

THE EFFECTS OF THE MINDFULNESS PROGRAM ON 12TH-GRADE HIGH SCHOOL STUDENTS' PERCEIVED STRESS, MINDFULNESS, AND SELF-EFFICACY LEVELS

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ABSTRACT

This experimental study aimed to investigate the effects of the Mindfulness Program (MP) on high school students' perceived stress, mindfulness, and self-efficacy levels. The study was conducted with 14 high school students attending Uskudar Municipality Youth Academy between 2018 and 2019. In the study, the Perceived Stress Scale (PSS), the Mindfulness Attention Awareness Scale (MAAS), and the General Self-Efficacy Scale (GSES) were used. The experimental group (n = 7) received a 6-session psychoeducation group program (MP), while the control group (n = 7) received no psychoeducation. A two-way (two-factor) repeated-measures ANOVA was performed for data analysis. The findings revealed that the **MP was significantly effective in reducing high school students' perceived stress levels and increasing their mindfulness and self-efficacy levels.** The findings of the study were reviewed in light of the literature, allowing for certain recommendations to be put forth for counselors and researchers in the field.

Keywords: Mindfulness, Perceived Stress, Self-Efficacy, High School Students

INTRODUCTION

Stress, considered an inevitable condition in modern life, arises when an individual is overloaded by the requirements of their environment to an extent that exceeds their capacity (Cohen & Manuck 1995). Adolescents are particularly prone to many physical, cognitive, and psychosocial changes that can be a source of stress (Neff & McGehee, 2010). During this period, it is important to successfully complete basic developmental tasks, such as developing positive relationships with friends and deciding upon appropriate professions (Cook, Herman, Phillips, et al., 2002).

However, adolescents have difficulty in self-regulation and adaptation to their environment, which leads them to show risky behaviors and psychopathologies due to their limited coping capacities (Byrne, Davenport, & Mazanov, 2007). Many studies have shown that adolescents experience negative outcomes of stress, such as test anxiety, anger, and behavioral disorders (Feindler, 1995; Prins & Hanewald, 1999). In Turkey, especially 12th-grade high school students experience the heaviest amount of stress in the run-up to the university exam (Hevedanlı & Ekici, 2011). Various studies have claimed that 12th-grade high school students experience more stress, which prevents them from realizing their potential, causing them even to buckle under the strain and seek to give up their educational responsibilities from time to time. The result is increased difficulty in attaining future goals and

dissonance in the school environment (Hevedanli & Ekici, 2011; Sahin et al., 2006). The adolescent's ability to cope with these stressors is clarified by the concept of self-efficacy.

Bandura (1989) defined self-efficacy as the product of an individual's belief in their own abilities to an extent which moderates the effects of stress. Self-efficacy has an important role in developing internal and cognitive problem-solving strategies (Cicognani, 2011), and it helps individuals to regulate themselves. In this sense, self-efficacy, which involves the adolescent's self-awareness, is explained by self-regulation (Greason & Cashwell, 2009). Self-regulation is the capacity to manage automatic desires and trends, even if the goals are long-term (Nakanishi et al., 2019). Self-regulation is the ability to **consciously control one's** own thoughts, behaviors, and feelings, and it can be developed through attention exercises (Shapiro & Schwartz, 2000). Directing attention to physical, emotional, and mental experiences is the feature of mindfulness that promotes the ability of self-regulation (Brown et al., 2011). In this context, mindfulness is increasingly conceptualized in terms of self-regulation (Shapiro et al., 2006; Muris et al., 2016). When the mindfulness of the person disappears, the person becomes unable to provide self-regulation (Ryan & Deci, 2000) and unable to show self-efficacy (Atalay et al., 2017; Cayoun et al., 2012; Chang et al., 2004).

