JKMU

Research Article

Journal of Kerman University of Medical Sciences, 2017; 24(1): 78-92

The Relationship of Components of Mindfulness with Cognitive Emotion Regulation Strategies: The Mediating Role of Alexithymia

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Received: 2 February, 2016 Accepted: 5 October, 2016

Abstract

Introduction: The aim of this study was to investigate the causal relationship of mindfulness and cognitive emotion regulation strategies and mediating role of alexithymia in this relationship.

Method: In this descriptive-correlational study, 355 students (192 females and 163 males) were recruited from Shahid Bahonar university of Kerman through random clustered sampling method. Five- facet mindfulness questionnaire (FFMQ), Toronto alexithymia scale (TAS) and cognitive emotion regulation strategies questionnaire (CERQ) were used as instruments. Data were analyzed through SPSS22 and Mplus5 software packages and using path analysis and mediation analysis.

Results: There was significant relationship between facets of mindfulness, alexithymia and cognitive emotion regulation strategies. In addition, facet of difficulty in identifying feelings had partial mediating role in relationship between facets of mindfulness and positive emotion regulation strategies.

Conclusion: Results indicated that mindfulness has a significant role in prediction of different aspects of alexithymia and cognitive emotion regulation and it can be useful for improvement of emotional problems.

ARTICLE INFO

Article type:
Original article

Keywords:
Mindfulness
Alexithymia
Cognitive emotion regulation strategies

Introduction

Mindfulness is a form of consciousness or quality of consciousness that develops due to attention to the present aim and without moment to moment evaluation (1). Mindfulness has shown positive effects on increasing positive emotions and decreasing negative emotions (2), improving mood, decreasing depression and anxiety (3) and increasing psychological adjustment (4). Also, mindfulness has a positive and meaningful relationship with psychological well-being (5) and conscientiousness (6), while it has a negative and meaningful relation with neuroticism (7) and worry (8).

Emotion regulation has been described as capability of effective management of negative emotions (9). There are two cognitive strategies that are effective in emotion regulation; positive cognitive strategies such as acceptance, refocus on planning, positive refocus, positive reappraisal, putting into perspective, and negative cognitive strategies including self-blame, others-blame, rumination or focus on thought and catastrophizing (10).

Theoretically, mindfulness has been presented for training and regulation of emotion (11), because negative emotions are part of daily life and require effective emotion self-regulation (12). Mindfulness causes immediate psychological advantages like diminishing emotion reactions and improving behavior regulation and in fact increases endurance against negative emotions and prepares the individual for effective coping (13). So that, even in regulating negative emotions, mindfulness causes better performance of the individual and leads to emotional well-being (14). Also, the relationship of greater levels of mindfulness with more adaptive emotion regulation processes has been confirmed in both clinical and non-clinical populations (15).

In healthy adults, mindfulness components such as observing, describing, acting with awareness and accepting without judgment are less related to emotion regulation problems (16), and the relationship of lower levels of mindfulness with emotion regulation problems has been mostly confirmed in people suffering from social anxiety (17), depressed and anxious people (18) and general population (19). Increasing mindfulness improves emotion regulations through exercises that are based on mindfulness (20). But, many aspects of mindfulness and emotion regulation need to be identified and studied (21), and because they have not been identified completely so far, study about how mindfulness affects emotion regulation and mechanism through which mindfulness affects emotion regulation has been suggested as a research and clinical demand (22).

There are only two studies that have analyzed this important issue in non-clinical sample; according to the first study, some part of indirect effects of mindfulness on emotional regulation can be explained by identifying clarity of internal experiences and it can have a mediating role in relationship of attention and acceptance components of mindfulness with regulation of negative emotions (23). Later study indicates that self-efficiency can explain some part of indirect effects of mindfulness components (acting with awareness, describing and accepting without judgment) on emotional regulation (22).

According to this point that high self-efficiency means confidence in personal abilities to do special behavior and efficient management of difficult and stressful situations (24-25), it seems that recognition of oneself can greatly affect this relation; a characteristic that patients suffering from alexithymia lack it.

