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Original Article

Epidemiology of Mental Disorder Symptoms in Students of University of Bojnord: The Role of Demographic Characteristics and Cognitive Emotion Regulation Strategies

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Abstract

Background and aims: Mental health problems are considered as important public health issues. This study aimed, firstly, to investigate the epidemiology of mental disorders' symptoms among the students of Bojnord University and examine the role of demographic characteristics in the prevalence of the given symptoms; and, secondly, to explore and compare the predictive role of adaptive and maladaptive emotion regulation strategies in identifying symptoms of different mental disorders.

Methods: A total of 351 students from Bojnord University completing their 2018-2019 academic year were recruited using cluster sampling method and responded to Symptom Checklist-SCL90 and Cognitive Emotion Regulation Questionnaire. Data were analyzed using descriptive statistics including mean, standard deviation, frequency and percentage, as well as multiple regression analysis.

Results: According to the findings from this epidemiological study, 33% of the students suffered from moderate symptoms of mental disorders, while 14% of them suffered from severe symptoms. Demographic characteristics of gender, marital status, and place of origin (i.e., being indigenous/non-indigenous) were not found to exert a significant effect on the prevalence of symptoms of mental disorders. The results of multiple regression analysis also indicated that cognitive emotion regulation strategies were capable of predicting all nine dimensions of mental disorder symptoms. In this regard, the maladaptive strategies were discovered to play a stronger role in predicting mental disorders compared to adaptive strategies.

Conclusions: Mental disorders were very common among university students. No significant relationship was detected between the prevalence of mental disorders' symptoms and gender, marital status, and place of origin. The study findings were also found to support the trans-diagnostic role of the emotion regulation in mental disorders.

Keywords: Epidemiology, Emotion regulation, Mental disorders

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Introduction

Mental health problems are considered as important public health issues.[1] Mental disorders cause significant disabilities regarding social, occupational, or other important areas of functioning.[2]

Numerous studies in the United States and Europe have shown that mental health problems are common among students.[3-6] Similarly, studies conducted in some Iranian universities have also reported a high prevalence of mental disorders among students.[7,8] Stressful transition from adolescence to early adulthood requiring the acceptance of responsibilities and independence,[9,10] transition from home to university,[10,11] academic pressures,[11,12] and financial worries[11] are among the most important contributory factors responsible for higher prevalence of mental disorders in students compared to the general population.

Although a significant percentage of students have some degrees of mental health problems, many of them do not receive appropriate treatment. A research carried out in USA showed that about 50% of American college students with mental health problems had not received mental health services and supports,[13] A common barrier for seeking treatment is the fact that these problems often remain undiagnosed and, therefore, the individuals are unaware of them or fail to perceive the need for treatment.[14] The early diagnosis and treatment of mental disorders in students is of great importance because if these disorders are left untreated, they can have significant negative consequences for students regarding their academic achievement[3,15] and can also lead to the decreased quality of life,[16] increased substance and alcohol abuse[17] and, in more serious cases, suicidal ideations and behaviors.[18]

Another effective measure in providing appropriate prevention and treatment programs for people with mental disorders is to identify the crucial etiological factors that

contribute to these disorders. Among the factors involved in the etiology of mental disorders, emotion regulation is an important trans-diagnostic factor that is believed to contribute to various disorders.[19]

The emotion regulation as a general concept is defined as "the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goals".[20] The general concept of emotion regulation may include a variety of biological (e.g., increased heart rate), social (e.g., seeking support), behavioral (e.g., screaming), and cognitive regulatory processes. Cognitive emotion regulation is defined as the cognitive way of managing the emotionally-related information.[21] Emotions can be regulated by a range of cognitive processes such as self-blame, other blame, rumination, or catastrophizing.[22] Cognitive processes are involved in experiencing and expressing emotion.[23] The ability to modify and change the way one experiences and expresses emotions plays a crucial role in maintaining mental health.[24]

Numerous studies have suggested that emotional dysregulation (i.e., the use of dysfunctional and maladaptive strategies of emotion regulation) is a determining factor in developing depression,[25] compulsive behavior,[26] eating disorders,[27,28] anxiety disorders,[25,29] somatic symptom disorder,[30] paranoia,[31] bipolar disorder,[32] alcohol use,[33] post-traumatic stress disorder,[34] psychotic disorders,[35] and problematic gambling.[36] Accordingly, emotion regulation can be considered as an important trans-diagnostic factor in the development, maintenance, and treatment of a wide range of mental disorders.[19] Several researches conducted in Iran in this regard have confirm the role of emotion regulation strategies in mental disorders such as borderline personality disorder,[36] schizophrenia,[37] obsessive-compulsive disorder (OCD),[38] depression,[39,40] anxiety disorders,[41] bipolar disorders,[37] and substance use.[42,43]

Although several studies have examined the role of emotion regulation in developing different mental disorders, it seems that the role of adaptive and maladaptive cognitive strategies of emotion regulation in different mental disorders has not received a due research attention.

The present study, therefore, aimed to investigates the prevalence of mental disorders symptoms in Bojnord University students. Previous studies had already suggested that demographic characteristics such as gender, marital status, and place of origin (i.e., indigenousness/non-indigenousness) may have functioned as risk or protective factors in mental disorders and different results had been obtained in this regard[4,44-47]; therefore, this study also attempted to examine the effect of these factors on the prevalence of mental disorders symptoms in students. Finally, the present study aimed to investigate and compare the predictive role of adaptive and maladaptive emotion regulation strategies in the symptoms of different mental disorders.

