

Effectiveness of Mindfulness Stress Reduction Program on Cognitive Flexibility and Early Maladaptive Schemas in Adults: Conscious Awareness, Cognitive Flexibility and Schemas

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Received January 13, 2022; Revised April 5, 2022; Accepted April 21, 2022

Cite This Paper in the following Citation Styles

(a): [1] Kahraman Güler, Nuket Oyguc, "Effectiveness of Mindfulness Stress Reduction Program on Cognitive Flexibility and Early Maladaptive Schemas in Adults: Conscious Awareness, Cognitive Flexibility and Schemas," *Universal Journal of Psychology*, Vol. 10, No. 2, pp. 11 - 21, 2022. DOI: 10.13189/ujp.2022.100201.

(b): Kahraman Güler, Nuket Oyguc (2022). *Effectiveness of Mindfulness Stress Reduction Program on Cognitive Flexibility and Early Maladaptive Schemas in Adults: Conscious Awareness, Cognitive Flexibility and Schemas. Universal Journal of Psychology*, 10(2), 11 - 21. DOI: 10.13189/ujp.2022.100201.

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Abstract This study was prepared to examine the effect of mindfulness-based stress reduction program on cognitive flexibility and early maladaptive schemas in a group of young adults. The research was carried out with the participation of 18 young adults without a psychiatric diagnosis. The research process consists of eight weeks, with each week's session lasting two and a half hours. In addition to this, another session including a 6-hour day of silence was held. Before and after the study, the "cognitive flexibility scale" and the "early maladaptive schemas" scale were applied to determine the cognitive flexibility levels and early maladaptive schemas of individuals. In addition, the sociodemographic form developed by the researcher was used. A single-group pre-test-post-test control group-free quasi-experimental design was used. SPSS 25 program and Wilcoxon signed-order test were used for the analysis of the data. Our results show that mindfulness-based stress reduction program significantly increased individuals' cognitive flexibility scores and decreased scores in some sub-dimensions of early maladaptive schemas.

Keywords Mindfulness, Cognitive Flexibility, Early

Maladaptive Schemas

1. Main Point

This study is an important one to put the applicability and positive results of the mindfulness-based stress reduction program in groups of different ages and characteristics. This result, which reveals the importance of awareness-raising studies, underlines its usability in coping with stress.

It is a study that emphasizes that mindfulness-based stress reduction program, which will be prepared according to the characteristics of the groups, can help individuals think more functionally, increase body differences and have a more positive outlook on life.

This study, which was tried in a group of healthy young adults, shows that cognitive flexibility and early maladaptive schemas decrease in scores, it is possible to participate in mindfulness-based programs for personal development and healthier thinking. It is thought that it is critical for an individual who has begun to fully adapt to

life in young adulthood to develop coping abilities to deal with any social problems that may arise, and this study exposes one of these methods.

2. Introduction

The concept of mindfulness continues to attract the attention of scientific research literature in recent years [40]. Although there are many definitions in the literature; Atalay [3], emphasizes that awareness is not just noticing, but perceiving what we notice with a conscious mind and a heart full of love and compassion. In other words, mindfulness is to approach one's attention to situations that are currently occurring, with the non-judgmental nature of attention [2]. Conscious awareness includes being aware of what is present in the present moment as well as being aware of what is not in the present moment. However, knowing that we are not mindful and aware in the present moment is also an example of mindfulness. The ultimate foundation of mindfulness is to take an accepting and friendly approach to current experiences, and to perceive and observe them with curiosity and clarity, without limiting them to certain categories or judgments (good, bad, pleasant or unpleasant) [44]. Although conscious awareness comes from the eastern meditation tradition, its applications in western culture are increasing day by day [19]. Mindfulness practices are mind and body practices where attention is focused on breathing, body sensations, thoughts, and emotions. Mindful awareness, which has its origins in Buddhist philosophy, can be developed through meditative practices and mindfulness training [25].

Since the 1980s, mindfulness techniques, with their proven basis, have been used in clinical psychology and especially in cognitive or behavioral interventions. There are therapy approaches and group intervention programs-trainings based on mindfulness in the literature [10]. In the literature, mindfulness research focuses on the MBSR Program and the MBCT program [38], [8], [6]. According to studies, MBSR and MBCT programs seem to be a promising approach in clinical and non-clinical groups [8]. The first program developed on the basis of mindfulness is MBSR (mindfulness-based stress reduction program) [44]. MBSR was developed by Jon Kabat Zinn in 1972. In this program, mindfulness practices were carried out to reduce the symptoms of chronic pain patients and the stress caused by the disease [7]. Mindfulness practices can also be applied to different groups. The elderly [5], children [22], teachers [29], health workers [28] are some of them.

