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The effectiveness of mindfulness training on ego-strength and meta-cognitive beliefs of students

Laya Abbasi [1*], **Morteza Akhlaghi-fard** [2]

[1] *M.A in psychology, Islamic Azad University Karaj Branch, Laya1371@gmail.com*
[2] *Assistant professor, Islamic Azad University Karaj Branch*

Abstract

This study determined the effectiveness of mindfulness training on ego strengths and metacognitive beliefs of the students. Research method was quasi experimental. Statistical population of this study included all the students of Islamic Azad university of Karaj, (30000 people in 2017-2018). Thirty students were selected using available sampling and randomly assigned to experimental and control groups. The psychosocial inventory of ego strengths by Markstrom et al., (1997) and the metacognitive beliefs questionnaire of Wells & Cartwright-Hatton. (2004) distributed among the participants in both groups. Then, Mindfulness training applied in eight two-hour sessions for experimental group while control group did not take any medical or psychological treatment. After Mindfulness training intervention, the questionnaires redistributed among groups. After analyzing the data by covariance test and variance analysis using 21st version of spss software, results indicated that mindfulness has a significant effect on metacognitive beliefs. In addition it has effect on its subscales (uncontrollability and danger, positive beliefs about worry, cognitive self-consciousness, cognitive confidence, need to control thoughts) and on the ego strength and its subscales, (hope, will, purpose, competency, love, care and wisdom) ($p < 0.05$) except fidelity ($p > 0.05$). Although the mean score for fidelity component was increased but it was not statistically significant.

Keywords:
Ego strength, Mindfulness, Students, Metacognitive beliefs

* Corresponding author: *M.A in psychology, Islamic Azad University Karaj Branch, Laya1371@gmail.com*
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1.Introduction

Students are considered to be important members of society because of their important role in the future management of the countries. and for a number of reasons, including youth specific circumstances, high school attendance, economic difficulties, ambiguous job prospects, are prone to loss of health and are required to plan to improve their quality of life and their physical, mental and social health (Hosseini et al., 2014).

Ego strength means one's capacity to realistically understand problematic situations and respond to them effectively. Ego strength helps reaching an emotional balance and adapt to internal and external stress. Inability to nurture ego processes, such as early sexual fixation or aggression, can lead to personality disorders (Einy et al., 2018).

Ego or I the second personality structure in Freud's theory is created by the forces existing in I would. ego strength refers to the capacity of I to manage the conflicting demands of the ID superego and the circumstances of external reality and the extent to which I cannot achieve functional balance, the personality of the individual will be disturbed (Lavertue et al., 2002).

The ego strength is the ability of an individual to manage the Id and super ego, despite the pressure that arises from either side, which causes request to increase the pleasure or act within the standards of society. The Ego strength is the balance that Freud emphasized as the key to a healthy personality, someone who can successfully seek pleasure and do it reasonably and in a reasonable time and place. The Mosby's medical dictionary recently defined the ego strength as an ability to maintain Ego by a group of features that provide good mental health together (Ali & Zilli. 2015).

Regarding the epigenetic principle, it is said that Ego strengths exist over a lifetime, but each one grows in coordination with the positive resolution of the psychosocial crisis, which they are relevant. specifically, hope from basic trust vs. mistrust, will from autonomy vs. shame or doubt , purpose from initiative vs. guilt, competence from industry vs. inferiority, fidelity from identity vs. identity confusion , love from intimacy vs. isolation , care from generativity vs. stagnation , and wisdom from integrity vs. despair (Markstrom et al., 2005). Since self-destruction is one of the central questions in the brain research of the emergency and the initial phase in emergency the board is planning, the ebb and flow study attempted to help experts in emergency mediation to teach and forestall self-destruction endeavors (Damirchi et al., 2019).

