RESEARCH ON EDUCATION AND PSYCHOLOGY (REP)

Received: September 25, 2020
Accepted: November 28, 2020
http://dergipark.org.tr/rep

e-ISSN: 2602-3733

December 2020 ◆ 4(2) ◆ 172-193

Research Article

Investigation of the Relationships between Metacognitive Functions and Subjective Well-Being and Depression, Anxiety and Stress Levels in Adult Individuals

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Abstract

The metacognitive functions significantly affect the levels of psychological symptoms such as depression, anxiety, stress in individuals. Thus, it was considered that metacognitive traits also have a significant effect on the subjective well-being levels. In the present study, the correlations between metacognitive functions and depression, anxiety, stress and subjective well-being levels of adult individuals were analyzed. The study was conducted with 114 female and 137 male, a total of 251 adult individuals. The study data were collected with the Metacognitions Questionnaire (MCQ-30), Depression, Anxiety, Stress Inventory, Subjective Well-being Scale and a Personal Information Form. The study data were analyzed using Pearson Correlation Analysis and Hierarchical Regression method. The analysis findings revealed that metacognitive functions, uncontrollability and danger, the need to control the thoughts, cognitive confidence, positive belief, and cognitive awareness levels were positively associated with depression, anxiety, and stress variables. On the other hand, there were negative correlations between subjective well-being and positive beliefs, need to control thought, levels of uncontrollability and danger, cognitive confidence, uncontrollability of thoughts and danger. According to the hierarchical regression analysis made by creating models, sub-dimensions of metacognition predict depression, anxiety, stress and subjective well-being levels.

Key Words

Metacognition • Subjective well-being • Depression • Anxiety • Stress

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Citation: Yazar, R., & Tolan, Ö. (2020). İnvestigation of the relationships between metacognitive functions and subjective well-being and depression, anxiety and stress levels in adult individuals. *Research on Education and Psychology (REP), 4*(2), 172-193.

Humans perceive, make sense and actively implement the sensations they receive from the environment throughout their lives. It is possible for individuals to make sense of life through various emotions and ideas that they develop based on experiences, exhibit various behaviors, and employ their cognitive processes. Cognition is defined as a type of mechanism that combines intellectual processes and functions (Irak, Çapan, & Soylu, 2015). In addition, Neisser (1967) defines that cognition means the transformation, reduction, processing, recording, restructuring of emotional input. On the other hand, metacognition is a concept first described by Flavel (1979). According to Flavel (1979), metacognition is the knowledge about cognitive abilities and strategies that an individual possesses. Brown (1987) defined metacognition as a type of higher system that allows an individual to be aware of, control and employ the cognitive skills and strategies that the individual possesses for certain purposes. According to Wells (2008), metacognition is the knowledge of self-intellectual processes, the way individuals organize their thoughts and the way they react. While mental processes such as perception and remembrance are cognitive functions, metacognitive functions include thinking about one's acts such as perception and remembrance (Garner & Alexander, 1989). Thus, individuals could have knowledge about their intellectual functions and thinking structures due to metacognitive processes and guide their minds purposefully and functionally (Tosun & Iraq, 2008). In this context, it was reported that the concept of metacognition, which includes awareness and regulation of cognitive capacity, includes several functions and individuals develop positive or negative beliefs based on their metacognitive beliefs about daily life events (Wells et al., 2009). Flavell (1979) argued that metacognition included three dimensions: "metacognitive knowledge", "metacognitive experiences" and "metacognitive strategies". Knowledge on the development of cognitive processes and beliefs about these processes is defined as metacognitive knowledge. Metacognitive experiences include the experiences of the individual in intellectual processes such as thinking and decision making when a situation or event is encountered. These experiences could be emotional or cognitive experiences. Metacognitive strategies, on the other hand, include the reactions (avoidance, control) of the individual against the encountered events throughout life. Also, Wells (2002) reported that metacognitive knowledge, metacognitive experiences and metacognitive strategies form the metacognitive system. It is known that the metacognitive system is effective in the development of coherent response styles by the individual (Cartwright-Hatton & Wells, 1997; Gwilliam, Wells, & Cartwright-Hatton, 2004). A diversion in this system could lead to various psychopathologies (Wells & Cartwright-Hatton, 2004). According to Cartwright-Hatton and Wells (1997), positive and negative beliefs play an important role in the development of psychopathology, affecting an individual's dysfunctional thoughts and the way they analyze the events. These beliefs are combined in the metacognitive system and lead to incoherent reactions. It was reported that the inadequate coping mechanisms such as rumination and the need to control thoughts, when discussed in this context, were effective on the emergence and progression of certain psychopathologies. In summary, metacognitive beliefs are associated with individual attempts to cope with stressful events such as anxiety, rumination, avoidance, and suppression. Thus, high inadequate coping efforts could lead to an increase in negative emotions and more intense anxiety and could create a vicious anxiety, avoidance and rumination cycle. The review of the literature on metacognitive model demonstrated that metacognitive processes were studied in association with disorders such as mood disorders (Matthews & Wells, 2004; Soderstrom, Davalos & Vázquez, 2011; Wells, 2002), anxiety disorders (Doğan, Solak, Özdel, & Türkçapar, 2013; Myers and Wells, 2005; Spada, Hiou, & Nikcevic, 2006; Wells & Papageorgiou, 1998),

psychotic disorders (Çağlar, Özsoy & Mermi, 2016; Favrod et al., 2014; García-Montes, Pérez-Álvarez, Soto Balbuena, Perona Garcelán & Cangas, 2006; Moritz et al., 2011).

