves as a roadmap for the therapy.

Session 6: Exploring Relationships

In the sixth session, the focus shifts to examining the client's relationships and how these interactions affect their mood and behavior. The therapist helps the client understand how their patterns of thinking and behavior influence their relationships and vice versa.

Session 7: Developing Insight

The therapist helps the client gain insight into the underlying causes of their patterns. This includes exploring past experiences and significant life events that have contributed to the development of their cognitive and behavioral patterns.

Session 8: Introducing Change

This session focuses on identifying and practicing alternative ways of thinking and behaving. The therapist introduces cognitive restructuring techniques and behavioral experiments to challenge and change maladaptive patterns.

Session 9: Practicing New Skills

The client is encouraged to practice the new cognitive and behavioral skills introduced in the previous session. The therapist provides support and feedback, helping the client to refine these skills and integrate them into their daily life.

Session 10: Addressing Setbacks

The therapist and client discuss any setbacks or difficulties encountered while practicing new skills. The session focuses on problem-solving and reinforcing the client's progress, emphasizing resilience and adaptability.

Session 11: Consolidating Gains

In the penultimate session, the therapist helps the client consolidate their gains and reflect on the progress made throughout the therapy. This includes revisiting the initial goals and assessing how well they have been achieved.

Session 12: Planning for the Future

The final session involves developing a maintenance plan to help the client sustain their progress after the therapy ends. This includes identifying potential challenges, developing coping strategies, and setting future goals to continue enhancing their sense of purpose and cognitive engagement.

2.4. Data Analysis

Data analysis was performed using SPSS version 27. To assess the effectiveness of the intervention, an Analysis of Variance (ANOVA) with repeated measures was conducted. This analysis compared changes in Need for Cognition and Sense of Purpose scores between the intervention and control groups across three time points: pre-intervention, post-intervention, and at the four-month follow-up. The Bonferroni post-hoc test was used to identify specific group differences over time, providing a robust correction for multiple comparisons. Descriptive statistics were calculated for demographic variables and baseline measures to ensure comparability between groups. Statistical significance was set at $p < .05$ for all analyses.

3. Findings and Results

The demographic characteristics of the participants were as follows: In the intervention group, there were 9 females (60.0%) and 6 males (40.0%), while the control group consisted of 8 females (53.3%) and 7 males (46.7%). The age range of participants was between 20 and 65 years. In the intervention group, the mean age was 38.6 years ($SD = 11.2$), with 2 participants (13.3%) aged 20-29, 5 participants (33.3%) aged 30-39, 4 participants (26.7%) aged 40-49, and 4 participants (26.7%) aged 50-65. The control group had a mean age of 39.2 years ($SD = 10.8$), with 3 participants (20.0%) aged 20-29, 4 participants (26.7%) aged 30-39, 5 participants (33.3%) aged 40-49, and 3 participants (20.0%) aged 50-65. Educational levels varied, with 5 participants (33.3%) in the intervention group and 4 participants (26.7%) in the control group having completed secondary education, and the remaining participants holding higher education degrees.

Table 1

Descriptive statistics for Need for Cognition and Sense of Purpose scores

Variable	Group	Time	Mean (M)	Standard Deviation (SD)
Need for Cognition	Intervention	Pre-Intervention	32.45	4.21
		Post-Intervention	45.62	3.88
		Follow-Up	43.89	4.10
	Control	Pre-Intervention	33.12	4.50
		Post-Intervention	34.67	4.37
		Follow-Up	34.01	4.29
Sense of Purpose	Intervention	Pre-Intervention	28.34	5.22
		Post-Intervention	42.15	4.92

Control	Follow-Up	40.78	5.03
	Pre-Intervention	29.12	5.30
	Post-Intervention	30.47	5.10
	Follow-Up	30.02	5.01

The intervention group showed significant improvement in both Need for Cognition (Pre-Intervention $M = 32.45$, $SD = 4.21$; Post-Intervention $M = 45.62$, $SD = 3.88$; Follow-Up $M = 43.89$, $SD = 4.10$) and Sense of Purpose (Pre-Intervention $M = 28.34$, $SD = 5.22$; Post-Intervention $M = 42.15$, $SD = 4.92$; Follow-Up $M = 40.78$, $SD = 5.03$). The control group, however, showed minimal changes over time.

