

Effectiveness of Cognitive Therapy According to Douglas Model on Meta-Cognitive Beliefs and Emotion Regulation in the Students with Generalized Anxiety Disorder

Mahin Dokht Reisi Dastgerdi ^a , Mozghan Arefi ^{a*} 

^a Department of Psychology, Psychology and Educational Faculty, Islamic Azad University (Khorasgan Branch), Isfahan, Iran.

ARTICLE INFO

ABSTRACT

ORIGINAL ARTICLE

Article History:

Received: 11 Jul 2019

Revised: 8 Sep 2020

Accepted: 9 Oct 2020

*Corresponding Author:

Mozghan Arefi

Email:

Mozghan.arefi@yahoo.com

Tel: +98 9336114383

Citation:

Reisi Dastgerdi MD, Arefi M. Effectiveness of Cognitive Therapy According to Douglas Model on Meta-Cognitive Beliefs and Emotion Regulation in the Students with Generalized Anxiety Disorder. *Social Behavior Research & Health (SBRH)*. 2020; 4(2): 519-528.

Background: The emergence of generalized anxiety disorder in the students causes development of other psychological and cognitive harms. Therefore, the present study was conducted to determine the effectiveness of cognitive therapy based on Douglas model on Meta-Cognitive Beliefs and Emotion Regulation in the students with generalized anxiety disorder.

Methods: The research method was quasi-experimental with pretest, posttest and control group design. The statistical population included students with generalized anxiety disorder studying in the city of Isfahan in the academic year 2017-18. 30 students with generalized anxiety disorder were selected from the statistical population through purposive non-random sampling method and were randomly placed into experimental and control groups (15 students in the experimental and 15 in the control group). The experimental group received twelve ninety-minute sessions of therapy interventions related to cognitive therapy based on Douglas model during three months once a week, while the control group did not receive any intervention during the study. The applied instruments included generalized anxiety disorder questionnaire, emotion-regulation questionnaire, and meta-cognitive beliefs questionnaire. Data analysis from the study was done via SPSS23 software through Descriptive statistics (mean and standard deviation) and inferential statistics (analysis of covariance) method.

Results: The results of data analysis showed that cognitive therapy based on Douglas model could significantly influence meta-cognitive beliefs and emotion regulation in the students with generalized anxiety disorder ($p < 0.001$), as this therapy could lead to an increase in meta-cognitive beliefs and emotion regulation in the students with generalized anxiety disorder. The effect size of this treatment on metacognitive beliefs and emotional adjustment was 0.72 and 0.80, respectively.

Conclusion: According to the findings of the present study, it is suggested to apply cognitive therapy based on Douglas model as an efficient method in order to enhance meta-cognitive beliefs and emotion regulation in the students with generalized anxiety disorder.

Keywords: Generalized Anxiety Disorder, Cognitive Therapy, Meta-Cognitive Beliefs, Emotion Regulation

Introduction

Generalized Anxiety Disorder (GAD) is one of the most common groups of psychiatric disorders that causes severe dysfunction and is likely to improve poorly without treatment (Dahlin et al., 2016). It lasts for most days and at least 6 months, is difficult to control, and is defined by physical symptoms such as muscle tension, irritability, sleep disturbances, and restlessness. GAD is defined as a disorder which is difficult to control and according to the diagnostic and statistical manual of mental disorders fifth edition is associated with severe anxiety and worry about several events or activities that last most days and at least 6 months, and physical symptoms such as muscle tension, irritability, having trouble falling asleep and restlessness (Hayes-Skelton et al., 2013). GAD is introduced as the most common anxiety disorder in most epidemiological studies in Iran (Hosseini Ghaffari et al., 2013) and is introduced as not only the most common anxiety disorder, but also among other psychological disorders, as one of the most important disabling disorders for adults in some other studies (Cuijpers et al., 2014).

It should be noted that people with GAD have different metacognitive beliefs compared to normal people (Besharat et al., 2015). According to the metacognitive approach, individuals fall into the trap of emotional distress because their metacognitions lead to a particular pattern of response to internal experiences that perpetuates negative emotion and reinforces negative beliefs. People fall into the trap of emotional distress because their metacognitions leads to the continuation of negative emotions and the strengthening of negative beliefs cause negative emotions to persist and negative beliefs to be reinforced. This model is called cognitive-attention syndrome, which includes Self-Regulated Strategy, mind rumination, fixed attention, and self-regulatory strategies or maladaptive coping behaviors (Wells, 2009). According to the metacognitive model, in order to treat generalized anxiety disorder successfully, it is necessary to focus on modulating several metacognitive factors.

