

Metacognition and Depression, State Anxiety and Trait Anxiety Symptoms

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Article info:

Received: 10 Jan. 2014

Accepted: 06 June 2014

Keywords:

Meta-cognition, Depression,
Trait anxiety, State anxiety

ABSTRACT

Objective: The objective of this study was analyzing the effect of meta-cognition elements on depression, trait and state anxiety symptoms.

Methods: In this Study, the sample consisted of 224 students of University of Social Welfare and Rehabilitation Sciences that answered three questionnaires including Metacognitive Questionnaire (MCQ-30), Beck Depression inventory (BDI-II) and Spielberger State-Trait Anxiety Inventory. Pearson correlation coefficient and step-by-step regression to analyze were used for data analysis.

Results: According to the results, there is a positive and significant correlation between total score of metacognition and four elements of beliefs (positive beliefs, negative beliefs, uncontrollability and low cognitive trust ($P < 0.01$)). In addition, summary of results indicated that out of metacognitive elements, only general negative beliefs may predict the variations of depression scores, ($P < 0.01$).

Conclusion: Summary of this study demonstrated that metacognitive beliefs are significantly effective on prediction of depression and anxiety. Moreover, out of metacognitive elements, only general negative beliefs, in comparison with other elements, may predict the depression.

1. Introduction

Metacognitive knowledge refers to the beliefs and ideas of people about recognition of self, e.g. beliefs about the meaning of different kinds of thoughts and beliefs related to efficacy of memory and cognitive control (Spada et al., 2008). According to the recent theories, metacognition is one of important factors in development and continuity of psychological disorders. Metacognitive beliefs are significantly effective on etiology and stability of anxiety and depression disorders (Wells, 2004). Main objective of this study was analyzing the factors affecting anxiety and depression disorder

including the effect of metacognition on appearance and continuity of these disorders, Based on self-regulatory executive function (S-REF) model of Wells, metacognitive control strategies include responses that people express for controlling the activities of their cognitive system (Wells, 2004; Wells, 2009). Metacognitive strategies include responses with the purpose of intensifying the information flow from objective level (such as monitoring) or strategies with the purpose of completing or improving the objective level processing. In general, emotional disorder is associated with the strategy of threat monitoring. This strategy focuses on internal or external threat resources. To improve the emotional disorder processing, the people must have a range of strategies at their dispos-

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Table 1. Frequency distribution of participants based on marital status, education, sex characteristics (n=224)

		Frequency	Percent
Marital status	Single	208	92.9
	Married	16	7.1
Education	M.Sc.	84	37.5
	B.Sc.	140	62.5
Sex	Male	81	36.2
	Female	143	63.8
Age	18-20	135	60.1
	21-23	80	35.8
	24-26	9	4.1

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al for controlling the annoying and unwanted thoughts (Wells et al., 1996). In self-regularity executive function model, cognitive vulnerability has symptoms analogs to psychological disorder and disorder continuity. These symptoms are diagnosed as intensified self-focused attention, threat monitoring, ruminative processing, activation of maladaptive beliefs and inefficient self-regularity strategies.

These symptoms are stimulated by metacognitive beliefs of sufferer and acts as reference and resource for interpretation and control of the cognitive events (Wells, 2004). The repetitive negative thought is a state that is observed in many psychological inefficiency cases. Meanwhile, depression is along with obsessive rumination. A person suffering from depression wants to be completely self-conscious, and focusing on the previous events involving oneself in the current and future problems related thereto. S-REF model focuses on the involvement of self-beliefs (knowledge to self) and psychological pathology. This knowledge incorporates the meaningful personal evaluations about stimulus and offers the schema for comparative responses. Wells et al., (1996) stated that the beliefs are offered as processing and comparison schema and are not focused (like schema theory, only contextually and as declarative knowledge), but they observed as products of specific routine processing. These beliefs provide a schema for processing that leads the attention, searching for information, memory recovery, evaluation and behavior.