Mindfulness refers to observing the inner experiences at the present moment, paying attention to what is happening here, recognizing the nature of this attention, and accepting without judgment (Kabat-Zin, 2015). This acceptance also includes the continuous and repetitive observation of all bodily sensations (Davidson et al., 2003). Also, mindfulness aims to strengthen well-being and awareness of the self and the environment and to regulate thoughts and emotions (Davidson et al., 2003; Bishop et al., 2004). Mindfulness practices are associated with decreased stress, strengthened well-being, and improved academic performance (Zenner et al., 2014). Mindfulness-based interventions for adolescents with academic issues demonstrate that when anxiety decreases, attention and academic performance increase (Beauchemin et al., 2008; Semple et al., 2010).

As mindfulness increases, individuals learn how to self-evaluate themselves with non-judgmentally. In this context, they can view their evaluations as life experience and gain. As regards the relationship between mindfulness and self-efficacy, the concept of mindfulness-based self-efficacy has been the subject of recent investigations (Atalay et al., 2017; Cayoun et al., 2012). Mindfulness-based self-efficacy has been defined as the person's ability to maintain awareness without judgment in various situations (Chang et al., 2004).

In this sense, human development should be understood from a strength-centered perspective (Bundick et al., 2010). Positive youth development (PYD) focuses on internal and external factors that influence the self-development of adolescence (Lerner et al., 2011). The main purpose of these programs is to **strengthen adolescents' ability to increase their self-efficacy**. Mindfulness practices focus on the development of awareness day by day, with the acceptance of events here and now (Shapiro et al., 2006) being effective in nurturing self-efficacy and self-regulation (Bishop et al., 2004). These practices provide well-being in terms of limiting stress (Grossman et al., 2010) and anxiety (Hofmann et al., 2010). Mindfulness-based stress reduction (MBSR) programs significantly reduce stress levels and increase self-efficacy levels in adolescents (Chang et al., 2004; Maslow & Austin, 2016). Furthermore, these programs provide emotion regulation (Tacón et al., 2003), awareness (Cohen-Katz et al., 2005), and school success in adolescents (Sibinga et al., 2011).

In intranational literature, most mindfulness studies have descriptively examined mindfulness according to different variables, such as self-compassion (Özyeşil, 2011) and stress (Ülev, 2014). Furthermore, a quite limited number of experimental studies examined stress (Demir, 2017) and emotional regulation (Demir & Gündoğan, 2018) in university students. A small number of studies, meanwhile, have focused on self-efficacy and mindfulness in high school students (Atalay et al., 2017). However, there is no study examining the stress, mindfulness, and self-efficacy variables in high school students. As Cayoun and his colleagues (2012) have stated, the literature currently does not have sufficient information on the relationship between mindfulness and other concepts. With this in mind, this study aimed to examine **the effects of the MP on high school students' perceived stress, mindfulness, and self-efficacy** levels. To this end, the study tested the following hypotheses.

Hypotheses

H₁: The MP is significantly effective in reducing the perceived stress levels of high school students in the experimental group, and this effect is sustained in two months following the completion of the program.

H₂: The MP is significantly effective in increasing the mindfulness levels of high school students in the experimental group, and this effect is sustained in two months following the completion of the program.

H₃: The MP is significantly effective in increasing the self-efficacy levels of high school students in the experimental group, and this effect is sustained in two months following the completion of the program.

METHODOLOGY

Research Design

This study examines the effects of the MP on high school student's perceived stress, mindfulness, and self-efficacy levels. The first factor shows the independent functional groups (experimental and control), while the other factor shows the repeated measurements (pre-test, post-test, follow-up test) in different conditions according to the dependent variable (Buyukozturk, 2006).