Materials and Methods

Study Design

The present study was a descriptive-analytical cross-sectional study.

Study Population, Sample and Sampling

The research participants were selected from among Bojnord University students completing their 2018-2019 academic year. The sample size was 351 based on Krejcie and Morgan Table[48] and the participants were recruited via cluster sampling. Inclusion criteria were being a student, and willingness to participate in the study. Exclusion criteria were those disabilities that prevented the individuals from responding to the research's questionnaires (e.g., blindness or severe visual impairment).

Data Collection Tools

Symptoms Checklist (SCL90): It is a widely used measure to assess the symptoms of psychopathology. This self-report inventory consists of 90 items, each rated on a five-point scale of distress (o to 4) from "not-at all" to "extremely". This inventory evaluates nine symptom dimensions: somatization, OCD, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism.[49] In the study by Derogatis et al,[49] the Cronbach's alpha coefficients were 0.77 to 0.90 for these nine dimensions. In this study, convergent validity was confirmed by examining the relationship between SCL-90 subscales and Minnesota Multiphasic Personality Inventory (MMPI). The Persian version also showed good psychometric properties. Cronbach's alpha coefficients of the nine dimensions were 0.65 to 0.84, and the test–retest reliability coefficients for one-week interval were 0.86 to 0.92. Convergent validity of the inventory was also confirmed.[50]

Cognitive Emotion Regulation Questionnaire (CERQ): This questionnaire was developed by Garnefski and Kraaij.[51] The short form is an 18-item questionnaire that evaluates cognitive emotion regulation strategies in response to life-threatening and stressful events. Each item is rated on a five-point scale of distress (1 to 5) from "almost never" to "almost always". In CERQ, cognitive emotion regulation strategies are divided into two general categories: adaptive strategies and maladaptive strategies. Adaptive strategies include five subscales (i.e., putting into perspective, positive refocusing, positive reappraisal, acceptance, and planning) and maladaptive strategies include four subscales (i.e., self-blame, other-blame, rumination, and catastrophizing).[52] In the study of Garnefski and Kraaij,[51] Cronbach's alpha coefficients of the CERQ subscales were 0.73 to 0.81. In this study, the construct and concurrent validity of the questionnaire were confirmed. The Persian version of CERQ also showed good psychometric properties. Cronbach's alpha coefficients of the Persian CERQ subscales were 0.73 to 0.90, and the test-retest reliability coefficients for a four-week interval were 0.70 to 0.81. The convergent and discriminant validity of this

questionnaire also were confirmed.[53]

Statistical Analysis

Descriptive statistics including mean, standard deviation, frequency, and percentage were used to analyze the data. A cut-off point based on one standard deviation above the mean was used to detect moderate symptoms of the disorder. Moreover, a cut-off point based on two standard deviations above the mean was adopted to detect severe symptoms of the disorder.[54,55] Chi-square test was also used to assess the role of demographic variables in the prevalence of mental disorders. In addition, multiple regression analysis was employed to test the hypothesis that "cognitive emotion regulation strategies (adaptive and maladaptive strategies) predict the symptoms of mental disorders." Analyses were performed using SPSS software version 22.

Results

The study participants were 351 students including 227 female students (64.7%) and 124 male ones (35.3%). The mean age of participants was 21.27±2.9 years (mean ± SD). As for the marital status, 266 participants (75.8%) were single and 85 ones (24.2%) were married. And as for the participants' places of origin, 156 ones (44.4%) were indigenous and 195 ones (55.6%) were non-indigenous. Table 1 shows the prevalence of mental disorders symptoms by gender, marital status, and place of origin based on one standard deviation above the mean that indicates moderate symptoms.

The prevalence of severe symptoms was investigated based on two standard deviations above the mean. Table 2 shows the prevalence of severe mental disorders symptoms by gender, marital status, place of origin.

Also, the results showed that there were no significant relationships between the prevalence of mental disorders symptoms and gender (χ^2=1.11; P=0.3), marital status (χ^2=0; P=0.9), and place of origin (χ^2=0.62; P=0.4).

Table 3 shows the results of the multiple regression analysis to determine the relationship between the adaptive/maladaptive cognitive emotion regulation strategies and the symptoms of mental disorders.

According to the results displayed in Table 3, cognitive emotion regulation strategies predicted 13% of the variance in somatization, 16% of the variance in OCD, 23% of the variance in interpersonal sensitivity, 22% of the variance in depression, 19% of the variance in anxiety, 8% of the variance in hostility, 15% of the variance in phobic anxiety, 14% of the variance in paranoid ideation, and 24% of the variance in psychoticism. M aladaptive emotion regulation

Table 1. The Prevalence of Moderate Symptoms of Mental Disorders by Gender, Marital Status, and Place of Origin