Alexithymia is characterized by difficulty in identifying and describing feelings, distinguishing between feelings and the bodily sensations of emotional arousal, and an externally- oriented style of thinking (26). Some qualities of mindfulness such as awareness and acceptance of reverse predictor are difficult dimensions in describing and identifying alexithymia feelings (27). Also, whilst alexithymia is considered as the result of personal inability (28), mindfulness as a trait increases feelings of power and efficiency in a person (14). In addition, mindfulness increases insight toward transient essence of emotion and this can be effective in freedom from fear (29), and causes the identification of feelings; however, those who suffer from alexithymia, have problems in identifying and describing their feelings for others (26) and in facing stressful situation, they show their real feelings and get stuck in emotion experience (30).

The defining features of alexithymia are in contrast to effective emotional regulation and research has demonstrated a relationship between alexithymia and maladaptive styles of emotion regulation (31). Adapted and non-adapted strategies of emotion regulation are respectively linked to low and high levels of alexithymia (32). Alexithymic individuals are more likely to use suppressive strategies and less likely to use reappraisal strategies as compared to non-alexithymic individuals (31). The reason of using preventive strategies in an individual suffering from alexithymia could be low mindfulness of the individual, because his/her behavior is on the counterpoint of avoidance experience which has been associated with assertiveness and decreases avoidance (14, 33).

Analysis of relationship between mindfulness and emotion regulation in format of a model can be used for calling mindfulness-based interventions and for explaining this issue that how mindfulness helps us to keep emotional and psychological status healthy (22). Since the relationship between mindfulness and emotion regulation has not been completely explained and the mentioned mediating variables could have only a partial mediating role while there are other mechanisms which are effective in this relation, this research was designed in order to find an aspect in impact of mindfulness attribute on emotional health that is earned by the insight into feelings and internal states (emotional and cognitive) and the ability in describing and identifying psychological experiences; Moreover, since there is no research about the mediating role of alexithymia in regard to the relationship of mindfulness attribute and emotion regulation, and the mediating role of alexithymia between these two factors is in doubt, this research tried to analyze this role on the format of similar factors. For example, alexithymia has the ability to present a mediating role in relationship between mindfulness and quality of life. Whereas quality of life factor in this research consists of emotional, somatic, performance and social dimensions (34-

35). Based on what was said, this research was designed not only to find relations between mindfulness, alexithymia and emotion regulation, but also to answer this question that whether alexithymia has a mediating role in relationship between mindfulness and emotion regulation or not?

Method

In this descriptive-correlation study, we used random clustered sampling. Research questionnaires were distributed among the students of six faculties of Shahid Bahonar University of Kerman including literature and humanities, architecture and art, basic sciences, management and economic, polytechnic, and theology faculties. According to Kline recommendation, the minimum size of a sample for analysis of model has to be 200 (36); so, for being sure about the proper size of a sample for analysis of model, 400 questionnaires were distributed and because 45 questionnaires were useless for different reasons, 355 questionnaires (192 females, 163 males) were used in final analysis. In this research we used five-facet mindfulness questionnaire (FFMQ), cognitive emotion regulation strategies questionnaire (CERQ), and Toronto alexithymia scale (TAS).

The Five-Facet Mindfulness Questionnaire (FFMQ)

This questionnaire was made by Baer et al through the combination of five independent questionnaires. The FFMQ is a self-report instrument that assesses an individual's tendency to be mindful in everyday life on the bases of factor analysis methods. FFMQ has five sub-components including observing, describing, acting with awareness, non-judging to inner experience and non-reactivity to inner experience. Items on the FFMQ are scored on a five point Likert scale, ranging from one (never or very rarely true) to five (very often or always true) (37). Test-retest correlation coefficients reported for Iranian sample are between r =0.57 (relevant to non-judging) and r =0.84 (relevant to observing). Also, Chronbach's alpha coefficient has been reported between r =0.55 (relevant to non-reactivity) and r=0.83 (relevant to describing) (38).

Cognitive emotion regulation strategies questionnaire (CERQ)

It was used for measuring cognitive emotion strategies. The CERQ is a 36-item scale that evaluates the cognitive aspects of emotion regulation and has been made by Garnefski et al. The CERQ is a multidimensional questionnaire constructed in order to measure individual's general cognitive style as well as his/her cognitive strategy after experiencing a specific event. The CERQ can be administered in normal and clinical populations, with different age groups. The items are rated on a 5-point Likert scale ranging from one (almost never) to five (almost always). Individual subscale scores are obtained by summing up the scores belonging to particular subscale or cognitive emotion regulation strategy (from 4 to 20). Higher scores reflect greater use of the strategy. Strategies' reliability of positive, negative and total scores using Cronbach's alpha coefficient, respectively, 0.91, 0.87 and 0.93 is obtained (10). Cronbach's alpha coefficients for

subscales of the questionnaire ranged from 0.64 to 0.82 in Iranian sample and the validity of the positive and negative Correlation Coefficient strategies with high and low scores on the (MAAS) questionnaire, were reported as favorable (39).

