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## Comparison of the effectiveness of working memory and mindfulness training on educational well-being, academic self-regulation and student's academic achievement motivation

Mehdi Bargamadi<sup>1</sup>, Hossein Mahdian<sup>2\*</sup>, Mohammad Yamini<sup>3</sup>

1. PhD student of Educational Psychology, Department of Psychology, Bojnourd Branch, Islamic Azad University, Bojnourd, Iran.
2. Assistant professor of Educational Psychology, Department of Psychology, Bojnourd Branch, Islamic Azad University, Bojnourd, Iran.
3. Assistant professor of Educational Psychology, Department of Psychology, Bojnourd Branch, Islamic Azad University, Bojnourd, Iran

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### Abstract

**purpose:** The purpose of this study was to compare the effectiveness of teaching Mindfulness and Working Memory on academic well-being, academic self-regulation and academic achievement motivation of second grade secondary school students.

**Methodology:** This research was a semi-experimental design with pre-test and post-test design with control group. A sample of 45 people who were lower in the three dependent variables were selected and randomly assigned to experimental and one control group (each group was 15). Within one week of pre-test run for each of the three groups, one of the experimental groups was subjected to an independent variable of mindfulness education (8 sessions one and a half hours, weekly one session), and the second group was subjected to working memory training (20 Half-hour session, three sessions per week) and the control group did not receive any training.

**Findings:** The results showed that mindfulness and working memory training increased academic well-being, self-regulation and academic achievement motivation. The results showed that there was a significant difference between the effectiveness of mindfulness and working memory training.

**Conclusion:** Training mindfulness was more effective in increasing academic well-being, academic self-regulation and academic achievement motivation.

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\* corresponding author: [hossein3284@gmail.com](mailto:hossein3284@gmail.com)

## 1. Introduction

Academic progress and related issues are one of the main concerns of the education system of the countries, because political, economic, cultural and social decision-makers all over the world consider the development of society as a development and improvement of the educational system, and this development and Progress is achieved through the academic achievement of students in the school and the classroom. One of the factors influencing the learning and development of motivational factors. Psychologists and educators have long been concerned with the impact of motivational factors on the learning and performance of students in different fields of study (Mohsenpour, Hejazi & Kiamanesh, 2005). The motivation for advancement is an attribute that can be enhanced by its education, and education, education, the family environment and the social environment play a key role in its emergence and development. In the case of students, the motive for advancement is of particular importance because people with motivation, mobility to complete an academic position, achieving a goal or a certain degree of merit in their work and profession find themselves (Pirkamali, Momeni Mahmoie & Pakdaman, 2013).

The next variable associated with education is self-regulation learning. The basic framework for self-regulation learning theory is based on how individuals organize their learning from the point of view of meta-cognitive, motivational, and behavioral beliefs. The importance of this structure in learning, transfer of learning, reducing the test anxiety of students and students, and the academic and professional achievement to such an extent that is considered by various theorists of psychology, including cognitive-behavioral, cognitive social constructivism and constructivist theorists (Daneshi, 2013). Adaptability and success in the educational environment requires that students develop and strengthen their cognitive, emotional, or behavioral development by developing self-regulation learning or similar processes in order to achieve their goals and not be anxious or worried. The most important strategies are self-regulation learning, cognitive strategies, meta-cognitive strategies and resource management (Pintrich, 1999). Lemos(1999) believes that self-regulation means the individual's capacity to adjust behavior, in accordance with the conditions and changes in the external and internal environment. He explains that self-regulation learning includes the ability of an individual to organize and manage his or her behaviors in order to achieve various learning goals. Pintrich (1999) also states that self-regulation is an active and organized process During this, learners choose their own learning goals and then tune, control and monitor their cognition, motivation and behavior (Jan & Sona, 2016).

On the other hand, in education, the good and constructive relationship of the individual with education and learning is of paramount importance, which is referred to as educational well-being. Educational well-being structure is composed of four dimensions related to the school. The first is the value of the school. The value of the school reflects the degree of honor and conscience that the student has for the school. Wigfield and Eccles (1992) defined the value of school as a perceived meaning of the process of going to school in general terms. Perceptual meaning involves student thinking of the attractiveness, importance, and usefulness of learning outcomes and going to school (Niemivirta, 2004). In a similar view, Niemivirta (2004) considers the value of school as an enormous amount of interest in reading lessons and eagerness to go to school. The second dimension, which is defined as the fatigue of meeting school expectations, the pessimistic and pessimistic attitude of the school, and the ineffectiveness of learning, are called exhaustion toward school (Salmela-Aro, Kiuru, Leskinen & Nurmi, 2009). In this sense, tiredness and emotional pessimism are prime predictors of inadequate academic education (Parker & Salmela-Aro, 2011). In another aspect, the factor of academic satisfaction is considered that implies personal satisfaction from the choice of path and educational option for achieving personal goals (Tuominen-Soini et al., 2012), and finally, in the fourth dimension, with the work of school or participation in school affairs, it is defined as a positive and centralized mindset that is characterized by energy, sustainability, and content (Salmela-Aro & Upadyaya, 2012). The present research

is an attempt to identify and explain the factors affecting the educational motivation of academic achievement, academic self-regulation and academic well-being.

