

Comparing metacognitive beliefs and worry in patients with anxiety, depression and non-patients

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ABSTRACT

The present study aimed to compare the metacognitive beliefs and worry in depressed, anxious patients and non-patients. This descriptive-correlational study was conducted in 2012. A total of 180 individuals including 60 depressed patients (30 males, 30 females), 60 anxious patients (30 males, 30 females) referred to psychological and counseling centers and 60 non-patient university students (30 males, 30 females) participated in the study. After applying convenience sampling and conducting unstructured interview by a psychologist, the subjects completed the Zung's Anxiety Scale, Beck's Depression Inventory, Penn State Worry Questionnaire, and the Wells' Metacognition Questionnaire. The results of the statistical analysis, ANOVA, LSD post hoc test, and Pearson correlation indicated that compared to depressed patients and non-patient subjects, anxious patients had higher levels of metacognitive beliefs and worry and this difference was significant ($F=21/53$, $p<0/001$). Moreover, there was a positive significant correlation between metacognitive beliefs and worry in anxious patients and healthy subjects ($p<0/001$). However, this correlation was not significant among depressed patients. It seems that metacognitive beliefs are closely related to worry specially in anxious patients.

Keywords: Metacognitive Beliefs, Worry, Anxiety, Depression

INTRODUCTION

According to cognitive theories, psychological disorders such as depression and anxiety are associated with inefficiencies and distortions of thoughts and evaluation of events. For instance, depression is distinguished by automatic ideas and some deficiencies in their interpretations. It is assumed that these negative thoughts, which cause broad psychological disorders, are rooted in the activation of negative beliefs and assumptions stored in the long term memory. Interpretations that are significant in depression are associated with the loss of relation, altitude and/or value. In the case of anxiety, main interpretation or cognitive conceptions are related to physical and/or mental-social risks (Hjemdal, Hagen, Nordahl & Wells, 2013).

Hence, cognitive-behavioral approaches tend to focus on a limited range of cognition to explain psychological disorders. These approaches pay much more attention to the content of thoughts and beliefs than their process. Moreover, it is not evident that how key aspects of cognition including beliefs, evaluations and the impacts of such beliefs on information are represented (Wells & Colbear, 2012).

In many cognitive models of anxiety and depression, social and physical beliefs are taken into consideration and therapy is concentrated on modifying and altering the content of such anxiety-provoking and depression-generating thoughts and beliefs. Other issues such as self beliefs and knowledge that people reflect about their own thoughts (metacognition) have no place in fundamental cognitive models such as Beck's (1976).

Meta-cognition is an aspect of information processing system that monitors, interprets, evaluates and regulates the content and processes of self organization. According to Flavell (1979) and Moses and Baird (1998, in Wells, 2000), there are two components of meta-cognition known as "metacognitive knowledge" and "metacognitive regulation". Metacognitive knowledge includes the first beliefs or knowledge about the factors that influence the process and outcome of cognitive functions. This knowledge may be right or wrong; and when it is activated, it affects the thought process and procedures. Metacognitive regulation refers to the number of executive actions such as planning, monitoring and reviewing, checking, detecting and correcting errors. According to the theory of Self-Regulatory Executive Function Model (Wells, 2000), these two general components (metacognitive knowledge and metacognitive regulation) interact and they have a great significance in Wells' theory (2000).

According to Wells' theory, beliefs and evaluations that people have about their automatic thoughts (metacognition) can be positive or negative (Wells, 2010). Researches indicate a positive association between metacognitive beliefs and worry (Marcantonio *et al.*, 2010; Nordahl *et al.*, 2010).

Meanwhile, worry is one of the central features of anxiety disorder in the fourth diagnostic and statistical classification of mental disorders in American Psychiatric Association (1994). Borkovec, Ray, & Stöber (1998) defined worry as a verbal dominant intellectual activity in which the individual think about the negative events that may occur in the future. However, excessive worry is an important characteristic of the anxiety and mood disorders (Stanley & Gibson, 1985 in Szabo & Lovibond, 2002; Yilmaz, Gencoz & Wells, 2011). Research conducted on anxiety has entailed metacognitive implications such as positive and negative beliefs about worry as well. People, who use metacognition such as positive beliefs about worry and rumination, mal-adapt copying strategies more than those who do not apply such beliefs (Wells, 2011). Positive metacognitive beliefs about worry isolate patients with generalized anxiety disorder from other patients and non-patients (Dugas, Gagnon, Ladouceur & Freeston, 2012; Dragan *et al.*, 2012). In particular, positive metacognitive beliefs about worry contribute to maintaining and strengthening worry (Dugas *et al.*, 1998). Research about positive beliefs about worry demonstrates that people who are really worry often believes that worry is a useful copying strategy and this attitude toward worry, maintains and fosters the tendency to being worry (Borkovec, Hazlett-Stevens & Diaz, 1999). Extremely worried people have report the belief that worry can help with analytic thinking, problem solving and motivation (Borkovec & Roemer, 1995; Davey, Jubb & Cameron, 1996; Cartright-Hatton & Wells, 1997).