Toronto Alexithymia Scale (TAS-20)

It was made by Taylor et al in 1994. TAS-20 is a 20-item scale that evaluates three aspects of alexithymia including difficulty in describing feelings, difficulty in identifying feelings, and externally-oriented thinking. Responses are made on a five-point Likert type scale, which ranges from "strongly disagree" to "strongly agree". The total alexithymia score is computed by summing the responses to all 20 items (11).

In examining the psychometric properties of TAS in Iranian sample, reported Cronbach's alpha for the total score and three subscales have been respectively 0.85, 0.82, 0.75 and 0.72 indicating good internal consistency of the scale. Test-retest reliability in 67 samples within four weeks of r=0.80 to r=0.87 and its construct validity of the scales based on the correlation between the subscales with emotional Intelligence (r=0.80), psychological well-being (r=0.78) and psychological helplessness (r=0.44) scale's was approved. Also, there are three factors of alexithymia by confirmatory factor analysis in Iranian sample (40).

Results

In order to analyze data, we used SPSS22 and MPLUS5 software packages. MPLUS5 was used to determine the relationship between mindfulness variables, alexithymia and cognitive strategies of emotion regulation (path-analysis). To determine the relationship between variables, we used Pearson correlation. Table 1, shows the correlation matrix indices of the studied variables. Generally, mindfulness components showed direct and reverse relationships with respectively positive and negative emotion regulation strategies. Also, alexithymia components showed direct and reverse relationships with respectively negative and positive emotion regulation strategies.

In order to analyze one-way direction model, we used any of mindfulness components including observation, describing, acting with awareness, being non-judgmental to inner experiences and being non-reactive to inner experiences to alexithymia components including difficulty in describing feelings, difficulty in identifying feelings and objective thinking. Also, one direction paths were from alexithymia components to positive and negative emotion regulation strategies. Moreover, one-way direction was considered from five components of mindfulness to two cognitive emotion regulation strategies. The relationship between mindfulness components has been considered too.

Table1. Correlation matrix indices of variables

Variable	1	2	3	4	5	6	7	8	9
1-Describing	1								
2-Observing	.52***	1							
3-Acting with awareness	-.12*	.14*	1						
4-Non-judging	.44***	.10-	.42***	1					
5-Non-reactivity	.41***	.39***	.24***	-.38***	1				
6-Difficulties in describing feelings	.09	-.30***	-.38***	-.09	-.03	1			
7-Difficulties in identifying feelings	.27***	.45***	.08	.17**	0.29***	-.03	1		
8- Objective thinking	-.25***	.08	-.21***	.15**	-.10	-.03	.27***	1	
9-Positive strategies	-.25***	-.01	-.45***	-.48***	-.26***	.22**	.19**	.11*	1
10-Negative strategies	.40***	.38***	.02	.26***	.30***	-.17**	-.26**	-.19**	.16**

P<0.05*; P<0.01**; P<0.001**

There are several indexes for evaluating model fitness including comparative fit index (CFI), Tucker Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). For CFI and TLI values more than 0.95 and for RMSEA and SRMA values less than 0.05 were considered as good fitness (41- 43). At first, the main model showed all the intended paths of test. In the second level, all the predictive paths that had no role in the overall fitness of model were considered constant. It should be noted that indirect effects of mindfulness components on cognitive emotion regulation strategies were analyzed through alexithymia mediator. The severity of direct and indirect effects was compared too. Generally, the results showed that the final model fits data well ($X^2_{(19)}$= 52.79, CFI =0.93 ،TLI =0.96 ،RMSEA =0.05 ،SRMR =0.04).

