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The mediating role of meta-cognitive beliefs and cognitive emotion regulation deficit on the relationship between cognitive perfectionism and worry in generalized anxiety disorder

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Abstract

Introduction: Generalized anxiety disorder is the most common anxiety disorder and has the highest rate of comorbidity with other psychiatric disorders. Excessive worry is the main diagnostic criteria for generalized anxiety disorder. The purpose of the present study is to examine the mediating role of meta-cognitive beliefs and cognitive emotion regulation deficit on the relationship between cognitive perfectionism and worry in generalized anxiety disorder.

Materials and Methods: This is an exploratory-correlative study in which new correlations between variables will be examined. The statistical population includes patients suffering from generalized anxiety disorder referred to clinical centers in Tehran and Yazd in years 2012 and 2013. 100 consecutive referrals with generalized anxiety disorder (74 women, 26 men) were selected through purposeful sampling. All participants completed Perfectionism Cognitions Inventory (PCI), Penn State Worry Questionnaire (PSWQ), Meta-cognitive Beliefs Questionnaire (MCBQ), and Cognitive Emotion Regulation Questionnaire (CERQ). Data analysis was done through Pearson's correlation coefficients, two-steps regression analyses and SPSS software version 16.

Results: Cognitive perfectionism as well as meta-cognitive beliefs and cognitive emotion regulation deficit had a positive relationship with worry in generalized anxiety disordered patients (P<0.001). Furthermore, data analysis revealed that the relationship between cognitive perfectionism and worry in patients with generalized anxiety disorder was mediated by meta-cognitive beliefs and cognitive emotion regulation deficit (P<0.001).

Conclusion: It can be concluded that the relationship between cognitive perfectionism and worry in patients with generalized anxiety disorder is not a simple linear one. This is partly mediated by meta-cognitive beliefs and cognitive emotion regulation deficit.

Keywords: Belief, Emotion, Generalized anxiety disorder, Meta-cognitive, Perfectionism, Worry

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Introduction

Generalized Anxiety Disorder (GAD) is the most prevalent anxiety disorder and many studies suggested that this disorder has more serious harmful consequences compare to major depressive disorder (1). About 25% who referred to anxiety disorders clinics and approximately 12% of referral patients to psychiatric clinics suffer from this disorder (2,3). According to these findings, probably GAD is the most prevalent disorder that it has comorbidity with other psychiatric disorders. Generalized anxiety disorder identifies as not-controlled and excessive worry so some researchers believe that the name of this disorder should be changed as generalized worry disorder in Diagnostic and Statistical Manual of Mental Disorders (4). These patients have higher scores in anxiety trait, depression and negative thoughts about worry compared to people with severe worry and they experience worries in wider range (5). The severe worry is a kind of bothering thoughts as not-controlled chain of verbal-language Thoughts about events and negative consequences in future (6). There are several theoretical conceptualizations about worry among GAD patients. Perfectionism is one of the cognitive processes that it has been assessed as

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the predictor of worry. Perfectionism is a multi-dimension structure (7-9) that it identifies as try to be perfect and ideal criteria for function with tendency to censurable evaluations about personal behavior and over sensitivity about mistakes (7,8,10).

According to Burns' definition, perfectionism defines as set of cognitions that include expects and interpretations of events and evaluations about self or others. Unrealistic criteria, serious and commitment to this criteria and equality of self value with function are its characteristics. Based on this approach, the perfectionism relates to foundation of ideal criteria for personal function in all dimensions of life (11).

Frost et al. indicated that worry about mistakes, is the main factor of perfectionism. Therefore the perfectionist individuals are unsatisfied about their functions and they believe that they do not achieve to their goals (7,8). The studies showed that dimensions of perfectionism are strong predictors for worry (12, 13). The different dimensions of perfectionism relate to worry and anxiety (14,15), so the perfectionist individuals may experience high levels of worry and psychological distress as a result of much worry of fail in achievement to unrealistic goals. The studies that suggest worried people have more need to evidences support the relation between perfectionism and worry (16).

The need to additional information before decision may show person's un-logical criterion that has much worry about mistake and doubt about personal abilities. Also get upset from mistakes, doubt about personal abilities, parental expects and criticism and socially prescribed perfectionism have strong relation to worry (17).

Hewitt and Flett study indicated that involved automatic thoughts in perfectionism and inter personal aspects of this item have relation with severity of anxiety. Also self oriented perfectionism can predict anxiety in interaction with social stress and it has a positive significant relation with trait anxiety (10). Frost and DiBartolo evaluated the different aspects of perfectionism and its relation with anxiety. They found that socially prescribed perfectionism with doubt about function and worry about guilt, relates with anxiety (18).