From a different perspective, it was claimed that psychopathology was due to the reactions of individuals to negative thoughts in the Self-Regulatory Executive Function (S-REF) model described by Wells and Matthews (1996). Based on the S-REF model, the individual's metacognitive processes and cognitive strategies (need to control, cognitive awareness, positive belief about anxiety, cognitive confidence) affect the way the individual assesses the events. In brief, it was argued that the individual reactions to negative thoughts besides the negative content of the thoughts play an important role in the development of psychopathology. Wells (2002) suggested that all psychological disorders were associated with a cognitive structure called Cognitive Attentional Syndrome (CAS) in the S-REF model. Based on the Cognitive Attentional Syndrome, persistent and repetitive contemplations such as anxiety and rumination that lead to the sustenance of psychopathologies concentrate the attention of the individual on negative situations. This may lead to the development of inadequate coping strategies (suppression, avoidance, distraction, etc.). For example, positive metacognitive beliefs that an individual should be constantly thinking about anxiety or a negative situation could lead to ruminative thoughts. Concentration of the attention on self-cognitive processes could trigger rumination and result in a decrease in cognitive functions. According to Wells et al. (2009), the belief of the individual that it would be beneficial to worry about a dangerous situation may lead to certain inadequate outcomes such as alertness for a danger and rumination. Thus, exacerbation and the persistence of the existing anxiety may be observed.

Metacognitive beliefs, such as avoiding the circumstances that trigger anxiety or avoiding thinking about the circumstances, may lead to greater perceived stress and concomitant negative emotions. General avoidance of anxiety could be understandable. From this point of view, the perception of the consequences of anxiety as dangerous may lead to the employment of initiatives such as control and avoidance. However, considering anxiety as a positive strategy to cope with a possible hazard may lead to focusing on the threatening stimuli. The literature review revealed that studies on the significance of metacognitive functions in the course of psychiatric disorders have increased in recent years (Morrison & Wells, 2003; Rahimi & Haghighi, 2010; Yılmaz, Gençöz, & Wells, 2011). However, according to the S-REF model, studies demonstrated that mood and anxiety disorders were associated with metacognitive functions are also seen in the literature (Corcoran & Segal, 2008; Ellis & Hudson, 2010; Köseoğlu, 2013; Papageorgiou & Wells, 2003; Spada, Mohiyeddini & Wells, 2008). The variables investigated in the study included depression, anxiety and stress symptoms.

Depression is a mood disorder characterized by emotional, behavioral and cognitive symptoms. Depression (Köknel, 2005), which is also called mental breakdown, is described as a disorder accompanied by emotions such as worthlessness, guilt, unhappiness, loneliness, and hopelessness (Sharp & Lipsky, 2002). Problem-solving skill problems also frequently accompany depression (Duque & Vázquez, 2015). In clinical depression, in addition emotional depression, impairments in cognitive processes such as perception, remembrance and attention could be observed (Yalom & Glick, 2006). Anxiety is known to be one of the most common concomitant psychopathologies in depression (Bartlett, Singh, & Hunter, 2017).

Anxiety is a clinical term used to describe fear and concern. In a broader definition, anxiety entails intense restlessness and stress against a situation that is not fully understood and perceived as dangerous. Beck, Emery and Greenberg (2005) defined anxiety as an emotional and physical reaction of the organism to a dangerous and

threatening circumstance, while Seligman, Walker and Rosenhan (2001) considered anxiety as a mood that could even be observed without a certain stimulus. Antony and Swinson (2000) considered the individual thoughts that an individual would not cope with a perceived threat as the most common form of anxiety. The literature review revealed studies that suggested that depression and anxiety were interrelated psychopathologies (Christensen, Griffiths, & Farrer, 2009; Davies, Morriss & Glazebrook, 2014; Dyrbye, Thomas & Shanafelt, 2006), and in other studies, depression, anxiety and stress variables were addressed (Beiter et al., 2015; Dyson & Renk, 2006; Newbury-Birch & Kamali, 2001; Rada & Johnson-Leong, 2004).

Stress was conceptualized as the presence of the perceived undesirable and negative life events by the individual (Lazarus & Folkman, 1984). Stress leads to tension and stimulation of an individual in the presence of certain life events; however, it sometimes functions as an adaptive and a stimulating reaction (Aydın, 2010). Stress factors and reactions to stress in life could also lead to the development of disorders such as depression and anxiety (Akerstedt, Kecklund & Axelsson, 2007; Wolkowitz, Epel, Reus, & Mellon, 2010). In the metacognitive framework, literature included studies which reported that metacognitive features affected the development of psychopathology such as depression, anxiety and stress (Normann, Emmerik, & Morina, 2014; Roussis & Wells, 2006; Spada et al., 2008; Yılmaz, Gençöz & Wells, 2014). Besides, certain studies reported that there were correlations between metacognitive functions such as positive beliefs about anxiety, the need to control thoughts, and frequent review of thoughts, and anxiety disorders (Barahmand, 2009; Morrison, Wells & Nothard, 2000). Several studies demonstrated that metacognitive functions such as cognitive confidence, described as self-confidence in memory, especially in verbal memory, as well as positive beliefs about negative thinking and anxiety were associated with depression (McDermott & Ebmeier, 2009; Moritz, Peters, Larøi & Lincoln, 2010; Özsoy & Kuloğlu, 2017; Soderstrom et al., 2011). Similarly, it was suggested in various studies that as the levels of metacognitive functions such as positive beliefs, cognitive confidence and the need to control thoughts increased, the stress levels increased as well (Doğan et al., 2013; Nixon et al., 2008; Önen, Uğurlu, & Çayköylü, 2013; Saricam, 2015; Spada et al, 2008).

