

The Role of Mindfulness and Emotional Regulation in Predicting Depression and Anxiety in University Students

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Submitted: 18 September 2017

Accepted: 07 December 2017

Int J Behav Sci. 2017; 11(3): 101-106

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Abstract

Introduction: The present study aimed to investigate the role of mindfulness and emotional regulation in predicting depression and anxiety in university students.

Methods: The study uses a descriptive-correlative design. For this purpose, 373 students were selected through random cluster sampling from the Arak University (185 males and 188 females). They were asked to answer to the five facet mindfulness questionnaires, the emotional regulation scales, as well as the depression, anxiety and stress questionnaire. Then, the correlation and regression analyses were employed.

Results: The results showed that re-evaluation, as one of the components of the emotional regulation and mindfulness, had a significant negative correlation with depression and anxiety. In addition, the suppression of other emotional regulation components had a significant positive correlation with depression and anxiety. The results of the regression analysis indicated that mindfulness and emotional regulation could predict depression and anxiety in the university students.

Conclusion: In general, it is suggested that mindfulness and emotional regulation are important psychological factors in predicting depression and anxiety in university students.

Keywords: Mindfulness, Emotional Regulation, Depression, Anxiety, University student

Introduction

Mindfulness is defined as the special and unbiased attention to the present time [1]. It involves adopting a non-judgmental attitude toward personal experience, which occurs at each moment. Thus, it allows individuals to have less reaction and more acceptance towards the experience [2]. In contrast, lack of mindfulness leads to the negative permanent self-talks, which play an important role in the self-assessment process [3]. Although mindfulness increases through meditation and training, it may also be defined as a dispositional trait that refers to the tendency to be mindful in everyday life. In fact, "mindfulness" could be defined as 1) psychological traits, 2) intellectual exercise, or 3) a special state of consciousness [4]. Several studies have shown that high levels of mindfulness is related to emotional stability [5], self-efficacy [6], life satisfaction, and low levels of psychological distress including depression and anxiety [7-9]. Mindfulness directly fertilizes the experience of well-being and indirectly facilitates self-regulatory behaviors such as increasing acceptance with regard to individual needs and values, and increasing adaptive capacity [7,10]. Marlatt [11] showed that mindfulness reduces depression, stress, and aggression through intermediate variables and could lead to an increase in mental health. In addition, some studies in non-clinical population indicated that mindfulness promotes the positive outcomes such as well-being as well as the quality of life, and reduces negative emotions, rumination, symptoms of stress, anxiety, somatization, aggression and avoidance behaviors

[12]. It may also increase health and the tolerance of stressful factors as well as negative emotions [13]. It seems that it also improves individuals' well-being through transforming and developing emotional intelligence, encouraging individuals in accurate perception emotions and their effective regulation [14, 15]. In other words, mindfulness as a non-judgmental awareness can lead to the acceptance of all emotions [16]. Since acceptance is a regulatory strategy and can cause positive outcomes, in many clinical interventions, mindfulness can be used as a strategy to improve emotional regulation [17]. Emotional regulation refers to those strategies which are used to reduce, boost, or maintain emotional experiences [18]. Emotional regulation consists of 1) the awareness and acceptance of excitement, 2) the capacity of tracking systematic behaviors at the time of confusion, 3) the use of flexible emotional regulation strategies for responding to difficult emotions instead of avoiding them, and 4) the desire to experience difficult emotions [19].

In Gross' emotional regulation model, emotional regulation strategies are classified in terms of their influence on the evaluating process of potential situations or their influence on the adjusting response tendency [20]. Cognitive reappraisal and suppression are the two emotional regulation strategies that are distinguished through the time of happening, i.e. before or after emotional response tendencies change physiological, behavioral, and experiential responses [21]. Reappraisal is the review of the situation in order to influence the emotional effects and possibly to reduce its negative experiences and emotional consequences. While suppression involves inhibiting the ongoing expression of emotions, it seems that these two strategies are independent [22]. The results of the previous studies revealed that using high levels of suppression and less reappraisal are associated with depression, anxiety, and stress-related symptoms after a relevant trauma [23-26].

