

Investigating the Effectiveness of Solution-Focused Metacognitive Therapy Protocol on Worry and Dysfunctional Attitudes in a Group of Anxiety Patients

Azadeh Babaie¹ (MSc), Fateme Bazrafkan² (MSc), Soraya Marsa³ (MSc), Tahereh Zehtab Narimani⁴ (MSc), Maryam Akbari⁵ (MSc)

1. Department of Counseling, Khatam Non-Profit University, Tehran, Iran
2. Department of Psychology, Marvdasht Branch, Islamic Azad University, Marvdasht, Fars Province, Iran
3. Department of Psychology and Education of Exceptional Children, Faculty of Humanities and Social Sciences, Science and Research Branch, Islamic Azad University, Tehran, Iran
4. Department of Clinical Psychology, Tabriz Medical Sciences Branch, Islamic Azad University, Tabriz, Iran
5. Department of Counseling, Faculty of Education and Psychology, Alzahra University, Tehran, Iran.

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Corresponding Author:

Maryam Akbari,
Department of Counseling,
Faculty of Education and Psychology,
Alzahra University,
Tehran,
Iran
E-mail: mm.akbarii1998.77@gmail.com

Abstract

Introduction: Anxiety disorders are among the most prevalent psychological conditions and are often accompanied by excessive worry and dysfunctional attitudes, which significantly impair daily functioning and interpersonal relationships. This study aimed to examine the effectiveness of Solution-Focused Metacognitive Therapy (SF-MCT) in reducing worry and dysfunctional attitudes in individuals diagnosed with anxiety disorders.

Method: This applied, quasi-experimental study employed a pre-test, post-test, and three-month follow-up design with experimental and control groups. The statistical population consisted of individuals with anxiety disorders who referred to psychology clinics in Tehran in 2023. A total of 30 participants were selected using purposive sampling and randomly assigned to the experimental or control group. The intervention included six 60-minute sessions, conducted twice weekly, based on the solution-focused metacognitive therapy protocol. Data were collected using the Penn State Worry Questionnaire (PSWQ-A) and the Dysfunctional Attitude Scale (DAS-26). Descriptive statistics (mean and standard deviation) were calculated, and inferential analyses were conducted using Mann-Whitney U test and analysis of covariance (ANCOVA) at a significance level of $p < 0.05$ with SPSS version 27.

Results: The findings indicated a significant between-groups effect for worry, with lower scores observed in the experimental group compared to the control group ($p < 0.001$). Additionally, a significant time $\times$ group interaction effect was found for worry ($p = 0.024$). The between-groups effect for dysfunctional attitudes was also statistically significant ($p < 0.001$).

Conclusion: The findings demonstrate that solution-focused metacognitive therapy is effective in reducing worry and dysfunctional attitudes among individuals with anxiety disorders and may contribute to alleviating anxiety symptoms.

Keywords: Solution-Focused Metacognitive Therapy, Worry, Dysfunctional Attitudes, Anxiety Patients

Introduction

Anxiety disorders are the most widespread type of mental health conditions throughout the world, impacting around 301 million individuals [1]. The Diagnostic and Statistical Manual of Mental Disorders recognizes 11 anxiety disorders, including generalized anxiety disorder, separation anxiety disorder, social anxiety disorder, panic disorder, specific phobia, and

selective mutism [2]. Although these disorders differ in clinical presentation, research suggests that they share core cognitive processes, particularly excessive worry and maladaptive cognitive patterns [3].

Cross-sectional research indicates that approximately 31–55% of patients with a history of anxiety meet diagnostic criteria for the same or another disorder within four years, highlighting the chronic and recurrent nature of these conditions [3]. Anxiety disorders are frequently associated with physical illnesses, including cardiovascular and respiratory conditions, rheumatoid disorders, irritable bowel syndrome, and gastroesophageal reflux disease [4]. Furthermore, a significant negative correlation has been reported between mental health, illness perception, anxiety symptoms, and depression [5].