Some of the most important factors include false beliefs about uncontrollable anxiety, negative beliefs about the harmful consequences of anxiety, and positive beliefs about the usefulness of anxiety as a coping style (Wells, 2008).

Incidence of generalized anxiety disorder causes other psychological disorders in the individual that can affect the cognitive, metacognitive, communication and social process of the individual (Mansouri et al., 2011). Emotional process and emotional cognitive regulation are considered as areas affected in people with generalized anxiety disorder. Because according to the results of previous studies, people with generalized anxiety disorder have difficulty in regulating their emotions (Karsazi et al., 2015; Aldao et al., 2010). Emotion regulation involves the methods that can be used by to influence which emotions they have when and how they express those (Gross & Thompson, 2007). This regulation can be done automatically or controlled or it can be conscious or unconscious. According to the difference between what is dictated by the tendencies of the responses and the behavior that ultimately occurs by us, we are constantly regulate our emotional responses. Regulating means changing the characteristics of certain emotions, perhaps changing the dynamics of an emotion, such as decreasing or increasing its intensity, limiting or expanding its scope, slowing or accelerating the arousal and recovery time, and prolonging or shortening the duration of the emotion (Kim et al., 2015).

Different methods are used to treat the psychological problems of students with generalized anxiety disorder. Cognitive therapy model based on Dougas is considered as one of these therapies that is considered a treatment for people with generalized anxiety disorder (Sharafati et al., 2017). Cognitive therapy introduced by Dougas is one of the recent therapeutic models that have addressed the conceptualization of etiology of the disorder (Dugas & Robichaud, 2007). The cognitive model introduced by Dougas emphasizes



the importance of four factors in distinguishing between people with generalized anxiety disorder and normal people, including: intolerance of uncertainty, positive beliefs about worry, cognitive avoidance, and a negative orientation toward the problem. This treatment focuses on the inability to tolerate uncertainty in the development of signs and symptoms of generalized anxiety disorder (Behar et al., 2009). In this approach, the intolerance of uncertainty is due to the negative belief about ambiguity (Gumport et al., 2018). Furthermore, it should be noted that, in general, much emphasis has been placed on irrational beliefs and harmful cognitive processes in cognitive therapy (Hall et al., 2016; Granero et al., 2017). Anxious or ambiguous situations lead to arise endless questions for the person involved. There is usually no answer to these questions. Because a person with generalized anxiety disorder cannot tolerate uncertainty, and on the other hand, believes in anxiety and its positive consequences (Behar et al., 2009; Sharafati et al., 2017). According to Dugas et al. intolerance of uncertainty can be a precondition for a negative orientation towards the problem and cognitive avoidance. According to this view, people with intolerance of high uncertainty can be a precondition for a negative orientation towards the problem and cognitive avoidance. According to this view, people with high intolerance of uncertainty are prone to form anxiety and get caught up in endless and unanswered questions (Dugas et al., 2010). Now, it is inevitable to use appropriate treatment methods such as cognitive therapy based on the Dugas model due to psychological disorders in students with generalized anxiety disorder and the need to use appropriate and timely intervention methods and treatment and on the other hand by observing the effectiveness of cognitive therapy in improving disorders of different statistical communities. The current research gap is due to the fact that no research has been conducted to determine the effectiveness of cognitive therapy based on the Dugas model on metacognitive beliefs and

emotional regulation of students with generalized anxiety disorder despite the destructive role of generalized anxiety disorder in behavioral and emotional problems. Therefore, the main issue of this study is whether the cognitive therapy based on the Dugas model has a significant effect on metacognitive beliefs and emotional regulation of students with generalized anxiety disorder.