Educational motivation structure refers to behaviors that are related to learning and progress in education. This structure is the internal force that leads the learner to a comprehensive assessment of his or her performance, taking into account the highest criteria for success and the pleasure that is successfully associated with performance (Pintrich & Schunk, 2002). In educational areas, student motivation and engagement play a significant role in their progress and interest in school and enjoyment (Schunk, Pintrich & Meece, 2008). Another variable that is important in learning and learning is self-regulation. Self-regulation means "the production and direction of thoughts, emotions and behaviors by the individual in order to achieve the goal" (Santrock, 2004). Green and Azevedo (2007) say that although there is a controversy over the theoretical definition of self-regulation or self-determination among scholars, all of them believe that self-regulating learners are active and, through monitoring and strategy, effectively organize their learning.

The concept of self-regulation is similar to self-control. Self-control or personal control refers to "the ability of an individual to control his or her behavior in the absence of reinforcement or punishment". A child who learns to act on the instructions of her teacher, and does this in the absence of a teacher, has reached self-control. In contrast to self-control, self-regulation is "a constant use of self-control skills in new situations". Self-regulation is the result of the interaction between the three components of the Bandura Mutual Determination Pattern, that is, personal characteristics, behavioral patterns and environmental factors (Snowman, McCown & Biehler, 2009). A review of research and theory shows that self-regulation is an important part of learning literature, and academic self-regulation is an important aspect of student's learning and academic performance in the classroom (Pintrich & DeGroot, 1990; Pintrich, 2000). Adaptation and success in school requires students to self-regulate their cognitive, emotional, and behavioral behaviors so that they can reach their goals (Schunk & Zimmerman, 1998).

Among other variables that are linked to the learning discussion in the motivation and self-regulation context is academic well-being. In recent years, well-being has been considered in academic situations. It means having positive feelings about learning environment and learning, feeling of control over academic tasks and interest in learning and self-efficacy (Konu & Rimpela, 2002). Students' well-being is considered as an important output variable in the educational process and is often studied as a component of educational quality. Different psychologists have presented various definitions of academic well-being. Korhonen, Linnenmaki, & Aunio (2014) argue that academic well-being is an important indicator in the educational process, and educational well-being structures include academic self-concept (mental representations of individual abilities in the field of study), perceived learning problems and academic burnout (fatigue, pessimism, and inefficiency). David (2010) defines academic well-being as a positive emotional state that results from the coordination between individual needs and expectations associated with the educational environment.

Tuominen-Soini et al. (2012) argue that welfare is defined in relation to the context of a school or educational institution, and its components include the lack of academic burnout, academic engagement, and academic values. Considering the importance of education, researchers have tried to study relevant factors and variables. One of the areas that has recently attracted the attention of educators and psychologists is the domain of consciousness. In the last decade, new interventional and educational approaches have been developed to cope with stress resources in cognitive approaches, in which the stress reduction mindset (MBSR) can be mentioned. In Kabat Zayn's view, this strategy is a one-dimensional, structured and focused approach that is successfully applied in educational environments. This method implies special attention in the current time and is free of prejudice and judgment, which is created through regular practice of mindfulness and emphasizes awareness of the contents of the mind. In this approach, the individual becomes aware of mental attitudes at any given moment and identifies the skills of more useful methods (Kabat-Zinn, 1990). The approach of cognitive psychologists explains that Much of the students' academic stress derives

from their concerns about the future, and so being in the present and learning about the momentary processes of the mind can be a good alternative for these students. In this regard, Austin (2001) states that mind-alert techniques help individuals to shift their observational state to consciousness, and this can be a useful cognitive-behavioral coping strategy (quoted by Evans et al., 2008).

Memory is one of the cognitive processes that, on the other hand, is related to perception and attention, and on the other hand, with problem solving and thinking (Karami Noori, 2004). Virtually all of our everyday activities, such as perception or understanding, reading, speaking, and even social behaviors, are learned and stored in our minds about our environment. In fact, without ever having the memory and the skills associated with it, life collapsed with increasing speed. Memory is the basis of all thoughts, ideas and the basis of what we have learned (Saed, 2010). Meanwhile, the role of working memory is very important. Workload refers to systems or systems that are necessary and necessary to keep things in mind when dealing with complex tasks such as reasoning, understanding, and learning (Alloway, 2007). In fact, workload is part of a cognitive system that provides the ability to hold and manipulate information in the process of guiding and executing complex cognitive tasks. Workload can be described as a multi-authoring system that is implemented through a central operating entity component that includes processes. Which provides attention control over the function of other components of work memory as well as other cognitive abilities (Baddeley, 2000).