Individuals with anxiety disorders commonly experience heightened and persistent concern that negatively affects their physical, psychological, and social functioning [6]. When worry exceeds normal intensity and duration and becomes difficult to control, it becomes pathological and is particularly characteristic of generalized anxiety disorder [7]. Anxiety is manifested through symptoms such as anger, anxiety, unmanageable worry, and excessive worry [8]. Empirical findings demonstrate significant associations between worry, generalized anxiety, and cognitive emotion regulation processes [9], suggesting that worry functions as a central maintaining mechanism across anxiety disorders.

The persistence of maladaptive worry is closely linked to dysfunctional attitudes. Dysfunctional attitudes consist of unrealistic expectations, rigid beliefs, and negative evaluations of the self and others that increase vulnerability to anxiety disorders and intensify their progression [10,11]. These maladaptive schemas are often activated automatically and influence emotional responses to daily stressors, thereby exacerbating symptoms of depression and anxiety [12]. Within this cognitive framework, dysfunctional attitudes operate as underlying vulnerabilities that maintain anxiety through biased information processing and heightened threat sensitivity [11].

Given the substantial impact of anxiety disorders on quality of life, personal performance, and social and occupational functioning [13], effective and sustainable interventions are essential. Although cognitive-behavioral therapy has demonstrated efficacy in many cases [14], a proportion of patients continue to experience persistent symptoms, indicating the need for innovative approaches. Solution-focused metacognitive therapy integrates principles from metacognitive therapy and solution-focused therapy. This approach aims to modify maladaptive metacognitive beliefs while simultaneously identifying internal resources and preferred future perspectives [15,16]. Research indicates that metacognitive therapy reduces worry and rumination [17] and improves tolerance of ambiguity and perceptions of worry [18]. Additionally, metacognitive and solution-focused interventions have shown positive effects on self-efficacy beliefs in individuals with anxiety disorders [15]. Despite growing evidence supporting metacognitive-

based interventions, limited research has examined structured protocols that integrate solution-focused principles within a metacognitive framework for anxiety patients. Moreover, few studies have simultaneously evaluated the effects of such integrative approaches on both worry and dysfunctional attitudes. Considering that the present study included clinically diagnosed anxiety patients from psychological clinics, focusing on shared cognitive vulnerabilities provides a coherent and theoretically grounded framework for intervention. Therefore, this study aims to investigate the effectiveness of a solution-focused metacognitive therapy protocol on worry and dysfunctional attitudes in a group of anxiety patients.

Method

This study is categorized as an applied and quasi-experimental research, utilizing a pre-test-post-test design with a follow-up period of three months, involving both a control and experimental group. The study aims to assess worry and dysfunctional attitudes as dependent variables in the post-test and follow-up stages. The statistical population for this research comprised individuals with anxiety disorders seeking treatment at psychology clinics in Tehran from July to October 2023. A sample of 30 participants (15 in the experimental group and 15 in the control group) was selected through purposive sampling and random assignment using coin tossing. Sample size adequacy was determined using G*Power software with parameters set at $\alpha=0.05$, effect size=0.50, power test=0.80, and Number of groups=2 [19]. Based on this calculation, the sample size was determined to be 30 individuals.

The study's inclusion criteria required participants to be at least 20 years old, provide informed consent, demonstrate sufficient understanding, be affiliated with specific psychology and counseling centers in Tehran, and have a confirmed case of anxiety disorders. Exclusion criteria involved having a physical condition hindering participation, missing responses to more than seven questionnaire items, engaging in similar educational programs within three months of the study, not attending multiple in-person sessions, and recent use of psychiatric medications resulting in study withdrawal. To initiate the research, the researcher secured necessary permits from their university, identified suitable psychology and counseling clinics and publicized the study on social media platforms and clinic websites. Information sheets were presented at the clinics, and individuals who met the study's requirements were chosen for initial interviews through a selective process.