Table 1
Research Pattern

Groups	Pre-test	Intervention	Post-test	Follow up test I
Experimental	PSS	(MP)	PSS	PSS
	MAAS		MAAS	MAAS
	GSES		GSES	GSES
Control	PSS	No intervention	PSS	PSS
	MAAS		MAAS	MAAS
	GSES		GSES	GSES

PS: Perceived Stress Scale, MAAS: Mindfulness Attention Awareness Scale, GSES: General Self-Efficacy Scale

Participants

Participants were selected among high school students taking support from the Uskudar Municipality Youth Academy during 2018-2019 Spring Term. A convenience sampling method was utilized. Firstly, the ethical permission from Istanbul Medipol University, was received and then the consent was taken from the participants and their families. PS, MAAS, and GSES were applied to 135 high school students. A total of 44 students who received higher than average scores in PS ($\bar{X} = 45.75$) ($Sd = 4.77$), and lower scores than average in MAAS ($\bar{X} = 50.08$) ($Sd = 10.7$) and GSES ($\bar{X} = 27.34$) ($Sd = 4.94$) were selected. 14 out of 44 students were accepted to participate voluntarily. Later, these fourteen students were randomly assigned to the experimental and control groups. Participants in both groups were balanced in terms of demographic variables. The control group got MP after the study was finished. The mean age of the experimental group came to 17.42 ($Sd = 5.34$) while the control group's came to 17.57 ($Sd = 5.1$). All participants were female.

Data Collection Instruments

Perceived Stress Scale (PSS): It was developed by Cohen et al. (1983) and adapted into Turkish by Eskin et al. (2013). The scale is composed of 14 item with 5-point Likert type. It also consists of two sub-dimensions: perceived insufficient self-efficacy and perceived stress/distress. The explanatory factor analysis explained 46.5% of the variance. The Cronbach's alpha coefficient was .84. The test-retest reliability coefficient was .87. In this study, the Cronbach's alpha coefficient was .82.

Mindfulness Attention Awareness Scale (MAAS): Brown et al. (2011) developed this scale, which was adapted into Turkish by Aydın-Sünbül & Yerin Güneri (2019). It consists of 14 items with 6-point Likert type. The internal consistency indicators of Cronbach alpha and test-retest reliability were .82 and .79,

respectively. The Cronbach alpha of the Turkish version of the scale was .81. The results of a confirmatory factor analysis supported the single factor structure of MAAS-A ($\chi^2 = 162.5$, $df = 75$, $\chi^2/df = 2.17$; GFI = 0.94, CFI = 0.92; TLI = .90; RMSEA = 0.06). In this study, the Cronbach's alpha coefficient was .80.

General Self-Efficacy Scale (GSES): It was developed by Schwarzer and Jerusalem (1995) and revised by the same researchers in 1981 as a self-report scale. The GSES consists of 10 item with 4-point Likert type. The Cronbach's alpha coefficient for the entire scale was .86. The scale was adapted into Turkish by Aypay (2010). The Cronbach's alpha coefficient for the Turkish version was .83. Test-retest reliability was found to be .80. In this study, the Cronbach's alpha coefficient was .83.

The Scope of the MP in High School Students

The program, developed by the researcher, was structured as a psychoeducation group program aimed at increasing mindfulness and self-efficacy levels and reducing perceived stress levels among high school students. In the beginning, theoretical information surrounding perceived stress, mindfulness, and self-efficacy and programs on these three concepts were examined (Maslow & Austin, 2016; Sibinga et al., 2011), and it was found that all three concepts were based on self-regulation (Greason & Cashwell, 2009; Shapiro et al., 2006). Thus the MP was based on self-regulation theory (Shapiro & Schwartz, 2000).

The Content of the MP in High School Students

The MP composed of 6-sessions, including eighteen psychological activities. Each session consists of three activities (warming up, the purpose of the activity, and ending the session with positive feelings). Table 2 shows the topics covered in each session.