Therefore, ego strength can be considered as indicators of psychosocial health at a given stage of growth. The components of ego strength together represent a general health, flexibility and psychosocial maturity. The components of ego strength are relevant to the coping skills that help managing life challenges, and may have implications of treatment and recovery (Abramoff et al., 2015). Taking into account that attendants assume a significant job in improving the strength of the local area, specifically, meta-intellectual convictions have a critical relationship with psychological disappointments of medical caretakers; taking out the hidden elements is considered, as a wellbeing need (Atadokht et al., 2019).

The higher scores in ego strength are positively correlated with psychosocial indicators of achieving identity, self-esteem, control source, empathy, vision and positive forms of adjustment, and lower scores in ego strength components are related with less favorable psychosocial structures (Markstrom and Marshall, 2007). Care based psychological treatment and meta-intellectual treatment dependent on

preparing on feeling guideline and tension affectability had distinctive adequacy. Thus, specialists should focus on this issue (Hatamian & Tabatabaei. 2020).

Individuals who are not desirous enough to overcome obstacles, are reluctant to leave the comfort zone, or are lazy; have lower scores of ego strength and those who desirous enough to overcome obstacles (Singh & Anand, 2015).

First time John Flavell developed the term “metacognition” in the late 1970s in the meaning of "cognition about cognitive phenomena" or much easier “thinking about thinking" (Lai. 2011).

Meta-cognition is defined as cognition about cognition or a model of cognition. Metacognition is a symbol of knowledge that is based on the information that comes from monitoring function and informs the function of control, such as the use of strategy when knowing for any reason is a failure. In addition, there are aspects of meta-cognition that can have an influential nature. (Efklides. 2011).

Generally, meta-cognition can be divided into two processes: metacognitive monitoring and metacognitive control, and both are remarkable on how a person is able to set up their social interactions. Metacognitive monitoring involves assessing the validity of judgments, knowledge and performance, while metacognitive control is the decision-making process of how to respond to these assessments (Singleton & Ridding. 2015).

Metacognitive beliefs are one of the effective factors in mental health. Metacognition that enhances the maladaptive ways of negative thoughts or increases the general negative beliefs endangers the state of mental health. Metacognitive beliefs are beliefs that relate to the uncontrollability, importance and danger of cognitive thoughts and experiences (Shooshtari et al., 2016).

Metacognitive approach believes that people are having mental health problems because their metacognition leads to a specific pattern of responding to internal experiences, which causes the continuation of negative beliefs and as a result, psychological problems. According to this theory, many confronting behaviors have a meta-cognitive nature that must be considered in explaining issues related to mental health (Kareshki & Pakmehr. 2011).

Historically, mindfulness is called the heart of Buddhist meditation and is the core of the teachings of Buddha (Kabat-Zinn. 2003).

Despite the diversity of perceptions throughout the Buddhist traditions, there is a clear and common ground on the ultimate goal and function, which meditation exercises follow in psycho-spiritual development. The methodological goal of the Buddhist practice is to eliminate the root causes of suffering, and the deep practice of mediating relieves and ultimately destroys suffering, by creating significant and lasting changes in the cognitive and emotional states of the individual, which leads to dramatic and irreversible changes in behavioral and psychological characteristics (Purser & Milillo. 2014).

Mindfulness is a way of paying attention, in which all mental states, are understood, but not judged. It is claimed that the mindfulness improves self-observation and inner states, which improves internal regulatory processes. Dispositional mindfulness is considered as an attribute, although it may be influenced by mindfulness-based therapy because it is designed to increase the level of dispositional mindfulness (Ouwens et al., 2015).

Mindfulness and presence of mind is a method that has long been used to alleviate or eliminate life's problems and psychological distress. The mindfulness is defined as the state of aroused attention and the

awareness of what is happening in the present moment. This attention is a deliberate attention, coupled with a judgment-free acceptance regarding current experiences now (Hashemi & Mahour. 2017).

Some of the explanations of mindfulness are: "1. Facing the facts of the experiences as they are, and perceiving every events, as if it is happening for the first time; 2. Keeping your awareness susceptible to the present reality; 3. Concentration in a particular way: purposefully, in the present moment and non judgemental; 4. Being aware of their present experience with acceptance" (Mace. 2007).