Therefore, S-REF model focuses on the effectiveness of a specific kind of self-knowledge disorder (metacognitive knowledge) in anxiety disorders. An attentive-cognitive syndrome with characteristics such as self-centralization, continuous processing of self-related beliefs, worry and rumination, threat monitoring, and applying all kinds of comparative methods is repugnant

to formation of knowledge related to adaptive self. This kind of knowledge leads to explanations and interpretations (Sica et al., 2007). The main idea of metacognition theory relates to incomplete beliefs in cognition which forms the metacognition. These beliefs incorporate a pattern of thought that worry, threat stabilization and uncontrollable thoughts dominate thereon (Yilmaz et al., 2004). Metacognitive beliefs predict the experience of negative emotions like anxiety (Pourehsan, 2010). Research evidences indicate that metacognitive beliefs have positive and significant relationship with anxiety and stress (Pournamdarian, 2012). The researches show that improvement of negative metacognitive beliefs is effective on reduction of anxiety symptoms (state and trait) (Bahrami, 2010). In the anxiety treatment using metacognition, generalized anxiety is affected mostly. The sufferer awareness of anxiety symptoms and stress origin in self can reduce the anxiety (Wells, 2004).

The results of the studies applied on metacognition demonstrate the remarkable effect of metacognitive beliefs on psychological disorders emergence and lasting. It is obvious that further results on the quality and effect of metacognitive elements on emotional disorders such as anxiety and depression are followed by theoretical and practical implications and facilitate theoretic perception of psychological disorders and better interventions for improvement of these disorders. To this effect, in this study the effect of metacognition on depression, state anxiety and trait anxiety is analyzed and through specifying the relationship among variables, the grounds of depression and anxiety disorder are more disclosed.

2. Method

This study used research a correlative study method. To evaluate the capability of metacognitive elements in the prediction of depression, state anxiety and trait anxiety

Table 2. Coefficient of correlation between metacognition, depression, state anxiety and trait anxiety

	Depression	State anxiety	Trait anxiety
Positive beliefs in worry	0.154*	0.122	0.129
General negative beliefs	0.539*	0.577*	0.583*
Low cognitive trust	0.232*	0.314*	0.372*
Negative beliefs in non-control	0.305*	0.303*	0.315*
Cognitive self-consciousness	0.054	-0.067	-0.040
General metacognition score	0.427*	0.423*	0.458*

* p< 0.05 ** p< 0.01

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symptoms, multiple regression test was used. Population of this study consisted of B.Sc. and M.Sc. students graduated from University of Social Welfare and Rehabilitation Sciences within academic year (2008-09) with an age range of 18-25 year. To implement the study, after obtaining permit from university registrar office, researcher referred to faculties of the university and according to stratified random sampling distributed questionnaire among the participants based on students' field and matriculation year and data was collected. In this survey, the sample size (estimating 10% loss) was calculated as 230, and at the end (whereas 6 samples were withdrawn from initial estimated sample) the data were collected and analyzed from 224 samples. In this study, Cochran's formula was used for determining sample size; sample size was evaluated by accounting 10% of falling 230 persons. At study Poornamdarian (2012) had chosen and studied to research effect of upward cognition on self efficiency sample students about 260 persons, so, in this research was chosen 230 persons based on Cochran's formula and according to record.

Inclusion criteria for the study

Selected peoples to be satisfy and interest on participating on study. 2- They enable to give information and experiences. 3- They are student of Wellbeing and Rehabilitation Science University

Criteria exit of program

1- To introduce dissatisfaction to continue participation, 2- people which are answer to the questionnaire partially:

Information collected from the instruments described in the following paragraphs:

Metacognitive questionnaire (MCQ-30): was designed based on etacognitive model by Cartwright-Hatton and

Wells (1997) for evaluation of individual differences related to positive and negative beliefs in worry and unwanted thoughts, metacognitive monitoring and judgment of cognitive efficiency. This questionnaire is comprised 30 questions and 5 subscales about metacognition (Bahrami et al., 2005). And as follows:

1-Congestion reliance, 2- positive beliefs about worry, 3- cognition awareness, 4- dangerous thoughts and incontrollable, 5- need to control thoughts- answers at this scale was computed based on Li kert scale 4 degrees (disagree (1), few agree (2), relatively agree (3), completely agree (4)). Minimum achievable point at this 30th questions test equal to 30 and maximum of that are 120. Total point for upward cognition was attained by sum of points under the scales. This questionnaire was finding norm by Mohammadi and co workers in Iran, in 2001. Quantity of Cronbach's alpha was reported for durability of this questionnaire is 0/74 and for permissibility is 0/81.