Variables	M (±SD)	Males	Females	Married	Unmarried	Indigenous	Non-indigenous	Total
Somatization	1.1 (0.69)	19 (15.3%)	27 (11.9%)	14 (16.5%)	32 (12%)	22 (14.1%)	24 (12.3%)	46 (13.1%)
Obsessive-compulsive disorder	1.13 (0.67)	15 (12.1%)	27 (11.9%)	10 (11.8%)	32 (12%)	17 (10.9%)	25 (12.8%)	42 (12%)
Interpersonal sensitivity	1.8 (0.67)	19 (15.3%)	38 (16.7%)	17(20%)	40 (15%)	25 (16%)	32 (16.4%)	57 (16.2%)
Depression	1.1 (0.71)	19 (15.3%)	31 (13.7%)	9 (10.6%)	41 (15.4%)	26 (16.7%)	24 (12.3%)	50 (14.2%)
Anxiety	0.9 (0.7)	22 (17.7%)	30 (13.2%)	12 (14.1%)	40 (15%)	27 (17.3%)	25 (12.8%)	52 (14.8%)
Hostility	0.9 (0.71)	23 (18.5%)	30 (13.2%)	13 (15.3%)	40 (15%)	25 (16%)	28 (14.4%)	53 (15.1%)
Phobic anxiety	0.7 (0.64)	20 (16.1%)	26 (11.5%)	11 (12.9%)	35 (13.2%)	22 (14.1%)	24 (12.3%)	46 (13.1%)
Paranoid ideation	1.37 (0.73)	24 (19.4%)	24 (10.6%)	8 (9.9%)	40 (15%)	23 (14.7%)	25 (12.8%)	48 (13.7%)
Psychoticism	0.9 (0.67)	21 (16.9%)	30 (13.2%)	14 (16.5%)	37 (13.9%)	26 (16.7%)	25 (12.8%)	51 (14.5%)
Total	-	45 (36.3%)	71 (31.3%)	29 (34.1%)	87 (32.7%)	53 (34%)	63 (32.3%)	116 (33%)

Table 2. The Prevalence of Severe Symptoms of Mental Disorders by Gender, Marital Status, and Place of Origin

Variables	Males	Females	Married	Unmarried	Indigenous	Non-indigenous	Total	Total Students With Moderate to Severe Symptoms
Somatization	1 (0.8%)	10 (4.4%)	4 (4.7%)	7 (2.6%)	5 (3.2%)	6 (3.1%)	11(3.1%)	57 (16.2%)
Obsessive-compulsive disorder	3 (2.4%)	7 (3.1%)	0 (0%)	10 (3.8%)	4 (2.6%)	6 (3.1%)	10 (2.8%)	52 (14.8%)
Interpersonal sensitivity	2 (1.6%)	8 (3.5%)	1(1.2%)	9 (3.4%)	5 (3.2%)	5 (2.6%)	10 (2.8%)	67 (19.1%)
Depression	2 (1.6%)	9 (4%)	1(1.2%)	10 (3.8%)	5 (3.2%)	6 (3.1%)	11 (3.1%)	61 (17.4%)
Anxiety	0 (0%)	12 (5.3%)	1(1.2%)	11 (4.1%)	5 (3.2%)	7 (3.6%)	12 (3.4%)	64 (18.2%)
Hostility	5 (4%)	11 (4.8%)	6 (7.1%)	10 (3.8%)	7 (4.5%)	9(4.6%)	16 (4.6%)	69 (19.7%)
Phobic anxiety	8 (6.5%)	7 (3.1%)	3 (3.5%)	12 (4.5%)	7 (4.5%)	8 (4.1%)	15 (4.3%)	61 (17.4%)
Paranoid ideation	3 (2.4%)	7 (3.1%)	2 (2.4%)	8 (3%)	2 (1.3%)	8 (4.1%)	10 (2.8%)	58 (16.5%)
Psychoticism	5 (4%)	6 (2.6%)	1 (1.2%)	10 (3.8%)	5 (3.2%)	6 (3.1%)	11 (3.1%)	62 (17.7%)
Total	18 (14.5%)	31 (13.7%)	11 (12.9%)	38 (14.3%)	24 (15.4%)	25 (12.8%)	49(14%)	165 (47%)

Table 3. Multiple Regression Analysis to Evaluate the Predictive Role of Adaptive and Maladaptive Cognitive Emotion Regulation Strategies on the Symptoms of Mental Disorders

Criterion Variable	Predictive Variable	R	R^2	F	*P*	B	Beta	t	*P*
Somatization	Adaptive ER	0.36	0.13	26.65	0.001	-0.03	-0.02	-0.43	0.66
	Maladaptive ER					0.53	0.37	7.2	0.001
Obsessive-compulsive disorder	Adaptive ER	0.40	0.16	33.02	0.001	-0.03	-0.03	-0.58	0.56
	Maladaptive ER					0.47	0.41	8.03	0.001
Interpersonal sensitivity	Adaptive ER	0.48	0.23	52.4	0.001	-0.12	-0.13	-2.75	0.006
	Maladaptive ER					0.52	0.49	10.23	0.001
Depression	Adaptive ER	0.47	0.22	49.6	0.001	-0.16	-0.11	-2.31	0.02
	Maladaptive ER					0.78	0.48	9.96	0.001
Anxiety	Adaptive ER	0.44	0.19	41.93	0.001	-0.13	-0.12	-2.35	0.02
	Maladaptive ER					0.55	0.45	9.15	0.001
Hostility	Adaptive ER	0.28	0.08	14.84	0.001	-0.015	-0.02	-0.42	0.67
	Maladaptive ER					0.21	0.28	5.39	0.001
Phobic anxiety	Adaptive ER	0.38	0.15	29.67	0.001	-0.06	-0.08	-1.57	0.11
	Maladaptive ER					0.31	0.39	7.7	0.001
Paranoid ideation	Adaptive ER	0.38	0.14	28.88	0.001	-0.007	-0.01	-0.19	0.84
	Maladaptive ER					0.29	0.38	7.45	0.001
Psychoticism	Adaptive ER	0.49	0.24	55.29	0.001	-0.11	-0.10	-2.13	0.03
	Maladaptive ER					0.59	0.50	10.51	0.001