Considering that various psychological symptoms are related to metacognitive functions, it comes to the fore that metacognition can be an important factor on the subjective well-being of the individual. Subjective well-being, which was one of the variables investigated in the study, was first described by Bradburn (1969). Bradburn (1969) stated that subjective well-being is a balanced combination of positive and negative emotions. Diener (1984) analyzed subjective well-being in two dimensions; cognitive and emotional well-being. The individual is considered happy when positive emotional experiences are more than negative emotional experiences. The cognitive dimension mostly includes subjective judgments about a satisfaction in the main areas of life, such as professional life, education, and marriage. Also, Hybron (2000) tackled subjective well-being in two dimensions of positive-negative affection and life satisfaction. Vaillant (2003) demonstrated that subjective well-being reflects positive psychological health, while Bray and Gunnell (2006) suggested that the level of subjective well-being provides important data to monitor, evaluate, preserve, and treat an individual's psychological health. It was reported that individuals with high subjective well-being levels tend to be creative, optimistic, trusting and benevolent (Diener, 2000), and it is considered to be associated with positive psychological traits of the individual (Eid & Larsen, 2008). With a metacognitive approach, Cornoldi (1998) reported that metacognitive features may play a protective role for psychological functions. Similarly, Fastame, Penna, Rossetti and Agus (2012) emphasized that subjective well-being level and metacognitive efficiency were

related. Metacognition (Brown, 1980), which allows behavior with high awareness, also includes subjective individual analyses about self-cognitive capacity and abilities (Fernandez-Duque, Baird & Posner, 2000). Kiaei and Reio (2014) reported that metacognitive competence, which develops based on cognitive processes such as monitoring, evaluation, planning and strategy, contributes to the subjective well-being levels by developing the individual's interpersonal skills. Wells and Matthews (1994) reported that Cognitive Attentional Syndrome, which leads to the development of negative metacognitive functions, activates strategies such as anxiety, rumination, threat, and monitoring, leading to a higher negative emotional level. According to Wells (2002), these coping strategies rarely work in resolving the stressful situation. This situation enforces the belief that the individual cannot control anxiety, resulting in the continuation of the problem. Increased dysfunctional strategies could lead to the continuation of an individual's maladaptive thinking and a drop in subjective well-being level. Similarly, negative metacognitive beliefs common in life negatively affect the subjective well-being levels through negative emotional and cognitive effects. Thus, it was concluded that the level of subjective well-being of the individual increases significantly as the level of metacognitive functions, especially the need to control, cognitive awareness and thoughts increase (Toffalini, Veltri & Cornoldi, 2014; Valiente, Prados, Gómez & Fuentenebro, 2012).

The review of the available studies and theoretical knowledge in the literature demonstrated that metacognitive characteristics were associated with depression, anxiety, stress levels and lay the ground for the development of various psychopathologies. The metacognitive functions and subjective well-being levels of individuals were scrutinized as two interacting variables. Despite the increasing academic interest in the concepts of metacognitive and psychological well-being, it was observed that the number of studies on the interaction between these two variables was limited. The review of the studies on metacognition in Turkey revealed that variables such as psychotic disorders, obsessive compulsive disorder, anxiety disorders and depression were frequently investigated (Canbay, 2018; Köseoğlu, 2013; Yılmaz, İzci, Mermi, Atmaca, 2016). The predicted variables (dependent variable) of the present study are subjective well-being and depression, anxiety, stress levels; the predictor variable (independent variable) is metacognitive functions. Thus, the present study aimed to contribute to the literature and investigate the correlation between metacognitive functions and depression, anxiety and stress levels in a non-clinical sample. In the present study, it is aimed to examine the relationship of metacognitive functions of individuals with various psychological symptoms and subjective well-being levels. There are studies conducted with clinical samples in the relevant literature. However, studies examining the meta-cognitive functions of individuals without any psychiatric diagnosis are limited. Today, increasing depression, anxiety and stress symptoms are thought to negatively affect the subjective well-being levels of individuals. Factors such as perceptions of one's emotions and thoughts, the presence of repetitive maladaptive thought patterns, avoiding or suppressing one's own thoughts are thought to be associated with depression, anxiety, stress symptoms and subjective well-being. Metacognitive approach, which is one of the third generation approaches of cognitive therapies, tries to explain psychopathologies especially in relation to the control of thought, interpretation of threat factors, dysfunctional thoughts and coping mechanisms. In order to examine whether metacognitive characteristics have an effect on individuals' depression, anxiety, stress symptoms and subjective well-being in a non-clinical sample, the relevant variables are discussed in the present study. Based on this main aim, the research problem was determined as whether there was a predictive role of

metacognitive functions on depression, anxiety and stress levels and subjective well being levels in adult individuals.

Method

Research Model

The purpose of the research is to present the relationship among metacognition and depression, anxiety, stress and subjective well-being as well as to test the created model in terms of these relations. A relational survey model has been used in the research. A relational survey is a research model conducted in order to define the relationships among two or more variables and in order to obtain clues concerning cause-and-effect relationships (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz, & Demirel, 2008).