Cognitive flexibility is the ability of a person to adapt to unexpected situations, to reveal a new synthesis by changing old knowledge, and to switch from one thought to another [37]. According to Dennis and Wall [12], cognitive flexibility includes 3 areas. The first of these; the ability to produce multiple solutions to the difficulties one faces, second; the tendency to see challenging situations as

controllable, and the third; It is the ability to perceive that there are possible alternatives to events and human behavior in life [26]. People who can exhibit cognitive flexibility are better able to cope with the problems they encounter and are able to produce appropriate solutions for the situation [13]. According to Martin and Anderson, cognitively flexible individuals believe that they can make the necessary changes in order to interact with others, and cognitive flexibility enables the individual to find options that make life easier in challenging situations [20].

According to Jeffrey Young [42,43], early maladaptive schemas are defined as lifelong, comprehensive and pervasive cognitive patterns that involve the individual's memories, emotions, body sensations and cognitions, and are directed towards one's self and relationships with others [36]. It is possible to say that the schemas can be compatible or incompatible. Although schemas help to exhibit cognitive coherence, they are often flawed and distorted. Early maladaptive schemas generally develop during childhood or adolescence and reflect the family environment and immediate environment of the child. Because schemas are rigid, resistant to change, and unconditional, they can become maladaptive later in life [16].

According to Young [43], early maladaptive schemas are divided into five areas. And these five areas contain eighteen schemas within themselves. These schemas are; imperfection, emotional deprivation, punitiveness, abandonment, social isolation, skepticism, instability, dependence, coexistence, failure, righteousness, insufficient self-control, submissiveness, self-sacrifice, approval-seeking, pessimism, suppression of emotions, and high standards [41].

In this study, it is aimed to examine the relationship between two variables of mindfulness training, which aims to focus one's attention on what is happening now, without judgment and in an accepting way, and this is the concept of cognitive flexibility, which expresses the ability of an individual to adapt their cognitions to changing environmental conditions, and its relationship with early maladaptive schemas that occur with early negative experiences and insist on self-sustainment. In summary, this study was conducted to examine the relationship of mindfulness stress reduction program with cognitive flexibility and early maladaptive schemas.

2.2. Purpose of the Research

The main purpose of this research is to examine the effect of a mindfulness-based stress reduction program on cognitive flexibility and early maladaptive schemas in a group of young adults. Based on this purpose, the research questions were determined as follows.

2.3. Research Questions

- (1) Is there a significant difference between the pre-test

and post-test mean scores of the mindfulness-based stress reduction program on the cognitive flexibility scale in a group of young adults?

- (2) Is there a significant difference between the pre-test post-test mean scores of early maladaptive schemas in a group of young adults of the Mindfulness-Based Stress Reduction Program?

2.4. Hypotheses

- (1) Mindfulness stress reduction program increases cognitive flexibility scores.
- (2) Mindfulness stress reduction program reduces early maladaptive schema scores.

3. Method

3.1. Research Model

This research was conducted using a single group pre-test post-test quasi-experimental design without a control group. In the single group pre-test post-test model, pre-test and post-experiment measurements are made after the experiment [18]. SPSS 22 statistical package program was used for the results and statistical analysis. The scales to be used are given below.

3.2. Participants

The MBSR program takes place with the participation of individuals aged 18 and over, as it is one of the conditions of the program. For this reason, the participants consist of individuals aged 18 and over, and a total of 18 people. The age range of participants in the program is 18-42. The study included participants from both our country and other countries. Participants were included in the program as a result of the preliminary interview. Information on gender, marital status, employment status, educational status, psychiatric disease and psychiatric illness status of the participants in the study were obtained and some of them were used as exclusion criteria in the pre-interview. The pre-interview is held to provide information about the program and to determine the participants who are suitable for the program by evaluating the exclusion criteria. Exclusion criteria; It includes elements such as having a psychiatric history, having a chronic physical illness, a history of addiction or suicide attempts.

An online form was created for the participants. They participated in the study by applying through this link. Afterwards, individual interviews were conducted with the participants. Participants were selected on the basis of exclusion criteria such as having a psychiatric history, having a chronic physical illness, and having a history of addiction or suicide attempt. Participants participated in the study on a voluntary basis and each was given a voluntary consent form.