The study included the recruitment of 42 participants through surveys and interviews. The interviews conducted in this study were of a clinical screening nature and were conducted to examine inclusion and exclusion criteria and confirm the presence of an anxiety disorder. These interviews were not used as a measurement tool for the research variables and did not use a specific scored scale or checklist.

The interviews occurred in person at a clinic office. During

this time, participants received information on the research objectives and ethical guidelines, as well as clarification on any queries they raised. In this initial stage, the eligibility of the clients was evaluated, and those who did not meet the criteria for the study, such as not having the necessary time or resources for training sessions, were excluded. Some clients also dropped out of the study, resulting in a final selection of 30 individuals. Subsequently, a pre-test was administered to the clients using the research instrument. Data from 30 individuals was collected during the pre-test stage, following which the participants were randomly assigned to either the experimental or control groups (using randomization by coin toss) in preparation for the training. The group receiving solution-focused metacognitive therapy training underwent six 60-minute sessions twice a week, held in person at one of the appropriate offices of the training workshops, under the supervision of the medical centers where the research took place. The control group did not receive any training initially but later received an intensive series of training sessions online to adhere to research ethics. Table 1 provides a detailed outline of the metacognitive training therapy sessions [20]. After the last session, the experimental group filled out post-test questionnaires and repeated them three months later. Follow-up assessments were conducted online by the researcher through virtual groups. Figure 1 displays the CONSORT flow chart.

The tools used in this study were as follows:

State Worry Questionnaire (PSWQ-A): In 1990, Meyer et al. created a 16-question questionnaire to assess worry and identify the extreme, pervasive, and uncontrollable features of pathological worry in individuals [21]. Responses to the questionnaire were rated on a Likert scale from one (not at all) to five (very much), with higher

scores indicating higher levels of concern. The possible score range on the scale is from 16 to 80, with a higher score suggesting more significant worry. In a study conducted in Iran, researchers found that the questionnaire had good internal consistency, with a Cronbach's alpha coefficient of 0.88. Similarly, in the Iranian sample, internal consistency was reported to be 0.83, and the correlation with the Spielberger Anxiety Scale ($r=0.67$) indicates appropriate convergence. [22]. The current research determined the Cronbach's alpha coefficient for the scale to be 0.74.

Dysfunctional Attitude Scale (DAS-26): In 1978, Weissman and Beck created a 16-item questionnaire to assess dysfunctional attitudes in individuals [23]. This questionnaire consists of 26 questions categorized into four components: success-perfectionism, need for approval, need to please others, and vulnerability-performance evaluation. The questionnaire responses are evaluated using a five-point Likert scale, ranging from strongly agree to strongly disagree. The total score can vary between 26 and 182 on this scale. Research conducted in Iran indicated that the internal reliability of the scale, calculated using Cronbach's alpha, was 0.89 and concurrent criterion validity has also been confirmed through correlations ($r=0.55$) and ($r=0.56$). [24]. The researcher conducting this study found the Cronbach's alpha coefficient for this scale to be 0.77.

This research analyzed descriptive statistics, such as mean and standard deviation, and research hypotheses using the Mann-Whitney U and analysis of covariance tests in SPSS version 27 with a p-value of 0.05. The Shapiro-Wilk test was employed to evaluate normal distribution, while the Levene test assessed the homogeneity of variances. Additionally, the Bonferroni post hoc test was utilized to compare means.