Beck Depression inventory (BDI-II): was designed by Beck in 1996 and is one of the prevalent self-assessment scales for depression and have 21 speeches and each speech compose of 4 sentences that person must be drew a line around one of them and shown feeling and behavior. Each speech was numbered 0 – 30 and so person could obtain the point between 0 – 63. this questionnaire has been widely evaluated psychometrically since formulation. Results of a meta-analytical analysis show that its internal consistency coefficient was equaled within the range of 0.73 to 0.92 with the mean value of 0.86. (Marnat, 2003). The internal stability of this test for Iranian students was equaled to 0.87 (α) and the reliability of retest is estimated as 0.73 (Gharayi et al., 2002). Validity of questionnaire was analyzed according to factorial structure (construct validity) method for a sample (n=353). Summary of the factor analysis and validity

Table 3. Summary of depression prediction model based on general score of metacognition and general negative belief

Variable	Coefficient of determination	Adjusted coefficient of determination	F	Sig (F)	Beta	Sig (Beta)
General score of metacognition	0.182	0.178	49.387	0.001	0.427	0.001
General negative beliefs	0.290	0.287	90.757	0.001	0.539	0.001

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assessment demonstrated the questionnaire efficiency (Dobson et al., 2006).

Spielberger State-Trait Anxiety Inventory: is a self-assessment instrument consisting of two separate psychometric scales for measuring two differentiated concepts but dependent to anxiety. The trait anxiety scale is comprised 20 items that the sample must specify his or her general feeling at the most times. The frequency of experienced anxiety symptom is determined by four grades (almost never, sometimes, most times and almost ever). Regarding state anxiety scale, score of 20-31 denotes mild anxiety, 32-42 moderate to low anxiety, 43-53 moderate to high anxiety, 54-64 relatively severe anxiety, 65-72 severe anxiety and 73-80 severe anxiety (Marnat, 1990). Mahram (2002) standardized this inventory in Iran and calculated its reliability according to Cronbach as 0.91. Concurrent and diagnostic validity of this test has been relatively high, to analyze correlation and regression was used SPSS21 software.

3. Results

The objective of this study was to analyze the effect of metacognition on depression, state and trait anxiety symptoms of B.Sc. and M.Sc. students who studied at the University of Social Welfare & Rehabilitation (2008-09 academic year). Accordingly, a sample size 224 students was selected for this purpose and questionnaires

were distributed among them. Inferential and descriptive statistics were used to analyze the data. Table (1) presents descriptive data of participants in this research. It is notable that the average age of study people 20.

According to upward table most of the participants were single and regard to educations, they were experts and according to sexuality they were female. According to upward table, the most range of age was 18 to 20 with 60% and the less range of age was 24 to 26 with 4%.

Table (2) presents coefficient of correlations between variables presented at the study. According to the results of Pearson correlation coefficient, a positive and significant association is observed between general score of metacognition and four elements including positive beliefs in worry, negative beliefs in worry focusing on risk and controllability, low cognitive trust, negative beliefs in thoughts focusing on superstition, punishment, responsibility and need to control as well as cognitive self-consciousness.

According to Table (3), 17.8% of variations of depression scores may be predicted by general score of metacognition ($P=0.001$). Moreover, according to the results obtained from step-by-step regression analysis test (Table 4), out of metacognitive elements, only general negative beliefs may significantly predict the variations of depression scores. In this model, metacognitive element

Table 4. Summary of trait anxiety prediction model based on metacognitive elements and general score of metacognition

Variable	Coefficient of determination	Adjusted coefficient of determination	F	Sig (F)	Beta	Sig (Beta)
Model 1						
General negative beliefs	0.340	0.337	114.257	0.001	0.583	0.001
Model 2						
General negative beliefs					0.518	0.001
Low cognitive trust	0.360	0.354	62.142	0.001	0.156	0.009
General score of metacognition	0.210	0.206	58.842	0.001	0.458	0.001

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Table 5. Summary of state anxiety prediction model based on general score of metacognition and general negative beliefs

Variable	Coefficient of determination	Adjusted coefficient of determination	F	Sig (F)	Beta	Sig (Beta)
General score of metacognition	0.182	0.178	49.387	0.001	0.427	0.001
General negative beliefs	0.290	0.287	90.757	0.001	0.539	0.001

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of general negative beliefs predicts 28.7% of variations relates to depression score.

With regard to Table (4), 20.6% of variations related to trait anxiety may be predicted based on general score of metacognition ($P < 0.01$; $F = 58.842$). Moreover, according to the results obtained from step-by-step regression analysis test (Table 4), out of metacognitive elements, 2 elements including negative beliefs in thoughts focusing on superstition, punishment, responsibility and need to control and low cognitive trust may significantly predict the variations of trait anxiety scores. In this model, 2 metacognitive elements of general negative beliefs in thoughts focusing on superstition, punishment, responsibility need to control and low cognitive trust predict 35.4% of the variation.