strategies were capable of predicting the symptoms of all 9 mental health problems including somatization ($P \leq 0.001$), OCD ($P \leq 0.001$), interpersonal sensitivity ($P \leq 0.001$), depression ($P \leq 0.001$), anxiety ($P \leq 0.001$), hostility ($P \leq 0.001$), phobic anxiety ($P \leq 0.001$), paranoid ideation ($P \leq 0.001$), and psychoticism ($P \leq 0.001$). On the other hand, adaptive emotion regulation strategies were also capable of predicting the symptoms of interpersonal sensitivity ($P=0.006$), depression ($P=0.02$), anxiety ($P=0.02$), and psychoticism ($P=0.03$). Maladaptive strategies predicted these problems positively, whereas adaptive strategies predicted them negatively. Furthermore, maladaptive strategies played a greater role than adaptive strategies in all of these four mental health problems.

Discussion

This study aimed, firstly, to investigate the prevalence of mental disorders symptoms among students of Bojnord University and, secondly, to evaluate and compare the relationships between cognitive emotion regulation strategies and each of the given disorders. The study results showed that 33% of the students had moderate symptoms of at least one of the nine mental health problems. In addition, 14% of the students had severe symptoms of the given problems. In other words, 47% of university students suffered from moderate to severe symptoms of mental disorders. These results were consistent with the findings from previous studies having evaluated the prevalence of mental disorders among students. For example, Said et al[11] examined a large sample of Australian students and reported that 30% of them had at least one mental disorder. Fortney et al[5] also demonstrated that the prevalence rates of depression, generalized anxiety disorder, and post-traumatic stress disorder among the student population were 20%, 17.5%, and 13%, respectively. Using data from WHO surveys conducted in 21 countries, Auerbach et al[3] reported that the 12-month prevalence of disorders listed in the Diagnostic and Statistical Manual of Mental Disorders (DSM) among students was about 20%. The results from another study using WHO surveys' data from 19 universities in eight countries showed that the lifetime prevalence of mental disorders among students was 35%, whereas the 12-month prevalence was 31%.[4] In Iran, Mesgarani et al[56] indicated that 15.5% of the students participating in their study were suspected of having a mental disorder. Sarabi et al[47] also determined that about 14% of students suffered from at least one mental disorder.

Various factors have been suggested to increase the risk of mental disorders among students living under stressful conditions, including academic pressure,[11,12] financial worries,[11] irregular sleep patterns, a significant shift in social roles, and increased independence due to a shift from living with parents to living away from home.[4] University age is also the age when some common mental disorders – mood, anxiety, and substance use disorders, in particular – begin to develop.[57] Accordingly, students can be considered a population that is at more risk of developing mental disorders than the general population, and therefore, adopting preparatory plans for early diagnosis and treatment of these disorders is a serious and urgent need for them; a strategy that can reduce the likelihood of their dropping out and increasing their academic and psychosocial functioning.[3]

Investigating the role of gender, marital status, and

place of origin in prevalence of moderate to severe mental disorders' symptoms has also shown that there are no significant relationships between these demographic variables and the prevalence of the given symptoms. Different studies have reported contradictory findings in this regard. For example, the findings from a study by Zolfaghari et al[8] indicated that there was no significant difference between male and female students regarding the prevalence of mental disorders. The study by Mesgarani et al[56] also showed that marital status and place of origin had no effect on the prevalence of mental disorders. The above-mentioned study findings were in line with the results from the present study. On the other hand, Sarabi et al[47] reported that the prevalence of mental disorders in single students was higher than that in married students. Similarly, Levecque et al[6] found that the prevalence of mental disorders was higher among female students compared to male ones, and it was also higher among single students compared with married ones. However, the study of Yaghubi et al[46] discovered that the prevalence of mental disorders was higher among male students and students staying at dormitories. Taking into account the given study results, the demographic variables had seemingly different effects on different populations. This difference might have been explained by the fact that other factors, such as cultural issues, were responsible for determining the role of variables including gender, marital status, and origin of place in developing mental disorders.

The findings from the present study also demonstrated that cognitive emotion regulation strategies played a role in all nine dimensions of the symptoms of mental health problems. Cognitive emotion regulation strategies were the strongest predictors of psychosis, but the weakest predictors of hostility. It was found that maladaptive cognitive emotion regulation strategies played an obviously greater role than adaptive strategies in causing mental disorders. Adaptive strategies are involved in determining interpersonal sensitivity, depression, anxiety, and psychoticism. However, these strategies have no role in determining somatization, OCD, hostility, phobic anxiety, and paranoid ideation. In contrast, maladaptive strategies predict all nine dimensions. As for four dimensions in which both adaptive and maladaptive strategies play significant roles (i.e., interpersonal sensitivity, depression, anxiety, and psychoticism), maladaptive strategies play a more prominent role than adaptive strategies. This implies that although using maladaptive cognitive emotion regulation strategies is an important risk factor for mental disorders, adopting adaptive strategies to a lesser extent functions as a protective factor against these disorders. The question that which emotion regulation strategies repertoire one may have and/or how one chooses emotion regulation strategies, plays a greater role as a risk factor than a protective factor in mental disorders. In the following section, the role of cognitive emotion regulation strategies in each of the mental health problems is examined.