Table 2
The MP in High School Students

Session	
1 st	<ul style="list-style-type: none"> ▪ Meeting, group cohesion ▪ Arriving in the place as conscious ▪ Determining group rules and purpose ▪ Determining the participants' daily problems
2 nd	<ul style="list-style-type: none"> ▪ Being aware of body sensations when speaking about a daily problem ▪ Finding bodily resources when speaking about a daily problem
3 rd	<ul style="list-style-type: none"> ▪ Being aware of emotions when speaking about problems ▪ Monitoring and dealing with emotions when speaking about a problem ▪ Finding feeling resources when speaking about a problem
4 th	<ul style="list-style-type: none"> ▪ Being aware of thoughts when speaking about a problem ▪ Monitoring and dealing with thoughts when speaking about a problem ▪ Finding resources of thoughts when speaking about a problem
5 th	<ul style="list-style-type: none"> ▪ Being aware of behaviors when speaking about a problem ▪ Being aware of the boundaries that protect against a problem ▪ Finding behavioral resources when speaking about a problem ▪ Being aware of the integrity
6 th	<ul style="list-style-type: none"> ▪ Containing what they have learned during the sessions ▪ Closing the program with positive group feedback ▪ Post-test

The MP in High School Students- Application Procedures

The program took place in the meeting room of the Youth Academy, and the participants were seated in a circle. The training program lasted six weeks (A 90-minute session a week).

Data Analysis

The researchers decided which tests (parametric or non-parametric) should be used during the **preliminary analysis**. Both groups' pre-test PSS, MAAS, and GSES scores were analyzed. According to the preliminary analysis results, the data had a homogeneous and normal distribution. Thus, parametric tests could be used.

To test the change in the pre-test, post-test, and follow-up test, the 2x3 two-factor ANOVA technique was used for repeated measurements, which is more appropriate for split-plot (mixed) designs (Buyukozturk, 2006). As a result of this analysis, data were tested according to the Tukey (HSD) test to analyze the source of significant differences. The SPSS 23.0 package program was utilized.

FINDINGS

Results of Preliminary Analysis

According to the parametric test results of the pre-test measurements, there were no significant differences between the groups in terms of mean PSS ($F_{(1-12)} = .514, p > .05$), MAAS ($F_{(1-12)} = .114, p > .05$) and GSES ($F_{(1-12)} = 4.915, p > .05$) scores. Furthermore, the Kolmogorov-Smirnov test results of the PSS (.128 $p > .05$), MAAS (.176, $p > .05$) and GSES (.183 $p > .05$) scores were larger than (p) .05 (Buyukozturk, 2006). This Kolmogorov-Smirnov test results and the skewness and kurtosis level on each of the three scales (+1 and -1) showed a normal distribution.

Results Related to the Hypothesis on Perceived Stress

The first hypothesis of the research was stated as, "The MP is significantly effective in reducing the perceived stress levels of high school students in the experimental group, and this effect is sustained in two months following the completion of the program." **The arithmetic means and standard deviations of the PSS scores of both groups were presented in Table 3.**

Table 3

Arithmetic Means and Standard Deviations of Both Groups' PSS Scores

Measurements Groups	Pre-test		Post-test		Follow-up test	
	\bar{X}	<i>Sd</i>	\bar{X}	<i>Sd</i>	\bar{X}	<i>Sd</i>
Experimental (N = 7)	47.14	4.14	30.28	3.49	26	5.09
Control (N = 7)	48.71	2.75	49.42	2.99	48.85	2.41

As seen in Table 3, both groups' mean pre-test scores were very close, while there were differences between mean post-test and follow-up test scores. Both groups' PSS scores were tested to see if there were significant differences. This was conducted by an analysis of variance (ANOVA). The results were presented in Table 4.

Table 4
Two-Factor ANOVA Results of PSS Scores

Source	Sum of squares	Sd	Average of squares	F	P	Eta squared
Intergroup	2417.452	13				
Group (E/C)	2214.881	1	2214.881	131.206	.000	.916
Error	202.571	12	16.881			
Intragroup	1168,619	14				
Measurement (pre-/post-/follow-up tests)	846.048	1	423.024	38.498	.000	.762
Group*Measurement	904.905	1	452.452	41.177	.000	.774
Error	263.714	12	10.988			

As shown in Table 4, in the results of the PSS scale, the group effect was significant ($F_{(1-12)} = 131.206$ $p < .01$). Without discriminating between the pre-test, post-test, and follow-up tests in experimental and control groups, there were significant differences between the mean PSS scores. Between the mean scores of individuals from pre-test, post-test, and follow up test, there were signs of significant differences, regardless of group discrimination ($F_{(2-12)} = 38.498$ $p < .01$). Regardless of group discrimination, this result indicated that the perceived stress levels of the individuals varied, in terms of the experimental process. Furthermore, it was observed that the value of common effect (group*measurement) was significant ($F_{(2-12)} = 41.177$; $p < .01$). A Tukey test shows in which groups there is a significant difference in terms of the measurements between groups. The values were shown in Table 5.