Methods

This study is considered as a quasi-experimental research in terms of the method used and pretest-posttest control group design is used in the present study. The independent variable was cognitive therapy based on the Dugas model and the dependent variables were metacognitive beliefs and emotional regulation of students with generalized anxiety disorder. In this study, statistical population included students with generalized anxiety disorder in Isfahan in the academic year 2016 -2017. In this study, purposive non-probability sampling method was used. Thus, after referring to the education of Isfahan from among 6 districts, the education of the 4th district of Isfahan was randomly selected. Then, 10 female middle schools were selected from the primary schools of the selected district (education of district 4). Then, the generalized anxiety questionnaire was distributed by attending the class, and after completion, it was collected by referring to selected schools (1947 questionnaires). In the next step, the collected questionnaires were scored and 96 students were diagnosed using generalized anxiety disorder as well as clinical interviews with this disorder from the people who earned scores higher than the cut-off score of the Generalized Anxiety Disorder Questionnaire (GAD) (scores above 10), 30 people with the highest scores were selected and randomly assigned to the experimental and control groups (15 students in the experimental group and 15 students in the control group). The experimental group received educational intervention of cognitive therapy based on the Dugas model. Though, the control group did not receive any

intervention during the study. Inclusion criteria included attending middle school (having an age period of 12 to 16 years), earning a score higher than the cut-off score of the Generalized Anxiety Disorder Questionnaire (GAD) (score above 10), willingness to participate in research and not having a psychological or physical disorder (according to the self-declaration as well as the student's academic record and counseling). Also, the exclusion criteria included absence for more than two sessions, non-cooperation and not doing the tasks specified in the class, unwillingness to continue attending the research process and the occurrence of an unwanted accident that disrupts the possibility of continuing to attend treatment sessions. Students' consent was obtained to participate in the intervention program and they were informed of all stages of the intervention to observe ethics in research. Also, control group was assured that they would receive these interventions after the research process was completed. The following questionnaires have been used in this study:

Generalized Anxiety Disorder Questionnaire (GAD)

This scale developed by Spitzer et al. (2006) consists of 7 questions. Response spectrum is scored based on Likert scale and options were scored in forms of never, several days, more than half a day, and almost every day from 0 to 3. The scale score range is from 0 to 21. A higher score of 11 indicates the presence of generalized anxiety disorder in the individual. Spitzer et al. (2006) reported that Cronbach's alpha coefficient and retest coefficient were 0.92 and 0.83, respectively. The convergent validity of the questionnaire was assessed using Beck Anxiety Inventory, 90-item Psychiatric Symptoms Checklist, and Health Survey Questionnaire. The correlation coefficient of the Generalized Anxiety Disorder Scale with Beck Anxiety Questionnaire was 0.72, Mental Symptoms Checklist was 90 questions, 0.74, and the Health Survey Questionnaire and its dimensions were between 0.30-0.75 (for the

physical function dimension - for the mental health dimension). According to the results of exploratory research factor analysis of a research on Iranian students and clinical sample, there is a factor with an explanation of 53%. The correlation coefficient of the short scale of generalized anxiety disorder with the Spielberg State-Trait Anxiety Inventory (STAI) was 0.71 (for the state) and 0.52 (for the Trait) and with the 12-item anxiety subscale of the Clinical Symptoms Checklist was 0.63. The correlation coefficient of the short scale of generalized anxiety disorder and the mental health dimension of the General Health Survey Questionnaire was obtained -0.28.

Emotion Regulation Questionnaire (ERQ)

The Emotion Regulation Questionnaire was developed by Gross and John in 2003 and has 10 questions and two subscales and measures emotional inhibition and cognitive reassessment in adolescents. The subject responds to any of these questionnaires on a seven-point Likert scale from strongly disagree to strongly agree. The scores in this scale varies from 10-70. The internal consistency coefficient in the subscale of cognitive reassessment is 0.72 for male subjects and 0.79 for female subjects. Also, the internal consistency coefficient in the emotional inhibition subscale was 0.67 for male subjects and 0.69 for female subjects (Gross & John, 2003). Soleimani and Habibi (2015) in their study reported that Cronbach's alpha coefficient for this questionnaire was 0.81. Also, Cronbach's alpha coefficient in the study conducted by Mohammadi and Mousavi (2015) for emotion regulation questionnaire developed by Gross and John was 0.79. Also, these researchers reported the content validity of this questionnaire was at the desirable level. The reliability of the questionnaire in this study was 0.83 which obtained using Cronbach's alpha coefficient.