Influenced by the introduction of mindfulness-based therapeutic programs, clinicians used mindfulness in the treatment of emotional and behavioral disorders such as borderline personality disorder, chronic depression, chronic pain and eating disorders. This process has been accomplished by an increasing framework of experimental evidences for the effectiveness of mindfulness-based interventions to decrease symptoms in clinical samples and improves psychological well-being in non-clinical samples (Hulsheger et al., 2012).

In this regard, Suyi et al., (2017) found that mindfulness training was effective in reducing stress and improving mindfulness and compassion but did not reduce mental exhaustion for the studying group (mental health professionals in Singapore). The findings of Keng et al., (2017) show that the benefits of mindfulness as a strategy are effective not only in regulating sad mood but also in preserving cognitive resources in mood regulation. Also, Sanger and Dorje's (2016) research proves that mindfulness practice is helpful in developing adolescents' metacognitive awareness and health, potentially supporting their self-efficacy and academic success. Felton et al., (2015) concluded that mindfulness training enhances students' ability to avoid stress, as well as increasing their confidence in improving stress and self-compassion. Students also showed greater confidence in their ability to prevent burnout and their future as mental health workers.

Hartman et al. (2012) also showed that mindfulness-based intervention leads to long-term reduction of psychosocial distress. Lykins' (2009) findings also showed that people with higher levels of mindfulness skills also experience less ego depletion even in the absence of meditation experience.

According to the mentioned, the present study has investigated one main hypothesis and two sub-hypotheses:

1. Mindfulness training affects the students' ego strength and metacognitive beliefs.

2. Mindfulness training affects the components of ego strength (hope, will, purpose, competency, fidelity, love, care, and wisdom) in students.

3. Mindfulness training affects the components of metacognitive beliefs (uncontrollability and danger, positive beliefs about worry, cognitive self-consciousness, cognitive confidence, need to control thoughts) in students.

Ego Strength Questionnaire: The Psychosocial Inventory of Ego Strengths (PIES) has developed by Markstrom et al., (1997), which has measures 8 points of Ego (hope, will, purpose, competence, fidelity, love, care, and wisdom) and has 64 questions. Scoring: The terms of this questionnaire are scored on a five-point Likert scale: "1. It is perfectly compatible with me, 2. It is slightly compatible with me, 3. I have no idea, 4. It is slightly incompatible with me, 5. It is not compatible with me at all". The highest score that a person could achieve is 300 and the lowest score is 60. Scoring about 300 indicates the high level of the Ego and a score of about 60 indicates the low level of the Ego. In addition, has eight sub-scales (hope, will, purpose, competence, fidelity, love, care, and wisdom).High scores in all subscales indicate

wellness and good psychosocial maturity. The score of each of the sub-scales is also calculated by summing up the scores of the questions of each subscale. Validity and Reliability: Markstrom et al., (1997) verified the validity and reliability of this questionnaire as the inventors of this questionnaire. They confirmed content, structure and the face validity of this questionnaire, and using the calculation method of the Cronbach alpha coefficient, they reported its reliability 0.68. Iranian validity and reliability: On the Iranian sample, Altafi (2009) reported the questionnaire's Cronbach alpha 0.91; he also reported the reliability of the scale split half 0.77.