According to the findings of the present study, maladaptive cognitive emotion regulation strategies were capable of predicting the somatization symptoms. In the study by Sayah Bargard et al,[58] only maladaptive strategies of cognitive emotion regulation were detected to be capable of predicting the somatic symptoms, whereas the adaptive strategies were discovered to be incapable of predicting them. In a study by Martin and Gitzen,[30] patients with somatization disorder adopted more maladaptive emotion regulation strategies, but fewer adaptive emotion regulation strategies compared to individuals in healthy control group. The findings from this study also revealed that maladaptive cognitive emotion regulation strategies were capable of predicting the symptoms of OCD, which were in line with the study results of Grisham et al.[26] Moreover, this study determined that the patients with OCD ffaced more difficulty in emotion regulation compared to those from the healthy control group. In a study by Saeidpoor et al,[38] OCD patients were compared with those from healthy group in terms of using cognitive emotion regulation strategies. The results indicated that the OCD group significantly scored higher than the control group in all four maladaptive strategies of cognitive emotion regulation. Patients with OCD obtained significantly lower scores compared to the control group in adopting three adaptive cognitive emotion regulation strategies (i.e., putting into perspective, positive refocusing, and positive reappraisal) out of the five ones. That is, the role of maladaptive strategies was greater than that of adaptive strategies. In the present study, it was also detected that maladaptive and adaptive cognitive emotion regulation strategies were capable of predicting the symptoms of interpersonal sensitivity. This finding was consistent with the findings from two studies by Garofalo et al[59] and Poole et al.[60] Both studies found that the difficulty in emotion regulation was directly related to interpersonal problems. According to the findings of the present study, the maladaptive and adaptive cognitive emotion regulation strategies were also capable of predicting the depressive symptoms. This finding was in line with the results from the studies by Garnefski et al,[21] Amone-P'Olak et al,[25] Sayah Bargard et al,[58] and Salehi et al.[40] In these studies, both adaptive and maladaptive strategies were found capable of predicting depressive symptoms, but maladaptive strategies were discovered to have more predictive power. Findings also suggested that maladaptive and adaptive cognitive emotion regulation strategies were capable of predicting anxiety symptoms. This finding was in agreement with the findings from studies by Amone-P'Olak et al[25] and Vahedi et al.[39] In the study by Amone-P'Olak et al,[25] both adaptive and maladaptive strategies were found capable of predicting the symptoms of depression and anxiety, but maladaptive strategies were discovered to be stronger predictors. According to Vahedi et al,[39] adaptive and maladaptive strategies of cognitive emotion regulation had significant correlations with anxiety. The correlation between anxiety and maladaptive regulation (0.59) was stronger than that between anxiety and adaptive regulation (-0.34).

Furthermore, the result from the present study demonstrated that maladaptive cognitive emotion regulation strategies were capable of predicting the hostility. This result supported the finding of Garofalo et al study[59] which showed that emotion regulation difficulties were capable of predicting aggression in interpersonal relationships. No study was found similar to the present study in finding the fact that maladaptive cognitive emotion regulation strategies were also capable of predicting phobic anxiety.

According to the present study findings, maladaptive cognitive emotion regulation strategies were capable of predicting paranoid ideation. This finding was consistent with the results from Krkovic et al study.[61] In this study, only maladaptive cognitive emotion regulation strategies were observed capable of predicting paranoia.

The findings also determined that maladaptive and adaptive cognitive emotion regulation strategies were capable of predicting the psychoticism. The results from a study by Grezellschak et al[35] showed that the patients with psychosis resorted to suppression (i.e., a maladaptive strategy) more than the individuals in healthy group for regulating emotions. However, there was no significant difference between these two groups in terms of using reappraisal (i.e., an adaptive emotion regulation strategy). Following the study by Atadokht et al,[62] maladaptive emotion regulation strategies predicted 72% of the variance in schizophrenia symptoms, while adaptive strategies predicted 19% of it. Zarekar et al[37] also reported that the patients with schizophrenia resorted to more suppression and less reappraisal compared to the individuals in healthy control group.

Limitations

The present study had some limitations that should be considered when interpreting and using the results. First, the present study was conducted using self-report questionnaires in which the possibility of bias in responding to the items existed. Second, the participants were students from a specific age range (i.e., early adulthood) and had a specific level of education (i.e., above the average); therefore, it was recommended that the generalization of the results to nonstudent populations be made with caution.

Conclusion

According to the results from the present study, about one-third of the students had moderate levels of mental disorders symptoms, which may have indicated a warning status and a higher probability of developing a full-blown mental disorder. Moreover, 14% of the students suffered from severe levels of mental disorders symptoms, which indicated the need for prompt and serious intervention. Findings also supported the role of emotion regulation as a trans-diagnostic component in causing mental disorders, and suggested that cognitive emotion regulation strategies had the strongest role in predicting psychosis but the weakest role in predicting hostility. These findings had some implications for mental health interventions. The role of emotional dysregulation in mental disorders suggested that emotional regulation skills training may be effective in treating these disorders and, thus, provides support for the underlying assumption of many approaches that highlighted emotion regulation as an important component of therapy (e.g. dialectical behavior therapy).