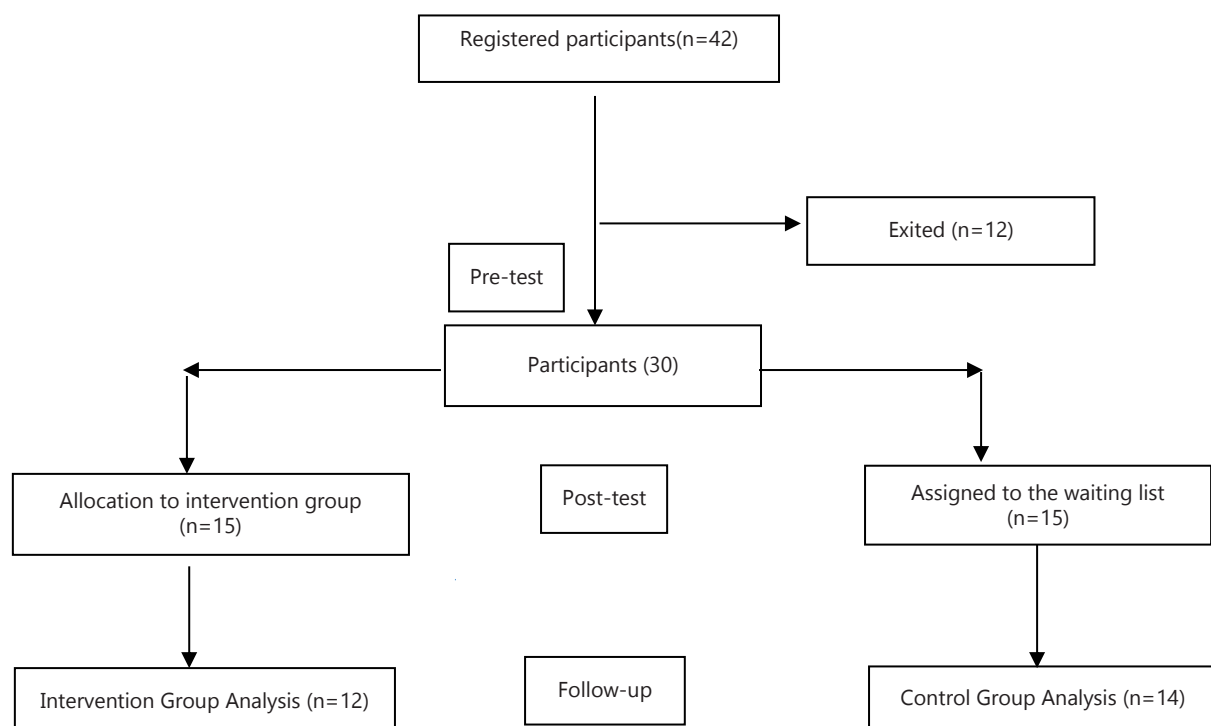


Figure 1. The flow diagram of the study.

Table 1. Summary of Solution-Focused Metacognitive Therapy

Session	
Description	The intervention was based on a Solution-Focused Metacognitive Therapy protocol developed by the researcher, integrating Wells's metacognitive therapy framework with core principles of solution-focused therapy. Delivered through a structured, manualized program by a trained therapist, the protocol preserved key metacognitive components while placing greater emphasis on identifying personal resources, exceptions, and practical solutions. Compared with classical metacognitive therapy, this approach presents metacognitive techniques in a short-term, goal-oriented, and solution-focused format aimed at enhancing self-efficacy and everyday problem-solving.
First	Introducing and getting to know the group members Objective: Getting to know the participants and introducing the goals of the solution-focused metacognitive protocol Activities: self-introduction and expressing personal experiences. Explaining anxiety disorders and their effects on people's lives. Discussing goals and expectations from the sessions. Introducing the solution-focused metacognitive model Exercise: Listing the situations in which a person experiences anxiety during the day or week
Second	Recognizing emotions in anxious situations Objective: Identifying thoughts and feelings related to anxiety disorders Activities: Review the assignment and make a list of people with the therapist's assistance. Practicing identifying negative and positive thoughts. Group discussion about feelings related to anxious situations Exercise: writing down daily feelings and thoughts
Third	Improving Metacognitive Skills Objective: metacognitive skills training Activities: Explain the concept of metacognition and its importance. Discuss strategies for managing emotions Exercises: identify and list thought patterns and worries. List solutions that people come up with to prevent anxiety
Fourth	Managing Anxiety and Strengthening Social Relationships Objective: Reducing anxiety and stress and examining social relationships and social support Activities: Teaching deep breathing and relaxation techniques. Time management and planning exercises, Discussion of coping strategies for anxiety, Discussion of the importance of social support and identifying sources of support in life as a solution to preventing anxiety
Fifth	Examining Dysfunctional attitudes Objectives: Introduce thoughts that cause anxiety Activities: Identifying factors, setting goals, and Discussing positive thoughts Exercises: Identify and list negative thoughts and solutions to prevent them
Sixth	Reviewing, evaluating, and planning for the future Objective: Reviewing materials and assessing progress Activities: Reviewing skills learned. Discussion of challenges and successes in solving problems when feeling anxious. Assessment of quality of life and psychological well-being. Set long-term and short-term goals. Discuss ongoing strategies for managing anxiety. Wrap up and encourage continued use of learned skills Exercise: Administer post-tests to individuals