Also, the perfectionist people tend to interpretation of daily events more threatening than others. Besharat indicated that there is a negative relation between parents' positive perfectionism and children's test anxiety otherwise the inverted situation associates with positive relation (19). The high levels of self and social oriented perfectionism have positive relation with physiologic anxiety (20). Therefore, perfectionism has relation with worry and anxiety but it is not clear that how perfectionism relate with worry in generalized anxiety disorder patients. Based on this reason, it is important that the role of mediated variables assess in relation of perfectionism and worry.

Meta-cognitive beliefs are the factors that they may assess as a mediator in above relation among generalized anxiety disorder patients. Recently, meta-cognition was assessed as base of many psychological problems (21). This multidimensional concept includes knowledge, processes and strategies that they supervise or control cognition. In Wells meta-cognitive theory, every disorder has specific content in cognitive or meta-cognitive levels and generalized anxiety disorder include negative beliefs about uncontrollability and danger and positive beliefs about advantage of worry. Positive meta-cognitive beliefs about worry relate with use of them as coping strategies and negative beliefs about worry refer to its uncontrollability and harmfulness. The negative beliefs about worry due to negative evaluation of worry and worry about worry that it called meta-worry or type 2 worry. This type causes disability sense in coping with anxiety and increase of distress and arousal (22).

Based on Freeston et al. study, levels of worry increase in proportion with positive beliefs about worry (23). The results of Barahmand's study about the relation between meta-cognitive beliefs and anxiety disorders indicated that the different types of negative meta-cognitive beliefs have significant relation with the scores of anxiety scale (24). The McEvoy and Mahoney study indicated that negative meta-cognitive beliefs play a mediated role in relation between neurosis and repeated negative thoughts among generalized anxiety disorder patients and patients without this disorder. Repeated negative thoughts relate with meta-cognitive beliefs, thought control and cognitive avoidant and among meta-cognitive beliefs, meta-beliefs of uncontrollability/danger relate with repeated negative thoughts constantly (25). The results of Wells and Carter study indicated that pathologic worry relates with meta-worry and this relation is dependant from trait-anxiety and type 1 worry (26).

Davis and Valentiner assessed several principles of this theory about generalized anxiety disorder patients by Wells meta-cognitive model. The results showed that cognitive insurance can predict anxiety symptoms even after control of trait-state anxiety (27). Khanipour et al. study showed that there were significant differences between people with normal and pathologic worry in 3 variables include positive

meta-cognitive beliefs about worry, uncontrollability/danger beliefs and self-punishment thought control strategy but there was no significant difference in social control strategy so meta-cognitive beliefs are the major factors in formation of pathologic worry and the beliefs related to uncontrollability, are the most specific factors of meta-cognitive variables that predict worry among different groups (28).

Cognitive emotion regulation deficit or use of non-adaptive strategies in cognitive emotion regulation is other cognitive variables that plays role as mediator in relation between perfectionism and worry in generalized anxiety disorder. Cognitive emotion regulation includes the management of emotion awakened information through conscious cognitive strategies (29). These strategies are necessary to help people for management, regulation and control of emotions in stressful and threatening events (30). Cognitive emotion regulation strategies include self-blame, other blame, focus on thought/rumination, catastrophizing, putting into perspective, positive refocusing, positive reappraisal, acceptance and refocus on planning that some of these strategies are adaptive and some of them are non-adaptive (31). The results of studies about relation between cognitive emotion regulation strategies and worry indicated that non-adaptive strategies of cognitive emotion regulation relate with increase of worry among clinical and non clinical samples (32). All of anxiety disorders are same in negative severe affect as form of fear and anxiety, so deficiency and insufficiency in cognitive emotion regulation relates with these disorders (33).

The item of possible impact of mediated variables in relation between two or several psychological variables (predictor and criteria variables) is one of the clinical psychologists' concerns. This concern suggests the theoretical and practical importance of set of variables that play role interactively in explanation of relations between psychological variables.

The results of this study may help to enrichment of the present theories about related and probably effective variables in levels of worry among patients with anxiety disorders. The more comprehensive identification of related variables to worry may help to promotion of preventive programs and patients' mental health. The present study conducted with major aim to assess the role of meta-cognitive beliefs and cognitive emotion regulation deficit in the relation between cognitive perfectionism and worry among patients with generalized anxiety disorder.

