Original Article

Prediction of corona anxiety based on cognitive regulation of emotion and psychological disturbances in students

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Abstract

Corona anxiety has had a penetrating effect on various aspects of people's lives and has led to psychological confusion and lack of regulation of emotions. The aim of the present study was to investigate the role of cognitive regulation of emotion and mental disturbances in predicting anxiety of corona in students. The research method was qualitative-quantitative. First, the cognitive regulation factors of emotion were investigated using the qualitative method (phenomenology). 317 people were selected from the statistical population of Payam Noor Urmia students by available sampling method. In coding, biological factors with 110 open codes, strategic factors with 83 open codes, intrapersonal factors with 71 open codes, and environmental factors with 63 open codes, couple factors with 46 open codes, respectively, are the priority of the cognitive emotion regulation factors in students. they came . And there was a direct relationship between the cognitive regulation of emotion identified and the cognitive regulation of emotion among Payam Noor in students. To predict corona anxiety, students responded to Alipour, et al.'s (2019), cognitive emotion regulation, and Garnoski, et al. (2001) psychological disorder scales (DASS-42). There was a Significant negative and positive correlation between the emotional regulation of adaptive and non-adaptive strategy with Corona anxiety, respectively. There was a Significant negative and positive correlation between emotional regulation of adaptive and non-adaptive strategies with psychological disturbance, respectively.. There was a Significant positive Correlation between mental disorder and corona anxiety. Regression analysis showed that these three components together explain 54% of Corona anxiety in students.

Introduction

Corona virus caused human civilization to face a fundamental crisis challenging human existence in 2019 and was declared as an epidemic by the WHO (2020). Corona virus was identified in December 2019 in the city Wuhan, China. The incubation period was from 1 to 14 days, mostly 3 to 7 days with fever, dry cough and fatigue, and Most countries got involved (Lu, et al., 2020). The initial diagnosis of pneumonia with an unknown cause was given to the patients. The common denominator of all these patients was their visit to a seafood market in Wuhan, China (Bogoch, et al., 2020). The results of the investigations showed that they were infected with a virus called Corona virus (Lu et al., 2020). The psychological effects of this viral disease are very important to the mental health of people in the society. In addition to public health concerns, this disease and its consequences have caused a variety of psychological disorders such as anxiety, stress, depression, avoidance behaviors, post-traumatic stress disorder and many other disorders, so in this situation, maintaining mental health and preventing it from psychological disturbances and cognitive regulation of emotions is very important (Wright, et al., 2021). It is necessary to implement necessary measures in order to prevent and treat psychological problems (Asgari., et al 2019). Anxiety means an incomprehensible and vague worry (that is, in the absence of a specific stimulus) that is constantly increasing and cannot be controlled. It is also associated with physical symptoms, and according to the definition of anxiety, anxiety means that a person has about being infected with the Corona virus feels in himself (Roi, et al., 2020). At that time, the world was living with critical conditions caused by this disease and fear and anxiety had covered the whole world (Kumar & Somani., 2020).

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Infectious diseases mainly increase a wave of anxiety that causes widespread disruption in the behavior and psychological well-being of many people (Balaratnasingam & Janka., 2016). The fear and anxiety caused by a possible illness is very harmful and can cause psychological abnormalities in people. Remaining anxious in the long term is destructive and leads to the weakening of the immune system and the reduction of the body's ability to fight diseases, including Corona (Atkinson et al., 2000, translated by Brahani et al., 2018).

The situation of the Covid-19 disease has affected almost the important aspects of society such as economic, political, social and even military, many trades, sports and the educational system of countries and especially universities, and many damages were caused to these layers (Huskey, et al., 2020; Li, et al., 2020). The results of Wang et al. (2021a) showed that the problems caused by the spread of the Coronavirus include mild to severe symptoms of stress, anxiety and depression. It is worth mentioning that the regulation of emotions caused by anxiety is strongly controlled by the person's current situation, and this has caused the factors related to emotional regulation to be investigated (Wang et al., 2020). Studies have shown that with the spread of the Coronavirus in China, about a third of respondents reported moderate to severe anxiety (same source). The Corona virus epidemic and the closure of universities caused a lot of anxiety among students, 24.9% of Chinese students experienced Corona anxiety and of these people, 9% reported severe anxiety and the rest reported mild anxiety.

Among the important reasons for causing anxiety in students, concern about the impact of the Corona virus on the future of education, employment in the future, difficulty in providing university tuition due to the loss of financial resources that resulted from the unemployment of people, family members and relatives becoming infected, and the reduction of social connections (Cao et al., 2020). The methods of guiding students to effectively and appropriately regulate their emotions in public health emergencies and to avoid losses caused by critical incidents have become an urgent problem for colleges and universities (The same source). The methods of guiding students to effectively and appropriately regulate their emotions in public health emergencies and prevent damages caused by critical incidents have become an urgent problem for colleges and universities (The same source) and in the aforementioned research, the difference in meaning It was not shown that there was a difference in gender, which is different from previous findings such as the study of Moreno et al., (2019) study. This difference shows that male and female students experienced similar stress and negative emotions as a result of the pandemic. The anxiety of Corona was such that some people committed suicide due to the fear of contracting this disease (Xiang et al., 2020). People's negative personal experiences or exposure to issues mentioned in the media about the Coronavirus crisis may increase their fear and anxiety and be associated with acute stress, and if people are repeatedly exposed to the news of this crisis, directly or indirectly. exposed directly (e.g. through the media) can lead to depression (Kumar & Somani, 2020; Holman et al., 2014). This is because many people may not think clearly and logically when reacting to Covid-19 with high anxiety, which is caused by various factors such as environmental, hereditary and genetic factors (Li et al., 2020) Psychologists define emotion regulation as the process of initiating, maintaining and modifying the experience and expression of a person's emotions (Gross & Jazairi, 2014). And the cognitive regulation of emotion is defined as a set of cognitive strategies, by which people seek to guide spontaneous emotions and ultimately causes changes in the experimental, behavioral and physiological response (Langer et al., 2021). It seems that the difficulty in regulating emotions in the face of threatening and anxiety-provoking conditions can be an important factor in Corona anxiety (Restubog et al., 2020). In such a way that in facing the Corona virus disease, knowing and understanding the power of regulating people's emotions plays a very important role (the same source). Difficulty in regulating emotions in this situation worsens the situation, but regulating emotions can provide better emotional control in difficult situations (Strauss et al., 2019). In fact, the cognitive regulation of emotion includes all cognitive strategies that are used to increase or decrease or maintain emotional experiences, and it is indicative of the behavioral styles of people in stressful situations. Cognitive emotion regulation strategies are generally divided into two categories: adaptive and maladaptive strategies. Adaptive strategies include acceptance, re-attention to planning, positive re-attention, positive re-evaluation, and creating a perspective in dealing with stressful events, and they promote self-esteem, social skills, etc. (Smith et al., 2019; Riaz et al., 2021). Incompatible strategies also include blaming and reprimanding oneself and others, mental rumination and catastrophic thinking in dealing with stressful events and lead to stress, depression, other psychological injuries, etc. (Granfsky et al., 2002; Merikangas & Angst, 1995). Kraij et al. (2003) quoting Granfsky et al. (2002b) have shown in their research that each class of people (for example, children, teenagers, young people and adults) have different emotional regulation related to age and group type through which their emotions regulate themselves in response to traumatic events, for example, a child with proper emotional upbringing during development may be immune to many disorders.