According to figure 1, the final results of model showed that mindfulness components of describing and acting with awareness had a negative relationship with components of difficulties in identifying feelings; it means that by increasing describing (β=-0.25) and acting with awareness (β= -0.36), difficulty in identifying feelings decreases. Mindfulness components of observing, describing, non-judging and non-reactivity have a positive relationship with difficulty in describing feelings; it means that by increasing observing (β=0.19), describing (β=0.30), non-judging (β=0.22) and non-reactivity (β=0.36), difficulty in describing feelings increases. Mindfulness components of describing and acting with awareness had a negative relationship and non-judging had a positive relationship with components of objective thinking; it means that by increasing describing (β=-0.20) and acting with awareness (β=-0.12), objective thinking decreases, while by increasing non judging (β=0.19) it increases.

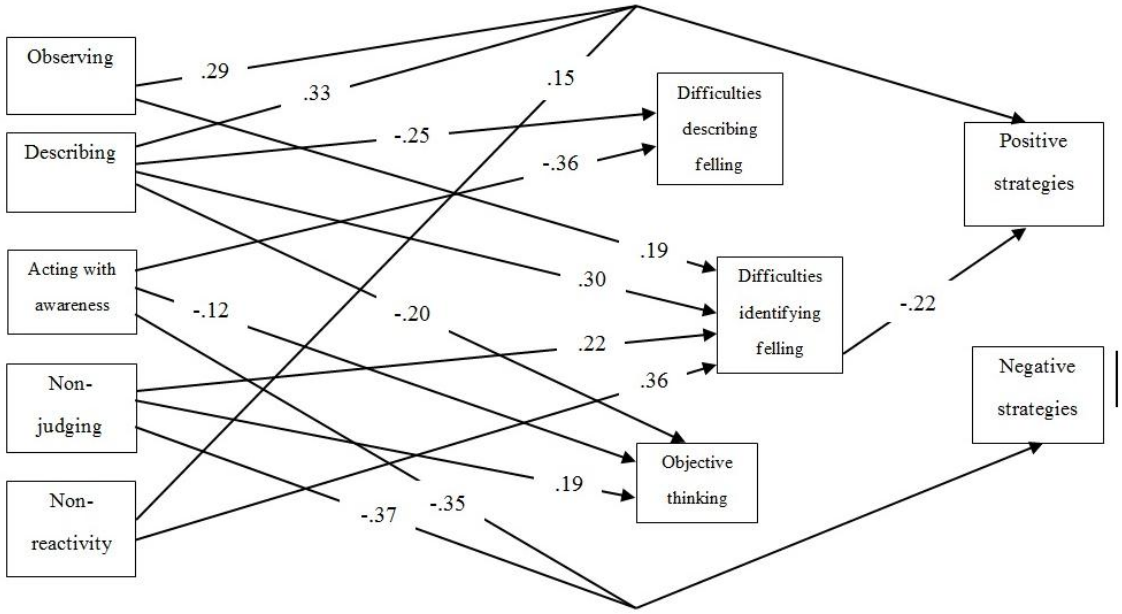

Figure1. Significant direct and indirect effects of mindfulness, alexithymia and cognitive emotion regulation strategies

Also, Mindfulness components including observing, describing and non-reactivity had a positive relation with positive cognitive emotion regulation; It means that by increasing observing (β=0.29), describing (β=0.33) and non-reactivity (β=0.15), the positive cognitive emotion regulation convenience increases. Also, acting with awareness and non-judging had negative relationship with negative cognitive emotion regulation; It means that by increasing acting with awareness (β=-0.25), non-judging (β=-0.37), the negative cognitive emotion regulation convenience decreases. Finally, difficulty in identifying feelings component of alexithymia had negative relationship with positive cognitive emotion regulation (β=-0.22); It means that by increasing this component, positive strategies decreases.

Indirect effect of mindfulness component on positive cognitive emotion regulation through the difficulty in identifying feelings showed that observing (β=-0.05), describing (β=-0.07), non-judging (β=-0.08), and non-reactivity (β=-0.05), predicted positive cognitive emotion regulation. By comparing the direct and indirect effects according to table 2, we showed that the direct effects of observation, description, being non-judgmental and non-reactive on positive emotion regulation strategies are more than indirect ones. So, we witnessed a partial mediating role for difficulty in identifying feelings component of alexithymia in relationship between mindfulness and positive emotion regulation strategies. It should be noted that none of the mindfulness components could predict negative cognitive strategies of emotion regulation directly.