Materials and Methods

The statistical community of this correlational-explorative research is all of patients with generalized anxiety disorder who referred to psychiatric clinics and centers of Tehran and Yazd cities in 2012-13. Among of them, to centers selected that they include Bahman Psychiatric Clinic (Yazd) and psychiatric department of Imam Hossein Hospital (Tehran). Number of 100 generalized anxiety disorder patients selected via consecutive refers and targeted method according to inclusion criteria that include diagnosis of generalized anxiety disorder by psychiatrist and age over than 18 years.

The research conducted after approve in psychiatric department of faculty of psychology and educational sciences of Tehran University and Bahman Psychiatric Clinic and psychiatric department of Imam Hossein hospital. According to research ethics, researchers promised to participants that their identities are rest unknown and they are free to refuse of continuation of research in every time that they will want.

Research instruments

A) Perfectionist Cognitions Inventory (PCI): This is a 25-item inventory that measures automatic perfectionist thoughts in 5 Likert degrees (0=never, 4=always). The minimum and maximum scores of this inventory are 0 and 100 respectively.

Its psychometrics characteristics were approved in clinical and students samples (34-36). These characteristics were assessed among 286 college students (174 women, 112 men) and Cronbach's alpha for total samples calculated 0.91 that it indicated appropriate internal consistency of scale (36). The reliability, convergence and diagnosis ability of the inventory were measured through spontaneously conduct with Beck depression inventory, Beck anxiety inventory, positive and negative affects schedule and mental health inventory among college students and clinical participants (87 women, 64 men). The results of Pearson coefficients indicated that there were negative significant relation (0.41 to 0.54) between perfectionist cognitions and positive affects and psychological well-being ($P<0.001$) and positive significant relation (0.47 to 0.63) between perfectionist cognitions and depression, anxiety, negative affects and psychological helplessness ($P<0.001$). These results approved convergent and diagnosis validity (37, 38). Also, the results of factorial exploration approved one main factor for perfectionist cognitions inventory (38).

B) Penn State Worry Questionnaire (PSWQ): This is a 16-item tool that it measures the severity of

worry in 5 degrees in range of 1 (absolutely disagreement) to 5 (absolutely agreement). The total score varies from 16 to 80 and the higher score indicates the more severity of worry. The internal consistency of the questionnaire reported in samples of college students and clinical cases from 0.88 to 0.95 (Cronbach's alpha) (39, 40) and retest reliability approved from 0.74 to 0.93 (39, 41). The validity of the questionnaire approved according to several indexes related to worry and anxiety among samples of college students and clinical cases (39, 41, 42).

The approval and explorative factorial analysis approved the one and two factorial structures of Penn worry questionnaire among clinical and non clinical cases (39, 42, 43). The pilot assessment of its psychometric characteristics among college students sample (232 women, 217 men) indicated internal consistency of total score of worry (Cronbach's alpha=0.91). The corrlational coefficients between the several participants' scores (73 women, 51 men) for reliability of retest in 2 times with 2-4 weeks interval for total score of worry calculated (r=0.78) (44).

The structure, convergent and diagnosis validity of questionnaire through spontaneously conduct with Beck depression inventory, depression anxiety stress scale, positive and negative affects schedule and mental health inventory among participants. The results of Pearson coefficients indicated that there were negative significant relation (-0.47 to -0.64) between participants' worry scores and positive affects and psychological well-being (P<0.001) and positive significant relation (0.44 to 0.65) between worry scores and stress, depression, anxiety, negative affects and psychological helplessness (P<0.001). These results approved convergent and diagnosis validity (44).

C) Meta-cognitive Beliefs Questionnaire (MCBQ): This is 30-item self-report questionnaire that measures the meta-cognitive fields in 5 dependent scales: 1- positive beliefs about worry, 2- negative beliefs about worry, 3- cognitive insurance, 4- need to control thoughts, 5- cognitive self-consciousness (45,46). The responses to questions are in Likert scale from 1=I don't agree to 4= I absolutely agree. In Wells and Carterit-Haton study, Cronbach's alpha of subscales of questionnaire reported 0.72-0.93.

The retest reliability in 22-118 days interval is: total score 0.75, positive beliefs scale 0.79, danger uncontrollability 0.59, cognitive insurance 0.69, need to control thoughts 0.74 and cognitive self-consciousness 0.87. The positive correlation between the related questionnaires in theoretical aspects observed and its factorial structure approved again (45). In Mohammadkhani and Farjad study, Cronbach's alpha of total questionnaire and subscales include positive beliefs about worry, danger uncontrollability, need to control thoughts and cognitive self-consciousness reported 0.80, 0.52, 0.71, 0.83, 0.60 and 0.79 respectively (47).