Regardless of cognitive regulation strategies, research shows that inappropriate emotional reactions in facing the Coronavirus disease, including feelings of sadness and distress, and inadequate strategies of emotion regulation cause the formation of feelings of sadness and short-term emotional disturbances. (Azazi Bejnvardi et al., 2019). Also, the findings show that positive emotion regulation strategies have a negative relationship with Corona anxiety and negative emotion regulation strategies have a positive and significant relationship with Corona anxiety (Azizi Aram & Beshrpour, 2019). In a research, Huh et al. (2017) came to the conclusion that adaptive strategies

of cognitive regulation of emotion have a negative effect on anxiety and depression, and maladaptive strategies of cognitive regulation of emotion have a positive effect on anxiety and depression. Mohebi and Zarei (2018) concluded that the adaptive strategies of cognitive regulation of emotion had a negative and significant relationship with anxiety and the negative strategies of cognitive regulation of emotion had a positive and meaningful relationship with anxiety. On the other hand, one of the important factors in how people respond to the tensions and anxieties caused by the Corona disease is their capacity to tolerate turmoil, which Simmons and Gahner (2005) refer to as a person's ability to deal with negative emotions. Mental disturbance can be related to many disorders. The important thing is that people who cannot tolerate or manage and control this distress are more likely to have problems and people with adaptive cognitive emotional regulation have higher mental health and lower psychological disturbances because they control negative emotions better (Amon, 2006; Gross &Thompson, 2007). In a study, Garnevsky and Karaj (2007) showed that the use of some strategies such as self-blame, rumination and reading catastrophizing and to some extent blaming others are common in adults with mental disorder. And in this way, psychological disturbances can play a role in the relationship between the cognitive regulation of emotion and Corona anxiety, because people with low disturbance tolerance find anxiety unbearable and cannot deal with their disturbance and distress (Williams et al., 2013). In fact, psychological disturbance affects the evaluation and consequences of anxiety and the experience of negative emotions, so that the greater the psychological disturbance, the stronger the reaction to stress and anxiety, such people have low coping skills. They are more sensitive to disturbances, and as a result, they try to avoid such emotions by using strategies that reduce negative emotions. (Keough et al., 2010) .Other research findings Like Van Dixhorn and White (2005) showed that disturbance tolerance has a negative correlation with Corona anxiety and can predict Corona anxiety. In this regard, Abdullahzadeh and Maroufi (2022) showed that the variable of anxiety can be predicted by the variable of psychological disturbance tolerance. Based on these findings, it can be said that the ability to regulate psychological disturbance makes people able to control their emotions and in stressful events, they can withstand psychological pressure, they control critical situations (such as the crisis of the Corona virus) and are able to solve problems, and this reason prepares the conditions for the increase of anxiety caused by the Corona virus .Considering the increase of the Corona pandemic and the anxiety caused by it in the country, it is still necessary to take measures to intervene in the crisis and health care in this field. Considering that there is still insufficient information about the psychological impact and public health of people at the height of the Corona virus epidemic (Aini et al., 2019). And this issue is associated with the uncertainty of the spread of the Coronavirus, and the studies related to the outbreak are mostly on the identification of epidemiology and clinical symptoms of patients affected by Corona (Huang et al., 2020). Unfortunately, the Corona virus puts a lot of psychological pressure on people in terms of physical, mental, cultural and social aspects (Shiondi & Hassanvand, 2019). Because of the importance of the issue of Corona anxiety among students as a vulnerability factor for suffering from other psychological disorders, identifying the effective factors for Corona anxiety seems to be of great importance, so it is necessary to conduct studies to explore the psychological aspects of this disease in order to be able to It helped the students' mental health condition and provided solutions to deal with it. Therefore, by referring to the research findings and literature and the importance of further scientific investigation, this research first investigates the relationship between cognitive factors of emotion and psychological disorders by identifying and prioritizing cognitive factors of emotion and then examines the role of regulating cognitive factors of emotion. And psychological disturbances in the prediction of Corona anxiety in students are discussed. Therefore, the purpose of the present study is to investigate the role of cognitive regulation of emotion and psychological disturbances in predicting anxiety of Corona.

Method

Participants

The population of the current study includes all students of Payam Noor University of Urmia, who were studying in Payam Noor University of Urmia in the first half of 1400, as many as 4442 people. In the correlation research, based on the statements of Tabachanik and Fidel (2013, translated by Sharifi et al., 2016), the number of 300 people is considered as a suitable sample. In this research, the sample was selected using random sampling method and based on the Crissy-Morgan (1970) table, for which a population of 351 people was proposed. 351 students were selected by observing the criteria for entering and exiting the study. Taking into account the dropout of the subjects and removing the distorted questionnaires, the final number of the sample was 317 people.

Instrument

Open interview:

According to Granfsky et al. (2002b), emotional cognitive factors are different in every stratum and class, so it can be claimed that emotional cognitive factors in students are not exempt from this rule, therefore, in this regard, a game interview was arranged to see from the perspective of several Expert, to determine the factors related to emotional regulation among university students. The experts in this research included 13 psychology professors who were selected by the snowball method.

Questionnaire of identified emotional regulation factors:

In this section, by reviewing foreign and domestic articles, questionnaires with valid reliability and validity were identified, and after distributing 30 samples among students and confirming their reliability in internal samples, the relationship between emotional regulation and factors adapted from interviews was investigated. It has been discussed in order to finally get more confidence in the connection of these factors with emotional regulation.

Table 1. Determining the reliability and validity of the emotional regulation factors questionnaire

Questionnaires	Number of items	Determining reliability and validity by
Emotional regulation biological factor questionnaire	7	Kim and Sasakim (2007)
emotional regulation strategic factor questionnaire	6	Garnevsky and Krige (2007)
Questionnaire of the intrapersonal factor of emotional regulation	7	Hoffman et al. (2016)
Emotional regulation environmental factor questionnaire	8	Manaser et al. (2012)
Emotional regulation couple factor questionnaire	6	Larsen et al. (2015)

Cognitive Emotion Regulation Questionnaire (CERQ-P):

In This questionnaire was compiled in the Netherlands and has two English and Dutch versions and is a self-report tool. It has 36 statements that are evaluated on the Likert scale from never = 1 to always = 5 and has a special form for adults and children (from 12 years and above) and examines 7 factors (Garnevsky & Kraich, 2006). This questionnaire has two adaptive emotional regulation strategies with questions 13, 11, 14, 16, 15, 19, 29, 20, 31, 22, 23, 24, 25, 32, 33, 34, 6, 7, 5, 4, 2. and non-adaptive cognitive emotional regulation with questions 19, 21, 28, 26, 27, 18, 8, 9, 10, 17, 1, 3, 8, 9, 12, 30, 35, 36. In examining the psychometric characteristics of this test, Garnofsky et al. (2001) reported the reliability coefficient of its subscales in a 14-month interval between 0.48 and 0.61, and the alpha coefficient for the subscales of this questionnaire was reported by Garnofsky et al. (2002) has been reported in the range of 0.71 to 0.81. The psychometric adequacy of the Cognitive Regulation of Emotion Questionnaire in Iran has been reported as favorable by Samani and Sadeghi (2011). The alpha coefficient for these factors in Samani and Sadeghi's research has been reported in the range of 0.62 to 0.91 and its retest coefficient in the range of 0.79 to 0.88. The reason for using this questionnaire was that, unlike many coping questionnaires, this scale differentiates between a person's actual thoughts and actions, and evaluates a person's thoughts and coping strategies after traumatic events, and it is easy and convenient to use. Normal people and clinical population.