Table2. Direct and indirect effects of mindfulness components on emotion regulation strategies

Path	Difficulty in describing feelings	Difficulty in identifying feelings	Objective thinking	Positive strategies		Negative strategies	
				Direct effect	Indirect effect	Direct effect	Indirect effect
Observing	-	.19	-	.29	-.05	-	-
Describing	-.25	.30	-.20	.33	-.07	-	-
Acting with awareness	-.36	-	-.12	-	-	-.35	-
Non-judging	-	.22	.19	-	-.08	-.37	-
Non-reactivity	-	.36	-	.15	-.05	-	-

Discussion

The aim of this research was to analyze the mediating role of alexithymia in relationship between mindfulness and cognitive emotion regulation strategies. Mindfulness is an ability that helps a person in facing wide range of thoughts, emotions and experiences, regardless of being pleasant or unpleasant (14) and helps to understand the inner and outer realities freely and without distortion (44). Alexithymia is a defect in awareness of emotions and symbolic cognitive activities (26). Mindfulness has a lot of components and some communication aspects of the two factors with these components are unknown; and yet there has been no research to analyze the relation of these two factors in the format of defining mindfulness with components such as describing, observation, acting with awareness, being non-judgmental and non-reactive. By analyzing the relationship of mindfulness components and alexithymia dimensions, we concluded that mindfulness components have a meaningful relationship with alexithymia components. While some of the mindfulness components such as describing and acting with awareness were in reverse relationship with alexithymia, components such as being non-reactive, non-judgmental and observation were in direct relationship.

Describing means naming experiences and feelings with words and acting with awareness means acting with vigilance in the moment (44). According to the studies of Barnhofer et al and Wenzel et al, the components of describing and acting with awareness have relationship with lower depression and higher psychological well-being respectively (45,46). Besharat has reported conversely about the Alexithymia component of difficulty in finding feelings (47), and somehow can bring logical proofs about the reverse relationships of these three components with each other. Results of the research done by Teixeira & Pereira showed a reverse relationship between mindfulness qualities and difficulty in describing

feelings as one of the components of alexithymia (27).

Observing means paying attention to inner stimuli such as cognitions and feelings and outer stimuli like noises and smells, being non-judgmental to inner experience in a sense of having no judgment about thoughts and feelings and being non-reactive in a sense of allowing inner thoughts and feelings come and go without getting involved (44); Whereas, being non-reactive and non-judgmental are components of mindfulness that are effective in diminishing depression and increasing psychological health (13, 33). In this research, increasing them show a problem in recognizing feelings. It should be noted that the direct relation of four components of mindfulness with difficulty in describing feelings that was observed in the present study, is in contrast with the results of a research done by Teixeira and Pereira. The difference can be attributed to using different tools for scaling mindfulness in the two studies. Teixeira and Pereira have used emotional and cognitive questionnaire and awareness of moment scale and acceptance of Philadelphia.

When the dimensions of recognizing and describing feelings disturb due to problem in cognitive processing system of emotional data or problem in emotion regulation, some sort of psychological distress happens that blocks logical thinking and analyzing and limits the individual's cognitive style to an externally- oriented, pragmatic and reality- based thinking (26). Finally, a person who suffers from alexithymia prefers to watch the events and not to analyze them; also, this person limits his/her relations and activities to externally- oriented affairs and does not care about his/her or others' feelings (48). Through analyzing the relationship of mindfulness components with alexithymia, we concluded that describing and acting with awareness have a reverse relation and being non-judgmental to inner experience has a direct relation with alexithymia.

Despite several advantages of mindfulness mentioned in recent studies (2-4), a positive relationship between mindfulness and alexithymia was seen in the present study. According to Eisenlohr et al, it is due to different tools of testing mindfulness and also considering different components for mindfulness (49); for instance, Buchheld et al have considered four components of presence, openness to experience, non-judgmental acceptance and insight for mindfulness (50); Feldman et al have considered four components of attention, present focus, awareness and acceptance (51) and Brown & Ryan have considered mindfulness as knowingly awareness without paying attention to specific components (44).