Moreover, worried people believe that worry can protect them from negative implications and reduce their emotional reactions to negative implications (Freeston, Rhe´aume, Letarte, Dugas, & Ladouceur, 1994). Studies have shown that participants with high levels of positive and negative metacognitive beliefs about worry have had higher scores on measures of psychopathology; and those with higher scores in positive beliefs have had the highest scores on measures of worry (Davey *et al.*, 1996; Marcantonio, *et al.*, 2010). Studies that have addressed worry and its metacognitive beliefs have mostly focused on worry in the context of anxiety disorders. However, it seems that worry plays a fundamental role in other disorders such as depression (Starcevic, 1995), playing a vital role. It seems that metacognitive beliefs are associated with proneness to worry and worry may also play an essential role in anxiety and depression (Wells *et al.*, 2012; Dragan *et al.*, 2012). Accordingly, the aim of the current study is to compare the metacognitive beliefs and worry in anxious and depressed patients and non-patients.

MATERIALS AND METHODS

The present study followed a descriptive-correlational method. The population of this study included all patients with anxiety and depressive disorders who were clients of public and private counseling centers in Rasht and 7 of its subordinate towns in 2012.

2.1. Sample and Sampling Method:

Three groups of subjects participated in this study. Anxious patients were those who referred to a psychologist or counselor due to their excessive anxiety, extreme worry and other emotional and cognitive symptoms and the psychologist had diagnosed the anxiety disorder using the unstructured clinical interview. Moreover, these subjects' Zung Anxiety Scale scores were above 34. Depressed patients were those who referred to a psychologist or counselor due to problems like excessive sadness, severe loss of appetite, drastic decline of interest in things that used to be interesting to the person of and issues related to depression symptoms; the psychologist had diagnosed the depression disorder using the unstructured clinical interview. In addition, these subjects' Beck Depression

Inventory scores were all above 20. Non-patients were 60 students that matched the clinical samples according to the criteria of age and sex. The sampling method of the present research was convenience sampling. Considering the extent of the population and the presence of three sample groups (anxious, depressed and non-patients) under study, to compare the mean values, 15 subjects were sufficient for each group. So the researcher used 60 depressed patients, 60 patients with anxiety disorders and 60 healthy individuals (students) to enhance the reliability and validity of the data.

The sampling method of the present study for the population of patients was convenience, non-random sampling, selecting patients interested in participating in research. Likewise, the sampling method for the healthy population was based on convenience sampling. Subjects of both sexes participated in the study. The number of participants in the anxious group was: female=30, male=30; in the group of depressed patients was: female=30, male=30 and in normal subjects was: female=30, male=30. The mean age of patients with anxiety was 24.20 (SD=2.89). The mean age of depressed patients was 23.12 (SD= 2.7) and for non-patients, it was 24.28 (SD=6.10).

2.2.Data collection

Zung's Anxiety Scale: This 20-question test was created in 1982 by Zung. Some items are designed in the positive form and some are negative that assess anxiety symptoms in three contexts of physiological, cognitions and emotion. Each item is measured through a 4-point Likert scale which is graded from 1 (never) to 4 (always). The range of raw scores of the measure is: (no anxiety <34-49< severe anxiety.) In the test, 34 is the section score of raw scores. Less than 34 is considered non-anxious and above that is anxious. The reliability coefficient is 0.89 and the internal consistency (Cronbach's alpha) has been reported 0.88 to 0.93 for this test (Lezak, 1995).

Beck's Depression Inventory: Beck's Depression Inventory is a 21-item self-reporting tool that gauges depression symptoms in the last 7 days (Frye and Goodman, 2000). Scores range from 0 to 63. Higher overall score indicates more depression. A meta-analysis of internal consistency estimated the mean coefficient alpha for psychiatric and non-psychiatric subjects to be 0.86 and 0.81, respectively (Beck, Steer & Garbin, 1988 in Frye and Goodman, 2000). Beck et al (1988; in Frye & Goodman, 2000) notes that Beck's depression inventory can distinguish between major depression and generalized anxiety disorder. Gallagher et al. (1982; in Frye & Goodman, 2000) have reported acceptable levels of internal consistency (coefficient alpha) and test-retest reliability for depressed patients (0.73 to 0.79) and non-depressed individuals (0.76 to 0.86) in samples of depressed patient and non-depressed subjects.