Study Group

The research group had previously received psychological support, psychiatric assistance (psychotherapy, medication, etc.) 251 adult individuals, 114 of whom were women and 137 men, who stated that they did not take consists of. The mean of age has been calculated as 31.6 and the range of age is 18-48. Table 1, which includes socio-demographic characteristics, was created to give information about the sample of the research. The descriptive statistics findings for the study variables are presented in Table 1.

Table 1

Participant Socio-Demographics

Variables		N	%
Gender	Female	137	54.6
	Male	114	45.4
Marital Status	Married	129	51.4
	Single	122	48.6
Age	18-25	86	34.3
	26-35	89	35.5
	36-45	57	22.7
	45 and over	19	7.6
Education Level	Literate	3	1.2
	Primary	19	7.6
	High	63	25.1
	Associate	42	16.7
	Undergraduate	108	43.0
	Graduate	16	6.4
Residence	Village/Town	9	3.6
	District	9	3.6
	Urban Center	119	47.4
	Metropolitan	114	45.4

Measurement Tools

Metacognitions Questionnaire–30 (MCQ-30): The Metacognition Questionnaire-30, developed by Cartwright-Hatton and Wells (1997) to determine the metacognitive functions in adult individuals, and adapted to Turkish culture by Tosun and Irak (2008) was employed in the study. The scale includes 30 items. It is a 4-point Likert-type scale [(1) strongly disagree, (2) partially disagree, (3) partially agree, (4) strongly agree]. The scale score range is between 30 and 120 points, and a higher score indicates the presence of pathological

metacognitive functions in the individual (Tosun & Irak, 2008). In the original scale, the internal consistency coefficient (Cronbach's alpha) for the entire scale was 0.93 and between 0.72 and 0.93 for the sub-scales. In the Turkish adaptation, the internal consistency coefficient (Cronbach's alpha) for the entire scale was 0.86 and it varied between 0.70 and 0.85 for the sub-scales. In the current study, the Cronbach Alpha coefficient was calculated as .88. The scale includes items such as ‘’I constantly examine my thoughts’’ and ‘’Worrying is dangerous for me’’.

Subjective Well-Being Scale (SWS): Subjective Well-Being Scale developed by Tuzgöl Dost (2005) was employed to determine the cognitive analysis of the participating individuals and the levels of their positive and negative emotions. The 5-point Likert-type scale includes 46 items [(5) completely agree, (4) mostly agree, (3) partially agree, (2) somewhat agree, and (1) disagree]. A higher scale score indicates that the subjective well-being level of the individual is high. The internal consistency coefficient (Cronbach's alpha) of the Subjective Well-being Scale was calculated as .93. Also the reliability of the scale was determined for adults. The reliability study was conducted by Canbulat and Çankaya (2014) with 174 adult individuals. It was observed that the total item correlations in the scale ranged between .25 and .71. Cronbach Alpha internal consistency coefficient was determined as .95 and the scale was considered adequate for adult individuals. In the current study, the Cronbach Alpha coefficient of the scale was determined as .93. The scale includes items such as ‘’I like to make plans for the future’’ and ‘’ I have trouble setting goals’’.

Depression, Anxiety and Stress Inventory (DASI): The Depression, Anxiety, Stress Inventory (DASI) developed by Lovibond and Lovibond (1995) was employed to determine the depression, anxiety and stress levels of adult participants in the study. The adaptation of the scale to Turkish culture was conducted by Akın and Çetin (2007). The scale includes 42 items; 14 of which measure depression, 14 measures anxiety and 14 measures stress. The scale is a 4-point Likert-type scale [(0) completely disagree, (1) somewhat agree, (2) generally agree, and (3) completely agree]. High depression, anxiety and stress dimension scores indicate that the individual suffers the relevant problem. As a result of item analysis, it was determined that total item correlations ranged between .51 and .75. The scale Cronbach Alpha internal consistency coefficient was .89 for the whole scale; and for the depression, anxiety, and stress subdimensions, the coefficient was .90, .92 and .92, respectively. Cronbach Alpha coefficient of the scale was determined as .95 in the current study. The scale includes items such as ‘’I feel sad and pessimistic’’ and ‘’ I think life is meaningless’’.

Process

The ethics committee approval was obtained from Dicle University Social Sciences and Humanities Ethics Committee. Appropriate sampling technique was used in the selection of the participants consisting of individuals aged 18 and over. Participants were informed about the research and were asked if they would like to participate in the study. The necessary information was given to the participants to fill in the scales. Participants whose verbal and written consents were obtained were included in the study. During the data collection, detailed information about the aim and scope of the study, the confidentiality of personal data and the voluntary participation principle was provided to the participants. It took approximately 25 minutes for the volunteering participants to complete the personal information form and the scales in the study.