## 2. Methodology

This research was a semi-experimental design with pre-test and post-test design with control group. The group was selected as the control group and the other two groups were selected as the experimental group. A test group was subjected to the training of work memory and the other group was exposed to the independent variable of mind awareness training. The control group did not receive any training. After obtaining the necessary permissions from the Islamic Azad University of Bojnourd, as well as the education of Sabzevar city, two boys' high schools were selected randomly from high schools in Sabzevar city and all students of these two high schools were selected as the sample, then three questionnaires Educational well-being, academic self-regulation and academic achievement motivation were implemented. At the next stage, the questionnaires were scanned and 45 questionnaires were collected from three variables: educational well-being, self-governing educational level and motivation for progress. Students had a lower grade and wished to be partners at educational sessions, they were selected as the sample and randomly assigned to two groups of experimental and one control group (each group was 15). Within one week of pre-test run for each of the three groups, one of the experimental groups was subjected to an independent variable of mindfulness training (8 sessions one and a half hours, weekly one session) and the second group was exposed to active memory training (20 Half-hour session, three sessions per week) and the control group did not receive any training. After teaching the mind-consciousness and active memory of the post-test, one week was performed for each of the three groups and all three groups filled out the educational well-being questionnaires, academic self-discipline and academic achievement motivation. After a month after the implementation of the post-test, the follow-up phase was completed and finally the data were analyzed. Below the steps and sessions related to Active Mindfulness and Memory are detailed:

The statistical population of this study includes all second-grade secondary school students in Sabzevar city in the academic year of 2017-2018, whose number is about 2340 people. Considering that the sample size in the research should be at least 15 for each group (Delavar, 2006), 45 individuals were selected as samples and randomly assigned to two groups of test and one control group. A cluster sampling method was used to select the sample. In this way, all secondary school high schools in Sabzevar, which have 11 high schools, were selected randomly by two high schools, and in the first step all students of these two high schools The sample was selected, then three questionnaires of educational well-being, self-regulation and academic achievement motivation were implemented among the students. In the next stage, the questionnaires were scored and 45

questionnaires were collected from the three well-being variables Academic achievement, academic self-education, and academic achievement motivation

The following three questionnaires were used to collect data: a) Tuominen-Soini & Associates (2012): The AWBQ Educational Well-being Questionnaire was designed by Tuominen-Soini et al. (2012). The questionnaire has 4 subsamples and 31 questions: The first dimension is the value of the school. The value of the school reflects the degree of honor and conscience that the student has for the school. Wigfield & Eccles (1992) defined the value of school as a perceived meaning of the process of going to school in general terms. Perceptual meaning involves student thinking of the attractiveness, importance, and usefulness of learning outcomes and going to school (Niemi-virta, 2004). In a similar view, Niemi-virta (2004) considers the value of school as an enormous amount of interest in reading lessons and eagerness to go to school. The second dimension, which is defined as the fatigue of meeting school expectations, the pessimistic attitude of the school and the lack of ability to learn, is called exhaustion toward school (Salmela-Aro et al, 2009). In this sense, tiredness and emotional pessimism are prerequisites for inadequate academic education (Parker & Salmela-Aro, 2011). In another aspect, the factor of academic satisfaction is considered that implies personal satisfaction from the choice of path and educational option for achieving personal goals (Tuominen-Soini et al., 2012), and finally, in the fourth dimension, with the work of school or participation in school affairs, it is defined as a positive and centralized mindset that is associated with the characteristics of energy, sustainability, and content (Salmela-Aro & Upadyaya, 2012).

Tuominen-Soini (2012) examined the validity of this scale through a confirmatory factor analysis and confirmed its quadruple structures. The researchers calculated the Cronbach's alpha value for the four dimensions of school value, school boredom, academic satisfaction, and income with school work of 0.64, 0.77, 0.91, and 0.94, respectively. This questionnaire was reviewed in Iran and in the study of Moradi et al. (2016). In order to determine the factor validity of this questionnaire, they used exploratory and confirmatory analysis methods and in order to examine the internal consistency of Cronbach's alpha coefficient. The results of factor analysis showed that this questionnaire consists of four factors. Confirmatory factor analysis confirmed the existence of four factors in this questionnaire. The Cronbach's alpha coefficient of the whole questionnaire was 0.87, the school's factor was 0.88, the burnout factor was 0.73, the academic satisfaction factor was 0.73, and the income factor with the school's work was 0.75.

The SRQ-A self-governing questionnaire is compiled by Kanle and Royan (1987). The questionnaire consists of 31 quadrants and four quarters including external regulation, intraocular adjustment, specified regulation and intrinsic motivation. The score for the questionnaire is 4-point Likert scale, which is considered as "not at all correct", "not very correct", "fairly correct" and "very correct", respectively, for points 1, 2, 3, and 4, respectively. To be The minimum possible score is 31 and maximum 124. Score Between 31 and 62: Self-Regulating is Low. Score 62 to 78: Self-discipline is a moderate level. Score above 78: Self-discipline is high. Content validity of the questionnaire was calculated through factor analysis. Reliability of the questionnaire with Cronbach's alpha was higher than 0.85.

Abd khodai's Motivation Inventory Questionnaire (2008) is based on eight motivational theories in education (progression, expectation-value, goal-oriented, empowerment, self-equity, documentary self-efficacy and internal-external motivation). This questionnaire has 53 questions and is validated and standardized on a sample of 1122 male students working at high school in the high schools of the seven regions of Mashhad. The subscales of this questionnaire include expectation-value, goal-oriented, motivation, self-equity, documentary self-efficacy and internal-external motivation. The score for the questionnaire is a 4-point Likert scale, which is considered as "very agreeable", "agree", "disagree" and "very disagree", respectively, with scores 1, 2, 3, and 4, respectively. The minimum possible score is 53 and a maximum of 212. Score 53 to 106: The motivation is low. Score between 106 and 132: Moderate academic motivation. Score above 132: High school motivation. In research of Nikbakht, Abd Khodaei and Hassan Abadi (2013), the reliability of this questionnaire was 0.89 with Cronbach's alpha and 0.98. Content validity was confirmed

by scrutinizing the scale phrases by several psychologists and psychologists. The validity of the criterion was 0.33.