Ethical Approval

The present study was approved by the Research Ethics Committee of Bojnord University (IR.UB.REC.1400.001). Participants were given the information about the research and its objectives prior to it and they were assured of confidentiality. While reassuring the participants about the confidentiality, an informed consent was obtained from all of them.

Conflict of Interests Disclosures

None to be declared.

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References

1. Vidourek RA, Burbage M. Positive mental health and mental health stigma: a qualitative study assessing student attitudes. Ment Health Prev. 2019;13:1-6. doi: 10.1016/j.mhp.2018.11.006.
2. American Psychiatric Association (APA). Diagnostic and Statistical Manual of Mental Disorders. 5th ed. Washington, DC: APA; 2013.
3. Auerbach RP, Alonso J, Axinn WG, Cuijpers P, Ebert DD, Green JG, et al. Mental disorders among college students in the World Health Organization World Mental Health Surveys. Psychol Med. 2016;46(14):2955-70. doi: 10.1017/s0033291716001665.
4. Auerbach RP, Mortier P, Bruffaerts R, Alonso J, Benjet C, Cuijpers P, et al. WHO World Mental Health Surveys international college student project: prevalence and distribution of mental disorders. J Abnorm Psychol. 2018;127(7):623-38. doi: 10.1037/abn0000362.
5. Fortney JC, Curran GM, Hunt JB, Cheney AM, Lu L, Valenstein M, et al. Prevalence of probable mental disorders and help-seeking behaviors among veteran and non-veteran community college students. Gen Hosp Psychiatry. 2016;38:99-104. doi: 10.1016/j.genhosppsych.2015.09.007.
6. Levecque K, Anseel F, De Beuckelaer A, Van der Heyden J, Gisle L. Work organization and mental health problems in PhD students. Res Policy. 2017;46(4):868-79. doi: 10.1016/j.respol.2017.02.008.
7. Mokhtari M, Farhang Dehghan S, Asghari M, Ghasembaklo U, Mohamadyari G, Azadmanesh SA, et al. Epidemiology of mental health problems in female students: a questionnaire survey. J Epidemiol Glob Health. 2013;3(2):83-8. doi: 10.1016/j.jegh.2013.02.005.
8. Zolfaghari AR, Fathi D, Hashemi M. The study of mental health status of Payame-Noor University students in Toyserkan, Iran. Procedia Soc Behav Sci. 2011;30:1795-7. doi: 10.1016/j.sbspro.2011.10.345.
9. Arnett JJ. Emerging adulthood: a theory of development from the late teens through the twenties. Am Psychol. 2000;55(5):469-80. doi: 10.1037/0003-066x.55.5.469.
10. Royal College of Psychiatrists. Mental Health of Students in Higher Education. London: Royal College of Psychiatrists; 2011. p. 19-33.
11. Said D, Kypri K, Bowman J. Risk factors for mental disorder