Data Analysis

In the present study that investigated the correlation between metacognitive functions and depression, anxiety, stress and subjective well-being levels in adult individuals, the relational research model, a general screening model, was employed. IBM SPSS-24 (Statistical Package for Social Sciences) software was used for the analyses. To determine the adequacy of the data for statistical analysis, normality assumptions were tested and it was concluded that all variables exhibited normal distribution. For the data to be accepted as normally distributed, the kurtosis-skewness values should be between -1.5 and +1.5 (Tabachnick and Fidell, 2007). Skewness value of metacognition scale -.123, kurtosis value -.356; skewness value of subjective well-being scale is -.182 and kurtosis value is .767; and for the DAS scale, the skewness value is .477 and the kurtosis value is -.585. Since all variables were distributed normally, the Pearson correlation coefficient was calculated to determine the correlations between the variables. In order to test the hierarchical regression assumptions, the Durbin-Watson coefficient was calculated to determine the autocorrelation of the variables of the study. The Durbin-Watson coefficient was calculated as d = 2.034 for sub-dimensions of metacognition and depression, anxiety, stress variables; also, d = 1.688 was calculated for the subjective well-being variable. The Durbin-Watson coefficient, which takes a value between 1.5 and 2.5 according to Kalaycı (2008), indicates that there is no autocorrelation problem between the variables. Thus, it is seen that there is no autocorrelation problem between variables. In another aspect, the Variance Inflation Factors (VIF) was examined in order to test the multiple connection problems between sub-dimensions of metacognition, which is the independent variable of the study. It is seen that the VIF values for the sub-dimensions take values between 1.16 and 2.39. Considering that there is no multicollinearity problem regarding the independent variables in case the Variance Inflation Factors takes a value less than 10, it is seen that there is no multicollinearity problem that negatively affects the suitability of the variables to regression analysis in the present study.

Findings

Before the analysis of the correlation between metacognitive functions and depression, anxiety, stress and subjective well-being variables, the scale scores were reviewed and presented in Table 2.

Table 2

Data Collection Instrument Statistics

	Variables	N	%	SS	X̄	Skewness	Kurtosis	Min	Max
Metacognition	**Positive beliefs**	251	100	.77344	2.1627	.156	-.829	1.00	4.00
	Cognitive confidence			.73619	2.1016	.255	-.922	1.00	3.83
	Uncontrollability and danger			.72565	2.3725	.083	-.832	1.00	4.00
	Cognitive self-consciousness			.65317	2.8493	-.222	-.412	1.00	4.00
	Need to Control of the thoughts			.70308	2.5153	-.119	-.426	1.00	4.17
DAS	**Depression**	251	100	.69880	.8882	.785	-.161	.00	2.79
	Anxiety			.63082	.9042	.629	-.419	.00	2.64
	Stress			.67379	1.1685	.235	-.688	.00	2.93
Subjective Well-Being		251	100	.63958	3.5840	-.096	-.457	1.96	4.93

The results of the correlation analysis conducted to determine the correlations between metacognitive functions and depression, anxiety, stress levels and subjective well-being are presented in Table 3.

Table 3

The Correlations between Metacognitions Questionnaire Sub-Dimensions and Depression, Anxiety, Stress, and Subjective Well-Being Variables

Variables	1	2	3	4	5	6	7	8
positive_beliefs (1)	1							
cognitive_confidence (2)	.106	1						
uncontrollability_and danger(3)	.276**	.399**	1					
cognitive_self-consciousness (4)	.323**	.071	.480**	1				
Need_to_control_thoughts (5)	.340**	.331**	.688**	.592**	1			
Depression (6)	.152*	.321**	.533**	.249**	.420**	1		
Anxiety (7)	.161*	.344**	.596**	.218**	.456**	.784**	1	
Stress (8)	.209**	.259**	.526**	.265**	.381**	.781**	.799**	1
SWB_mean (9)	-.125*	-.423**	-.500**	.005**	-.349**	-.630**	-.509**	-.489**

Note: **p < .05; ** p < .01*

As seen in Table 3, a positive correlation was determined between depression and uncontrollability of thoughts and danger (r = 0.533 and p = 0.001), need to control thought levels (r = 0.420 and p = 0.001), cognitive confidence (r = 0.321 and p = 0.001), cognitive self-consciousness (r = 0.249 and p = 0.001), and positive beliefs (r = 0.152 and p = 0.008) metacognitive function sub-dimensions.

There were positive correlations between anxiety and uncontrollability of thoughts and danger (r = 0.596 and p = 0.001), need to control thought levels (r = 0.456 and p = 0.001), cognitive confidence (r = 0.344 and p = 0.001), cognitive self-consciousness (r = .218 and p = .001), and positive beliefs (r = 0.161 and p = 0.005).

It was determined that there were positive correlations between stress and uncontrollability of thoughts and danger (r = 0.526 and p = 0.001), need to control thought levels (r = 0.456 and p = 0.001), cognitive confidence (r = 0.259 and p = 0.001), positive beliefs (r = 0.209 and p = 0.001), and cognitive self-consciousness (r = 0.218 and p = 0.001).

Based on the above-mentioned findings, there is a significant correlation between metacognition sub-dimensions and depression, anxiety and stress levels.

It was also determined that there were negative correlations between the subjective well-being level, another dependent variable analyzed in the study, and positive beliefs (r = -0.125 and p = 0.048), need to control thought levels (r = -0.349 and p = 0.001), cognitive confidence (r = -0.423 and p = 0.048), and uncontrollability of thoughts and danger (r = -0.500 and p = 0.001). There is no significant relationship between subjective well-being cognitive awareness, which is one of the sub-dimensions of metacognition (r = 0.005 ve p = 0.938).

Attention, decision-making processes are related to metacognitive functions and they vary from person to person. It is thought that the metacognitive strategies used can have a significant effect on the cognitive and emotional processes of the person. It is considered that the way of evaluating events in line with the relevant metacognitive strategies may be affected and this situation may lead to processes that disrupt the adaptation of

the individual. Therefore, metacognitive functions were considered as predictors of depression, anxiety, stress, and subjective well-being variables.