Results

In this study, data were collected from patients in the experimental and control groups across three stages: pretest, posttest, and follow-up. To examine baseline comparability, demographic variables including gender, age, and education level were analyzed. Descriptive results showed comparable gender distributions between the experimental (41.7% male, 58.3% female) and control groups (35.7% male, 64.3% female). The most frequent age ranges were 20–25 and 30–40 years, with relatively similar distributions across all age categories. Participants held diploma, bachelor's, and master's degrees, with no notable differences between groups. Given the ordinal nature of the data and sample size, Mann–Whitney U tests were applied, indicating no significant differences between the experimental and control groups in gender, age, or education level ($P > 0.05$). These findings confirm

demographic equivalence between groups, allowing observed differences in dependent variables to be attributed to the therapeutic intervention.

The researcher also scrutinized the mean and deviation of the research variables in Table 2 for the research groups. Table 2 displays the mean and standard deviation of the participant's scores on the research variables. It is evident from this data that the mean of the worry variable was fairly similar in both the experimental and control groups during the pre-test phase. However, the mean scores for worry in the experimental group decreased in the post-test and follow-up stages compared to the control group, which did not show any significant changes. Similarly, the mean for the dysfunctional attitude variable was not significantly different between the experimental and control groups during the pre-test phase. Nevertheless, the scores for dysfunctional attitude decreased in the

experimental group during the Post-test and Follow-up stages compared to the control group. Once more, the control group did not show any notable differences. Similarly, the analyst investigated Levene's test in Table 3 and found that the assumption was validated. In Table 4, the analyst reviewed the outcomes of the analysis of the covariance test with repeated measurements. Based on the findings from the analysis of covariance in Table 4, the covariance analysis showed a significant between-group difference between the experimental and control groups for worry, after controlling for pre-test effects ($p < 0.001$). A significant time $\times$ group interaction was also found for worry ($p = 0.024$), indicating differential

changes over time. In addition, a significant between-group effect was observed for dysfunctional attitudes ($p < 0.001$).

As shown in Table 5, a significant difference in worry was observed between the experimental and control groups at the post-test stage ($p = 0.003$), with a greater reduction in the experimental group. This difference remained significant at the follow-up stage ($p < 0.001$), indicating the sustained effect of the intervention. Moreover, Table 5 and Figure 5 revealed significant between-group differences in dysfunctional attitudes at both post-test and follow-up stages ($p < 0.001$), with lower mean scores in the experimental group.