Corona Virus Anxiety Scale (CDAS):

This instrument measures the anxiety caused by the spread of the Corona virus and it was prepared and validated in Iran by Alipouret et al. (2018). The latest version of this questionnaire has 18 items and 2 subscales. Items 1 to 9 measure mental symptoms and items 10 to 18 measure physical symptoms and have a 4-point Likert scale (never = 0, sometimes = 1, most of the time = 2, and always = 3). The highest and lowest score obtained in this questionnaire is between 0 and 54. High scores indicate a higher level of anxiety in people.

Because it measures the physical and mental symptoms of Corona anxiety, This questionnaire was selected for the present study. The reliability of this tool was obtained using Cronbach's alpha method for the first factor ($\alpha=0.879$), the second factor ($\alpha=0.861$) and for the whole questionnaire ($\alpha=0.919$). Also, Gottman's λ-2 value was obtained for the first factor (λ-2=0.882), the second factor (λ-2=0.864) and for the whole questionnaire (λ-2=0.922). In order to check the criterion validity of this tool, the GHQ-28 questionnaire was used, and the results showed that this tool was 0.483, 0.507 with the total score of the GHQ-28 questionnaire and anxiety component, physical symptoms, social functioning disorder and depression respectively. , 0.418, 0.333 and 0.269 are correlated and all these coefficients were significant at the 0.01 level. In the research of Gravand (2021), Cronbach's alpha coefficient was 0.89 for the whole scale and 0.84 and 0.85 for the subscales of mental and physical symptoms, respectively, and the aforementioned results indicate the appropriate reliability of the research tool.

DASS-42 psychological disturbance scale:

The self-report scale of depression, anxiety and stress DASS-42 was prepared by Lavibond and Lavibond (1995). This scale has two forms, the main form has 42 statements that describe each of the mental constructs of depression, anxiety and stress by 14 different statements and based on a four-point Likert scale with questions such as (I can't bear to see interruptions in my work It measures depression, anxiety and stress. This scale has the ability to diagnose and screen the symptoms of anxiety, depression and stress during a week and is suitable for adults. The studies conducted by Lavibond and Lavibond (1995) showed that the test-retest reliability for the subscales was 0.81 for stress, 0.79 for anxiety, and 0.71 for depression. Labivand and Labivand to check the convergence validity of the scale, the correlation coefficients with Beck's anxiety and depression questionnaires were obtained 0.81 and 0.74, respectively. In a research by Afzali et al. (2006), the psychometric characteristics of the test were verified in a sample of 400 students, the results showed that the correlation of the depression scale of this test with the Beck depression questionnaire was 0.849, the

correlation of the anxiety scale was 0.849. It was also reported with Zong's anxiety questionnaire 0.831 and the correlation of stress scale with students' stress scale was 0.76. Afzali et al. (2006) also reported Cronbach's alpha of depression, anxiety and stress scales as 0.85, 0.94 and 0.88, respectively. The reason for choosing this questionnaire is because it fulfills important issues such as: 1- For the success of developmental studies and research in the adult population, the availability of assessment tools that analyze the full spectrum of the main symptoms of anxiety and depression and accurately distinguish between the two Emotional state is differentiated, essential (Kendall et al., 1989). 2- In addition, to provide adequate medical care, it is necessary to first widely identify the problem, and different scales are widely used as screening tools to assess mental health issues. It is necessary to ensure that the existing dimensions are considered sufficient to provide the necessary psychological support (Ahmid et al., 2022).

Procedure

The study started on October 6, 2021, data collection closed on February 29, 2021, and was last revised on November 22, 2022. The current research method was based on the objective, fundamental, and in terms of the method of data collection, it was mixed and qualitative-quantitative. In the quantitative part, the descriptive and correlational research method and in the qualitative part, in the first stage, cognitive and emotional factors were investigated among the students using the open-ended interview of psychologists using the snowball method, and after classification, using the method of identifying and prioritizing cognitive factors. Emotions among students were classified using Max Kyoda software, then the relationship between the obtained emotional regulation factors and the results of cognitive regulation of emotions among students of Payam Noor University of Urmia was investigated. Data from the qualitative section were analyzed with pls software. Finally, to predict the anxiety of Corona, due to the Corona epidemic; Research questionnaires were provided to students online through student groups on WhatsApp and Telegram, which complemented the electronic learning management system of each course. The criterion for entering the study was the individual's informed consent and understanding of the meaning of the questions, the subjects were assured that their information would remain confidential. Making the results available if people wish was one of the other ethical principles observed in this research. Questionnaire data was analyzed using SPSS-25 software by Pearson's correlation coefficient and step-by-step regression.

Results

Demographic information of the participants showed that there were 317 people with an average age of 31.74 ± 9.07. Of these, 140 people (44.02%) were men and 177 people (55.80%) were women. 180 people were single (56.80) and 137 people (43.20) were married. In terms of educational level, 190 people (59/94) had bachelor's degrees, 85 people (26/81) had master's degrees, and 42 people (13/25) had doctoral degrees. 205 (64/67) of the sample were employed and 112 (35/33) were unemployed.

Expression of coding results

According to the codings, biological factors with 110 open codes, strategic factors with 83 open codes, intrapersonal factors with 71 open codes, and environmental factors with 63 open codes, paired factors with 46 open codes, respectively as priorities Cognitive and emotional regulation factors were obtained among students, which is shown in Figure 1 and Table 2.
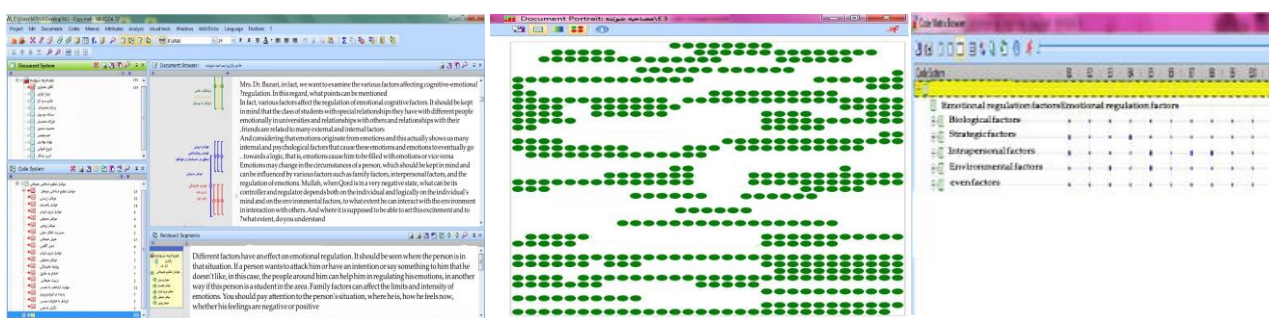
Figure 1. A view of the concentration of codings in Maxqda software (source: researcher's)

Table 2. Part of the table of categorization of concepts of signs

Number in the text	Source	Open source	Subcategory	Main article
1	E1	Being sensitive can have a great effect on regulating emotions	Personality characteristics	Intrapersonal factors
4	E1,E2,E3,E4	High anxiety during a subject has caused my patients to lose control over their emotions		
1	E13	Some people's inner selfishness even causes them to control their emotions.		