The hierarchical regression analysis was conducted on the sub-scales to determine the predictive power of metacognition sub-dimensions of depression, anxiety, stress and subjective well-being levels. The findings are presented in Table 4, Table 5, Table 6 and Table 7.

Table 4

The Results of Hierarchical Regression Analysis Regarding to the Prediction of Depression Level by the Sub-Dimensions of Metacognition Questionnaire

Model	R	R^2	R^2(Adj)	Std.Err.	F	P
A	.533	.284	.281	.59234	98.934	.000
B	.538	.290	.284	.59130	50.582	.000
C	.550	.302	.294	.58720	35.685	.000
D	.550	.303	.291	.58824	26.702	.000
E	.550	.303	.289	.58942	21.278	.000

A. Predictor: Uncontrollability and danger
B. Predictor: Uncontrollability and danger, need to control thoughts
C. Predictor Uncontrollability and danger, need to control thoughts, cognitive confidence
D. Predictor Uncontrollability and danger, need to control thoughts, cognitive confidence, self-consciousness
E. Predictor Uncontrollability and danger, need to control thoughts, cognitive confidence, self-consciousness, positive beliefs
Dependent Variable: Depression

***p<0.1*

As seen in Table 4, uncontrollability and danger, which are sub-dimensions of metacognition were explained the total variance of depression at a rate of 28.4% in the first model. After that, the need to control thoughts sub-dimension was added to the first model and it was observed that the second model was explained at a rate of 29%, significantly. Then, cognitive confidence was added to the third model and it was explained 30.2 % of the total variance. The fourth model was created by adding the cognitive self-consciousness to the third model and it was explained 30.3% of the total variance. It was seen that the positive beliefs sub-dimension added in the last model but it was not contribute the model.

Table 5

The Results of Hierarchical Regression Analysis Regarding to the Prediction of Anxiety Level by the Sub-Dimensions of Metacognition Questionnaire

Model	R	R^2	R^2(Adj)	Std.Err.	F	P
A	.596	.355	.352	.50765	137.034	.000
B	.599	.359	.354	.50707	69.459	.000
C	.609	.371	.364	.50314	48.658	.000
D	.617	.380	.370	.50066	37.719	.000
E	.617	.380	.368	.50168	30.053	.000

A. Predictor: Uncontrollability and danger
B. Predictor: Uncontrollability and danger, need to control thoughts
C. Predictor Uncontrollability and danger, need to control thoughts, cognitive confidence
D. Predictor Uncontrollability and danger, need to control thoughts, cognitive confidence, self-consciousness
E. Predictor Uncontrollability and danger, need to control thoughts, cognitive confidence, self-consciousness, positive beliefs
Dependent Variable: Anxiety

***p<0.1*

As seen in Table 5, uncontrollability and danger were explained the total variance of anxiety at the rate of 35.5% in the first determined model. For the second step, the need to control thoughts added to the model which was explained significantly to the model at a rate of 35.9%. Then, cognitive confidence and cognitive self-consciousness were added to the next models, respectively, and they were contributed significantly the models. The cognitive confidence was added to the model and it was constituted 37.1% of the total variance and the cognitive self-consciousness was explained 38%. In the last step, it was seen that the positive beliefs sub-dimension was added to the model and it did not contribute to the model.

Table 6

The Results of Hierarchical Regression Analysis Regarding to the Prediction of Stress Level by the Sub-Dimensions of Metacognition Questionnaire

Model	R	R^2	R^2(Adj)	Std.Err.	F	P
A	.526	.276	.352	.57440	95.003	.000
B	.526	.277	.354	.57527	47.482	.000
C	.529	.280	.364	.57537	31.947	.000
D	.529	.280	.370	.57646	23.887	.000
E	.533	.284	.368	.57608	19.399	.000

A. Predictor: Uncontrollability and danger
B. Predictor: Uncontrollability and danger, need to control thoughts
C. Predictor Uncontrollability and danger, need to control thoughts, cognitive confidence
D. Predictor Uncontrollability and danger, need to control thoughts, cognitive confidence, self-consciousness
E. Predictor Uncontrollability and danger, need to control thoughts, cognitive confidence, self-consciousness, positive beliefs
Dependent Variable: Stress

***p<0.1*

When Table 6 is examined, the uncontrollability and danger were added in the first step to the model and it was explained the total variance of stress at a rate of 27.6%. In the second step, when the need to control thoughts was added to the model, it is seen that 27.7% of the total variance was explained. In the third model, cognitive confidence was explained the total variance by 28%. The cognitive self-consciousness was added to the model in the fourth step and it seems that it did not contribute to the model. It is seen that the positive beliefs added in the last step of the model and the last model explained the total variance significantly at a rate of 28.4%.

Table 7

The Results of Hierarchical Regression Analysis Regarding to the Prediction of Subjective Well Being Level by the Sub-Dimensions of Metacognition Questionnaire

Model	R	R^2	R^2(Adj)	Std.Err.	F	P
A	.500	.250	.247	.55514	82.838	.000
B	.500	.250	.244	.55624	41.262	.000
C	.556	.310	.301	.53464	36.922	.000
D	.616	.380	.370	.50773	37.676	.000
E	.617	.381	.368	.50836	30.142	.000

A. Predictor: Uncontrollability and danger
B. Predictor: Uncontrollability and danger, need to control thoughts
C. Predictor Uncontrollability and danger, need to control thoughts, cognitive confidence
D. Predictor Uncontrollability and danger, need to control thoughts, cognitive confidence, self-consciousness
E. Predictor Uncontrollability and danger, need to control thoughts, cognitive confidence, self-consciousness, positive beliefs
Dependent Variable: Subjective Well Being

When Table 7 is examined, the uncontrollability and danger added to the first model and it was explained the total variance of stress at a rate of 25%. It is seen that the need to control thoughts sub-dimension was added in the second step, and it did not contribute to the second model. In the third model, cognitive confidence was explained the total variance by 31%. When cognitive self-consciousness was added to the model in the fourth step, it is seen that the model explains 38% of the total variance. Based on the last model, the positive beliefs was added to the existing model and explained 38.1% of the variance.