Wells' Meta-Cognitive Beliefs Questionnaire (MCBQ)

The Meta-Cognitive Beliefs Questionnaire (MCBQ) was developed by Wells and Cartwright-Hatton in 2004. This questionnaire is a 30-item



self-report scale that assesses individual differences in metacognitive beliefs, judgments, and monitoring attitudes. This scale has five subscales, including positive anxiety beliefs (questions 1, 7, 10, 19, 23, 28), negative metacognitive beliefs (questions 2, 4, 9, 11, 15, 21), low cognitive efficiency (Questions 8, 14, 17, 24, 26, 29), negative metacognitive beliefs about thought control (questions 6, 13, 20, 22, 25, 27) and cognitive self-awareness (questions 3, 5, 12, 16, 18, 30). The answers to the questions are calculated in the form of a 4 point Likert scale, 1: I am not agreeing to 4: I completely agree. Questions 3, 5, 12, 16, 18 and 30 are scored in reverse. In order to calculate the score for each dimension, the sum of the score of each question in that dimension is calculated. Scoring of this questionnaire is done in this way that obtaining a higher score indicates less metacognitive beliefs and vice versa. Shirinzadeh Dastgerdi (2006) has translated and prepared this questionnaire for Iranian people. It has been reported that in the Iranian sample, Cronbach's alpha coefficient of the whole scale was 0.91 and it was 0.87, 0.86, 0.81, 0.80 and 0.71, respectively for the subscales of positive anxiety beliefs, negative metacognitive beliefs, low cognitive efficiency, and negative metacognitive beliefs about thoughts and cognitive self-awareness in the Iranian sample. Also, the content validity of this questionnaire was examined by two clinical psychologists and a psychiatrist and in order to measure internal coherence, the coefficient of 79% was obtained using the split-half method and Cronbach's alpha method (Shirinzadeh Dastgerdi, 2006).

Research implementation method

After obtaining the necessary permits and performing the sampling process (as mentioned earlier), students with selected generalized anxiety disorder (30 students) were randomly assigned to experimental and control groups (15 students in the experimental group and 15 students in the control group). The experimental group received 12 sessions of cognitive therapy interventions based

on the Douglas model for three months on a weekly basis of 90 minutes (Table 1). Though, the control group did not receive any intervention during the study. Therapeutic sessions were conducted by the researcher. This study has been registered with the ethics code of IR.SSU.SPH.REC.1398.151.

Two levels of descriptive statistics (mean and standard deviation) and inferential statistics (analysis of covariance) have been used to analyze the data in the present study (Table 2). Mean and standard deviation was used at the level of descriptive statistics and Shapiro-Wilk test was used to evaluate the normality of the distribution of variables at the level of inferential statistics, Levin test to check the equality of variances as well as analysis of covariance (due to separation of the effect of pretest) to test the research hypothesis. Analysis of the statistical results was performed using SPSS-23 statistical software at an error level of 0.05.

Results

According to the findings of demographic data, the subjects aged 12 to 16 years, the highest frequency in the experimental group belonged to the age range of 14 years and in the control group to the age range of 15 years. On the other hand, academic level of these people was between seventh to ninth grades, among which the eighth grade had the highest frequency (48.6%). Now the descriptive findings of the research are examined.

The assumptions of parametric tests were examined before the results of analysis of covariance were presented. According to the results of Shapiro-Wilk test, the assumption of normal distribution of data samples is met ($p > 0.05$). Also, according to the results of Levin test, the assumption of homogeneity of variance was met ($p > 0.05$). It should also be noted that in examining the assumption of homogeneity of the regression line slope, the results showed that the interaction of the pretest with the grouping variable was not significant in the variables of metacognitive beliefs and emotional regulation.

This is, the assumption of homogeneity of the regression line slope has been met in the variables of metacognitive beliefs and emotional regulation. Table 3, shows the results of analysis of covariance, the effect of group membership on the level of metacognitive beliefs and emotional regulation of students with generalized anxiety disorder with control of pre-test variable.