Metacognitive beliefs questionnaire: The original version of the Wells Metacognitive Beliefs Questionnaire (MCQ), which contained 65 items, was developed by Cartwright-Hatton and Wales (1997). Due to the excess of the items, the 30-item version of this questionnaire was developed (Wells & Cartwright-Hatton. 2004). Similar to the original form the short form named as the metacognitive beliefs of the Wells 30 (MCQ-30) has the five following subscales: uncontrollability and danger, positive beliefs about worry, cognitive self-consciousness, cognitive confidence, and the need to control thoughts. Scoring: This questionnaire is scored in a four-degree spectrum. From "I do not agree" to "I'm totally agree".To calculate the score for each dimension, sum up the scores of all the questions of that dimension. The scores in each sub-scale are 6 to 26 and the scores of total sub-scales is 30 to 120. Higher scores represent high levels of harmful meta-cognitions. Validity and reliability: In the original version of this questionnaire, the internal consistency for the whole scale was 0.93. In addition, the test-retest reliability of this questionnaire was 0.75 within four weeks and for the sub-scales it was from 0.59 to 0.87 (Wells and Cartwright Hatton. 2004). Iranian Validity and Reliability: Sabet (2011) tested 490 people for the standardization of the Wells Metacognitive Beliefs Questionnaire (MCQ). The results showed that the Cronbach's alpha coefficient was 0.896 for the whole group. The validity of this test was also investigated in two ways and the results indicated that it was acceptable (Sabet. 2011).

2.Methodology

This research was a quasi-experimental and the method was the pretest-posttest with the control group. The statistical population included all the students of Islamic Azad University of Karaj in 1396-97, which were 30,000. Then 30 people who had criteria to inter the study were selected by simple random sampling and randomly divided into 2 groups, experimental (15 subjects) and control (15 subjects). After answering the questionnaires, the subjects in experimental group were asked to participate in 8 sessions of 2 hour (1 session a week) mindfulness training, while subjects in control group did not take any medical or psychological treatment. One week after training sessions ended, both groups took a posttest separately and at the same time.

The following is a brief overview of what was presented at these sessions. The protocol of this training had excerpted from the book "the mindful way through depression: freeing yourself from chronic unhappiness" authored by Teasdale & Segal. (2007); translated into Persian by Soltanizadeh, Nezamzadeh and Pourkazem 2016. Session 1: Introduction, Explaining Research Goals, Automatic Guidance, Raisin exercise. Session 2: Body Scanning Meditation Training. Session 3: Three-minute breathing space. Session 4: mindful Yoga. Session 5: Discussion of past sessions and participants' experiences. Mindfulness of the breath, sounds and thoughts. Session 6: mindful walking. Session 7: Techniques of conscious awareness of hands and direct experience of physical senses. Session 8: breathe focus without guidance, Emphasizing Using What You Learn to Deal with Your Next Mood, Summarizing and Evaluating.

Methods and tools for analyzing data: Data analysis method and tools: The results of demographic characteristics of the subjects and research data were analyzed using descriptive statistics (mean, standard

deviation) and inferential statistics (analysis of multivariate covariance). SPSS 21 was used for data analysis.

3. Results

The demographic data of the sample show that the majority of the respondents in the experimental group (40%) were 23 years and the lowest (20%) were 21, 22 and 26 years. In addition, the majority of respondents in the control group (40%) were 22 years and the lowest (20%) were 21, 23 and 49 years. In addition, 60% of the respondents in the experimental group were male and 40% were female. In addition, 20% of the respondents in the control group are male and 80% are female. The analysis of Multivariate and single-variable covariance was used for data analysis. Therefore, first, the Kolmogorov-Smirnov test was used to test the assumption of normality of the research data. Significance level for all research indices is greater than 0.05. As a result, all the indices studied have a normal distribution. “Table 1” presents the descriptive statistics for the two groups.

Table (1). Descriptive statistics (standard deviation ±mean)