Discussion

Metacognition is the self-consciousness about the properties of one's cognitive processes and their resources, and awareness about using these resources efficiently, actively and effectively (Livinstgon, 1997). In the current study, metacognitive functions of adult individuals were investigated as predictors of depression, anxiety, stress symptoms and subjective well-being levels. First, the correlations between metacognitive functions and depression, anxiety, stress and subjective well-being levels were discussed, and it was concluded that there were significant correlations between these variables. The literature review demonstrated that metacognition sub-dimensions such as the negative beliefs about the uncontrollability of thoughts and danger (Matthews, Hillyard, & Campbell, 1999; Moritz et al., 2010; Spada et al., 2008; Taylor, 2010; Yılmaz et al., 2011), cognitive confidence (Köseoğlu, 2013; Lee, Hermens, Porter & Redoblado-Hodge, 2012; Mcdermott & Ebmeier, 2009; Nieto, Delgado, Mateos & Bueno, 2010; Paelecke-Habermann, Pohl & Leplow, 2005), cognitive self-consciousness (Grøtte et al., 2014; Köseoğlu, 2013; Myers & Wells, 2005; Reuven-Magril, Rosenman, Liberman, & Dar, 2009), beliefs about the need to control thought levels of uncontrollability and danger (Köseoğlu, 2013; Morrison et al., 2000; O'Carroll & Fisher, 2013), and positive beliefs (Barahmand, 2009; Morrison et al., 2000; Yılmaz, 2007) were associated with various psychopathologies such as depression, anxiety and stress. Thus, it observed that the present study findings were consistent with the findings reported by similar studies in the literature. Based on the findings, the predictive role of metacognitive strategies on psychological symptoms such as depression, anxiety and stress demonstrate that the level of these symptoms could increase with the level of negative metacognitive strategies adopted by individuals.

On the other hand, frequent use of metacognitive strategies may negatively affect the subjective well-being of the individual by paving the way for the development of discordant psychological responses. Thus, from a metacognitive perspective, the cognitive analyses of the individual against life events could have a significant effect on psychological well-being (Brett, Johns, Peters, & McGuire, 2009). The present study finding that metacognitive evaluations were not factors that only affect the depression, anxiety and stress levels, but also the subjective well-being, which is a reflection of general well-being, demonstrated that metacognitive functions could be effective on several fields of life. Similarly, the finding that the increase in metacognitive function levels had a negative impact on the subjective well-being level was consistent with the literature (Fastame et al., 2012; Fastame & Penna, 2013; Sarıçam, 2015).

Metacognition manages the cognitive system and is an important component of this system (Veenman, Wilhelm, & Beishuizen, 2004). In the current study, the analysis of the correlations between the metacognition sub-dimensions and depression, anxiety, and stress levels revealed a positive and significant correlation between these variables and the positive beliefs, uncontrollability and danger, cognitive confidence, cognitive self-

consciousness and need for control sub-dimensions, and metacognition sub-dimensions significantly predicted depression, anxiety, and stress levels.

The uncontrollability and danger sub-dimension is associated with frequent anxiety and continuity of anxious thoughts despite the efforts of the individual to control them. It was suggested that negative metacognitive functions caused by beliefs that negative thoughts could not be controlled could play an active role in the presence of mechanisms such as persistent thinking (e.g., rumination) and threat monitoring. Thus, based on the study findings, it was suggested that beliefs about the difficulty of controlling negative thoughts may have increased the depression, anxiety and stress levels. In the literature, certain studies reported that the uncontrollability and danger sub-dimension was associated with depression, anxiety, stress levels (Davis, Chen, Jivet, Hauff, & Houben, 2016; Matthews, Hillyard & Campbell, 1999; Moritz et al., 2010; Spada et al., 2008; Taylor, 2010; Yılmaz et al., 2011). The positive beliefs sub-dimension reflects individual's positive beliefs about anxiety. According to Wells (2002), the positive beliefs of the individual about anxiety lead to rumination as a type of coping mechanism. In the present study, this could be explained by the fact that the individual, who perceives the anxiety as a positive factor, employees' anxiety in several fields of life as a method of coping with undesired thoughts. A belief that anxiety is beneficial could result in intense anxiety levels that extend throughout the life of the individual. Thus, the depression, anxiety and stress symptoms may increase. In the literature, certain studies reported that the positive beliefs sub-dimension affected primarily the depression and anxiety levels (Barahmand, 2009; Clark & Wells; 1995; Morrison et al., 2000; Papageorgiou & Yılmaz, 2007; Wells; 2002; Wells, 2003).

The cognitive confidence sub-dimension reflects the insecure beliefs of individuals about their memory. It was suggested that the distrust of the individual towards her or his memory could lead to a non-confidence, which in turn activates negative metacognitive beliefs and increases depression, anxiety and stress levels. The present study findings were consistent with the previous studies which reported a negative correlation between cognitive insecurity that reflects the negative perceptions of the individual about memory performance and depression and anxiety levels (Köseoğlu, 2013; Lee et al. 2012; Mcdermott & Ebmeier, 2009; Nieto et al., 2010; Paelecke-Habermann et al., 2005).