1	E5	Unfortunately, there are emotions hidden inside me that are related to my personality...	
13	E1,E2,E3,E4,E5,E6,E7, E8,E9,E10,E11,E12,E13	Neuroticism is actually the most important factor in not controlling emotions.	neurosis
3	E7,E10,E11 , E17	Optimism and pessimism are soothing factors for dominant negative emotions.	attachment style
2	E1,E2,E14,E15	Attachment to the environment in humans helps to regulate emotions.	
3	E1,E5,E6	Hereditary genes are also among the factors of control or lack of regulatory control of emotions	Inheritance
1	E9,E15	Heredity is one of the factors that regulate the internal state of a person and control positive or negative emotions by adapting from the past generation.	

For example, both open codes "Optimism and pessimism are soothing factors of dominant negative emotions" and "Attachment to the environment in humans helps to regulate emotions". Considered as a subcategory of "attachment style", this category is combined with similar categories and related to the problems of "intrapersonal factors", which is a main category.

Evaluation of the conceptual model of the research

To test the conceptual model of the research, partial square modeling technique was used, which provides the possibility of examining theory and metrics simultaneously. In PLS models, two models are tested. The external model, which is equivalent to the measurement model, and the internal model, which is similar to the structural model in structural equation models. The internal model indicates the factor loadings of the observed variables.

Table 3. Two-step model evaluation process

Validity and reliability of reflective structures	External model evaluation
Validity of composite constructs	
Explaining the dispersion of endogenous structures	Evaluation of the internal model
Effect rate (β coefficient)	
Predictive correlation (coefficient of determination or R2)	

Examining the validity and reliability of measurement models (reflective structures)
In PLS models, measurement models or structures are divided into two categories: reflective structures and composite structures. In this study, all measurement models are reflective. In evaluating the reliability of

these models, the one-dimensionality of the blocks must be determined. Cronbach's alpha is used to determine the one-dimensionality of measurement models (Farshchi, 2022a). The results and output report of PLS software for these two indicators are given in Table.

Table 4. Results and output report of PLS software

Variables	Cronbach's alpha	composite reliability
Biological factors	0.884	0.917
Strategic factors	0.84	0.904
Intrapersonal factors	0.826	0.896
Environmental factors	0.916	0.941
Even factors	0.856	0.912

As can be seen, the values obtained for Cronbach's alpha and composite reliability are greater than 0.70, which indicates the satisfactory reliability of the research variables. Therefore, the measurement models have good reliability. These indicators are concluded by examining the internal correlation or factor loadings between the factors regarding the simultaneous reliability of the variables, but since the reliability of the factors is different, the reliability of each factor must be evaluated alone. Researchers believe that the variables

that have a factor load of 7 (correlation between a construct and each of its observed variables) less than 0.4 should be removed from the measurement model (Khzari Azar et al., 2013).

Examining the internal research model
The numbers in the table6 represent the R2 values for the endogenous variables. R2 value is not provided for exogenous or independent variables. As can be seen, the value of R2 for all variables is significant.

Table 5. The value of the coefficient of determination

Variables	R Square
Biological factors	0.892
Strategic factors	0.816
Intrapersonal factors	0.886
Environmental factors	0.650
Even factors	0.902

Table 6. Mean and standard deviation, skewness and stretch, tolerance coefficient, inflation and Watson camera variables

variable	Kolmogorov-Smirnov test					Error independence test	Test the model linearity indices	
	N	Mean	Std.Error	Z	Sig	Durbin-Watson	Tolerance	VIF
Emotional regulation of adaptive strategy	317	30.35	3.83	1.117	0.147	2.035	1.17	0.768
Emotional regulation of non-adaptive strategy	317	24.37	3.07	1.09	0.121	1.86	1.55	0.85
Psychological turmoil	317	90.59	6.68	1.09	0.173	1.913	13.876	0.556
Corona anxiety	317	40.68	6.87	1.76	0.121	2.341	7.451	0.721

According to the results of the decision criterion (P-Value), this value is greater than the significance level of 0.05. Therefore, there is no reason to reject the assumption that the desired sample was obtained from a normal distribution. In this sense, the research variables have a normal distribution. Durbin-Watson's test of independence of errors also indicates the absence of correlation, which is the optimal condition in the main assumptions related to the residuals in the regression analysis. In fact, the statistic is in the range of 1.5 to 2.5,

which accepts the null hypothesis of the test (no correlation between errors). Also, tolerance and VIF indices show that there is no multiple collinearity between predictor variables. In fact, each of them can play an independent role in explaining the dispersion of Corona anxiety scores. The value of skewness and kurtosis for research variables is in the range (2, -2). That is, in terms of skewness and elongation, the research variables are normal and their distribution is symmetrical.

Table 7. Correlation matrix of research variables

Variable	1	2	3	4
Emotional regulation of adaptive strategy	-			
Emotional regulation of non-adaptive strategy	-0.145**	-		
Psychological disturbance	-0.353*	0.321*	-	
Corona anxiety	-0.291*	0.353*	0.301*	-

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

The results of the Pearson correlation coefficient in Table7 indicate that there is a negative correlation between the emotional regulation factors of the adaptation strategy with Corona anxiety (n=371, r =-0.291, p < 0.05) and between the emotional regulation of the non-adaptation strategy with Corona anxiety There is a positive correlation (n=371, r = 0.353, p < 0.05). There is also a negative correlation (n=371, r =-0.353, p < 0.05) between the emotional regulation factors of adaptive strategy and psychological

disturbance. There is a positive correlation between emotional non-adaptive strategy and psychological disturbance (n=371, r = 0.321, p < 0.05). There is also a positive correlation between psychological disturbance and Corona anxiety (n=371, r = 0.301, p<0.05 has it .Further, in order to investigate the cognitive regulation of emotion and psychological disturbance in the prediction of Corona anxiety, multiple regression analysis was used in a step-by-step method, the results of which are given in Table 8.