Table 5
Tukey Test Results of Differences between Subjects and within Subjects in Terms of PSS Scores

		Experimental			Control		
		Pre-test	Post-test	Follow-up test	Pre-test	Post-test	Follow-up Test
Experimental	Pre-Test	-	16.86***	21.14**			
	Post-Test		-	4.28		-19.14**	
	Follow-up Test			-			-22.85**
Control	Pre-Test				-	-.0.71	-0.14
	Post-Test					-	0.57
	Follow-up Test						-

* $p < .05$ ** $p < .01$

The first hypothesis of the research was verified, as shown in Table 5. A significant difference was found **between the experimental group's pre-test PSS scores and their post-test and follow-up test PSS scores.** However, no statistically significant difference was found **between the control group's pre-test PSS scores and their post-test and follow-up test PSS scores.** Thus, the MP significantly reduced the perceived stress levels of the experimental group.

Results Related to the Hypothesis on Increasing Mindfulness

It was theorized that "The MP is significantly effective in increasing the mindfulness levels of high school students in the experimental group, and this effect is sustained in two months following the completion of the program." **The arithmetic means and standard deviations of the MAAS scores of both groups were shown in Table 6.**

Table 6
Arithmetic Means and Standard Deviations of Both Groups' MAAS Scores

Measurements	Pre-test		Post-test		Follow-up test I	
	\bar{X}	<i>Sd</i>	\bar{X}	<i>Sd</i>	\bar{X}	<i>Sd</i>
Experimental (N = 12)	40.42	6.24	58.00	2.94	58.42	2.69
Control (N = 12)	40.14	5.81	39.85	5.08	39.57	64.65

Both groups' pre-test MAAS scores were close, while differences emerged between both groups' post-test and follow-up test scores (Table 6). An ANOVA was performed to test whether both groups' mean scores differed significantly. The results were shown in Table 7.

Table 7
Two-Factor ANOVA Results of MAAS Scores

Source	Sum of squares	<i>Sd</i>	Average of squares	<i>F</i>	<i>P</i>	Eta squared
Intergroup	2156.786	13				
Group (E/C)	1621.929	1	1621.929	36.389	.000	.752
Error	534.857	12	44.571			
Intragroup	1762.00	14				
Measurement (pre-/post-/follow-up tests)	703.00	1	1541.99	29.704	.000	.712
Group*Measurement	775.000	1	387.500	32.746	.000	.732
Error	284.000	12	11.833			

As shown in Table 7, the results of the MAAS showed a significant effect ($F_{(1-12)} = 36.389$ $p < .01$). Without discriminating between the pre-test, post-test, and follow-up tests of both groups, there was a significant difference between mean MAAS scores.

There were also significant differences in the mean scores of individuals from pre-test, post-test, and follow-up test ($F_{(2-12)} = 29.704$ $p < .01$). Without group discrimination, this result showed that the mindfulness levels of each individual were changing over the course of the experimental process. Furthermore, it was seen that the value gathered from the examination of common effect (group*measurement) was significant ($F_{(2-12)} = 32.746$, $p < .01$). A Tukey test determines in which groups there is a significant difference in terms of measurements between groups. The values were presented in Table 8.