among university students in Australia: findings from a web-based cross-sectional survey. Soc Psychiatry Psychiatr Epidemiol. 2013;48(6):935-44. doi: 10.1007/s00127-012-0574-x.
12. Pedrelli P, Nyer M, Yeung A, Zulauf C, Wilens T. College students: mental health problems and treatment considerations. Acad Psychiatry. 2015;39(5):503-11. doi: 10.1007/s40596-014-0205-9.
13. Gruttadaro D, Crudo D. College Students Speak: A Survey Report on Mental Health. Arlington, VA: National Alliance on Mental Illness; 2012.
14. Kessler RC, Berglund PA, Bruce ML, Koch JR, Laska EM, Leaf PJ, et al. The prevalence and correlates of untreated serious mental illness. Health Serv Res. 2001;36(6 Pt 1):987-1007.
15. Bruffaerts R, Mortier P, Kiekens G, Auerbach RP, Cuijpers P, Demyttenaere K, et al. Mental health problems in college freshmen: Prevalence and academic functioning. J Affect Disord. 2018;225:97-103. doi: 10.1016/j.jad.2017.07.044.
16. Pillay N, Ramlall S, Burns JK. Spirituality, depression and quality of life in medical students in KwaZulu-Natal. S Afr J Psychiatr. 2016;22(1):731. doi: 10.4102/sajpsychiatry.v22i1.731.
17. Weitzman ER. Poor mental health, depression, and associations with alcohol consumption, harm, and abuse in a national sample of young adults in college. J Nerv Ment Dis. 2004;192(4):269-77. doi: 10.1097/01.nmd.0000120885.17362.94.
18. Li W, Dorstyn DS, Jarmon E. Identifying suicide risk among college students: a systematic review. Death Stud. 2020;44(7):450-8. doi: 10.1080/07481187.2019.1578305.
19. Berking M, Wupperman P. Emotion regulation and mental health: recent findings, current challenges, and future directions. Curr Opin Psychiatry. 2012;25(2):128-34. doi: 10.1097/YCO.0b013e3283503669.
20. Thompson RA. Emotion regulation: a theme in search of definition. Monogr Soc Res Child Dev. 1994;59(2-3):25-52.
21. Garnefski N, Kraaij V, Spinhoven P. Negative life events, cognitive emotion regulation and emotional problems. Pers Individ Dif. 2001;30(8):1311-27. doi: 10.1016/s0191-8869(00)00113-6.
22. Garnefski N, Rieffe C, Jellesma F, Terwogt MM, Kraaij V. Cognitive emotion regulation strategies and emotional problems in 9 - 11-year-old children: the development of an instrument. Eur Child Adolesc Psychiatry. 2007;16(1):1-9. doi: 10.1007/s00787-006-0562-3.
23. Martin RC, Dahlen ER. Cognitive emotion regulation in the prediction of depression, anxiety, stress, and anger. Pers Individ Dif. 2005;39(7):1249-60. doi: 10.1016/j.paid.2005.06.004.
24. Arndt JE, Fujiwara E. Interactions between emotion regulation and mental health. Austin J Psychiatry Behav Sci. 2014;1(5):1021.
25. Amone-P'Olak K, Boitumelo V, Mberengwa DS. Cognitive emotion regulation strategies and mental health problems in war-affected youth in Northern Uganda: findings from the WAYS study. J Ment Health. 2019;28(2):125-31. doi: 10.1080/09638237.2017.1385745.
26. Grisham JR, Martyn C, Kerin F, Baldwin PA, Norberg MM. Interpersonal functioning in hoarding disorder: an examination of attachment styles and emotion regulation in response to interpersonal stress. J Obsessive Compuls Relat Disord. 2018;16:43-9. doi: 10.1016/j.jocrd.2017.12.001.
27. Smith KE, Mason TB, Anderson NL, Lavender JM. 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. 2019;32:95-100. doi: 10.1016/j.eatbeh.2019.01.003.
28. Prefit AB, Cândea DM, Szentagotai-Tătar A. Emotion regulation across eating pathology: a meta-analysis. Appetite. 2019;143:104438. doi: 10.1016/j.appet.2019.104438.
29. Kinney KL, Burkhouse KL, Klumpp H. Self-report and neurophysiological indicators of emotion processing and regulation in social anxiety disorder. Biol Psychol. 2019;142:126-31. doi: 10.1016/j.biopsycho.2019.01.019.
30. Martin A, Gitzen H. The role of health anxiety for emotion regulation in somatic symptom disorder. J Psychosom Res. 2017;97:160. doi: 10.1016/j.jpsychores.2017.03.267.
31. Lincoln TM, Hartmann M, Köther U, Moritz S. Dealing with feeling: specific emotion regulation skills predict responses to stress in psychosis. Psychiatry Res. 2015;228(2):216-22. doi: 10.1016/j.psychres.2015.04.003.
32. Dodd A, Lockwood E, Mansell W, Palmier-Claus J. Emotion regulation strategies in bipolar disorder: a systematic and critical review. J Affect Disord. 2019;246:262-84. doi: 10.1016/j.jad.2018.12.026.
33. Jakubczyk A, Trucco EM, Kopera M, Kobyliński P, Suszek H, Fudalej S, et al. The association between impulsivity, emotion regulation, and symptoms of alcohol use disorder. J Subst Abuse Treat. 2018;91:49-56. doi: 10.1016/j.jsat.2018.05.004.
34. Barańczuk U. Emotion regulation mediates the effects of temperament traits and posttraumatic stress disorder symptoms on affect in motor vehicle accident survivors. Transp Res Part F Traffic Psychol Behav. 2018;58:528-35. doi: 10.1016/j.trf.2018.06.035.
35. Grezellschak S, Jansen A, Westermann S. Emotion regulation in patients with psychosis: a link between insomnia and paranoid ideation? J Behav Ther Exp Psychiatry. 2017;56:27-32. doi: 10.1016/j.jbtep.2016.08.001.
36. Marchica LA, Mills DJ, Keough MT, Montreuil TC, Derevensky JL. Emotion regulation in emerging adult gamblers and its mediating role with depressive symptomology. J Affect Disord. 2019;258:74-82. doi: 10.1016/j.jad.2019.07.078.
37. Zarekar A, Rahimiyambogar E, Ghodrati M. Comparison of executive function, emotional intelligence and emotion regulation in schizophrenia and bipolar disorders and healthy people. J Ilam Univ Med Sci. 2015;23(4):123-34. [Persian].
38. Saeidpoor S, Kazemi-Rezai SA, Karbalaei-Esmaeil E, Kazemi-Rezai SV, Ahmadi F. Diagnostic role of cognitive emotion regulation strategies, cognitive fusion and thought control strategies in obsessive-compulsive disorder. J Clin Psychol. 2017;9(3):1-12. doi: 10.22075/jcp.2017.10900.1058. [Persian].
39. Vahedi S, Badri Gargari R, Gholami S. Mediating role of cognitive emotion regulation strategies on the relationship between the attachment styles and emotional problems: a path analysis. Iran J Psychiatry Behav Sci. 2016;10(4):e4013. doi: 10.17795/ijpbs-4013.
40. Salehi A, Mazaheri Z, Aghajani Z, Jahanbazi B. The role of cognitive emotion regulation strategies in the prediction of depression. Knowledge & Research in Applied Psychology. 2017;16(1):108-17. [Persian].
41. Abasi I, Dolatshahi B, Farazmand S, Pourshahbaz A, Tamanaeefar S. Emotion regulation in generalized anxiety and social anxiety: examining the distinct and shared use of emotion regulation strategies. Iran J Psychiatry. 2018;13(3):160-7.
42. Zare H, Kangavari S, Aliakbari-Dehkordi M. The relationship between risk perception and cognitive emotion regulation with tendency to addiction mediated by decision-making styles. J Psychol. 2019;22(4):379-95. [Persian].
43. Ejei J, Gholamali-Lavasani M, Erami H. Comparison of emotional regulation in substance abusers and normal subjects. J Psychol. 2015;19(2):137-46. [Persian].
44. Younger DS. Epidemiology of childhood and adult mental illness. Neurol Clin. 2016;34(4):1023-33. doi: 10.1016/j.ncl.2016.06.010.
45. Chang S, Abdin E, Shafie S, Sambasivam R, Vaingankar JA, Ma S, et al. Prevalence and correlates of generalized anxiety disorder in Singapore: results from the second Singapore