Table 2. Description of Research Variables

Variable	TIME	Groups	N	M	SD	Min	Max	Skewness	Kurtosis	Shapiro-Wilk	P
Worry	Pre-test	Experimental	12	52.16	1.94	50	57	1.40	2.64	0.87	0.078
		Control	14	52.42	2.06	50	57	1.09	0.79	0.88	0.074
	Post-test	Experimental	12	49.41	1.62	47	52	-0.20	-0.98	0.92	0.363
		Control	14	52.92	2.49	50	58	0.92	-0.03	0.89	0.083
	Follow-up	Experimental	12	46.58	2.06	44	50	0.74	-0.77	0.87	0.065
		Control	14	53.71	2.61	51	59	0.75	-0.59	0.87	0.053
Dysfunctional Attitude	Pre-test	Experimental	12	106.41	4.29	100	115	0.44	0.03	0.97	0.911
		Control	14	104.64	3.41	100	111	0.61	0.15	0.91	0.211
	Post-test	Experimental	12	99.41	1.83	97	103	0.53	-0.02	0.92	0.372
		Control	14	105.42	2.27	102	110	0.56	-0.07	0.95	0.688
	Follow-up	Experimental	12	97.91	0.99	96	99	-0.47	-0.65	0.87	0.080
		Control	14	105.21	3.19	100	111	0.33	-0.33	0.96	0.743

Table 3. Test for Equality of Variances (Levene's)

		F	df1	df2	p
Worry	Post-test	0.54	3	22	0.654
	Follow up	1.86	3	22	0.165
Dysfunctional Attitude	Post-test	0.51	3	22	0.676
	Follow up	0.41	3	22	0.567

Table 4. Covariance Analysis Test

Variable	Source	SS	MS	F	P	η^2p
Worry	TIME	0.45	0.45	0.07	0.792	0.003
	TIME * Pre-test	0.66	0.66	0.10	0.749	0.005
	TIME * Gender	0.56	0.56	0.08	0.768	0.004
	TIME * Group	37.75	37.75	5.96	0.024	0.22
	TIME * Gender * Group	0.50	0.50	0.08	0.780	0.004
	Pre-test	5.23	5.23	1.10	0.305	0.05
	Gender	3.50	3.50	0.74	0.399	0.03
	Group	362.11	362.11	76.65	< .001	0.78
	Gender * Group	4.27	4.27	0.90	0.352	0.04
	TIME	0.12	0.12	0.02	0.888	9.715×10^{-4}
Dysfunctional Attitude	TIME * Pre-test	0.06	0.06	0.01	0.921	4.836×10^{-4}
	TIME * Gender	0.23	0.23	0.03	0.848	0.002
	TIME * Group	4.21	4.21	0.66	0.423	0.03
	TIME * Gender * Group	0.97	0.97	0.15	0.698	0.007
	Pre-test	0.04	0.04	0.01	0.918	5.160×10^{-4}
	Gender	17.12	17.12	3.90	0.061	0.15
	Group	479.70	479.70	109.46	< .001	0.83
	Gender * Group	3.84	3.84	0.87	0.360	0.04

Table 5. Post Hoc Comparisons - Group * TIME

Variable			MD	SE	t	P _{bonf}
Worry	Experimental Group, Post-test	Control, Post-test	-3.70	0.90	-4.07	0.003
		Experimental Group, Follow-up	2.85	1.04	2.73	0.075
		Control, Follow-up	-4.38	0.95	-4.61	< .001
	Control, Post-test	Experimental Group, Follow-up	6.55	0.95	6.86	< .001
		Control, Follow-up	-0.68	0.99	-0.68	1.000
	Experimental Group, Follow-up	Control, Follow up	-7.23	1.00	-7.23	< .001
Post Hoc Comparisons						
Dysfunctional Attitude	TIME	Group(I)	Group(J)	MD	Std. Error	P
	Post-test	Experimental Group	Control	-5.97*	0.86	< .001
		Control	Experimental Group	5.97*	0.86	< .001
	Follow up	Experimental Group	Control	-7.30*	1.01	< .001
		Control	Experimental Group	7.30*	1.01	< .001

Discussion

The present study aimed to examine the impact of a solution-focused metacognitive therapy protocol on worry and dysfunctional attitudes in a group of patients with anxiety disorders. The participants included individuals diagnosed with various anxiety disorders referred to psychology and counseling centers.