It has been shown that individuals who report more reappraisal, significantly become less nervous and experience much more positive emotions [27]. Some other findings also suggested that reappraisal not only reduces negative emotional experiences but also contributes to the individuals' health by reducing physiological responses significantly [28]. Reappraisal contributes to stress management and improves the individuals' performance in the interpersonal fields via reducing their negative mood. In addition, Gross has shown that the reappraisal techniques, in response to the negative events, reduce negative behavioral tendencies and increase positive behaviors [20], while the suppression techniques not only reduce negative behaviors, but also reduce positive response behaviors as well as the suppression and avoidance of psychological experiences (including thoughts, emotions, feelings, memories, and desires), considered as maladaptive and inflexible responses to stressor stimuli [29]. As a result, they have many negative consequences including mood disorders and substance abuse. According to the studies of Aldao et al., the relationship between the four psychological traumas namely anxiety, depression, eating disorders, drug-related disorders on the one hand; and

the six emotional regulation strategies including acceptance, avoidance, problem-solving, reappraisal, rumination, and suppression on the other, shows that the reappraisal, problem-solving, and acceptance are often considered useful strategies and have a protective role against psychological traumas. Moreover, rumination, suppression (expressive and thought suppression) and avoidance (experimental and behavioral avoidance) are always known as facilitating factors in developing psychological traumas [30]. According to the theoretical and experimental principles, it can be mentioned that each of the variables of mindfulness and emotional regulation has a relationship with depression and anxiety. Thus, the present study aims to study the share of each of the above-mentioned variables in predicting depression and anxiety by investigating the relationship between mindfulness and emotional regulation as well as depression and anxiety in a non-clinical population.

Methods

An informed consent was obtained from all the participants of the study. The protocol was approved by the local ethical committee of Arak University. A group of 400 university students from Arak University with an average age of 22.21 years (SD = 4.33) were selected through multiphase cluster sampling and were then included in the study.

To control the fatigue effect and the sequence of the tests, the order of scales and questionnaire was balanced across the participants. The data obtained from eight participants were omitted due to their incomplete answer sheets, that of 19 participants because of invalid answers (i.e. choosing more than one answer for some of the items). The obtained data from 373 participants was analyzed using Pearson correlation and regression analyses. In order to collect the data, the following instruments were utilized:

Emotional regulation Scale: This 10-item scale has been developed by Gross and John which consists of reappraisal (6 items) and suppression (4 items) subscales. It is scored on the basis of seven-point Likert scale, varying from "completely disagree" to "completely agree". The Cronbach's alpha coefficient for reappraisal is 0.79, and for suppression is 0.73. The test-retest reliability for the whole scale is 0.69 [22]. The internal consistency coefficient of this scale at the University of Milan has been reported 0.48 to 0.68 for reappraisal, and 0.42 to 0.63 for suppression. The correlation coefficient for reappraisal with positive and negative emotions scale is 0.24 and 0.14 respectively. The correlation coefficient for the suppression is -0.15 and 0.04 for the positive emotions scale and negative emotions scale respectively [31]. This scale has been normalized in the Iranian culture too [32]. The scale's reliability has been reported favorable based on the internal consistency method (the Cronbach's alpha ranging from 0.60 to 0.81). The validity of this scale has been acceptable through the analysis of the main components and using varimax rotation as well as the correlation between the two subscales (0.13). In this study, the reliability of this scale (Cronbach's alpha) for the total scale was 0.60.

Depression, Anxiety, and Stress questionnaire: This questionnaire was introduced in 1995 by Lovinbond and Lovinbond. Its short form has three subscales: depression, anxiety, and stress. The participants should rate the frequency of occurring each term during the last week using a 4-point scale (0 to 3). The psychometric properties of this scale have been investigated in several studies, such as Henry and Crawford's study [33]. Using a great sample, the questionnaire's Cronbach's alpha for the total scale and depression, anxiety and stress sub-scales has been calculated 0.88, 0.82, and 0.90 respectively. The final version of this scale has 21 items i.e. 7 items in each subscale.

According to Sahebi, Asghari, and Salari's study in the Iranian population, the internal consistency coefficients of depression, anxiety and stress were 0.77, 0.79, and 0.78 respectively ($P < 0.001$). These findings indicate the desired reliability of the Persian version of the scale [34]. In this study, the reliability (Cronbach's alpha) for the total scale was 0.89.