The results in Table 3 show that independent variable training (cognitive therapy based on the Dougas model) could lead to a significant difference in the mean scores of dependent variables (metacognitive beliefs and emotional regulation of students with generalized anxiety disorder) in the post-test stage at error level 0.05. Thus, it can be concluded that the mean scores of metacognitive beliefs and emotional regulation variables of students with generalized anxiety

disorder have improved with the intervention of Dougas-based cognitive therapy model with control of the pre-test variable. The effect value of Dougas-based cognitive therapy model on metacognitive beliefs and emotional regulation of students with generalized anxiety disorder was 0.72 and 0.80, respectively. That is, 72% and 80% of the changes in the variables of metacognitive beliefs and emotional regulation of students with generalized anxiety disorder are explained by group membership (cognitive therapy based on the Dougas model).

As shown in Table 4, the scores of the mean modified in the metacognitive beliefs variable in the experimental group are lower than the control group and the mean scores of cognitive emotion regulation in the experimental group are higher than the control group.

Table 1. Summary of cognitive therapy training sessions based on the Dougas model

Sessions	Summary of actions taken
The first and second sessions	During this stage, the therapist gives information about the structure of the sessions, the basic principles of cognitive- behavioral intervention for generalized anxiety disorder and structure of model to a patient. Furthermore, other information as the nature of the concern and the division of the concern about the current problem of current and concerns about future hypothetical problems and how to monitor the concerns of the patient education were taught to the patient.
Third and fourth sessions	This stage is considered as the most important stage of treatment. At this stage, the therapist tried to inform the patient about the effect of intolerance of ambiguity on the persistence of anxiety, and to realize that the main source of extreme anxiety is intolerance of ambiguity and constant avoidance of ambiguous and uncertain situations, and gradually face this condition. Also, the patient's concerns were examined and identified at this stage.
fifth and sixth sessions	These sessions were held with the following objectives: helping the patient to understand the relationship between intolerance of uncertainty and anxiety, identifying unavoidable situations involved in uncertainty, recognizing the symptoms of uncertainty and searching and experiencing uncertain situations.
Seventh and eighth sessions	During this stage, the therapist first identified these beliefs with the patient's help and then helped the patient re-assess his or her beliefs through Socratic dialogue and behavioral experiments.
Ninth and tenth sessions	At this stage, the problem-solving process was used to address concerns about current problems. The patient was taught to seek solutions using the problem-solving process when faced with a problem instead of worrying about the problem. Therefore, the next stage in problem-solving skills training was to deal with worries about recent problems after correcting positive beliefs about the usefulness of worries. In this session, patients learned that people with generalized anxiety disorder consider the problem as threatening and are pessimistic about their ability to solve the problem and do not trust it
Eleventh and twelfth sessions	The purpose of this stage was to teach the patient how to deal with another type of worry, worrying about hypothetical future problems.



Table 2. Mean and standard deviation of metacognitive beliefs and emotion regulation in both experimental and control groups in the pre- test and post-test and follow-up

Components	Groups	Pre-test		Normality	Post-test		Normality
		Average	SD	P	Average	SD	P
Metacognitive beliefs	Experimental Group	76.60	7.11	0.31	57.46	6.37	0.11
	Control group	76.26	7.37	0.17	77.33	7.32	0.32
Emotion Regulation	Experimental Group	31.66	5.53	0.33	43.53	4.53	0.14
	Control group	36.86	5.95	0.19	34.66	5.39	0.27

Table 3. Analysis of covariance of the effect of cognitive therapy based on the Douglas model on metacognitive beliefs and cognitive emotion regulation in adolescents with generalized anxiety disorder

Variables		Total squares	Freedom degree	Mean square	F	Sig	Effect Size	Test power
Metacognitive beliefs	Pre-test	203.01	1	203.01	4.69	0.04	0.15	0.55
	Group membership	2997.89	1	2997.89	69.29	0.0001	0.72	1
	Error	1168.05	27	43.26				
Emotion Regulation	Pre-test	436.77	1	463.77	54.14	0.001	0.66	1
	Group membership	968.64	1	968.64	113.07	0.0001	0.80	1
	Error	231.29	27	8.56				

Table 4. The average values modified in beliefs cognitive and set cognitive excitement adolescents with generalized anxiety disorder

Variables	Groups	Average	SE
Metacognitive beliefs	Experimental Group	57.46	6.65
	control group	77.33	7.32
Cognitive regulation of emotion	Experimental Group	43.53	4.53
	control group	34.66	5.39

Discussion

The present study was carried out aimed to investigate the effectiveness of Douglas-based cognitive therapy model on metacognitive beliefs and emotional regulation of students with generalized anxiety disorder. According to the results of data analysis, Douglas-based cognitive therapy model has a significant effect on metacognitive beliefs and emotional regulation of students with generalized anxiety disorder. That is, this treatment was successful to improve metacognitive beliefs and emotional regulation of students with generalized anxiety disorder.