Finally, according to Table (5), 17.5% of variations related to state anxiety may be predicted based on general score of metacognition ($P < 0.01$; $F = 48.385$). Moreover, according to the results obtained from step-by-step regression analysis test, out of metacognitive elements, only negative beliefs in thoughts focusing on superstition, punishment, responsibility and need to control may significantly predict the variations of state anxiety scores. In this model, metacognitive element of negative beliefs in thoughts focusing on superstition, punishment, responsibility and need to control may predict 33% of variations related to trait anxiety

4. Discussion

Results of this research indicated that metacognitive beliefs have significant effects on the prediction of depression and anxiety which are consistent with the previous researches (Corcoran et al., 2008; Perez Nieto et al., 2010; Yaris, 2010; Yousefi, et al., 2008). In addition, out of metacognitive elements, only general negative beliefs comparing to other elements may predict the depression. Therefore, negative beliefs in non control, low cognitive trust and positive beliefs in worry, despite of correlation with depression may not significantly predict the depression. According to self-regularity executive function model, cognitive vulnerability has symptoms

in connection with psychological disorder and its continuity which include intensified self-focused attention, threat monitoring, ruminative processing, activation of maladaptive beliefs and inefficient self-regularity strategies. These symptoms are stimulated by metacognitive beliefs of the sufferer and acts as reference and resource in interpretation and control of cognitive events (Wells, 2009; Wells, 2004). The repetitive negative thought is a state observed in many psychological inefficiency cases. Depression accompanies with obsessive rumination and anxiety com with worry. A person suffering from depression wants to be completely self-conscious, focuses on the past events and involves himself in the current and future problems related thereto (Wells, 2004; Papegeorgiou et al., 2009). In addition, a part of trait anxiety variations is predictable by metacognitive beliefs. Among elements related to metacognitive beliefs, low cognitive trust and general negative beliefs may predict the trait anxiety scores. Other metacognitive elements despite of correlation have no significant predictability in this model.

Summary the results of this study concerning the positive relationship between metacognitive elements and trait anxiety are consistent with some previous researches (Wells, 2004; Burduk, Robinson et al., 2003; Spada et al., 2010). Moreover, metacognitive beliefs may predict a part of variations of state anxiety. Out of metacognitive elements, only general negative belief has predictability of state anxiety variations. Findings of this study concerning association between metacognitive beliefs and state anxiety confirm the results of former researches (Wells et al., 2006). According to S-REF model, psychological disorder has a close relationship with attentive-cognitive responses syndrome.

These responses are revealed as self-focused attention, continuous processing, negative beliefs, worry, rumination, awareness of threat and execution of specific types of coping that is connected to more adaptive knowledge progress. In pressure states, coping and processing activities affect the cognitive adaption that are necessary for patient's returning to natural function. Particularly,

processing activities that are associated with worry or active intellectual rumination affect the internal function of self-regularity executive system of the anxious person (such as changing the processing priorities and improvement of beliefs) as well as coping strategies that need attention. In addition, these distressed and stressed people are often involved in attentive coping strategies for monitoring the threat consistent to their personal concerns. These characteristics stop the self-processing activities of people so that they will suffer from permanent psychological disorders.

The cognitive and functional purposes of anxious and stressed people are limited due to lack of accessible processing resources or pressed by individual goals, so that the patient for coping with inefficiency is completely ill and has problem for his/her cognitive restructuring. In general, S-REF theory approach states that the metacognitions (peoples' information on their cognitions) have fundamental role in keeping the maladaptive coping forms (such as excessive self-attention, monitoring the treats) and this form is majorly effective on development and keeping the emotional and psychological disturbances (Wells et al., 2004). Results of this study may be used in prediction of depression and anxiety therapy. Metacognition elements have not significant predictability of depression, but have more predictability for anxiety. Low cognitive trust and general negative beliefs have predictability of scores related to trait anxiety.

Anxiety this research had some limitations first, team conditions for implementation of study and constraints for complete and one-by-one supervision over filling the questionnaires may affect the attention of participants for answering the questionnaires. Furthermore, due to implementing the research on a student sample, the findings may not be generalized to the whole population. Therefore, it is proposed to apply the present study on different social classes to obtain more extendable results. Moreover, to compare the metacognitive beliefs of men and women, it is necessary to provide these comparisons in a homogenous sample with respect to age and in compliance with the men and women ratio in the sample.

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