The first key finding was a reduction in worry following the intervention. The results suggest that the protocol may help decrease excessive worry, which is a common cognitive feature across different anxiety disorders. These findings are in line with previous research showing that metacognitive therapy can reduce worry and rumination in individuals with generalized anxiety disorder [17] and improve tolerance of ambiguity and perception of worry [18]. This pattern indicates that interventions targeting metacognitive beliefs may influence worry by helping participants monitor and evaluate their thoughts about potential threats and future events, potentially replacing unproductive worry patterns with more adaptive cognitive strategies [6,16].

The second main finding was a decrease in dysfunctional attitudes. The results indicate that solution-focused metacognitive therapy may contribute to modifying maladaptive cognitive patterns. Previous studies support this outcome, showing that metacognitive therapy, solution-focused therapy, and endurance training can enhance self-efficacy beliefs in individuals with social anxiety disorder [15] and reduce maladaptive thoughts and behaviors in emotional disorders such as depression and anxiety [25,26]. Lawrence et al. (2021) further highlighted that metacognitive approaches help diminish dysfunctional attitudes by addressing underlying factors, such as emotion regulation difficulties and unhealthy beliefs about oneself, which can support psychological well-being and reduce anxiety and depressive symptoms [26]. In this study, participants were guided to recognize thought patterns such as negative future thinking, persistent worries, and beliefs of uncontrollable thoughts, and to adopt more flexible and realistic perspectives [27,28]. By focusing on metacognitive processes rather

than the content of negative thoughts, patients may develop practical strategies to manage their cognition, reduce the intensity of dysfunctional attitudes, and engage in constructive behaviors that improve emotional regulation [15].

Overall, these findings suggest that the solution-focused metacognitive therapy protocol may be effective in addressing core cognitive and metacognitive processes that maintain anxiety and maladaptive thought patterns. By emphasizing evaluation and adjustment of cognitive processes, the therapy encourages participants to respond more adaptively to worries and dysfunctional attitudes [6,16].

One of the limitations of the current study was the inclusion of participants diagnosed with various types of anxiety disorders without focusing on a single specific disorder. This decision was made intentionally due to practical constraints in recruiting a sufficient number of participants; therefore, the sample was heterogeneous in terms of diagnosis, including individuals with generalized anxiety disorder, social anxiety disorder, and panic disorder. Although this approach allowed for a broader understanding of the therapy's impact on shared cognitive and metacognitive mechanisms, it limits the ability to generalize the findings to any single anxiety disorder. Additionally, other potentially relevant factors, such as negative emotions, were not examined, suggesting that future research should consider including mediating variables to clarify the mechanisms underlying changes. Some participants with low motivation showed limited engagement, highlighting the need for motivation-enhancing strategies, such as motivational interviewing, in similar studies. The therapist's experience and perspective can influence treatment effectiveness; therefore, using therapists with diverse backgrounds and providing regular supervision is recommended. External environmental conditions may also affect outcomes, suggesting that future studies should consider strategies to manage these factors. Some participants had difficulty understanding the treatment protocol, emphasizing the importance of providing clear explanations or manuals at the onset of therapy.

Conclusion

The study indicates that solution-focused metacognitive therapy is effective in reducing worry and dysfunctional attitudes among individuals with anxiety by enhancing cognitive coping and thought-management strategies. The findings support the broader clinical use of this protocol, including group-based interventions, psychoeducational programs, and digital formats to improve accessibility. Future studies should investigate its efficacy in more homogeneous anxiety populations and explore mediating, motivational, environmental, and therapist-related factors to better clarify mechanisms of change and improve treatment outcomes.

Conflict of Interest

The authors declare no conflicts of interest.

Ethical Approval

Participants' privacy and confidentiality were respected, and they were given the option to voluntarily participate or withdraw from the study at any time. The research was approved under the ethical code of IR.SAU.REC. AIAZHA 1402.253.

Declaration of Generative AI and AI-Assisted Technologies

During the preparation of this work, the authors did not use any AI tools.

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