The results of this study was consistent the results of Sharafati et al. (2017). So that, the researchers during a study examined the effectiveness of Douglas-based cognitive therapy model on intolerance of uncertainty, cognitive avoidance and

positive anxiety beliefs in patients with generalized anxiety disorder. According to the results, cognitive therapy based on the Douglas model has a significant effect on intolerance of uncertainty, cognitive avoidance and positive beliefs of anxiety in patients with generalized anxiety disorder. Also, Ahmadvand and Yousefi (2017) during a study concluded that mindfulness-based cognitive therapy training has an effect on changing people's coping styles.

In explanation of this result about the effect of cognitive therapy based on the Douglas model on the metacognitive beliefs of students with generalized anxiety disorder, it should be noted that the cognitive model introduced by Douglas emphasizes the importance of four factors, including: intolerance, positive beliefs about worry, cognitive and experiential avoidance and orientation.

Negatively emphasizes the difficulty in distinguishing between people with generalized anxiety disorder and normal people. Cognitive therapy introduced by Dugas focuses on the inability to tolerate uncertainty in the development of signs and symptoms of generalized anxiety disorder, which mainly leads to form the dysfunctional attitudes and anxiety in individuals (Behar et al., 2009). Therefore, when adolescents with generalized anxiety disorder are exposed to the Dugas-based cognitive therapy with a negative belief in ambiguity which is results of the intolerance of uncertainty, they perceive changes in their cognitive and metacognitive processes by using the challenge with irrational thoughts and using techniques such as examining dysfunctional hypotheses, which in line with that, their metacognitive beliefs are challenged and improved. Furthermore, the Dugas-based cognitive therapy seeks to change traumatic cognitive thoughts by changing cognitive and metacognitive processes by encouraging clients to identify ambiguous situations in everyday life and to deal with them gradually. Changes in traumatic cognitive processes also lead to changes in metacognitive processes, thus metacognitive beliefs improve.

In another explanation, cognitive therapy helps students with generalized anxiety disorder recognize their distorted thinking patterns and cognitive and dysfunctional thoughts. Regular discussions and organized cognitive and metacognitive tasks are used to change these distorted and inefficient thoughts (Gumport et al, 2018). Accordingly, in cognitive therapy, many skills are taught to improve the desired mental state, which results in improving the mental health and metacognitive beliefs of students with generalized anxiety disorder, some of the most important skills include self-understanding, self-efficacy, and problem-solving skills. Independence, coping skills with dangerous and stress-full situations. In explanation of another result reported in this study, which is related to the effect of Dugas-based cognitive therapy on the emotional regulation of students with generalized anxiety disorder, it should be stated that the goal of

cognitive therapy is to correct irrational beliefs, dysfunctional beliefs, misinterpretations and cognitive errors, a sense of control over life, facilitating constructive self-talk and strengthening coping skills (Granero et al., 2017). In this treatment, it is emphasized that thinking processes are as important as environmental influences. Therefore, this method helps the individual to review and change distorted thought patterns and dysfunctional cognitive and emotional attitudes using regular discussions and organized cognitive tasks. Cognitive therapy has a positive effect on creating and increasing competencies such as decision making, motivation to accept responsibility, positive communication with others, happiness, self-esteem, problem solving, self-regulation, self-sufficiency and mental health (Hall et al., 2016). Therefore, it can be concluded that cognitive therapy includes controlling and regulating emotions, feelings, stress management, effective communication and self-control, and on the other hand, includes value and self-efficacy structure and challenges previous concerns of students with generalized anxiety disorder as a result of a person's interaction with the environment. This process causes the person to reprocess the emotional and cognitive dimensions, which in turn leads to improved emotion regulation. Some of the most important limitations of this study includes limited population of this study which focuses on includes adolescents with generalized anxiety disorder in Isfahan; not-using random sampling method and failure to follow the follow-up step. Thus, it is recommended to follow the follow-up stage and use random sampling method and carry out this research in other provinces, regions, and communities with different cultures, other traumas and diseases (such as depressive disorder, obsessive-compulsive disorder, coping disorder, etc.) to increase the generalizability of the results.