Cognitive emotion regulation strategies refers to the individuals' cognitive strategies in facing life events and positive cognitive emotion regulation strategies are adaptable methods in facing negative

events of life. These strategies are methods of positive thinking in facing stressful events and have five states. In the first state that is called acceptance, the person is satisfied with what is occurring (52). Kabat-Zinn, too, has considered acceptance as an infrastructure concept of mindfulness (1). The second state or refocus on planning refers to a time that the person thinks about an unfortunate event and strategies to face it (44); this is an issue that needs patience and hesitation. According to Baer et al, increase of mindfulness is led to reduction of human suffering and growth of positive attributes like insight, wisdom, compassion, placidity, self-possession, balance and coolness (33). In the third state called positive refocusing, the individual thinks to positive aspects of life and does not think about the unfortunate event that has happened. In the fourth state or positive reappraisal, the person tries to give that unfortunate event a good meaning, in a way that it becomes an opportunity for personal growth and finally, in the fifth state or putting into perspective, the person thinks that whatever happens in life, including that unfortunate event, is transient and relative (52). One of the other concepts of mindfulness is experiencing the present moment that can be related to positive strategies of positive refocusing, positive reappraisal and putting into perspective (33).

By analyzing causal relation between mindfulness components and positive cognitive emotion regulation strategies, we concluded that three components of observation, describing and being non-reactive to inner experience have direct relationship with positive cognitive emotion regulation strategies. There is an attribute, named mind initiator, that has been mentioned in relation to mindfulness and it can explain the observed relationship; based on this attribute, the individual can experience anything such as people and things for the first time and find a new approach to the world based on that experience and regardless the past experiences (1). Previous studies show that there is a relation between mindfulness components measured by MAAS questionnaire and positive cognitive emotion regulation strategies (39).

The analysis of the relationship between mindfulness and negative cognitive emotion regulation strategies showed that two components of acting with awareness and being non-judgmental to inner experiences have a reverse relationship with negative cognitive emotion regulation strategies. These negative strategies are incompatible methods to manage negative events of life. These incompatible strategies are thinking methods based on self-blaming and other-blaming, thinking too much about a negative event, or in other words rumination or treating an unfortunate event tragically (52). One of the important attributes of mindfulness is responsive reaction instead of impulsive answers (33) that is in contrast

with blaming others. Mindfulness has a positive relationship with compassion and release; these two attributes are respectively in contrast with self-blaming and catastrophizing (53). Also, a meaningful negative relationship between mindfulness and rumination has been reported (18).

In regard to the relationship between mindfulness and cognitive emotion regulation strategies, we can divide the mindfulness components in two categories; the components which specifically showed relation with positive strategies such as observing, describing and being non-reactive, and the components which specifically showed relation with negative strategies such as acting with awareness and being non-judgmental. In the commentary of this finding we can say that infrastructure mechanisms are for promotion of positive strategies and decrement of negative strategies.

One of the other aims of this research was to analyze the mediating role of alexithymia in relationship between mindfulness and cognitive emotion regulation strategies. The results showed that among different components, difficulty in recognizing feelings is the only mediator of relationship between mindfulness and positive cognitive emotion regulation strategies. Some outcomes of mindfulness meditations are feelings like disgust, fidget and impatience (53), whereas the final outcome of these exercises is more peace for the individual; and it is in line with the results of the present study; that is, although four components of mindfulness are along with increasing difficulty in recognizing feelings, they increase positive cognitive emotion regulation strategies indirectly. We can say that mindfulness, through cluttering cognitive processing system, causes use of positive emotion regulation strategies. It should be noted that, at first, mindfulness practices increase pain and stress; and the purpose of these exercises is not calming, but only enforcing a non-judgmental attention toward anything that happens at moment regardless of being pleasant or unpleasant (53).

In this research, the relationship between mindfulness and alexithymia could not be easily classified and clarified and it shows that dimensions of alexithymia, in comparison to cognitive strategies of emotion regulation, have more complex relationships with mindfulness; therefore, it's suggested that in interventions that are based on mindfulness and the aim is to improve emotional problems like high alexithymia and negative cognitive strategies or increasing positive strategies, special attention be paid to this important issue.

Conclusion

In overall, mindfulness has an important role in emotion regulation especially in improvement of positive strategies and reducing negative strategies

of emotion regulation; even if there is a direct relationship between mindfulness and emotional problems, we can consider the outcome of this relationship good for a person.

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Acknowledgments

The authors are thankful to all students that patiently helped in completing research questionnaires and also those researchers that made this research possible by their scientific documentations.

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