Prior to conducting the main analyses, assumptions for ANOVA with repeated measures were checked and confirmed. Normality of the data was assessed using the Shapiro-Wilk test, with results indicating that the scores for Need for Cognition (intervention group pre-intervention $W = 0.975$, $p = 0.877$; control group pre-intervention $W =$

0.962 , $p = 0.651$) and Sense of Purpose (intervention group pre-intervention $W = 0.969$, $p = 0.807$; control group pre-intervention $W = 0.954$, $p = 0.532$) were normally distributed. Homogeneity of variances was verified using Levene's test, with non-significant results for Need for Cognition ($F(1, 28) = 1.235$, $p = 0.277$) and Sense of Purpose ($F(1, 28) = 1.445$, $p = 0.240$). Additionally, Mauchly's Test of Sphericity was conducted to test the assumption of sphericity, which was not violated for Need for Cognition ($\chi^2(2) = 3.268$, $p = 0.195$) and Sense of Purpose ($\chi^2(2) = 2.892$, $p = 0.236$). These results confirm that the assumptions for conducting repeated measures ANOVA were met.

Table 2

ANOVA results for Need for Cognition and Sense of Purpose scores

Source	SS	df	MS	F	p
Need for Cognition					
Between Groups	512.23	1	512.23	31.67	<.001
Within Groups	452.12	28	16.15		
Time	768.34	2	384.17	35.45	<.001
Time * Group	634.45	2	317.23	29.27	<.001
Error	607.23	56	10.84		
Sense of Purpose					
Between Groups	732.12	1	732.12	28.56	<.001
Within Groups	586.23	28	20.94		
Time	856.32	2	428.16	32.19	<.001
Time * Group	743.45	2	371.73	27.46	<.001
Error	729.34	56	13.03		

The ANOVA results, presented in Table 2, indicate significant main effects for time and group, as well as significant interaction effects between time and group for both Need for Cognition ($F(2, 56) = 29.27$, $p < .001$) and Sense of Purpose ($F(2, 56) = 27.46$, $p < .001$). These results

suggest that the intervention had a significant impact on improving both cognitive and motivational outcomes over time, with the intervention group showing greater improvements compared to the control group.

Table 3

Bonferroni post-hoc test results for Need for Cognition and Sense of Purpose scores

Comparison	Mean Difference	SE	p
Need for Cognition			
Pre vs. Post (Intervention)	-13.17	0.92	<.001
Pre vs. Follow-Up (Intervention)	-11.44	0.88	<.001
Post vs. Follow-Up (Intervention)	1.73	0.85	.045
Pre vs. Post (Control)	-1.55	0.90	.089
Pre vs. Follow-Up (Control)	-0.89	0.88	.313
Post vs. Follow-Up (Control)	0.66	0.87	.456
Sense of Purpose			

Pre vs. Post (Intervention)	-13.81	1.05	<.001
Pre vs. Follow-Up (Intervention)	-12.44	1.01	<.001
Post vs. Follow-Up (Intervention)	1.37	0.98	.167
Pre vs. Post (Control)	-1.35	1.04	.204
Pre vs. Follow-Up (Control)	-0.90	1.00	.376
Post vs. Follow-Up (Control)	0.45	0.97	.644

The Bonferroni post-hoc test results, shown in Table 3, reveal significant differences in the intervention group between pre-intervention and post-intervention (Need for Cognition: Mean Difference = -13.17, $p < .001$; Sense of Purpose: Mean Difference = -13.81, $p < .001$), as well as between pre-intervention and follow-up (Need for Cognition: Mean Difference = -11.44, $p < .001$; Sense of Purpose: Mean Difference = -12.44, $p < .001$). These results indicate sustained improvements in both cognitive engagement and sense of purpose following the CAT intervention. In contrast, the control group did not show significant changes over time.

4. Discussion and Conclusion

The current study aimed to evaluate the effectiveness of Cognitive Analytic Therapy (CAT) in enhancing the Need for Cognition and Sense of Purpose among individuals with depression. The findings reveal significant improvements in both constructs for the intervention group, which were sustained at the four-month follow-up. Specifically, the intervention group demonstrated substantial increases in Need for Cognition and Sense of Purpose scores post-intervention and at follow-up, compared to minimal changes observed in the control group. These results are consistent with the ANOVA and Bonferroni post-hoc tests, indicating that the observed changes were statistically significant and robust.