In this study, an interventional training program was used to study the working memory of the Institute of Cognitive-Behavioral Sciences in Sina. This software was developed under the supervision of professors of psychology of Ferdowsi University of Mashhad in 1389 and based on existing theories by modeling RoboMoMo software (Kleinberg, Fernell, Olesen, Johnson, Gustafsson, Dahlström, 2005) and adaptation to Iranian culture. Content validity It is approved. This software provides exercises in three sections of audio, visual and spatial memory (fixing) separately using numbers, letters and shapes to the user. The difficulty level of each exercise is categorized from 1 to 9, and the user can select the difficult degree at the beginning of each exercise, but after the start of the exercise, the degree of difficulty increases automatically and the maximum memory capacity can be used for Exercise more and increase memory levels. On the left side of the page, the scorecard provides the scorecard as a feedback exercise for the user, and for each attempt, 20 points are added to the scores and for each attempt, an error of 10 points is deducted from him and, if taken 100 points, difficulty level of practice, 1 degree.

### 3. Findings

**Table 1.** Descriptive indexes of educational well-being in experimental and control groups in three stages

Variable	group	pre		post		follow	
		mean	SD	mean	SD	mean	SD
School value	Learning	40/47	6/53	49/87	4/17	53/60	2/97
	Working	37/27	8/82	38/60	5/08	44/73	3/10
	Control	40/20	6/66	24/60	3/64	23/80	2/24
Burnout towards school	Learning	44/73	8/46	55/07	5/70	56/20	5/01
	Working	44/07	7/38	47/73	6/02	46/87	5/84
	Control	45/40	5/11	30/20	5/66	23/07	3/47
Academic Satisfaction	Learning	12/73	1/67	16/47	1/51	15/40	2/32
	Working	11/07	2/28	13/53	1/60	13/27	1/33
	Control	12/00	2/45	10/87	1/92	9/73	1/22
school	Learning	34/20	9/97	48/53	5/10	43/80	5/36
	Working	31/87	7/47	31/13	4/64	37/47	6/05
	Control	35/13	8/01	25/80	3/26	21/53	3/44
Educational well-being	Learning	127/53	19/97	169/93	9/05	169/00	8/10
	Working	122/93	20/15	131/00	13/04	142/33	12/12
	Control	131/93	13/90	91/47	8/73	78/13	6/13

- SD, PRE, post, fol, stand for Standard deviation, pretest, post, follow up respectively

Comparison of the meanings in Table 1 indicates that in the post-test and follow up, the mean scores of the experimental groups are higher than the control group, and the Mindfulness training group has a higher mean than the working memory training group.

**Table 2.** Descriptive indexes of self-regulatory in experimental and control groups in three stages

Variable	group	pre		post		Follow	
		mean	SD	mean	mean	SD	mean
Exterior adjustment	Learning	18/47	4/70	28/33	2/61	28/07	2/25
	Working	19/40	3/78	23/80	2/48	23/47	3/39
	Control	17/53	5/34	14/67	1/95	15/20	2/62
academic self-regulation	Learning	20/40	5/28	30/13	2/47	29/80	6/04
	Working	19/87	3/93	25/20	3/89	24/47	2/60
	Control	21/20	4/46	15/53	3/02	16/73	3/70
Specified setting	Learning	17/53	3/91	24/07	1/67	24/00	2/05
	Working	16/40	3/16	20/40	2/92	22/07	2/17

Intrinsic motivation	Control	17/73	3/08	13/33	2/41	14/67	1/75
	Learning	14/87	4/82	24/73	1/10	24/67	2/19
	Working	15/13	5/33	21/60	2/29	20/87	1/76
Self-discipline	Control	17/67	5/21	13/53	3/31	12/87	2/64
	Learning	69/73	13/84	107/27	3/73	106/53	1/68
	Working	70/93	11/23	91/00	6/62	90/87	5/05
	Control	73/47	9/81	57/07	7/19	59/47	5/77

Comparison of the meanings in Table 2 indicates that in the post-test and follow-up, the mean scores of the experimental groups are higher than the control group, and the Mindfulness training group has a higher mean than the working memory training group.

**Table 3.** Descriptive Indicators of Educational Achievement Motivation in experimental and Control Groups in Three Stages

Variable	group	pre		post		follow	
		mean	SD	mean	mean	SD	mean
academic achievement motivation	Learning	137/60	15/84	176/47	9/43	175/20	11/96
	Working	141/60	17/10	146/13	11/05	146/00	8/19
	Control	149/13	15/27	125/57	6/78	126/47	5/91

The comparison of the meanings in Table 3 shows that the post-test and follow-up of the mean scores of the academic achievement motivation of the experimental groups from the control group is higher and the Mindfulness training group has a higher mean level than the working memory training group. The results of the Shapiro Wilk test to assess the assumption of normal distribution in the educational well-being dimensions showed that the distribution of all variables by groups is normal. The results of the Levine test to investigate the equality of variances among groups in the educational well-being dimensions showed that the homogeneity of variances in all variables was determined by the stages of the test. The results of multivariate testing of intergroup differences in educational well-being also showed that the linear composition of the four dimensions of educational well-being is significant in terms of test, group membership, and functional effect, and there is a difference between the groups and the stages of the test. The effect size of the sources of change in creating the differences is 57.7, 0.67 and 0.79 respectively. The test power is also at the upper level. This means that the sample size and the test used to make the differences are sufficient.