Table 8. Results of multiple regression analysis by step-by-step method in predicting Corona anxiety

Model	(SS)	df	Ms	F	P
Regression	367.453	1	367.453		
residual	879.456	316	19.760		0.006
total	1247.909	317		12.098	

Predictive variables	step	R	R²	ARS	Non-standard coefficients		standard coefficients	T(p)
					SE	B	beta	
Constant					4.935	0.788	-	0.160 (0.768)
Emotional regulation of adaptive strategy	1	0.446	0.198	0.176	-0.07	0.240	-0.26	2.63 (0.009)
Emotional regulation of adaptive strategy* Emotional regulation of non-adaptive strategy	2	0.621	0.385	0.173	0.08	0.240	0.18	2.08 (0.039)
Emotional regulation of adaptive strategy * Emotional regulation of non-adaptive strategy * Psychological disorder	3	0.736	0.541	0.180	-0.04	0.240	-0.29	2.74 (0.007)

Examining Table 8 shows that F value (12.098) with degree of freedom 1 and 316 is statistically significant,

which indicates that the cognitive regulation of emotion with the mediating role of psychological disturbance

provides a meaningful explanation of Corona anxiety in students. they give In fact, as the findings showed, the ratio of F value indicates the relationship of these variables with Corona anxiety (0.01). The variance analysis test shows that the regression model has a good fit with the predictor and criterion variables and the changes explained by the model are real and not caused by chance and coincidence. Therefore, the predictor variables of the research have adequate explanatory power and are able to explain well the changes in the variance of the criterion variable (Corona anxiety). The information related to the coefficient of determination and the ratios obtained from the regression analysis show that these two components together are able to explain 54% ($R^2=0.541$) of Corona anxiety in students And the remaining 46% are related to other factors. In general, the results show that the first model of "emotional regulation factors" explains 19% of the variance of Corona anxiety ($R^2=0.198$). This value is significant with the beta coefficient (β-0.26) at the level of (P=0.09). With the introduction of the variable "emotional regulation" in the second model; The amount of explained variance reaches 38% ($R^2=0.385$). And it alone can explain 18% ($R^2=0.187$) of Corona anxiety. Standard coefficients of both predictor changes are significant with beta coefficient (β-0.18) at the level (P=0.039). And finally, with the inclusion of the "psychological disturbance" variable in the third model; The amount of explained variance reaches 54% ($R^2=0.541$). That is, it alone can explain 15% ($R^2=0.156$) of the Corona anxiety component. This value is significant with beta coefficient (β-0.29) at the level (P=0.007).

Discussion

The psychological effects of epidemics have always been of interest to researchers. The anxiety caused by Corona has affected various aspects of people's lives and will undoubtedly affect people's lives after the end of this disease. The results of the present study showed that based on coding, biological factors with 110 open codes, strategic factors with 83 open codes, intrapersonal factors with 71 open codes and environmental factors with 63 open codes, couple factors with 46 open codes. The order was obtained as the priorities of the emotional cognitive regulation factors among the students and a direct relationship was obtained between the identified emotional cognitive regulation factors and the emotional cognitive regulation in Payam Noor students. There is a positive correlation between non-adaptive strategy and Corona anxiety. There is a negative correlation between the emotional regulation of the adaptive strategy and mental disorder, and there is a positive correlation between the emotional regulation of the non-adaptive strategy and mental disorder. Also, there is a positive correlation between psychological disturbance and Corona anxiety. Regression analysis shows that these three components together are able to explain 54% of students' Corona anxiety ($R^2=0.541$). Emotional regulation adaptive

strategy explains 19% ($R^2=0.198$), maladaptive emotional regulation strategy 18% ($R^2=0.187$) and psychological disorder 15% ($R^2=0.156$) of Corona anxiety. The results of this research showed that there is a negative correlation between the emotional regulation of adaptive strategy and Corona anxiety, and there is a positive correlation between non-adaptive strategy and Corona anxiety. There is a negative correlation between emotional regulation of adaptive strategy and psychological disturbance and there is a positive correlation between emotional regulation of non-adaptive strategy and psychological disturbance. There is a positive correlation between psychological disturbance and Corona anxiety. There is a positive and significant relationship between psychological disturbance and Corona anxiety. In general, it can be said that based on the findings of this research, the ineffective style of cognitive emotional regulation can increase psychological disturbances. In some ways, the result of this research was consistent with the results of Dumaradzka and Fajkowska (2018), Huh et al. (2017), Mohebi and Zarei (2018), Markoin (2011), Wolgast et al,. (2011). For example, Dumaradzka and Fajkowska (2018) concluded that the positive factors of cognitive regulation of emotion had a negative correlation with anxiety and the negative factors of cognitive regulation of emotion had a positive correlation with anxiety. Azizi and Beshrpour (2019) showed that emotional regulation plays an important role in predicting Corona anxiety, and this finding is consistent with the findings of Bojunordi et al. (2019), who showed that there is a significant correlation between cognitive regulation of emotion and Corona anxiety in diabetic patients. These studies emphasize that the high use of negative factors such as rumination, catastrophic thinking, and self-blame are associated with a high dose of anxiety, and these styles increase and perpetuate anxiety. Therefore, it can be said that the use of negative cognitive regulation factors increases people's readiness to create anxiety, and as a result, instead of rationally dealing with stressful events such as Corona anxiety, they respond to them with confusion. According to Gross (2007) research, it can be said that positive (adaptive) factors in dealing with stressful events improve physical, social health, etc., and negative factors that are incompatible factors in dealing with stressful events. They cause stress, depression, other mental injuries, etc. Because it is assumed that abnormality in emotion regulation is one of the underlying causes of mood and anxiety disorders (Campbell-Silles & Barlow, 2007). the use of negative factors is leads to the lack of proper control of emotions against daily life events and causes symptoms or disorders such as depression and anxiety. In fact, having a bias in the interpretation of the events of the social environment causes the formation of negative attitudes about oneself and the social environment, and this causes a wrong evaluation of the social conditions; Therefore, it can be expected that by increasing the positive factors of cognitive regulation of emotion and decreasing the negative factors of cognitive

regulation of emotion, the amount of Corona anxiety in patients will be reduced.. In recent research studies, it has been shown that the spread of such epidemic viruses leads to tension and anxiety, and these conditions cause difficulty in emotion regulation factors to reduce the amount of negative emotions (Dariman & Heimberg, 2018). Jangman et al showed in a research that the anxiety of the Corona virus predicts the difficulty of emotion regulation (Jungman & Witthoft, 2020). In explaining this relationship, it can be said that due to the fact that during the Corona virus epidemic, the media plays an active role in informing the news and events caused by this epidemic, and these informations provoke It will lead to physiological high and as a result increase in negative emotions of people, which will lead to them not being successful in regulating their emotions adaptively (Jungman & Witthoeft, 2020). People who use negative cognitive regulation strategies such as rumination, catastrophizing and self-blame are more vulnerable compared to other people (Garnefsky & Kraij, 2006). Having positive strategies of cognitive regulation, such as positive evaluation, makes a person use other thinking methods in emotional situations in order to reduce emotional tension so that he does not have a negative emotional experience (Szczygie et al., 2012). In the emotional regulation model of Gross (2007), Brettheimin and positive refocusing are emphasized as styles that lead to appropriate physical and emotional responses to emotion-provoking stimuli. Among other findings of the current research showed that psychological disturbance has a positive correlation with Corona anxiety and can predict Corona anxiety. The results are consistent with the study of Simmons and Gahner (2005). In this regard, Moqbli et al.(2018) showed that anxiety can be predicted by the variable of psychological disturbance. In fact, it can be said that the ability to tolerate disturbance makes people able to relieve their emotions and tolerate disturbance and mental pressure in crises, which in turn causes the ability to face problems and solve them, in other words, people with psychological disturbances cannot control their emotions well in traumatic life situations (such as the Coronavirus crisis) and solve problems .according to research Zare and Selagi's (2013), there is a significant correlation between psychological disturbances and cognitive regulation strategies. Inefficient components of cognitive regulation of emotion had a significant positive relationship with psychological disturbances and efficient components of cognitive regulation of emotion had a significant negative relationship with psychological disturbances. In explaining the relationship between ineffective strategies of cognitive regulation of emotion and disturbances, Aldao and Nolen-Hoeksma (2010) have explained that efficient strategies in people have a lesser role in cognitive regulation of emotion than ineffective strategies, because their adaptability and adaptability are mostly dependent on It is context, for example, reappraisal is considered adaptive when it is really possible to rebuild, but rumination is considered non-adaptive in most cases.