control		experimental		
posttest	pretest	posttest	pretest	component
30.87 ± 3.642	30 ± 3.071	34.40 ± 2.874	31 ± 6.579	hope
31.87 ± 3.944	29.80 ± 2.396	35 ± 2.77	31.60 ± 2.667	will
30.80 ± 3.840	31.80 ± 3.364	33.73 ± 3.555	32.40 ± 3.247	purpose
30 ± 3.094	31.40 ± 3.562	34 ± 2.699	30 ± 3.761	competency
30.80 ± 2.883	31 ± 1.964	33.20 ± 3.167	30.40 ± 4.290	fidelity
29.07 ± 2.604	26.40 ± 2.971	33.80 ± 1.373	26.80 ± 0.414	love
30.80 ± 3.234	30.07 ± 2.374	34.07 ± 4.096	31 ± 5.057	care
28 ± 2.752	24.33 ± 2.70	32 ± 2.390	23.93 ± 2.520	wisdom
242.20 ± 16.428	240 ± 13.06	270.20 ± 10.122	242.33 ± 20.208	Ego strength
14.87 ± 1.598	14 ± 1.852	10.40 ± 1.549	13.66 ± 1.345	uncontrollability and danger
15.80 ± 3.342	15 ± 2.360	12 ± 1.309	14.13 ± 2.503	positive beliefs about worry
13.87 ± 1.995	13.33 ± 1.397	11.60 ± 2.028	14.47 ± 2.446	cognitive self-consciousness
12.60 ± 2.694	12.20 ± 2.808	10.60 ± 1.404	13.67 ± 2.193	cognitive confidence
15 ± 2.699	15.20 ± 1.781	12.60 ± 1.549	15.60 ± 2.230	need to control thoughts
72.13 ± 8.202	69.73 ± 7.106	57.20 ± 4.828	71.53 ± 5.027	metacognitive beliefs

The analysis of Multivariate covariance was used to test all research hypotheses. The assumption of homogeneity of covariance matrix for dependent variables in groups was examined by Box test. The significance level of Box test for all variables was greater than 0.05. Therefore, at a confidence level of 95%, the assumption of covariance matrix homogeneity of the dependent variables is accepted in different groups.

The results of the analysis of multivariate covariance indicated that the multivariate F value for mindfulness training in all tests was statistically significant at $P < 0.05$. Therefore, it can be said that there is a significant difference between the two experimental and control groups. At least in one of the ego strength indices and metacognitive beliefs and at least in one of the ego strength components (hope, will, purpose, competency, fidelity, love, care and wisdom), and at least in one of the metacognitive beliefs components (uncontrollability and danger, positive beliefs about worry, cognitive self-consciousness, cognitive confidence, need to control thoughts).

The analysis of single-variable covariance was used to determine this difference. The prerequisite for using the analysis of single-variable covariance is to assume that the variance of the dependent variables is homogeneous in the groups. Levene's test was used to test this assumption. The significance level of Levene's test for all variables was greater than 0.05. Consequently, the assumption of homogeneity of variances was confirmed.

In addition, another assumption of single-variable covariance analysis is the non-collinearity. Pearson correlation test was used to investigate the existence of collinearity. According to the correlation matrix between the ego strength components and metacognitive beliefs components, no pair of correlation between dependent variables is greater than 0.9. Therefore, the assumption of multiple collinearity is obeyed. The results of the analysis of single-variable covariance are given in “Table 2”.

Table (2). Results of the Intergroup Effects of Covariance Analysis

Effect size	Significance level	F- statistic value	Mean of squares	Degrees of freedom	Sum of squares	Component
0.429	0.001	15.032	47.860	1	47.860	hope
0.445	0.001	16.038	73.272	1	73.272	will
0.384	0.004	10.691	50.821	1	50.821	purpose
0.298	0.009	8.497	62.111	1	62.111	Competency
0.060	0.273	1.268	5.283	1	5.283	fidelity
0.553	0.001	24.774	109.086	1	109.086	love
0.341	0.004	10.360	59.808	1	59.808	care
0.698	0.001	46.297	165.951	1	165.951	Wisdom
0.725	0.001	68.541	1941.577	1	1941.577	ego strength
0.657	0.001	43.994	111.381	1	111.381	uncontrollability and danger
0.675	0.001	47.669	139.134	1	139.134	positive beliefs about worry
0.231	0.015	6.923	28.545	1	28.545	cognitive self-consciousness
0.239	0.013	7.233	27.168	1	27.168	cognitive confidence
0.385	0.001	14.369	54.692	1	54.692	need to control thoughts
0.565	0.001	33.825	5838.557	1	5838.557	metacognitive beliefs

According to the values in "Table 2", it is clear that the significance level for ego strength (F= 68.541, P< 0.05) index and metacognitive beliefs (F= 33.825, P< 0.05) is less than 0.05. Thus, at the 95% confidence level, the assumption of parity of the posttest of the ego strength and meta-cognitive beliefs indices scores, between the two experimental and control groups is not confirmed.