**Table 4.** Analysis of variance of repeated measures factors in educational well-being

Variables	Source of change	SS	df	MS	F	P	Partial
School value *	Test	205/88	1/72	119/76	5/02	0/01	0/11
	Group	7717/04	2/00	3858/52	95/07	0/0001	0/82
	Test × Group membership	4208/56	3/74	1124/77	51/32	0/0001	0/71
Burnout towards school	Test	189/44	2/00	94/72	4/27	0/02	0/09
	Group	8645/93	2/00	4322/96	67/93	0/0001	0/76
	Test × Group membership	5021/99	4/00	1255/50	56/58	0/0001	0/73
Academic Satisfaction	Test	64/19	2/00	32/10	10/61	0/0001	0/20
	Group	361/79	2/00	180/90	41/67	0/0001	0/67
	Test × Group membership	140/25	4/00	35/06	11/59	0/0001	0/36
challenge with school	Test	46/46	2/00	23/23	0/87	0/42	0/02
	Group	4908/90	2/00	2454/45	37/39	0/0001	0/64
	Test × Group membership	3365/01	4/00	841/25	31/46	0/0001	0/60

The results of the table above show that in the value of the school, the effect of the test, group membership and interaction is significant ( $P \leq 0.01$ ). The effect sizes are 0.11, 0.82 and 0.71 respectively. The results of school burnout and academic satisfaction also show that differences in terms of test, group membership and interactive effects are significant ( $P < 0.05$ ). The effect sizes in burnout versus the school according to the sources of change are 0.09, 0.76 and 0.73 respectively. These coefficients for academic satisfaction are 20/0, 67/0 and 36/0 respectively. Differences are not significant in the subsistence level with the school ( $P \leq 0.05$ )

but according to group membership and interactive effects ( $P < 0.01$ ). The effect sizes are 0.02, 0.64 and 0.06 respectively. Other results indicate that the test power in all models is in the medium to high level.

**Table 5.** Ben-Feroni test results to compare the mean of the groups in the educational well-being dimensions

Variables	Mindfulness-working memory			Mindfulness-control			working memory -control		
	Mean differences	Normal error	P	Mean differences	Normal error	P	Mean differences	Normal error	P
School	7/79	1/34	0/0001	18/44	1/34	0/0001	10/67	1/34	0/0001
Burnout	5/78	1/68	0/004	19/11	1/68	0/0001	13/33	1/68	0/0001
Academic challenge	2/24	0/44	0/0001	4/00	0/44	0/0001	1/76	0/44	0/001
	8/69	1/71	0/0001	14/69	1/71	0/0001	6/00	1/71	0/0001

The results in Table 5 show that the difference between groups is significant in all variables ( $P < 0.01$ ). The comparison of mean differences indicates that in all variables, the Mindfulness training group has the highest mean and the control group has the lowest mean. Overall, the results showed that the difference between groups in three stages of the test was significant in terms of educational well-being. Intergroup comparisons also showed that there is a significant difference between mental health education and working memory education in all aspects of educational well-being and the subjects in the mind-awareness training group have a higher mean (Table 4-12). The results of Table 4 also show that most of the averages have little or no follow-up from the post-test. The results of benferroni test for the comparison of mean during the test steps also showed that the differences are not unpredictable ( $P \leq 0.05$ ). Based on what was discussed, the first hypothesis of the present study is confirmed. This means that there is a significant difference between the effectiveness of mindfulness training and working memory training, and education of mind awareness in increasing the educational well-being and its dimensions is more effective. The effectiveness of these methods from post-test has not been followed up by significant changes.

**Table 6.** Analysis of variance of repeated measures factors in self-regulatory dimensions of educational part

Variables	Source of change	SS	df	MS	F	P	Partial
Exterior adjustment	Test	430/68	2/00	215/34	31/21	0/0001	0/43
	Group membership	1988/10	2/00	994/05	64/28	0/0001	0/75
	Test $\times$ Group membership	767/01	4/00	191/75	27/79	0/0001	0/57
Internal Configuration *	Test	298/77	1/89	157/72	20/14	0/0001	0/32
	Group membership	1827/66	2/00	913/83	37/21	0/0001	0/64
	Test $\times$ Group membership	1135/50	3/79	299/71	38/27	0/0001	0/65
Specified setting	Test	214/04	2/00	107/02	18/44	0/0001	0/31
	Group membership	1020/84	2/00	510/42	51/69	0/0001	0/71
	Test $\times$ Group membership	615/64	4/00	153/91	26/51	0/0001	0/56
Intrinsic motivation	Test	443/66	1/45	305/16	21/25	0/0001	0/34
	Group membership	1059/39	2/00	529/70	34/17	0/0001	0/62
	Test $\times$ Group membership	1102/30	2/91	379/09	26/40	0/0001	0/56

The results of the above table show that in the external setting, the effect of the test, group membership and interaction is significant ( $P \leq 0.01$ ). The effect sizes are 0.43, 0.75 and 0.57, respectively. The results of intraocular adjustment also showed significant effects of test, group membership and interaction ( $P \leq 0.01$ ) and effects of 0.33, 0.64 and 0.65. The results of the specified setting also indicate that the differences are significant in terms of test, group membership, and interactive effects ( $P \leq 0.01$ ). The effect sizes in this variable according to the sources of change are respectively 0.31, 0.71 and 0.56 respectively. These coefficients for intrinsic motivation are 34/0, 62/0 and 56/0 respectively. Differences in terms of test, group membership, and interactive effects in this subscale are also significant ( $P < 0.01$ ). Other results indicate that test power is high in all models.