Conclusion

In total, the results showed that cognitive regulation of emotion and emotional disturbance predicts Corona anxiety in students. In explaining the findings of the present study, it can be said that students who have a high tolerance for distress can easily cope with the anxiety caused by the Coronavirus. These people probably use positive emotions to face difficult experiences, and students who cannot control pressures and traumatic crises rationally, and instead of accepting issues and focusing on problems to find a better solution, use avoidance styles. Most likely, with the intensification of the pressures and stresses caused by the traumatic situation, they feel helpless and show little ability to bear these disturbances, which in turn increases the use of avoidance styles in these people. It can have many negative consequences, including increasing anxiety for them. People with high psychological disturbance get stuck in a wrong cycle of dealing with negative emotions and are caught in behavioral disorder, to the extent that the high disturbance of these people forces them to find a quick solution to get rid of negative emotions. One of the limitations of this research is the method of conducting the research, which was offline and online, and as a result, those who did not have access to the Internet could not participate in this research. Another limitation of this study was the lack of full supervision of the researcher on the implementation method. Also, self-report tools were used, which always leads to concern about the correctness and reliability of people's answers, and there is also the possibility of bias in these conditions, and finally, the research community was limited to Urmia University students. Future studies can conduct their studies with more careful supervision and face-to-face with tools such as interviews, and also replicate this study in clinical samples and other areas. Finally, according to the results of the present study, it is recommended to hold online training workshops and design appropriate psychological interventions to train the adaptive factors of coping with the disease and its acceptance and emotional management now and after the end of this disease by mental health experts. I am very grateful to all those who guided us in this research and also to all the students participating in the research who helped us in the process of sampling and completing the questionnaires. This research has not received any financial aid from government, private or non-profit organizations.

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References

Abdullahzadeh, & Maroufi. (2022). Predicting the recovery rate of generalized anxiety symptoms based on disturbance tolerance, uncertainty tolerance, and cognitive avoidance in patients referred to Isfahan medical centers in 2019-1400. *Journal of Qom University of Medical Sciences*, 16(4). http://journal.muq.ac.ir/article-1-3382-fa.html

Afzali, Afshin; Delawar, Ali, Barjali, Ahmed and Mirzamani, Mahmoud. Psychometric characteristics of DASS-42 test based on a sample of high school students in Kermanshah city. *Behavioral science research* 2006; 5 (2): 81-92. doi: 20.1001.1.17352029.1386.5.2.3.4

Aini, Sanaz.; Ebadi, Matina. And Turabi, Naghma. (2019). Development of a model of Corona anxiety in students based on the sense of coherence and resilience: the mediating role of perceived social support. *Culture of Counseling and Psychotherapy*, 11(43), pp. 1-32. doi:10.22054/QCCPC.2020.51656.2376

Aldao, A., & Nolen-Hoeksema, S. (2010). Specificity of cognitive emotion regulation strategies: A transdiagnostic examination. *Behaviour research and therapy*, *48*(10), 974-983. doi:10.1016/j.brat.2010.06.002

Alipour, Ahmed,; Gadami, Abolfazl.; Alipour, Zahra.; and Abdullah Zadeh, Hassan. (2018) Preliminary validation of Corona Disease Anxiety Scale (CDAS) in Iranian sample. *Scientific-Research Quarterly of Health Psychology*. 8 (32): 163-175. doi: 10.30473/HPJ.2020.52023.4756

Askari, Mohammad; Gadami, Abolfazl; Aminaei, Hengameh; Rezazadeh, Reihaneh. (2019). Psychological dimensions of covid 19 disease and mental injuries caused by it: a systematic review. *Educational Psychology Quarterly*, 16(55). pp. 173-206. doi: 10.22054/jep.2020.53307.3045

Atkinson, Ritaal, Atkinson, Richard C., Smith, Edward E., Bam, Darryl J., and Hoeksma, Susan Nolen (2018). *Hilgard's field of psychology, 33rd edition*, (translated by Mohammad Naghi Brahni, Behrouz Birshak, Mehrdad Beyk, Reza Zamani, Saeed Shamlou, Mehrnaz Shahrarai, Yusuf Karimi, Nissan Gahan, Mehdi Mohiuddin and Kianoush Hashemian. Tehran: Rushd Publications. (2000).

Azizi Aram, S. and Beshrpour, S. (2019). The role of rumination, emotion regulation and reactivity to stress in predicting the anxiety of Coronavirus in nurses. *Nursing Management Quarterly*, 9(3), 18-8

Azazi Bojunordi, Elmira; Kadampur, Samaneh; Moradi, Shakib and Amena, Ghadbanzadeh (2019. Prediction of Corona anxiety based on cognitive emotion regulation strategies, health stubbornness and death

anxiety in diabetes patients. *Psychiatric Journal*, 8(2); 34-42. https://www.magiran.com/paper/2157002

Ahmed, Oli ., Faisal, Rajib Ahmed ., Alim, Sheikh MD ABU HENA Mostafa Sharker, Tanima ., Hiramoni, Fatema ,Akhter.(2022). The psychometric properties of the Depression Anxiety Stress Scale-21 (DASS-21) Bangla version. *Acta Psychologica* Volume 223, March 2022, 103509. doi:10.1016/J.ACTPSY.2022.103509

Amone-P'Olak, Kennedy., Garnefski, Nadia.,& Kraaij, Vivian.(2006). Adolescents caught between fires: Cognitive emotion regulation in response to war experiences in Northern Uganda, *Journal of Adolescence*,Volume 30, Issue 4, Pages 655-669. doi: 10.1016/j.adolescence.2006.05.004

Basharat, Mohammad Ali. (2015). Cognitive Emotion Regulation Questionnaire: Implementation and Scoring Method. *Quarterly Journal of Evolutionary Psychology (Iranian psychologists)*. 13 (2 consecutive 50): pp. 223-221. https://jip.stb.iau.ir/article_529166.html

Bogoch II, Watts A, Thomas-Bachli A, Huber C, Kraemer MU, Khan K. Pneumonia of unknown aetiology in Wuhan, China: potential for international spread via commercial air travel. *Journal of travel medicine*. 2020;27(2):taaa008. doi: 10.1093/jtm/taaa008

Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry research*, 287(112934), 1-5. doi:10.1016/j.psychres.2020.112934

Campbell-Sills, L., & Barlow, D. H. (2007). *Incorporating emotion regulation into conceptualizations and treatments of anxiety and mood disorders.* In J. J. Gross (Ed.), Handbook of emotion regulation. New York: Guilford Press, 542-559. https://psycnet.apa.org/record/2007-01392-027

Domaradzka, E, & Fajkowska, M. (2018). Cognitive emotion regulation strategies in anxiety and depression understood as types of personality. *Front Psychol*, 9(3): 1-12. doi:10.3389/fpsyg.2018.00856