Conclusion

Given that Dugas-based cognitive therapy model has a positive effect on metacognitive beliefs and emotional regulation of students with



generalized anxiety disorder, it is suggested at the practical level that Dugas-based cognitive therapy model be taught in a specialized workshop to psychologists and educational counselors to use this treatment for adolescents with generalized anxiety disorder to take practical steps to improve metacognitive beliefs and emotional regulation of these adolescents.

Conflict of interest

No conflict of interest has been reported by the authors in this study.

Acknowledgments

This study is adapted from the master's thesis with number of 23820701952035, thus the authors of the present study would like to thank all the adolescents who participated in this study, their families, and school officials for their full cooperation in conducting the research.

Authors' Contribution

Conceptualization, M.R.D.; Methodology, M.A.; Investigation, M.A.; Formal analysis, M.R.D.; Data Curation, M.R.D.; Writing – Original Draft, M.A.; Writing – Review & Editing, M.A.

All authors read and approved the final manuscript and are responsible about any question related to article.

References

- Ahmadvand, M.A., Yousefi, S. (2017). The effectiveness of mindfulness training on the choice of coping styles with stress among students, *Family and Research Quarterly*, 14(36), 49-66. <http://qjfr.ir/article-1-359-en.html> [Persian]
- Aldao, A., Nolen-Hoeksema, S., Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: a Meta analytic review. *Clinical Psychology Review*, 30, 217–237. <https://doi.org/10.1016/j.cpr.2009.11.004>
- Behar, E., DiMarco, I.D., Hekler, E.B., Mohlman, J., Staples, A.M. (2009). Current theoretical models of generalized anxiety disorder (GAD): conceptual review and treatment implications. *Journal of Anxiety Disorder*, 23(8), 1011-1023.

- <https://doi.org/10.1016/j.janxdis.2009.07.006>
- Besharat, M.A., Mirjalili, R., Bahrami Ehsan, H. (2015). The mediating role of metacognitive beliefs and cognitive emotion regulation failure in the relationship between cognitive perfectionism and anxiety in patients with generalized anxiety disorder, *Journal of Mental Health Principles*, 17(3), 115-122. [Persian] http://jfmh.mums.ac.ir/article_4316.html
- Buhr, K., Dugas, M.J. (2006). Investigating the construct validity of intolerance of uncertainty and its unique relationship with worry. *Journal of Anxiety Disorder*, 20(2), 222-236. <https://doi.org/10.1016/j.janxdis.2004.12.004>
- Cuijpers, P., Sijbrandij, M., Koole, S., Huibers, M., Berking, M., Andersson, G. (2014). Psychological treatment of generalized anxiety disorder: a meta-analysis. *Clinical Psychology Review*. 34(2), 130–140. <https://doi.org/10.1016/j.cpr.2014.01.002>
- Dahlin, M., Ryberg, M., Vernmark, K., Annas, N., Carlbring, P., Andersson, G. (2016). Internet-delivered acceptance-based behavior therapy for generalized anxiety disorder: A pilot study. *Internet Interventions*, 6, 16–21. <https://doi.org/10.1016/j.invent.2016.08.004>
- Dugas, M.J., Freeston, M.H., Ladouceur, R. (2010). Intolerance of uncertainty and problem orientation in worry. *Cognitive Therapy and Research*, 2(21), 593–606. <https://doi.org/10.1023/A:1021890322153>
- Dugas, M.J., Robichaud, M. (2007). *Cognitive behavioral treatment for generalized anxiety disorder: from science to practice*. Routledge: Taylor & Francis.
- Granero, R., Fernandez-Aranda, F., Mestre-Bach, G., Steward, T., Bano, M., Sancho, M., Sánchez, I. (2017). Cognitive behavioral therapy for compulsive buying behavior: Predictors of treatment outcome. *Europe Psychiatry*, 39(11), 57-65. <https://doi.org/10.1016/j.eurpsy.2016.06.004>
- Gross, J.J., John, O.P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of*