**Table 7.** Bonferroni test results to compare the mean of the groups in the self-governing academic dimension

Variables	Mindfulness-working memory			Mindfulness-control			working memory -control		
	Mean differences	Normal error	P	Mean differences	Normal error	P	Mean differences	Normal error	P
External adjustment	2/73	0/83	0/01	9/16	0/83	0/001	6/42	0/83	0/0001
internal setting	3/60	1/05	0/004	8/96	1/05	0/001	5/36	1/05	0/0001
self-regulation	2/24	0/66	0/01	6/62	0/66	0/001	4/38	0/66	0/001
Intrinsic motivation	2/22	0/83	0/03	6/73	0/83	0/001	4/51	0/83	0/0001

The results presented in Table 7 show that there are significant differences between groups in all variables ( $P \leq 0.05$ ). The comparison of mean differences indicates that in all variables, the Mindfulness training group has the highest mean and the control group has the lowest mean. In sum, the results showed that there was a significant difference between groups in three stages of study in self-governing educational dimensions. Intergroup comparisons also showed that the difference between the Mentally Consciousness Education and Working Memory Training in all aspects of self-regulatory education was significant and the subjects in the Mentally Consciousness Education Group had a higher mean. Also, the results showed that most of the averages were from follow-up to follow-up Little or no change. The results of bonferroni test for the comparison of mean during the test steps also showed that the differences are not unpredictable ( $P \leq 0.05$ ). Based on what was discussed, the second hypothesis of the present study is confirmed. This means that there is a significant difference between the effectiveness of mindfulness training and working memory training, and education of mind awareness is more effective in increasing academic self-regulation and its dimensions. The effectiveness of these methods from post-test has not been followed up by significant changes.

#### 4. Conclusion

In explaining the results of the statement that the mindfulness of consciousness about self-regulation is comparable to the teaching of working memory, it can be said that mindfulness can simultaneously affect all the components of self-regulation, but working memory training cannot simultaneously aim at all these dimensions. Zimmerman (1998) also considers 6 elements for self-regulating learners based on the theory of social cognition. The first element is self-regulating motivation. Motivation is a process in which a person tries to achieve his goal. In other words, the element of self-regulating motivation indicates the reason for doing the job. Students' knowledge of self-regulating strategies in regulating motivation helps them find the motive in situations where they are not interested in doing things (Dembo & Eaton, 2004).

The second element of self-regulation refers to learning methods. These methods include mental imagery, organization and spreading of the subject. The third element of self-regulating learning is time management. Self-regulated students use their time to read usefully. The fourth element is the self-regulating control of the location, which refers to how the physical environment is selected and its setting. The fifth element of self-regulation is related to the control of the social environment. That is, self-regulating learners know when and how to get help from others. The last element of the self-regulation process is obvious performance or behavior. This element indicates that self-regulating learners have the ability to modify their behavior and responses based on received feedbacks from others and can adapt themselves to the new conditions (Kadivar, 2009). Finally, we must say that the mind of consciousness It affects both cognitive and emotional components, but working memory only emphasizes the improvement of specific components, and in general, mind awareness is much wider.

In explaining the result of why the effectiveness of mind-awareness of learning memory has been greater in the motivation of academic achievement, it can be said that academic success is one of the most important factors in academic motivation and the teaching of working memory only on the domain of memory and

recognition that only One of the factors influencing educational progress and achievement is influencing. But mind awareness training targets more areas to increase academic motivation. Mentality education seems to increase the level of arousal in the individual. Also, it is believed that higher levels of arousal lead to higher levels of motivation, which, in turn, leads to higher levels of academic achievement. For a student to function properly, a certain level of arousal is required; however, too little or too much arousal can lead to inappropriate performance of the person. The level of arousal is necessary for the person's effective performance along with the complexity of the task (Biabangard, 2009)

By using the techniques of mind-consciousness, observing people without judgment and criticism learn with their compassion toward themselves and others in action; they learn that by observing the intense and sad thoughts and emotions, they develop a pattern of negative thoughts before they are drawn into a defective cycle. In this way, in the long run, mindfulness brings about a lot of changes in the mood and level of happiness and health of individuals. Scientific research has shown that mindfulness not only prevents depression but also has positive effects on mind patterns in terms of anxiety, depression, irritability and anger (Williams & Penman, 2012). Zeghibi Ghanad, Alipour, Shahani Villages and Haji Yakhchali, (2017) concluded that mind awareness plays an important role in the prediction of subjective wandering through the mechanisms of self-regulation, creativity and active memory. Zarei, Saadi Pour and Delavar (2016) concluded that mindfulness and helping have a different effect on academic stress and that the mind-awareness method is more effective in reducing the stress of education. Sattari and Kafashzadeh (2015) In a research entitled "The Effect of Mindfulness on the Test Anxiety" in the middle school students in Saveh, students concluded that teaching mind-awareness is effective in reducing the test anxiety. Also, training this method is effective on the emotional and cognitive components of anxiety.