Penn State Worry Questionnaire (PSWQ) (Meyer, et al., 2002): This questionnaire contains 16 items that measure the tendency toward worry and focus on frequency, uncontrollability and distress. Each item is measured by a 5-point Likert scale which is scored from 1 (completely disagree) to 5 (completely agree). PSWQ has a single construct. It has a high internal consistency (Alpha coefficient=0.93), and test-retest reliability after 4 weeks which is $r=0.93$. Blairs et al (2002) reported that its alpha coefficient was close to 0.91. In other conducted studies, the test had associations with psychological variables such as anxiety, depression and self-esteem (Meyer et al, 1990). In the present study, the coefficient alpha for the whole sample was 0.68 and the coefficient alpha for sub-groups of anxious, depressed patients, and non-patients was 0.79, 0.62 and 0.68, respectively.

The 30-item Revised Metacognition Questionnaire (Wells & Cartright-Hatton, 2004): the 30-item questionnaire measures a range of beliefs about worry, intrusive thoughts and metacognitive processes which includes 5 sub-components as follows: Cognitive confidence (e.g. I have a poor memory), positive beliefs about worry (worry helps me cope), cognitive self-consciousness (I pay attention to the way my mind works), negative beliefs uncontrollability and dangerousness of worry (worry is dangerous for me) and the need to control thoughts (e.g. thinking about certain things is very bad). The test is taken from the main 65-item test (Cartright-Hatton & Wells, 1997) due to saving time and money. Each item is measured by a 4-point Likert scale which is scored from 1 (disagree) to 5 (completely agree). Cronbach's alpha coefficient was ranged from 0.72 (need to control thoughts) to 0.93 (cognitive confidence). The overall alpha was $\alpha=0.93$. Test-retest reliability of Pearson correlation for the total scale was $r=0.75$ and for its sub-scales including cognitive confidence, positive beliefs and cognitive self-consciousness, negative beliefs and need to control thoughts was, $r=0.69, 0.79, 0.87, 0.59$ and 0.74 respectively. For Padowa obsession, its correlation was 0.23-0.40, for PSWQ, $r=0.54$ and in the case of Spielberg's trait anxiety, it was $r=0.53$ (Wells & Cartright-Hatton, 2004; Wells, 2005). In the present study, the Cronbach's alpha for the whole sample was estimated to be 0.87. This is while for anxious patients, depressed patients and non-patients, it was 0.89, 0.71 and 0.86, respectively.

The study procedures and ethical considerations: For the purposes of the research, questionnaires were completed in the presence of the counselor through visiting counseling centers and gaining the consent of authorities of private centers and Official coordination with public services (welfare and education). After providing necessary explanations regarding the objectives of the study and gaining subjects' full consent, the questionnaires were

completed. A number of questionnaires were completed in the presence of a counselor or a psychologist with a master's degree. Some other forms were answered in the presence of the researcher. Subjects whose diagnosis of the psychologist or psychiatrist did not comply with test criteria were excluded.

Moreover, according to the criteria of age and sex, 60 students who matched the clinical samples were selected and they answered the questionnaires in the presence of the researcher. This statistical analysis was conducted using statistical software SPSS 11.5. Statistical methods of one-way ANOVA, LSD post hoc test and correlation coefficient were also applied.

RESULTS AND DISCUSSION

Table 1 represents the Mean and SD of worry and metacognition variables in anxious, depressed patients, and non-patients.

Table 1: Mean and SD of worry and metacognition variables in anxious, depressed patients, and non-patients

Variable	Group	Anxious Patients		Depressed Patients		Non-patients	
		\bar{X}	SD	\bar{X}	SD	\bar{X}	SD
	Statistical Indicators	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD
Worry		55.72	3.24	48/62	4/32	43/78	6/35
Metacognition subscales	Lack of cognitive confidence	12.48	5.41	11/60	4/00	9/77	3/24
	Positive beliefs about worry	12.1	5.24	10/58	2/13	10/45	3/62
	Cognitive self-consciousness.	18.58	2.71	16/55	3/37	15/98	3/80
	Negative beliefs about uncontrollability and dangerousness of worry	17.63	4.51	14/85	3/44	13/18	4/59
	The need to control thoughts	18.00	4.11	16/93	2/84	14/88	3/35
General metacognition		78.80	15.12	70/52	8/49	64/27	11/99

As Table 1 indicates, the mean and standard deviation of metacognition in anxious, depressed and non-patient groups are $\bar{X} = 78.80$ (SD=15.12), $\bar{X} = 70.52$ (SD=8.49) and $\bar{X} = 64.27$ (SD=11.99), respectively. The average score of metacognitive beliefs of anxious patients is higher than that of other two groups.