Five Facet Mindfulness Questionnaire: This tool is a 39-item self-assessment Questionnaire, which has been developed by Bayer et al. through combining Konchuki mindfulness questionnaire items, the consciousness and mindful attention scale, the Freiberg mindfulness questionnaire, the emotional and cognitive mindfulness revised scale, and the Sutampton mindfulness questionnaire as well as applying the factor analysis approach. The analysis has identified five factors that assess different aspects of mindfulness. These factors include observation, description and action with consciousness, the lack of judgment about the inner experience, and the lack of response to internal experience. The responses are coded from one to five on the basis of Likert scale [35]. According to the results of the internal consistency, the factors were appropriate and the Alpha coefficient was in the range of 0.75 to 0.91. The correlation between the factors was moderate and significant in all cases [36]. In a study on the validity and reliability of the questionnaires, which was carried out in Iran, the test-retest correlation coefficients were 0.57 to 0.84. The alpha coefficients were also 0.55 to 0.83 [37]. The reliability of this scale (Cronbach's alpha) was calculated

0.77 for the total scale.

Results

A preliminary analysis of the data was conducted to ensure the compliance of the assumptions for the regression analysis (inter-correlation among variables).

Table 1 provides an overview of the average, the standard deviation and the inter-correlation of all variables in this study.

The results of the person correlation test revealed (table 1) a significant negative correlation between suppression, depression and anxiety with mindfulness ($P < 0.01$). This means that individuals with lower mindfulness score had higher levels of suppression, depression and anxiety, while the correlation between mindfulness and reappraisal is positive and significant ($P < 0.01$). The correlations between depression and anxiety sub-scales are positive and significant ($P < 0.01$).

The results of the multiple regression analysis are presented in Table 2.

A stepwise multiple regression was conducted to test if mindfulness and emotional regulation significantly predicted the participants' depression. The results indicated that mindfulness and two strategies of the emotional regulation i.e. suppression and reappraisal, enter the equation respectively, and they explained 36% of the variance ($R^2 = 0.36$, $F(3,369) = 70.81$, $p < 0.01$). It was found that mindfulness significantly predicted depression ($\beta = -0.43$, $p < 0.01$), as it also predicted emotional regulation i.e. suppression ($\beta = 0.26$, $p < 0.01$) reappraisal ($\beta = -0.19$, $p < 0.01$)

Another stepwise multiple regression was conducted to test if mindfulness and emotional regulation significantly predicted participants' anxiety. The results of the regression (Table 3) indicated that mindfulness and two strategies of the emotional regulation i.e. suppression and reappraisal, enter the equation respectively, and they explained 19% of the variance ($R^2 = 0.19$, $F(3,369) = 30.75$, $p < 0.01$). It was found that mindfulness significantly predicted anxiety ($\beta = -0.33$, $p < 0.01$), as it did emotional regulation i.e. suppression ($\beta = -0.23$, $p < 0.01$) and reappraisal ($\beta = 0.22$, $p < 0.01$)

Table 1. Mean, standard deviation and inter-correlation of variables

Variables	M	SD	Mindfulness	Reappraisal	Suppression	Depression	Anxiety
Mindfulness	129.84	15.50	1				
Reappraisal	26.60	7.59	0.16**	1			
Suppression	14.47	5.46	-0.27**	0.13*	1		
Depression	18.81	10.18	-0.53**	-0.23**	0.35**	1	
Anxiety	11.85	9.38	-0.31**	-0.30**	0.16**	0.50**	1

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

Table 2. Multiple regression analysis (stepwise method), predicting depression through mindfulness and emotional regulation variables

Regression progress steps	Variables	coefficient B	coefficient β	coefficient t	Adjusted R square	coefficient F
First step	Mindfulness	-0.35	-0.53	-12.13**	0.28	147.07**
	suppression	0.42	0.22	5.07**		
Second step	Mindfulness	-0.31	-0.47	-10.70**	0.32	91.28**
	suppression	-0.28	-0.43	-9.78**		
Third step	suppression	0.48	0.26	5.92**	0.36	70.81**
	Reappraisal	-0.26	-0.19	-4.51**		

** $p < 0.01$

Table 3. Multiple regression analysis (stepwise method), predicting anxiety through mindfulness and emotional regulation variables

Regression progress steps	Variables	coefficient B	coefficient β	coefficient t	Adjusted R square	coefficient F
First step	Mindfulness	-0.18	-0.31	-6.16**	0.09	38.02**
Second step	Mindfulness	-0.16	-0.26	-5.41**	0.15	34.29**
	suppression	0.42	0.22	5.07**		
Third step	Mindfulness	-0.20	-0.33	-6.63**	0.19	30.75**
	suppression	-0.27	-0.22	-4.52**		
	Reappraisal	0.38	0.22	4.49**		

**p<0.01

The findings of the two sets of stepwise multiple regression analysis showed that mindfulness, and the two strategies of emotional regulation i.e. suppression and reappraisal, significantly predict depression and anxiety in the university students.