The significant improvement in the Need for Cognition among the intervention group aligns with previous research highlighting the efficacy of cognitive interventions in enhancing cognitive engagement. Chen, Jordan, and Thompson (2006) demonstrated that Cognitive Behavioral Therapy (CBT) effectively increases cognitive engagement and problem-solving skills, which in turn reduce depressive symptoms (Chen et al., 2006). Similarly, CAT, with its integrative approach combining cognitive and psychoanalytic techniques, provides a comprehensive framework for addressing maladaptive thought patterns and promoting cognitive engagement (Crits-Christoph et al., 2010). The results of this study suggest that CAT can significantly enhance the Need for Cognition by encouraging individuals to actively engage in reflective and

analytic thinking, thereby improving their cognitive functioning and resilience to depression (Bishop et al., 1986).

The observed improvement in Sense of Purpose is also supported by existing literature. Lewis and Hill (2021) found that a strong sense of purpose acts as a psychological resource, promoting resilience to cognitive deficits attributable to depressive symptoms (Lewis & Hill, 2021). By helping individuals understand and modify their cognitive and behavioral patterns, CAT fosters a sense of agency and direction, which is crucial for developing and maintaining a sense of purpose. This study's findings are consistent with Pfund et al. (2022), who demonstrated that interventions focusing on enhancing purpose in life can significantly improve mental health outcomes, including reducing depressive symptoms and enhancing overall well-being (Pfund et al., 2022).

Moreover, the sustained improvements observed at the four-month follow-up indicate that CAT's effects are not merely short-term but have lasting benefits. This is particularly important in the context of depression, where relapse rates are high, and long-term maintenance of therapeutic gains is crucial. Previous studies have shown that CAT is effective in addressing both the cognitive and relational aspects of psychological distress, providing a comprehensive treatment framework that can lead to lasting improvements (Hunot et al., 2010).

Despite the promising results, this study has several limitations. First, the sample size was relatively small, with only 30 participants, which may limit the generalizability of the findings. Larger samples would provide more robust evidence and enhance the external validity of the results. Second, the study was conducted in Tehran, which may limit the applicability of the findings to other cultural contexts. Cultural differences can influence the effectiveness of therapeutic interventions, and future research should include diverse populations to examine the cross-cultural applicability of CAT. Third, the study relied on self-report measures, which are subject to response biases such as social desirability and recall bias. Incorporating objective measures of cognitive and motivational constructs would strengthen the study's methodology. Finally, the control group did not

receive any active intervention beyond standard care, which could have influenced the observed differences. Future studies should consider using an active control group to account for the placebo effect and provide a more rigorous comparison.

Future research should address the limitations mentioned above by including larger, more diverse samples to enhance the generalizability of the findings. Conducting multi-site studies across different cultural contexts would provide valuable insights into the cross-cultural applicability of CAT. Additionally, future studies should incorporate objective measures of cognitive and motivational constructs, such as neuropsychological assessments and behavioral tasks, to complement self-report measures and provide a more comprehensive evaluation of CAT's effectiveness. Furthermore, examining the long-term effects of CAT beyond the four-month follow-up period would be beneficial to understand the sustainability of therapeutic gains over time. It would also be valuable to explore the mechanisms underlying CAT's effectiveness, such as changes in specific cognitive and relational processes, to identify the active ingredients of the intervention and inform the development of more targeted treatments.

The findings of this study have significant implications for clinical practice. CAT's effectiveness in enhancing Need for Cognition and Sense of Purpose suggests that it can be a valuable addition to the repertoire of therapeutic interventions for depression. Clinicians should consider incorporating CAT techniques into their practice to address the cognitive and relational aspects of depression, thereby providing a more comprehensive and holistic treatment approach. The collaborative and reflective nature of CAT fosters a sense of agency and empowerment among clients, which can enhance engagement and motivation in therapy. Training programs for mental health professionals should include CAT to equip clinicians with the skills and knowledge needed to implement this integrative approach effectively. Moreover, given the lasting benefits observed, CAT can be particularly useful in preventing relapse and maintaining therapeutic gains over the long term, thus improving the overall quality of care for individuals with depression.

In conclusion, this study demonstrates the significant and sustained benefits of Cognitive Analytic Therapy (CAT) in enhancing the Need for Cognition and Sense of Purpose among individuals with depression. The results align with previous research on cognitive interventions and underscore the importance of addressing both cognitive and

motivational constructs in the treatment of depression. While the study has limitations, it provides valuable insights into the potential of CAT as an effective intervention for improving cognitive engagement and fostering a sense of purpose, ultimately leading to better mental health outcomes. Future research should continue to explore the mechanisms and long-term effects of CAT, as well as its applicability across different cultural contexts, to further establish its efficacy and inform clinical practice.

Authors' Contributions

Authors contributed equally to this article.

Declaration

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

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

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

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