Dryman MT, Heimberg RG.(2018). Emotion regulation in social anxiety and depression: A systematic review of expressive suppression and cognitive reappraisal. *Clinical Psychology Review*. 2018;65:17-42. doi: 10.1016/j.cpr.2018.07.004

Farshchi, (2022a). Model components and types of variables and models in pls approach, written on July 4, 2022, retrieved from: https://www.smartpls.ir/pls-model-parts/

Garnefski, N., Kraaij, v. (2006). Cognitive emotion regulation questionnaire-development of a short 18-item version(CERQ-short). Personality and individual defferences, 41(6),pp.1045-1053 doi:10.1016/j.paid.2006.04.010

Garnefski, N., Kraaij, v. (2006). Relationships between cognitive emotion regulation strategies and depressive symptoms: a comparative study of five specific samples. *Personality and Individual*

Differences, 40, 1659-1669. doi:10.1016/j.paid.2005.12.009

Garnefski, N., & Kraaij, V. (2007). The Cognitive Emotion Regulation Questionnaire: Psychometric features and prospective relationships with depression and anxiety in adults. *European journal of psychological assessment*, 23(3), 141-149. doi:10.1027/1015-5759.23.3.141

Garnefski, N., Kraaij, V., & Spinhoven, P. (2001). Negative life events, cognitive emotion regulation and emotional problems. *Personality and Individual Differences*, 30(8):1311-1327. doi:10.1016/S0191-8869(00)00113-6

Garnefski, N., Kraaij, V., & Spinhoven, P. (2002b). Manual for the use of the Cognitive Emotion Regulation Questionnaire. *Leiderdorp, The Netherlands: DATEC*. https://www.scirp.org/(S(i43dyn45teexjx455qlt3d2q reference/ReferencesPapers.aspx?ReferenceID=286 182

Garnefski,n; legerstee,j; kraaij,v; van den kommer,t; teerds,j (b2002). Cognitive coping strategies and symptoms of depression and anxiety: a comparison between adolescents and adults. , 25(6),603–611. doi:10.1006/jado.2002.0507

Gross, J. J., & Thompson, R. A. (2007*). Conceptual Foundations*. In Handbook of Emotion Regulation (pp. 3–24). New York: Guilford Press.

Gross, J. J. (2007). (Ed.). *Handbook of emotion regulation*. New York: Guilford Press. https://psycnet.apa.org/record/2007-01392-000

Gro*ss, J. J., & Jazaieri, H. (2014). Emotion, emotion regulation, and psychopathology: An affective science perspective. Clinical Psychological Science, 2(4), 387-401*. doi:10.1177/2167702614536164

Gravand, Hoshang. (2021). Structural modeling of problem solving styles and Corona anxiety in students with emphasis on the mediating role of self-efficacy. *Cognitive and behavioral science research*. 10(2), series 19, pp. 166-145. doi:10.22108/cbs.2022.130911.1581

Garnefski, N., Kraaij, V., & Spinhoven, P. (2001). Negative life events, cognitive emotion regulation and emotional problems. *Personality and Individual Differences*, 30 (8), 1311-1327. doi:10.1016/S0191-8869(00)00113-6

Hofmann, S. G., Carpenter, J. K., & Curtiss, J. (2016). Interpersonal emotion regulation questionnaire (IERQ): Scale development and psychometric characteristics. *Cognitive therapy and research*, 40(3), 341-356. doi: 10.1007/s10608-016-9756-2

Holman, E.A., Garfin, D.R., Silver, R.C., 2014. Media's role in broadcasting acute stress following the Boston Marathon bombings. *Proc. Natl. Acad. Sci*. U. S. A. 111 (1), 93–98. doi:10.1073/pnas.1316265110.

Huh, H.J., Kim, K.H., Lee, H.K., & Chae, J.H. (2017). The relationship between childhood trauma and the severity of adulthood depression and anxiety symptoms in a clinical sample: The mediating role of cognitive emotion regulation strategies. *J Affect Disord*, 213(1): 44-50. doi:10.1016/j.jad.2017.02.009

Husky, M. M., Kovess-Masfety, V., & Swendsen, J. D. (2020). Stress and anxiety among university students in France during Covid-19 mandatory confinement. *Comprehensive Psychiatry*, 102, 152191. doi:10.1016/j.comppsych.2020.152191

Habibi, Arash (2013). Morgan-Pars table, manager. Written on April 8, 2011, from https://parsmodir.com/db/research/morgan.php

Huang C., Wang Y., Li X., Ren L., Zhao J., Hu Y., Zhang L., (...), Cao B. (2020). Clinical features of patients infected with 2019 novel Coronavirus in Wuhan, China. *Lancet*, 395(10223),pp. 497–506. doi:10.1016/S0140-6736(20)30183-5

Jungmann SM, Witthöft M. Health anxiety, cyberchondria, and coping in the current COVID-19 pandemic: Which factors are related to Coronavirus anxiety? *Journal of Anxiety Disorders*. 2020:73(102239). doi:10.1016/j.janxdis.2020.102239

Khazari Azar, Hayman; Pashvi, Qasim; Amani, Javad; Abbaszadeh, Seyyed Mohammad. (2013). *An introduction to structural equation modeling by PLS method and its application in behavioral sciences* Urmia University Publications

Keough, M. E. Riccardi, C. J. Timpano, K. R. Mitchell, M. A. & Schmidt, N. B. (2010). Anxiety symptomatology: The association with distress tolerance and anxiety sensitivity. *Behavior Therapy*, 41(4): 567-574. doi:10.1016/j.beth.2010.04.002

Kim, H. S., & Sasaki, J. Y. (2012). Emotion regulation: The interplay of culture and genes. *Social and Personality Psychology Compass*, 6(12),pp. 865-877. doi: 10.1111/spc3.12003

Kumar, A., & Somani, A. (2020). Dealing with Corona virus anxiety and OCD. *Asian Journal of Psychiatry*,51(102053). doi:10.1016/j.ajp.2020.102053

Kendall, D.P. Cantwell, A.E. Kazdin .(1989). Depression in children and adolescents: Assessment issues and recommendations, *Cognitive Therapy and Research*, 13 (2) (1989), pp. 109-14. 10.1007/BF01173268

Larsen, J. L., Clauss-Ehlers, C. S., & Cosden, M. A. (2015). An exploration of army wives' responses to spousal deployment: Stressors and protective factors. Couple and Family Psychology: *Research and Practice*, 4(4).pp.212-228. doi:10.1037/cfp0000049

Langer, K., Wolf, O. T., & Jentsch, V. L. (2021). Delayed effects of acute stress on cognitive emotion regulation. *Psychoneuroendocrinology*, 125, 105101. doi:10.1016/j.psyneuen.2020.105101

Li, S., Wang, Y., Xue, J., Zhao, N., & Zhu, T. (2020). The impact of COVID-19 epidemic declaration on psychological consequences: A study on active

weibo users. *International journal of environmental research and public health*, 17(6), 2032-40.doi:10.3390/ijerph17062032

Lovibond pF, Lovibond SH.(1995) The structure of negative emotional states: comparison of the depression anxiety stress scales (DASS) with the beck depression and anxiety inventories. *Behaviour research and Therapy* , 33(3), 335-343. doi:10.1016/0005-7967(94)00075-U