Discussion

The purpose of this research was to investigate the role of mindfulness and emotional regulation in predicting depression and anxiety in university students. According to the results of this study, mindfulness significantly correlated with depression and anxiety, and the correlations were negative. The regression analysis also showed that mindfulness is a significant predictor of depression and anxiety. These findings are consistent with the previous findings [9, 11, 12] concerning the negative relationship between mindfulness, anxiety and depression.

Mindfulness removes automatic thoughts, habits, and unhealthy behavioral patterns. Thus, it plays a key role in strengthening behavioral regulation. Mindfulness launches the processes which simultaneously optimize psychological functioning and reduce psychological distress. Since mood and anxiety disorders are considered as disturbance in attention [38], it seems that the attention control and non-judgmental attitude toward the individual experience of mindfulness can lead to the reduction of depression and anxiety. Anxious and depressed patients' attention automatically drawn to the topics consistent with their mood. They can hardly remove their focus from negative information. This process will increase depression and anxiety. Thus, mindfulness, on one hand, improves the reduction of rumination and depression, and on the other hand, reduces anxiety [39]. In other words, the attention of an individual's' conscious mind to the present moment and the ability to control the attention prevents the individual to immerse in the ruminating thoughts. Paying attention to the present experiences facilitate this attitude, even though many individual experiences are transient in nature. The ability to manage negative emotions could be another possible mechanism to explain the relationship between mindfulness, depression, and anxiety. Mindfulness improves the ability to manage negative emotions through increasing the understanding of the inner life and reducing its reactivity, so, this provides the background to deal with the negative emotions effectively. Mindfulness can release individuals from negative and destructive psychological states.

The results also showed a significant negative correlation between reappraisal strategy, depression and

anxiety. Reappraisal significantly predicted depression and anxiety. These findings are consistent with the previous studies [24, 25, 28, 30] concerning the correlation between reappraisal, depression and anxiety.

Reappraisal is a process that provides an alternative interpretation for meaning to stimuli or emotional events. These alternative interpretations lead to the alternative emotional responses. Reappraisal is also a kind of emotional regulation focused on antecedents, which is created before creating emotional regulation aiming at regulating emotions. To some extent, reappraisal can be an effective strategy in emotional regulation, because no considerable cognitive effort is required here. In fact, using a more effective reappraisal strategy helps individuals to benefit from the released cognitive resources to address their goals and assignments [40], and put them in the processes of related working memory [41]. In other words, reappraisal reduces anxiety by creating positive comments and views from a stressful situation, and leads to positive emotional and physical responses to emotional stimuli. Cognitive reappraisal facilitates interpersonal behaviors, which are necessary for social interactions

Furthermore, the results showed a positive and significant correlation between suppression strategy, depression and anxiety. In other words, suppression significantly predicted depression and anxiety. These findings are consistent with the results of the other studies [24, 25, 28, 30] in terms of the correlation between the suppression strategy, depression and anxiety. According to Gross' model of emotional regulation, suppression reduces emotional expression, subjective experiences, and the expression of external emotion, but it is ineffective in reducing emotional and its physiological arousal in a long period [21]. It seems that the efforts to voluntarily suppressing thoughts increase the access to these thoughts and emotional arousal. Suppression is a strategy that enters into the emotional production process relatively late and only changes the behavioral aspects of the emotional responses before the mental and physiological experiences reduce negative emotion. The chronic suppression prevents from the habituation to the emotional stimuli and increases the sensitivity to depression anxiety-related thoughts and symptoms. High levels of anxiety and depressing experiences limit emotional regulation skills, and lead to more rumination, avoidance, and the suppression of positive emotions. In general, it seems that the ability to regulate negative emotions plays a mediatory role in the relationship between mindfulness and the two aspects of mental health i.e. the psychological distress and the psychological well-being.

Conclusion

Not only does mindfulness increase the ability for reappraisal, but it also can promote the emotional regulation strategies through the acceptance of emotions and access to emotional regulation strategies. Therefore, it is recommended that the factors such as rejecting unpleasant emotions and access to more adaptive strategies in response to negative emotions, including depression and anxiety, should be studied in the mindfulness state. In other words, reappraisal and mindfulness promote each other reciprocally [42]. Mindfulness can facilitate the better and stronger interpretations of stressful events which will considerably reduce psychological distress.

Acknowledgement

The authors would like to thank all those who participated in this study and also for the cooperation of the University of Arak.

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