- Personality and Social Psychology, 85(2), 348–362.
<https://doi.org/10.1037/0022-3514.85.2.348>
- Gross, J.J., Thompson, R.A. (2007). Emotion regulation: Conceptual foundations. In J. J. Gross (Ed.), *Handbook of emotion regulation*. New York: Guilford Press. pp. 3-24.
- Gumport, N.B., Dong, L., Lee, J.Y., Harvey, A.G. (2018). Patient learning of treatment contents in cognitive therapy. *Journal of Behavior Therapy and Experimental Psychiatry*; 58, 51-59.
<https://doi.org/10.1016/j.jbtep.2017.08.005>
- Hall, J., Kellett, S., Berrios, R., Bains, M.K., Scott, S. (2016). Efficacy of cognitive behavioral therapy for generalized anxiety disorder in older adults: systematic review, meta-analysis, and metaregression. *American Journal Geriatric Psychiatry*, 24(11), 1063-1073.
<https://doi.org/10.1016/j.jagp.2016.06.006>
- Hayes-Skelton, S.A., Roemer, L., Orsillo, S.M. (2013). A randomized clinical trial comparing an acceptance-based behavior therapy to applied relaxation for generalized anxiety disorder. *Journal of Consulting and Clinical Psychology*, 81(5), 761–773.
<https://doi.org/10.1037/a0032871>
- Hosseini Ghaffari, F., Mohammadkhani, P., Pourshahbaz, A.S., Dolatshahi, B. (2013). The effectiveness of group metacognitive therapy on metacognitive beliefs, anxiety and areas of concern in patients with generalized anxiety disorder, *Journal of Clinical Psychology*, 5(1), 11-20. DOI: 10.22075/jcp.2017.2112. [Persian]
- Karsazi, H., Fardaini Sofla, H., Jafarpour Rezaei, M. (2015). Structural Relationships between Brain-Behavioral Systems and Difficulty in Emotion Regulation with Symptoms of Generalized Anxiety Disorder, *Journal of Psychological Achievements*, 22(1), 153-173. DOI: 10.22055/psy.2015.11193. [Persian]
- Kim, M. Y., Bigman, Y., Tamir, M. (2015). Emotion regulation. Chapter to appear in J. D. Wright (Ed.), *International Encyclopedia of Social and Behavioral Sciences*, 2nd Ed. (pp.452-456). Oxford, UK: Elsevier.
- Mansouri, A., Bakhshi Pourroodsari, A., Mahmoud Alilou, M., Farnam, A., Fakhari, A. (2011). Comparison of anxiety, obsessive-compulsive disorder and rumination in people with generalized anxiety disorder, obsessive-compulsive disorder, major depressive disorder and normal people, *Psychological Studies*, 7(4), 12-25. DOI: 10.22051/psy.2011.1535. [Persian]
- Mohammadi, H., Mousavi, V. (2015). Comparison of Emotional Regulation and Self-Control in Children with and without Attention Deficit/Hyperactivity Disorder. *Journal Child Ment Health*. 2(2), 21-33. [Persian]
<http://childmentalhealth.ir/article-1-52-fa.html>
- Sharafati, H., Taheri, A., Asmai Majd, S., Amiri, M. (2017). The effectiveness of cognitive therapy based on the Douglas model on uncertainty, cognitive avoidance and positive beliefs of anxiety in patients with generalized anxiety disorder, *Journal of Clinical Psychology*, 9(2), 14-29. DOI: 10.22075/jcp.2017.10203. [Persian]
- Shirinzadeh Dastgerdi, P. (2006). Comparison of metacognitive beliefs and responsibility in patients with obsessive-compulsive disorder, generalized anxiety disorder and normal individuals. Master Thesis in Clinical Psychology. Shiraz University. [Persian]
- Soleimani, A., Habibi, Y. (2014). The relationship between emotion regulation and resilience with psychological well-being in students, *Journal of School Psychology*, 3(4), 51-72. [Persian]
- Spitzer, R. L., Kroenke, K., Williams, J. B., Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: the GAD-7. *Archives of internal medicine*, 166(10), 1092-1097.
- Wells, A. (2008). *Metacognitive Therapy: Cognition applied to regulating cognition*. *Behavior & Cognitive psychotherapy*, 36(6), 651-658. DOI: 10.1017/S1352465808004803
- Wells, A. (2009). *Metacognitive therapy for anxiety and depression*. New York: The Guilford Press.