According to the mean scores in Table 1, it is clear that mindfulness training has affected both ego strength and metacognitive beliefs indices and has increased in the ego strength indices and decreased in meta-cognitive beliefs.

In addition, considering the effect size values in table 2, it is concluded that respectively 72.5% and 56.5% of the difference in the post-test scores of ego strength and metacognitive indices beliefs were related to the effect of mindfulness training. Also the significance level for the seven components; hope (F=15.032, P<0.05), Will (F=16.038, P<0.05), Purpose (F=10.691, P<0.05), Competency (F=8.497, P<0.05), love (F=24.774, P<0.05), care (F=10.360, P<0.05) and wisdom (F=46.297, P<0.05) is less than 0.05.

Therefore, at the 95% confidence level, the assumption of parity of the posttest scores in these seven components, between the two experimental and control groups is not confirmed. Considering the mean scores in Table 1, it is clear that mindfulness training has influenced these seven components and increased students' scores.

Also, considering the effect size values, it is concluded that respectively 42.9%, 44.5%, 34.8%, 29.8%, 55.3, 34.1%, 69.8% of the difference in the post-test scores of the components of hope, will, purpose, competency, love, care and wisdom were related to the effect of mindfulness training. However, the significance level for the fidelity component (F=1.268, P>0.05) is greater than 0.05 which indicates that there is no significant difference between the post-test fidelity score between the experimental and control groups.

Also, regarding the values in table 2, the significance level for all the 5 components; uncontrollability and danger (F=43.994, P<0.05), positive beliefs about worry (F=47.669, P<0.05), cognitive self-consciousness (F=6.923, P<0.05), cognitive confidence (F=7.233, P<0.05) and the need to control thoughts (F=14.369, P<0.05) are less than 0.05. Therefore, at the 95% confidence level, the assumption of parity of the posttest scores in these five components, between the two experimental and control groups is not confirmed.
Considering the mean scores in Table 1, it is clear that mindfulness training has influenced these five components and decreased students' scores. And, according to the effect size values, it is concluded that 65.7%, 67.5%, 23.1%, 23.9% and 38.5% of the difference in the post-test scores of the components of uncontrollability and danger, positive beliefs about worry, cognitive self-consciousness, cognitive confidence, need to control thoughts were respectively Related to the effect of mindfulness training.

First hypothesis: The results of this study showed that mindfulness training is effective on the components of the ego strength (hope, will, purpose, competency, love, care and wisdom) except for fidelity in students. Along that same line Suyi et al., (2017), concluded that mindfulness training is effective in reducing stress and improving mindfulness and compassion but did not reduce mental exhaustion for the studying group. Also Hartmann et al. (2012) found that mindfulness-based intervention led to a long-term decline in psychosocial distress.

In addition, the findings of this study indicate that although the average of fidelity component of participants increased by mindfulness training, but this increase was not statistically significant. It should be noted that no similar research has been done on the effectiveness of mindfulness training on ego strength. Nevertheless, the results of researches close to the present study are not completely consistent with this result, including the results of Lykins (2009) which found that mindfulness is effective in short-term memory, long-term memory and self-regulation and Individuals with higher levels of mindfulness skills may experience less Ego depletion. Therefore, it is necessary to repeat the research to clarify this issue.