The cognitive self-consciousness sub-dimension reflects the review of one's thoughts frequently. In the present study, it was suggested that the cognitive self-consciousness sub-dimension was associated with depression, anxiety, stress symptoms, and intensive focus on one's psychological processes and more frequent monitoring of present threats. According to the Cognitive Attentional Syndrome model defined as by Wells and Matthews (1994), an individual's intense focus on danger increases negative metacognitive beliefs about the potential threat and danger. In short, it could be suggested that the intense interest of the individual to self-thoughts, frequent review of these thoughts, and focus on mental processes, could increase rumination levels. In the present study, it is possible to say that as the cognitive attention levels of the individuals increased, their depression and anxiety levels might have increased along with their ruminative thinking styles. This finding was consistent with the findings of previous studies that associated cognitive self-consciousness and psychopathologies such as depression, anxiety, and stress (Grøtte et al., 2014; Köseoğlu, 2013; Myers & Wells, 2005; Reuven et al., 2009).

The need to control thought levels sub-dimension reflects the beliefs that thoughts should be frequently controlled. An individual's belief that one should control thought levels could increase the anxiety about dangerous and could lead to an increase in depression, anxiety and stress levels. Similarly, certain studies demonstrated that the need to control thought levels was associated with depression, anxiety, and stress (Köseoğlu 2013; Morrison et al., 2000; O'Carrol & Fisher, 2013). Based on the present study findings, it was suggested that the subjective well-being level, which could be defined as the balance between the positive and negative emotions, and high life satisfaction and perceived happiness levels, could be reduced by inadequate coping mechanisms and psychopathologies that were increased due to the negative metacognitive functions. The finding that the metacognitive functions predicted the subjective well-being level could be explained by the Self-Regulatory Executive Functions Model (S-REF) developed by Wells and Matthew (1996) which proposed that metacognitive beliefs played a significant role in the development of psychopathologies and explained psychological disorders based on their association with intellectual processes. Thus, the positive beliefs about anxiety through an individual's metacognitive beliefs triggered by a negative life event could lead to ruminative thinking. As a result of the continuity of rumination, the belief that the anxiety is uncontrollable, and the individual would face an inevitable danger could lead to a significant difficulty in the individual's ability to think lax and control her or his negative thoughts. As the negative metacognitive functions increase, the frequency of adopting strategies such as rumination and threat monitoring increases (Wells & Matthews, 1996). It was suggested that dysfunctional mechanisms such as directing attention to the sources of threat, thought suppression, anxiety and rumination, which could be used as coping methods, may have negatively affected the subjective well-being levels. There are only a limited number of studies which demonstrated that metacognitive beliefs were an important factor in subjective well-being (Fastame & Penna, 2013; Toffalini et al., 2014; Valiente et al., 2012). It was suggested that the level of negative metacognitive beliefs reduced the perceived subjective well-being levels by affecting the individual's ability to adapt and cope.

Fisher and Wells (2009) reported that psychopathologies are associated with the cognitive processes that individuals employ in a controlled and deliberate manner when they face thought content and threatening negative life events. In summary, in the present study, it was suggested that increased depression, anxiety, stress symptoms and metacognitive beliefs increase the incongruous coping methods that are actively used by an individual. The dysfunctional mechanisms such as concentration on the sources of threat, thought suppression, anxiety, and rumination, which could be used as coping methods, may have negatively affected the subjective well-being levels.

Conclusion

The current study is among the limited number of studies in the literature where metacognitive functions in adult individuals were analyzed based on depression, anxiety, stress and subjective well-being levels. Metacognition entails the cognitive capacities of individuals and the conscious knowledge that they possess through self-monitoring these activities. The existence of anxiety and inadequate beliefs about cognitive functions increases the level of dysfunctional thinking, leading to emotional distress. Based on the current study findings, metacognitive functions had positive correlations with depression, anxiety and stress levels, and a negative correlation with subjective well-being. Furthermore, it was concluded that metacognitive functions were significant predictors of these variables. The present study findings demonstrated the importance of

metacognitive therapy methods in the treatment of psychopathologies. Thus, it was suggested that the existence of studies on the metacognition system that affects the individual's thought patterns, assessments and beliefs about the cognitive processes were important. The current study has certain limitations. The facts that the sample was not sufficiently large and it was assigned to the convenience sampling method were the factors that limited the generalizability of the study findings. The current research was conducted by a non-clinical sample. In future studies, different psychological variables that could have an impact on metacognition could be analyzed with a clinical sample. It was also suggested that the scrutiny, regulation and functionalization of metacognitions in therapeutic relationships would have positive effects on perceived subjective well-being levels and the development and course of psychological problems. Evaluation of metacognitive processes will be an important intervention in the treatment of depression and anxiety disorders. Within the framework of metacognitive therapy, it would be appropriate to determine the dysfunctional thinking styles of the clients and strategies to avoid negative experiences and implementing practices that will reduce the rumination level. In addition, questioning the beliefs of the clients who are followed up with depression and anxiety disorder about their beliefs that worry is uncontrollable or that it is necessary to worry will be beneficial in terms of decreasing depression, anxiety, stress symptoms and increasing the subjective well-being of the clients during the therapy process.

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