Mental Health Study. J Anxiety Disord. 2019;66:102106. doi: 10.1016/j.janxdis.2019.102106.
46. Yaghubi H, Karimi M, Omidi A, Mesbah N, Kahani S, Abedi-Qelich-Qeshlaq M. Prevalence of mental disorders and demographic factors that influence the freshmen students of Tehran city universities of medical sciences. J Clin Psychol. 2014;6(2):95-104. doi: 10.22075/jcp.2017.2167. [Persian].
47. Sarabi P, Parvizi F, Kakabaraee K. Epidemiology of psychiatric disorders in students of Islamic Azad University of Kermanshah. Journal of Analytical-Cognitive Psychology. 2019;10(39):9-26. [Persian].
48. Krejcie RV, Morgan DW. Determining sample size for research activities. Educ Psychol Meas. 1970;30(3):607-10. doi: 10.1177/001316447003000308.
49. Derogatis LR, Rickels K, Rock AF. The SCL-90 and the MMPI: a step in the validation of a new self-report scale. Br J Psychiatry. 1976;128:280-9. doi: 10.1192/bjp.128.3.280.
50. Modabernia MJ, Shojaie Tehranie H, Falahi M, Faghirpour M. Normalizing SCL-90-R inventory in Guilan high-school students. J Guilan Univ Med Sci. 2010;19(75):58-65. [Persian].
51. Garnefski N, Kraaij V. Cognitive emotion regulation questionnaire – development of a short 18-item version (CERQ-short). Pers Individ Dif. 2006;41(6):1045-53. doi: 10.1016/j.paid.2006.04.010.
52. Besharat MA. Emotion Regulation Questionnaire: Instruction and Scoring - (Persian Version). Developmental Psychology: Iranian Psychologists. 2017;50:221-3.
53. Besharat MA, Bazzazian S. Psychometri properties of the cognitive emotion regulation questionnaire in a sample of Iranian population. J Shahid Beheshti Univ Med Sci. 2014;24(84):61-70. [Persian].
54. Feil EG, Small JW, Forness SR, Kaiser AP, Hancock TB, Serna LA, et al. Using different measures, informants, and clinical cut-off points to estimate prevalence of emotional or behavioral disorders in preschoolers: effects on age, gender, and ethnicity. Behav Disord. 2005;30(4):375-91. doi: 10.1177/019874290503000405.
55. Dunstan DA, Scott N. Clarification of the cut-off score for Zung's self-rating depression scale. BMC Psychiatry. 2019;19(1):177. doi: 10.1186/s12888-019-2161-0.
56. Mesgarani M, Shafiee S, Kiani N, Sadeghi-Khorashad M. Epidemiological study of symptoms of mental disorders in new students of Zahedan University of Medical Sciences. Teb va Tazkiye. 2004;53:84-8. [Persian].
57. de Girolamo G, Dagani J, Purcell R, Cocchi A, McGorry PD. Age of onset of mental disorders and use of mental health services: needs, opportunities and obstacles. Epidemiol Psychiatr Sci. 2012;21(1):47-57. doi: 10.1017/s2045796011000746.
58. Sayah Bargard M, Olapur A, Ardame A, Shahidi S, Yaghoobi Askarabad E. Prediction of mental health and academic performance of students within cognitive emotional regulation strategies in Medical Sciences University of Jundishapur in Ahvaz. Educational Development of Judishapur. 2014;5(1):37-44. [Persian].
59. Garofalo C, Velotti P, Zavattini GC, Kosson DS. Emotion dysregulation and interpersonal problems: the role of defensiveness. Pers Individ Dif. 2017;119:96-105. doi: 10.1016/j.paid.2017.07.007.
60. Poole JC, Dobson KS, Pusch D. Do adverse childhood experiences predict adult interpersonal difficulties? the role of emotion dysregulation. Child Abuse Negl. 2018;80:123-33. doi: 10.1016/j.chiabu.2018.03.006.
61. Krkovic K, Krink S, Lincoln TM. Emotion regulation as a moderator of the interplay between self-reported and physiological stress and paranoia. Eur Psychiatry. 2018;49:43-9. doi: 10.1016/j.eurpsy.2017.12.002.
62. Atadokht A, Majdi N, Hajloo N, Abolghasemi A. The relationship between cognitive emotion regulation and schizophrenia positive and negative symptoms. 3rd Conference on Psychology, Educational Sciences and Lifestyle with International Approach; 2016.