A possible explanation regarding the result of the fidelity component in the current research can be due to the complex and sensitive nature of this component. For example, in terms of Erikson, fidelity is the fundamental force that must be created during the adolescence years (12-18). The stage that must be faced with the identity crisis and since identity formation and its acceptance are difficult and full of anxiety, people may resist against the changing of this component and concerning the nature of fidelity, it seems that the mindfulness cannot significantly improve this component by itself. Therefore, mindfulness-based cognitive therapy seems to be more appropriate alternative. In explaining effects of mindfulness on ego strength, it can be said that based on the results of numerous studies, mindfulness

prevents, loss of gray matter of the brain and thickening of the anterior insula, sensory cortex and prefrontal cortex. Many studies have confirmed the involvement of prefrontal cortex in meditation (Siegel. 2009; translated by Keshmiri and Jalali, 2017).

Studies have shown that the most important areas involved during meditation are the prefrontal cortex, especially the right hemisphere, and the cingulate gyrus. Some other studies have confirmed the activity of the basal ganglia, thalamus, amygdala and hippocampus (Ahadian & Mirlou. 2013).

In addition, regular brain imaging studies have established the connection between the frontal-limbic system and the impulse control (Feist et al, 2013; translated by Seyed Mohammadi, 2016). Therefore, it can be inferred that mindfulness has a beneficial effect on the brain function and subsequently on ego.

In another explanation one can infer that: In some studies, it has been proven that mindfulness and meditation exercises help to increase self-awareness, self-acceptance, and maintenance of functional stability and the flexibility of individuals in new situations (Yaghoobi et al., 2015). Moreover, on the other hand, we know that people with high levels of Ego strength does not experience distress and emotional difficulty confronting the stressful and difficult conditions because of their flexible approach to life (Teimourpour et al., 2015). Therefore, it can be said that mindfulness training may be effective in improving the ego strength by increasing flexibility in individuals.

Another possible explanation regarding the effectiveness of mindfulness on Ego strengths is that the mindfulness can improve the ego strengths and resolve conflicts between the id and the superego by giving person the ability to be aware of what is happening to him at the present moment and to react appropriately in different situations.

Second hypothesis: The results of this study showed that mindfulness training is effective on the components of meta-cognitive beliefs (uncontrollability and danger, positive beliefs about worry, cognitive self-consciousness, cognitive confidence, need to control thoughts) in the students.

Along that same line, findings from Keng et al., (2017) indicates that the benefits of mindfulness as a strategy are not only effective in regulating the dysphoric mood but also in preserving cognitive resources in regulating the mood.

Sanger & Dorjee (2016) concluded in their research that mindfulness practice could be helpful in the development of metacognitive awareness and adolescent health, which potentially supports their self-sufficiency and academic achievement.

In explaining this finding, it can be said that metacognitive knowledge is obtained when a person becomes aware of his or her cognitive abilities and disabilities (Sadeghi & Mohtashami. 2010). In fact, the metacognitive strategy means the awareness of individuals from their thinking process and their ability to control this process (Kavosi et al., 2017).

In mindfulness, the individual becomes aware of his thinking and action at any moment, and thus, he learns the skills of identifying more effective strategies (Yaghoobi et al., 2015). Therefore, it seems that mindfulness improves metacognitive beliefs in such way.

People are trapped in emotional distress because their meta-cognition have led to a specific pattern of responding to the inner experiences and it causes a continuation of negative emotions and strengthening the negative beliefs and thus, it brings about mental problems (Kavosi et al., 2017).

Mindfulness helps individuals modulate negative behavior patterns and automatic thoughts and regulate positive health-related behaviors (Eini-Mirzavand. 2013). So, through the methods which is mentioned, mindfulness can make positive changes in people's metacognitive beliefs

4. Conclusion

According to the results, the mindfulness training was useful for decreasing harmful metacognitive beliefs and increasing ego strengths scores. Therefore, mindfulness training is effective on ego strengths and metacognitive beliefs of the students. Considering the importance of students' mental health and their high number, providing appropriate conditions for mindfulness training is suggested for universities.

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