Also in explaining the result we can say that one of the issues that arises in self-control is the awareness of the events and events that occur around the person. Teasdale, Segal, Williams (1995) pointed out that the teaching of the presence of the mind makes them aware of all emotional events and cognition, as they occur. Particularly in those who may experience early signs of relapse of depression, hence the training of mental presence can enhance the initial recognition of the symptoms of a problem, and the use of these skills is likely to be a problem in preventing the problem. Linehan(1993) argued that observation without judgment allows for the possibility of recognizing the consequences of one's behavior (such as anger the boss with his repeated delays). This knowledge will have an effective behavioral change. Linehan(1993), which particularly emphasizes impulsivity and maladaptive behaviors about having a "mental presence" in the present, states that this skill creates attention control and is a useful skill for those who complete the important tasks due to their senses. Perth is a problem caused by worries, memories or negative people. Especially in the field of study and self-regulation, the student needs to know the thoughts, attitudes, behaviors and emotions related to their education and full awareness of them, and certainly awareness of these issues will help the individual self-regulation. One of the issues It is important to pay attention to time in the field of education especially for self-regulation. The foundation of mind awareness is based on the present, and it seems that students who are not currently paying attention to their facilities are not very successful. They may be constantly in the future or past, and they may become overwhelmed with tasks. In a research entitled The Effectiveness of Self-Regulatory Education, Mindfulness, and Time Management on Reducing Deaths and Increasing the Academic Achievement of High School Students, Vahedi, Fathi Azar, Adib and Ghareh Aghaji (2018) showed that the implementation of educational intervention on reducing procrastination and increased academic achievement. Chiesa, Calati & Serretti (2011) concluded that short-term instruction in mindfulness could improve sustainability in selective and executive attention, and also altered attention in people who had no experience of meditation. Also, long-term instruction in mindfulness can create further improvements in selective and executive attention. As a result, the training of mindfulness can bring about beneficial changes in cognitive abilities. In the other explanation it can be said that those who are in higher working memory perform better

in the process of tracking and selecting the target of those with lower memory. In a research entitled The role of working memory on the progression of goal tracking, Avery, Smille & Fockert (2013) found that people who have better working memory typically use a dominant approach, and those with a worse working memory than The goal approach is used. It can be said that those who use the dominant approach in target selection are gradually seeking to pursue their goal, but those who use a functional approach usually use short-term strategies. In general, working memory plays a very important role in improving target tracking, and those with a higher workload are more successful in tracking goals.

## References

- Alloway T C. (2007). Working memory, reading and mathematical skills in children with developmental coordination disorder. *Experimental child Psychology*. 96(2):20-36.
- Avery E, Smille D L, Fockert J W. (2013). The role of working memory in achievement goal pursuit. *Act Psychology*. 144(2):361-372.
- Baddeley A. (2000). The episodic buffer: a new component of working memory? *Trends in Cognitive Sciences*. 11(3):417-423.
- Biabangard I. (2009). *Educational Psychology*. Tehran: Virayesh publication. Third edition.
- Chiesa A, Calati R, Serretti A. (2011). Does mindfulness training improve cognitive abilities? A systemic review of neuropsychological findings. *Clinical Psychology Review*. 31(1):449-464.
- Daneshi F. (2013). The relationship between self-regulated learning strategies and achievement motivation of high school students with their academic achievement in mathematics. master's thesis Mathematical Education, Science and Research Branch of Islamic Azad University [Persian].
- David A P. (2010). Examining the relationship of personality and burnout in college students: The role of academic motivation. *Educational Measurement and Evaluation Review*. 1(3):90-104.
- Delavar A. (2006). *Theoretical and Practical Principles of Research in the Humanities and Social Sciences*. Tehran: Roshd Publications.
- Dembo M, Eaton M. (2004). Self- regulation of academic learning in middle level schools. *The elementary school journal*. 100 (15):420- 437.
- Evans S, Fernando S, Findler M, Stowell C, Smart C, Haglin D. (2008). Mindfulness-based cognitive therapy for generalize anxiety disorder. *Journal of anxiety disorders*. 22(3):716-721.
- Gholamali Lavasani M, Khazri Azar H, Amani J. (2011). Gender Differences in Self-efficacy, Goals, Assignment Value, Cognitive Involvement and Mathematical Progress. *Journal of Women's Studies*. 9(1): 7-32.
- Green A J, Azevedo R. (2007). A theoretical review of Winne and Hadwin's model of self-regulation learning: New perspective and direction. *Review of Educational Research*. 77(3):334-372.
- Jan Kalenda S V. (2016). Self-regulated Learning in Students of Helping profession. *Procedia- social and Behavioral Science*. 217(4) :282-292.
- Kabat-Zinn J. (1990). *Full catastrophe living: How to cope with stress, pain and illness using mindfulness meditation*. New York: Bantam Dell.
- Karami Noori R. (2004). *The Psychology of Memory and Learning with a Cognitive Approach*. Tehran: Samt Publications.
- Konu A, Rimpela M. (2002). Well-being in schools: a conceptual model. *Health promotion International*. 17(1): 79-87.
- Korhonen J, Linnenmaki K, Aunio P. (2014). Learning difficulties, academic well-being and educational dropout: A person-centered approach. *Hearing and Individual Differences*. 31(1):1-10.
- Lemos S L. (1999). Student's goals and self-regulation in the classroom, *International Journal of Educational Research*. 31:471-485.
- Linehan M M. (1993). *Cognitive behavioral treatment of borderline personality disorder*. New York: Guilford Press.
- Mohsenpour M, Hejazi E, Kiamanesh A. (2005). The Role of Self-efficacy, Goals, Learning Strategies and Sustainability in Academic Achievement in Third Year High School Students in Mathematics in Tehran. MA thesis, Tehran University, Faculty of Education and Psychology.
- Moradi M, Soleimani Khashab A A, Shahabzadeh S, Sabaghian H, Dehgani Zade M H. (2016). Factor structure test and internal consistency assessment of Iranian version of academic well-being questionnaire. *Journal of Training Measurement*. 7 (26):123-148.
- Niemivirta M. (2004). Stability and change in middle school students' school value: An application of latent growth curve modeling. In A. Efklides, G. Kiosseoglou, & Y. Theodorakis (Eds.), *Qualitative and quantitative research in psychology*. 2(3):301-314.
- Nikbakht E, Abd Khodaei S, Hassan Abadi H. (2013). The Effectiveness of Group Reality Therapy on Increasing Academic Motivation and Reducing Academic Delay. *Research in Clinical Psychology and Counseling*. 3 (2):81-94.