D) Cognitive Emotional Regulation Questionnaire (CERQ): This is a 18-item tool that measures the cognitive emotional regulation strategies in response to threatening and stressful life events in 5 degrees from 1 (never) to 5 (always) according to 9 subscales include: self-blame, other blame, focus on thought/rumination, catastrophizing, putting into perspective, positive refocusing, positive reappraisal, acceptance and refocus on planning (31). The minimum and maximum of scores in every subscale are 2 and 10 respectively and higher score indicates the more use of cognitive strategy. Its psychometric characteristics approved in foreign studies (30, 31, 48).

The pilot assessment of its psychometric characteristics among population (197 women, 171 men) indicated Cronbach's alpha of subscales 0.67 to 0.89. The corrlational coefficients between the several participants' scores (43 women, 36 men) for reliability of retest in 2 times with 2-4 weeks interval for subscales calculated (r=0.57-0.76). This significant (P<0.001) coefficients approved the reliability of retest. The content reliability of cognitive emotional regulation questionnaire calculated in subscales (0.81 to 0.92) based on the 8 psychology specialists' comments and Kendal agreement coefficient (49). Data analyzed by SPSS software version 16, Pearson correlational coefficients and 2 step regression analyses.

Results

The participants were 74 women and 26 men. The women's mean age and range were 34.03±9.89 and 18-52 years, the men's mean age and range were 32.54±11.31 and 18-56 years and the participants' mean age and range were 33.64±9.89 and 18-56 years. Table 1 shows the mean and standard deviation of research variables among patients with generalized anxiety disorder.

The results of Pearson correlation test showed in Table 2. Based on data, cognitive perfectionism has a significant positive correlation with worry. Also, meta-cognitive beliefs and cognitive emotional regulation insufficiency have a significant positive correlation with worry. All correlational coefficients are significant in level of α=0.01.

Then, the complex of 2-step regression analysis conducted to evaluate the mediator impact of meta-cognitive beliefs and cognitive emotional regulation

insufficiency on relation between cognitive perfectionism and worry. These results have been shown in Table 3.

Table 1. Mean and standard deviation of scores of perfectionist cognition, worry, meta-cognitive beliefs and cognitive emotional regulation insufficiency among patients with generalized anxiety disorder

	Women		Men		Total	
Variable	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
perfectionist cognition	62.50	18.63	58.35	16.45		18.10
worry	56.98	15.37	53.00	14.60	55.95	15.20
meta-cognitive beliefs	80.42	17.43	76.85	15.28	79.49	16.89
cognitive emotional regulation insufficiency	24.82	7.28	21.50	5.96	23.96	7.08

Table 2. The Pearson correlational coefficients between generalized anxiety disorder patients' scores about cognitive perfectionism, worry, meta-cognitive beliefs and cognitive emotional regulation insufficiency

Variable	1	2	3
Cognitive perfectionism	1		
Worry	0.50	1	
Meta-cognitive beliefs	0.62	0.67	1
Cognitive emotional regulation insufficiency	0.53	0.68	0.53

Table 3. The summary of regression model, variance analysis and statistical characteristics of mediator effect of meta-cognitive beliefs and cognitive emotional regulation insufficiency on relation of cognitive perfectionism and worry

Variable/Index	B	SEB	β	t	*P*
First step: Cognitive perfectionism (R^2=0.25)	0.423	0.073	0.504	5.77	0.001
Second step: Cognitive perfectionism	0.113	0.080	0.135	1.42	0.160
Meta-cognitive beliefs (R^2=0.46 and ΔR^2=0.21)	0.531	0.085	0.591	6.22	0.001
First step: Cognitive perfectionism (R^2=0.25)	0.23	0.073	0.504	5.77	0.001
Second step: Cognitive perfectionism	0.168	0.071	0.200	2.35	0.021
Cognitive emotional regulation insufficiency (R^2=0.49 and ΔR^2=0.24)	1.25	0.182	0.577	6.80	0.001

These results indicated that insertion of meta-cognitive beliefs as mediator variables in regression, β coefficient of cognitive perfectionism has reduced from 0.50 to 0.13 and this change is significant (t=6.22, P<0.001) so cognitive perfectionism is not significant (t=1.42, P<0.160). These results indicated that meta-cognitive beliefs as mediator variables could impact the relation between cognitive perfectionism and worry completely. Also, the same analyses indicated that insertion of cognitive emotional regulation insufficiency as mediator variables in regression, β coefficient of cognitive perfectionism has reduced from 0.50 to 0.20 and this change is significant (t=6.80, P<0.001) but cognitive perfectionism is significant (t=2.35, P<0.021). These results indicated that cognitive emotional regulation insufficiency as mediator variables could impact the relation between cognitive perfectionism and worry slightly.