Table 8
Tukey Test Results of Differences between Subjects and within Subjects in Terms of MAAS Scores

		Pre-test	Experimental		Control	
			Post-test	Follow-up test	Pre-test	Post-test
Experimental	Pre-Test	-	-17.58**	-18**	-	-
	Post-Test	-	-	-	18.15**	-
	Follow-up Test	-	-	-	-	18.85**
Control	Pre-Test	-	-	-	0.29	0.57
	Post-Test	-	-	-	-	0.28
	Follow-up Test	-	-	-	-	-

* $p < .05$ ** $p < .01$

The second hypothesis of the research was verified, as shown in Table 8. A significant difference was found between the experimental group's pre-test MAAS scores and their post-test and follow-up test MAAS scores. However, no statistically significant difference was found between the control group's pre-test MAAS scores and their post-test and follow-up test MAAS scores. Thus, the MP was significantly effective in increasing the mindfulness levels of the experimental group.

Results Related to the Hypothesis on Increasing Self-Efficacy

The third hypothesis was stated as, "The MP is significantly effective in increasing the self-efficacy levels of high school students in the experimental group, and this effect is sustained in two months following the completion of the program." The arithmetic means and standard deviations of the GSES scores of both groups were shown in Table 9.

Table 9
Arithmetic Means and Standard Deviations of Both Groups' GSES Scores

Measurements Groups	Pre-test		Post-test		Follow-up test I	
	\bar{X}	<i>Sd</i>	\bar{X}	<i>Sd</i>	\bar{X}	<i>Sd</i>
Experimental N = 12	21.42	3.15	48.71	3.40	43.28	3.13
Control N = 12	24.00	2.00	24.57	2.07	24.24	2.54

As seen in Table 9, both groups' pre-test GSES scores were close, while differences emerged between both groups' post-test and follow-up test scores. An ANOVA was performed to test whether both groups' mean GSES scores differed significantly (Table 10).

Table 10
Two-Factor ANOVA Results of PSS Scores

Source	Sum of squares	<i>Sd</i>	Average of squares	<i>F</i>	<i>p</i>	Eta squared
Intergroup	1958.309	13				
Group (E/C)	1748.595	1	1748.595	100.056	.000	.893
Error	209.714	22	17.476			
Intragroup	3058.667	14				
Measurement (pre-/post-/follow-up tests)	1362.048	1	681.024	38.601	.000	.763
Group*Measurement	1273.190	1	636.595	36.082	.000	.750
Error	423.429	12	17.643			

The results of the GSES scale yielded a significant group effect ($F_{(1,12)} = 100.056$; $p < .01$) (Table 10). Without discriminating between pre-test, post-test, and follow-up tests of both groups, significant differences emerged between the groups' mean GSES scores.

Between the mean scores of individuals from the pre-test, post-test, and follow-up tests, there were also significant differences ($F_{(2,12)} = 38.601$; $p < .01$). Without group discrimination, this result indicated that the self-efficacy levels of students varied, depending on the experimental process. It was observed that values gathered from the examination of common effect (group*measurement) were significant ($F_{(2,12)} = 36.082$; $p < .01$). A Tukey test shows in which groups there is a significant difference in terms of measurements (Table 11).

Table 11

Tukey Test Results of Differences between Subjects and within Subjects in Terms of GSES Scores

		Experimental			Control		
		Pre-test	Post-test	Follow-up test	Pre-test	Post-test	Follow-up test
Experimental	Pre-Test	-	-27.29**	-21.86**			
	Post-Test		-	5.43		24.14**	
	Follow-up Test			-			19.04**
Control	Pre-Test				-	0.57	0.24
	Post-Test					-	-0.33
	Follow-up Test						-

The third hypothesis of the research was verified, as shown in Table 11. A significant difference was found between the experimental group’s pre-test GSES scores and their post-test and follow-up test GSES scores. However, no statistically significant difference was found between the control group’s pre-test GSES scores and their post-test and follow-up test GSES scores. Thus, the MP was significantly effective in increasing the self-efficacy levels of the experimental group.