- Parker P D, Salmela-Aro K. (2011). Developmental processes in school burnout: A comparison of major developmental models. *Learning and Individual Differences*, 21(4):244–248.
- Pintrich P R, DeGroot E V. (1990). Motivational and self-regulated components of classroom academic achievement. *Journal of Educational Psychology*. 82(3):33-40.
- Pintrich P R. (2000). The Role of Goal Orientation in Self-Regulated Learning. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of Self-Regulation: Theory, Research, and Applications* (pp. 451-502). San Diego, CA: Academic Press.
- Pirkamali M A, Momeni Mahmoie H, Pakdaman M. (2013). Review of the relationship between self-efficacy of science teachers on motivation, attitude and academic achievement of fifth grade elementary school students. *Research in Curriculum Planning*. 10 (37):122-134.
- Saed O. (2010). *The psychological and biological foundations of memory*. Tehran: Arjomand Publication.
- Salmela-Aro K, Kiuru N, Leskinen E, Nurmi J E. (2009). School burnout inventory (SBI): Reliability and validity. *European Journal of Psychological Assessment*. 25(4):48–57.
- Salmela-Aro k U. (2012). The schoolwork engagement inventory: Energy, dedication and absorption (EDA). *European journal of psychological Assessment*. 28(4): 60-67.
- Sattari Y, Kafashzadeh M. (2015). The Effect of Mindfulness Method on Test Anxiety of Middle School Girl Students in Saveh. *Journal of instruction and Evaluation*. 31(4):25-36.
- Schunk D H, Zimmerman B J. (1998). *Self-regulated learning: From teaching to self-reflective practice*. The Guilford Press: New York.
- Schunk D H, Pintrich P R, Meece J L. (2008). *Motivation in education: Theory ,research ,and applications*. Englewood Cliffs , NJ: Merrill.
- Seif A A. (2007). *Educational Psychology (Learning and Teaching Psychology)*. Thirteenth Edition. Tehran: Agah Publications.
- Snowman J, McCown R, Biehler R. (2009). *Psychology applied to teaching (12th ed.)*. Wadsworth, International Edition.
- Teasdale J D, Segal Z V, Williams J G. (1995). How does cognitive therapy relapse and why should attentional control (mindfulness) training help? *Behavior Research and Therapy*. 33(3):25-39.
- Tuominen-Soini H, Salmela-Aro K, Niemivirta M. (2012). Achievement goal orientations and academic well-being across the transition to upper secondary education. *Learning and Individual Differences*. 22(3):290-305.
- Vahedi Sh, Fathi Azar E, Adib Y, Ghareh Aghaji S. (2018). A study on the effectiveness of self-regulation, mindfulness and time management training program on reducing procrastination and increasing academic achievement in high school students. *Journal of Educational Psychology Studies*. 30(2):241-275.
- Wigfield A, Eccles J. (1992). The development Task values: a theoretical analysis. *Developmental Review*. 12: 265-310.
- Williams M, Penman D. (2012). *Mindfulness: A practical guide to finding peace in a frantic world*. Piatkus. co. uk.
- Zarei P, Saadi Pour E, Delavar A. (2016). Comparison of the Effectiveness of Mindfulness Training and Help Seeking Method on Reduce Student's Academic Stress. *Journal of Psychology (Tabriz University)*. 11(43):105-124.
- Zeghibi Ghanad S, Alipour S, Shahani yeylagh M, Haji Yakhchali A R. (2017). The causal relationship of mindfulness and mind wandering with mediating strategical engagement regulation, anxiety, depression and working memory. *Journal of Cognitive Psychology*. 5(3):46-34.
- Zimmerman B J. (1998). *Self-regulated learning: From teaching to self-reflective practice*. 9 1-19). New York: Guilford press.