Also the mean and standard deviation of the worry scores for anxious, depressed and non-patient groups were $55/72$ ($\bar{X} = 55.72$, SD=3.24), $48/62$ ($\bar{X} = 48.62$, SD=4.32) and $43/78$ ($\bar{X} = 43.78$, SD=6.35). The average score of worry of anxious patients is higher than that of other two groups. In general, anxious patients have significantly higher scores in scales and subscales of metacognitive beliefs and worry compared to depressed patients and non-patients and depressed patients scored significantly higher than those of the non-patients.

Table 2: Results of univariate analysis of variance of metacognition in anxious, depressed and non-patient subjects

Source of variation	SS	df	MS	F	P
Between-group	6377/88	2	3188/94	21/53	0/001
within-group	26220/32	177	148/14		
total	32598/19	179			

As Table 2 demonstrates, there is a significant difference between metacognitive beliefs of anxious, depressed and non-patient subjects ($p < 0.001$, $F = 21.53$).

Results of LSD test on the metacognition variable for anxious, depressed and non-patient subjects are shown in table 3.

Table 3: Results of LSD test on the metacognition variable for anxious, depressed and non-patient subjects

Mean	Group	2	3
78/80	1 - Anxious	**	**
70/52	2 - Depressed	-----	**
64/27	3 - Non-patient	-----	-----

Results of LSD (table 3) show a significant difference between the average scores of metacognitive beliefs for anxious, depressed and non-patient subjects. In other words, the average score of metacognition for the anxious group is higher than those for depressed and non-patient subjects; and the difference is significant ($p < 0.006$).

Results of univariate analysis of variance on worry score in three groups are shown in table 4.

Table 4: Results of univariate analysis of variance, the variable of worry in anxious, depressed and non-patient subjects

Source of variation	SS	df	MS	F	P
Between-group	4323/51	2	2161/76	93/36	0/001
within-group	4098/55	177	23/16		
total	8422/06	179			

As it is shown in Table 4, there is a significant difference between worry scores of the three groups ($p < 0.001$, $F = 93.358$)

Results of LSD test on the variable of worry in the three groups are represented in table 5.

Table 5: Comparison of the mean of worry on anxious, depressed, and non-patient subjects

Mean	Group	2	3
55/72	1 - Anxious	**	**
48/62	2 - Depressed	-----	**
43/78	3 - Non-patient	-----	-----

As it is demonstrated in Table 5, the results of LSD test indicate a significant difference between the score of worry for the three groups. In other words, the level of worry of anxious subjects is higher than that of depressed and non-patient subjects ($p < 0.001$)

Table 6 represents the correlation coefficients between metacognitive beliefs and worry in anxious, depressed non-patients subjects.

Table 6: correlation coefficients and between metacognitive beliefs, its various dimensions and worry in anxious, depressed and non-patients subjects

Variable	All		
	Anxious patients	Depressed patients	non- patients
Cognitive confidence	**0/62	0/19	**0/38
Positive beliefs about worry	0/19	0/003	0/11
cognitive self-consciousness,	**0/52	0/03	0/17
Negative beliefs about uncontrollability and dangerousness of worry	0/23	**0/41	**0/67
Need to control thoughts	**0/47	-0/18	**0/53
Overall Metacognitions	**0/58	0/21	**0/59

** $p < 0.01$ * $p < 0.05$

According to the results shown in Table 6, there is a significant positive relationship between worry and metacognitive beliefs in anxious patients and non-patients; however, no significant relationship between worry and total scores of metacognitive beliefs was found among depressed patients.