Lu H, Stratton CW, Tang YW. Outbreak of pneumonia of unknown etiology in Wuhan, China: The mystery and the miracle. *Journal of medical virology*. 2020;92(4):401-2. doi:10.1002/jmv.25678

Manser, R., Cooper, M., & Trefusis, J. (2012). Beliefs about emotions as a metacognitive construct: Initial development of a self-report questionnaire measure and preliminary investigation in relation to emotion regulation. *Clinical Psychology & Psychotherapy*, 19(3),pp. 235-246. doi:10.1002/cpp.745

Marroquín, B. (2011). Interpersonal emotion regulation as a mechanism of social support in depression. *Clinical Psychology Review*, 31(8), pp.1276– 1290. doi:10.1016/j.cpr.2011.09.005

Mohebi, Mahmoud., and Zarei, Saeed. (2018). Between emotion regulation strategies and competitive anxiety in Taekwondo athletes, *Journal of Cognitive Psychology and Psychiatry*, 6(2), pp. 86-101. doi:10.29252/shenakht.6.2.86

Moqbli, Masoumeh, Omidi, Abdullah, and Zanjani, Zahra. (2018). *The relationship between health anxiety and experiential avoidance and distress tolerance*. Second national congress of the third wave of behavioral therapies, Kashan. https://civilica.com/doc/960950

Merikangas, K. R. and Angst, J. (1995). Handbook of The challenge of depressive disorders in adolescence. In Psychosocial disturbances in young people, Rutter, M. (Ed.), Cambridge: Cambridge University Press, pp. 131–165. https://psycnet.apa.org/record/1995-97684-000

Moreno, E., Muñoz-Navarro, R., Medrano, L. A., González-Blanch, C., Ruiz-Rodríguez, P., Limonero, J. T., ... & Moriana, J. A. (2019). Factorial invariance of a computerized version of the GAD-7 across various demographic groups and over time in primary care patients. *Journal of affective disorders*, *252*, pp.114-121. doi:10.1016/j.jad.2019.04.032

Restubog, S. L. D., Ocampo, A. C. G., & Wang, L. (2020). Taking control amidst the chaos: Emotion regulation during the COVID-19 pandemic: *Journal of Vocational Behavior*, 119, 103440. doi:10.1016/j.jvb.2020.103440

Roy, D., Tripathy, S., Kaushal, V. (2020). Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. *Asian J Psychiatr*, 51(2): 1-7. doi:10.1016/j.ajp.2020.102083

Riaz, M., Abid, M., & Bano, Z. (2021). Psychological problems in general population during covid-19 pandemic in Pakistan: role of cognitive emotion regulation. *Annals of Medicine*, 53(1), 189-196. doi:10.1080/07853890.2020.1853216

Szczygie, D., Buczny, J., & Bazinska, R. (2012). Emotion regulation and emotional information processing: The moderating effect of emotional awareness. *Personality and Individual Differences*, 52(3), pp.433–437. doi:10.1016/j.paid.2011.11.005

Samani, Siamak; Sadeghi, Laden. (2011). Sufficiency of psychometric indicators of cognitive emotion regulation questionnaire. *Scientific-research quarterly of psychological methods and models*. 1(1), pp. 51-62. doi:20.1001.1.22855516.1389.1.1.5.9

Shiondi, Kamran ., Hassanvand, Fadlullah. (2019). Developing a model of the psychological consequences of anxiety caused by the Coronavirus epidemic and investigating the mediation role of spiritual health. *Culture of Counseling and Psychotherapy*, 11(42), pp. 1-36. https://qccpc.atu.ac.ir/issue_1950_1955.html#:~:text =10.22054/QCCPC.2020.50918.2346

Simons, J. S. & Gaher, R. M. (2005). The Distress Tolerance Scale: Development and validation of a self-report measure. *Motivation and Emotion*, 29(2),pp. 83-102. doi:10.1007/s11031-005-7955-3

Smith, K., Mason, T., Anderson, N.L., Lavender, J.M. (2019). Unpacking cognitive emotion regulation in eating disorder psychopathology: The differential relationships between rumination, thought suppression, and eating disorder symptoms among men and women. *Eat Behav*, 32:95-100. doi: 10.1016/j.eatbeh.2019.01.003

Strauss, A. Y, Kivity, Y., Huppert, J. D. (2019). Emotion regulation strategies in cognitive behavioral therapy for panic disorder.*Behav Ther*. 50(3), 659-671. doi: 10.1016/j.beth.2018.10.005

Tabachanik, Barbara J; Fidel, Linda. (2016). *The application of multivariate statistics* (translated by Hassan Pasha Sharifi, Bilal Izanlou, Hamidreza Hassanabadi, Valiullah Farzada, Khadijah Abol-Maali, Mojtaba Habibi Asgarabad), first edition, edited. Tehran: Rushd Publications (2013).

Van Dixhoorn J, White A. Relaxation therapy for rehabilitation and prevention in ischaemic heart disease: a systematic review and meta –analysis . *Eur J Cardiovasc Prev Rehabil* 2005;12(3):193-202. doi:10.1097/01.hjr.0000166451.38593.de

Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 Coronavirus disease (COVID-19) epidemic among the general population in China. *International journal of environmental research and public health*, 17(5), 1729-53. doi: 10.3390/ijerph17051729

Wang, Y., Di, Y., Ye, J., & Wei, W. (a2021). Study on the public psychological states and its related factors during the outbreak of Coronavirus disease 2019

(COVID-19) in some regions of China. Psychology, *Health & Medicine*, 26(1). doi:10.1080/13548506.2020.1746817

Wright, L., Steptoe, A.,& Fancourt D (2021). Are adversities and worries during the COVID-19 pandemic related to sleep quality? Longitudinal analyses of 46,000 UK adults. *PLoS ONE* 16(3): e0248919. doi:10.1371/journal.pone.0248919 .

World Health Organization. 2020. Coronavirus disease 2019 (COVID-19) situation report-60[EB/OL] https://www.who.int/news/item/27-04-2020-who-timeline---covid-19.

Williams, A. D., Thompson, J., & Andrews, G. (2013). The impact of psychological distress tolerance in the treatment of depression. *Behaviour research and therapy*, 51(8): 469-475. doi:10.1016/j.brat.2013.05.005

Wolgast, M., Lundh, L. G., & Viborg, G. (2011). Cognitive reappraisal and acceptance: An experimental comparison of two emotion regulation strategies. *Behavior Research and Therapy*, 49(12), (pp. 858- 866). doi:10.1016/j.brat.2011.09.011

Xiang, Y. T., Yang, Y., Li, W., Zhang, L., Zhang, Q., Cheung, T., & Ng, C. H. (2020). Timely mental health care for the 2019 novel Coronavirus outbreak is urgently needed. *The Lancet Psychiatry*, 7(3), 228-229. doi:10.1016/S2215-0366(20)30046-8

Zare, Hossein; Selgi, Zahra. (2011). Investigating the relationship between cognitive emotion regulation strategies and depression, anxiety and stress in college students. *Scientific-Research Quarterly of Research in Psychological Health*, (3) 6, pp. 19-29. http://rph.khu.ac.ir/article-1-1524-fa.html