Discussion

The findings of this research indicated that cognitive perfectionism has a significant positive relation with worry among generalized anxiety disorder patients. This result that accords to results of the past researches about the relation of cognitive perfectionism with worry (13,17,50) explains based on some probability. According to Burns idea (11), the perfectionist individuals know their self value equal to ideal and unrealistic goals. This incorrect concept of self value predisposes the perfectionist person to danger of failure to achieve the ideal criteria. The worry about mistakes as a main component of perfectionism (7,8) helps to continue of worry through predisposing and internal tendency. The results of the past studies about the relation between anxiety and cognitive perfectionism (14,15,18-20) approve this explanation.

Perfectionism through the unrealistic objectives does not accept any mistake or failure so it does not permit person to satisfaction of partial achievements (51,52). Also, the perceived deficits under effect of perfectionist characteristics increase person's worry about repeat of this situation. Perfectionism through characteristics such as unrealistic expects, reject of personal limitations and inflexibility (8,10,14) leads that person does not enjoy of difficult works and he/she does not satisfy from personal function (14). The absence of satisfaction about function is a component of psychological helplessness that leads to worry elevation. The approved correlations of perfectionism with incompatibility indexes and negative affects (17,51) support this explanation.

The results indicated that meta-cognitive beliefs play a mediator role in relation between cognitive perfectionism and worry so cognitive perfectionism through meta-cognitive beliefs predicts the changes of worry in GAD. Several probabilities suggested for this finding. As mentioned above, two type positive and negative meta-cognitive beliefs indicated (22). The positive meta-cognitive belief about worry helps individual to use worry as a coping strategy.

The Freeston et al study (23) showed that the levels of worry increase when people report more positive meta-cognitive beliefs about their worry. Based on this finding, we can suggest that perfectionism through meta-cognitive beliefs causes worry elevation in GAD patients. The negative meta-cognitive beliefs about worry cause this perception that the worry is uncontrollable and harmful (22).

These negative beliefs about worry lead to negative evaluation and type of meta-worry. Perfectionism through negative meta-cognitive beliefs causes worry in GAD patients that this finding accords to studies that approved the role of meta-worry in aggravation of worry (25,26,53). The negative meta-cognitive beliefs cause perceived disability in control of thoughts (24) and this sense of disability leads to increase of worry. This finding is accord to meta-cognitive model of GAD (26). Based on this model, when internal experience of worry perceived as threatening event, the discontinuation process of worry is difficult and it may lead to continuation of worry and aggravation of negative beliefs. This problem cause to keep about worry thoughts and progression of bothering thoughts (26,46).

The findings of research indicated that cognitive emotional regulation insufficiency plays a mediator role in relation between cognitive perfectionism and worry. Based on this finding, cognitive perfectionism through cognitive emotional regulation insufficiency can partially but not completely predicts the changes of worry among people with GAD that it accords to the past researches (32,33) and it may be explained based on several probabilities. The cognitive strategies of emotional regulation are necessary for management, regulation and control of emotions in life (30).

The deficiency of cognitive emotional regulation insufficiency, weak the ability of management and regulation of severe and negative emotions and it may leads to aggravation of worry and anxiety (32,33,54). So, this probability may be suggested that cognitive perfectionism partially through non-adaptive strategies of cognitive emotional regulation can cause to aggravation and continuation of worry among GAD patients. Menin et al. (55) introduced emotional over-arousal as one of mechanism of aggravation of worry in exposure to stressful and negative emotions.

According to this explanation, the perfectionism may lead to aggravation continuation of worry through person's disability in use of adoptive strategies of emotional regulation. The negative orientation about emotions has been suggested in aggravation of worry. Therefore this probability may be suggested cognitive perfectionism may increase worry through negative orientation about emotions. There is a probability that perfectionism through negative orientation about emotions or emotional over-arousal may increase worry.

The limitation of statistical community of this correlative study and its samples, limits in generalization of results and etiological explanations of variables. The participants selected voluntarily from individuals referred to two centers of two different cities and they number of two sexes were not equal. The low number of participants limits the advanced analyses such as making model and assessment of complex relations between variables.

Conclusion

Based on the results, the relationship between perfectionism and worry among patients with generalized anxiety disorder is not a simple linear one and meta-cognitive beliefs and insufficiency in cognitive emotion regulation deficits can impact this relation. These results highlight the major role of different cognitive factors in formation, aggravation, and continuation of worry. Considering the fact that worry is a common characteristic of almost all psychiatric disorders, this role may be true in other disorders as well.

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