DISCUSSION AND CONCLUSION

The present study aimed at comparing the metacognitive beliefs and worry of the anxious and depressed patients and non-patients. Accordingly the results suggested that:

There is a significant difference between metacognitive beliefs of anxious patients, depressed patients and non-patients. In other words, the level of metacognitive beliefs of anxious patients was higher than those of depressed patients and non-patients. In addition, the metacognitive beliefs of depressed patients were higher than those of non-patients, and the differences were significant. Anxious patients scored higher in all the sub-components of the metacognitive beliefs comparing to depressed patients and non-patients. Depressed patients scored higher in all sub-components of metacognition than non-patient group, indicating that metacognitive beliefs are the underlying factors involved in the development and persistence of psychological distress. This supports Wells' theory of S-REF. The present study is consistent with studies on psychological disorders such as anxiety disorder and generalized anxiety disorder (Wells & Carter, 2001; Dragan et al, 2012), obsessive-compulsive symptoms (Wells & Papageorgiou, 1998; Stian Solem et al, 2010), hypochondriasis (Bouman & Meijer, 1999), test anxiety (Matthews, Hillyard & Campbell, 1999) and post-traumatic stress disorder (Holeva, Tarrier & Wells, 2001; Hazel Bennett & Wells, 2012). However, regarding the difference between sub-components, the results are somehow different from

other studies such as Wells and Carter (2001) in which only the sub-component of metacognition (positive beliefs about worry, negative beliefs including uncontrollability and dangerousness and the need to control thought) in patients with generalized anxiety disorder, panic, social distress were compared to the control group. In Wells & Carter's study (2001), depressed patients were the same as patients with generalized anxiety disorder and panic in the sub-component of positive beliefs about worry and obtained higher scores in the sub-component of dangerousness of worry compared to patients with panic disorder and lower scores than patients with generalized anxiety disorder which can be caused by different sample and methodology research as well. In addition, there were a significant difference among anxious patients, depressed patients and non-patients regarding their level of worry. The level of worry in anxious patients was higher than that of other two groups. Moreover, in comparison with non-patients, anxious patients were much more worried and the difference was significant. This research study differs from the study of Chelminsky & Zimmerman (2003) in which the level of being worried was higher in depressed and anxious patients, but the difference was not significant. Regarding the high levels of worry in depressed patients it should be noted that recently performed researchers have pointed to the role of worry in depressed patients (Stanley and Gibson, 1985; in Szabo & Lovibond, 2002). However, it must be mentioned that worry has the most important role in anxiety disorders (Barlow and Di Nardo, 1991, in Chelminsky & Zimmerman, 2003). The role of worry in depression is often faced with conflicting opinions. On the one hand, Borkovec et al. (1998) asserted that worry may contribute to depression, even the experimental development of worry in university students leads to depression and anxiety (Andrews and Borkovec, 1988, in Borkovec, et al. 1998). But, others (Nolan, Hoskma, 1996 in Borkovec et al, 1998) have claimed that the phenomenon of rumination occurs in depressed individuals and worry is similar to rumination and rumination creates depression or cause its survival. Hence, there are mediate opinions claiming that both rumination and worry happen in depressed and anxious people. Even Segerstrom et al. (2000) have reported a relationship between rumination and worry both in clinical and non-clinical individuals. Using complex statistical models, the authors showed that the rumination and worry have a hidden variable and this component is the repeated thought which is emphatically linked with depression and anxiety. Implications of these findings may reveal that studying worry may help us to understand the overlapping processes of anxiety and depression disorders. For example, the theme of worry could distinguish between the thoughts about future events (and therefore developing anxiety and anxiety states) and negative thoughts about past events (the development of depressive states). In addition, feelings of hopelessness and eventually the depression may occur in chronic worries when the individual comes to the fact that he/she cannot actually do anything to avoid events which may happen in future.

Regardless of how worry may contribute to both anxiety and depression, it is a fact that worry may be responsible for some cases of reoccurrence of events (Borkovec et al, 1998). This could be the explanation that why targeting worry to treat negative disorders could be beneficial.

The relationship between worry and metacognitive beliefs, in two groups of anxious and non-patient was significant. In the whole sample the relationship between worry and metacognitive beliefs was significant, whereas no significant relationship was found between anxiety and metacognitive beliefs.

Regarding to the Wells' theory, anxious patients have positive and negative metacognitive beliefs about worry, whereas depressed patients' positive and negative beliefs about rumination. In the whole sample, there was a significant relationship among all the components of metacognitive beliefs and morbid worry which is consistent with Davis & Valentiner (2000), Wells & Papageorgiou (1998), Cartright-Hatton and Wells (1997). The present study may support and coordinate with the expectations of Wells' theory (2000, 2010 and 2012) that ineffective metacognitive beliefs (positive and negative) have a positive significant relationship with malfunctioning forms of coping strategies in emotional disorder and emotional vulnerability is associated with the use of ineffective strategies of metacognitive though control. These strategies are identified via negative ideas about the stable self such as worry and rumination.

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