DISCUSSION

This study revealed that the 6-week MP applied to adolescents was significantly effective in reducing perceived stress levels and increasing self-efficacy and mindfulness levels. The research findings and the program contents (monitoring body sensations, finding resources) can be compatible with the findings of mindfulness practices (Chang et al., 2004; Cohen-Katz, et al., 2005; Maslow & Austin, 2016; Sibinga et al., 2011; Tacón, et al., 2003).

According to the first result of this study, the MP was significantly effective in reducing perceived stress levels in adolescents. This result overlaps with the results of MBSR cases (Demir, 2017; Maslow & Austin, 2016). In studies where MBSR was applied to the adolescent population and their longitudinal effects were observed, symptoms such as depression (Segal et al., 2002) and psychological stress (Shapiro et al., 2006) significantly decreased. These findings fall in line with our finding that the effect on stress levels remains even two months after the complementation of the program. In this regard, it can be said that the MP with awareness exercises (e.g., monitoring, finding resources) increases the adolescent’s capacity to self-regulate, enabling them to better adapt to and cope with their current issues. This may have also increased their regulation capacity and their well-being over the six-week period, although this was not directly measured in the present study.

The second finding was that the MP proved significantly effective in boosting the mindfulness levels of adolescents. This result was found to be compatible with the results of mindfulness studies (Ames et al., 2014; Atalay et al., 2017) conducted with adolescents. It can be inferred that thanks to MPs with monitoring and observing exercises, adolescents pay attention to the present experience nonjudgmentally, become aware of what they do, regulate their senses, feelings, and thoughts, and adapt their behaviors to different circumstances (Himmelstein et al., 2012).

Finally, the third finding was that the MP proved to be significantly effective in increasing the self-efficacy levels of adolescents. This supports other studies that show a relationship between mindfulness practices and self-efficacy. Many studies have found that MPs significantly reduce stress and increase self-efficacy levels in patients (Turner et al., 2016) and in adult participants selected from the general population (Firth et al., 2019). A number of studies (Atalay et al., 2017; Maslow & Austin, 2016; Pepping, 2016) have found that MPs designed for adolescents are significantly effective in reducing stress and

increasing self-efficacy levels. All these studies support our third finding mentioned above. In this regard, it can be said that all MP exercises based on regulation skills enable adolescents to be aware of and to utilize their regulation skills. These regulation skills may have also increased their self-efficacy levels.

All the above-mentioned findings directly evidence that MPs designed for adolescents are significantly **effective in reducing adolescents' perceived stress levels and increasing their self-efficacy** and mindfulness levels.

CONCLUSION

Adolescence is a transitional period from childhood to adulthood, therefore, adolescents may face many stress factors (Neff & McGehee, 2010). It is recognized that MPs reduce perceived stress levels and increase self-efficacy levels (Atalay et al., 2017; Maslow & Austin, 2016; Pepping, 2016). As Cicognani (2011) states, **adolescents' perceived self-efficacy** plays a critical role in the formation of their personality and in their strategies to cope with the challenges they face. This study has shown that increasing mindfulness skills among adolescents in the midst of preparing for the university entrance exam, a major source of stress in an already stressful period, increased perceived self-efficacy and mindfulness levels, thereby reducing stress levels. Most of the mindfulness practices developed so far are tailored to **meet adults' needs. Since adolescents have less-developed** attention skills than older subjects, modifications are required accordingly (Posner & Petersen, 1990). In this respect, this program differs from that featured in the literature, and its content is arranged in accordance with the developmental process of adolescence. This structured program is open for the benefit of specialists working in schools, and guidance centers.

However, the study has various limitations. Firstly, the scores obtained from the scales cannot be considered independently from the social-desirability bias. Secondly, the sample was composed of only 12th-grade students, which provides homogeneity but reduces diversity. Therefore, the MP can be tested on different adolescent groups. Thirdly, our study group comprised only female participants. Thus, the MP can be applied and tested on male adolescent groups. Only an experimental and a control group were included in the study. Adding a placebo group can increase the reliability. Finally, a single program was applied to the participants, and the program was not compared with a different program. Thus, a practical comparison with other programs in the literature would strengthen these findings.

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