3.3. Data Collection

Individuals' cognitive flexibility levels and early maladaptive schemas were assessed before and after the study using the "cognitive flexibility scale" and the "early maladaptive schemas" scale. A quasi-experimental design with a single-group pre-test-post-test control group was adopted. The data was analyzed using the SPSS 25 program and the Wilcoxon signed-order test.

3.4. Cognitive Flexibility Scale

The Cognitive Flexibility Scale was developed by Martin and Rubin, and its validity and reliability study in our country was conducted by [9]. It consists of 12 items and one dimension. It is a 6-point Likert type scale. BEÖ 1 is answered as "strongly disagree" and 6 "strongly agree". The internal consistency coefficient (α) of the measurement tool is .80, and the test-retest reliability coefficient is .83. High scores indicate a high level of cognitive flexibility.

3.5. Young Schema Scale- Short Form 3

The original form of the scale was developed by Young [42]. The original form consists of 18 schema fields and 205 items. In addition, Young developed a 75-item short form of the scale. In this study, the third version of the short form of the scale was used. The validity-reliability studies of the short form of the scale were carried out by Soygüt, Karaoğlu and Çakır [36]. According to the analyses made, it is seen that 5 dimensions and a structure with 14 factors are suitable for the scale. The measurement tool has 90 items. It is a Likert-type scale in the range of 1-6. The internal consistency coefficient of the scale is ($\alpha=.95$), and the internal consistency coefficients of the sub-scales vary between .54 and .85.

3.6. Analysis of Data

Analyses were made using the SPSS 25 program. In this study, Non-Parametric tests were applied because the sample size was less than 30. The analyses applied were made at the 95% confidence level. In the next stage; In order to recognize the data, demographic variables in the personal information form were examined with frequency and descriptive statistical analyses. The Wilcoxon Marked Orders Test, a non-parametric test, was used to determine the difference between the two dependent groups.

3.7. Program Implementation Process

The MBSR program consists of 2-2.5-hour sessions once a week and takes a total of 8 weeks. In the 8-week program, there is also a day of silence. The program was carried out on the zoom platform in order to provide convenience in terms of accessibility during the pandemic period. In the study, there are people who participated in all sessions.

3.8. Sessions

Session 1

Topic: Exploring Conscious Awareness.

Purpose: Conceptual explanation of mindfulness. Realizing the place of autopilot in our lives experientially.

Exercises: Raisin exercise and body scan meditation.

Session 2

Topic: How Do We Perceive the World?

Purpose: To realize that our reactions to experiences are largely related to our perceptions. To discover that the perception of a situation is affected by our previous experiences, the mood we are in, and many familiar factors. Trying to perceive current experiences as pure and as they are, as far from interpretation and judgment as possible.

Exercises: Nine (9) Point exercise, vision exercise, sitting meditation with awareness of breath, body scanning meditation.

Session 3

Subject: Being in the Body.

Purpose: To investigate one's own limits, to realize their attitudes towards these limits. Being in contact with one's own body and developing a caring, gentle relationship with one's body, Deepening the ability to stay in the present moment. Recognizing contact with pleasant moments. These goals are addressed through mindful movement/yoga practices.

Exercises: Mindful movement/yoga exercises, sitting meditation with breath and body awareness.

Session 4

Topic: Dealing with Stress with Conscious Awareness

Purpose: Perceiving the stressors with conscious awareness, consciously noticing our automatic stress responses. To talk about the physiological and psychological bases of the stress response. Talking about unpleasant moments.

Exercises: Sitting meditation, mindful movement, group work on stressors and stress responses.

Session 5

Subject: Our Relationship with Stress-Increasing Thoughts

Purpose: To give consciously chosen responses to stressors instead of automatic responses. Being aware of the thoughts that accompany the experience of stress. To gain the ability to observe the feelings and thoughts that cause stress without identifying them.

Exercises: Sitting meditation, mindful movement/yoga exercises.

Session 6

Subject: Aware Communication

Purpose: To become aware of automatic thoughts, feelings and judgments in our communication experiences.

To gain the ability to express our own feelings and needs without harming others. To stay in touch with ourselves. To discover what we need for more successful communication.

Exercises: Sitting meditation, conscious awareness listening and speaking exercise, mindful movement.

Session 7

Subject: Taking Care of Yourself

Purpose: How can I take care of myself better, is it possible for me to gain a new perspective beyond my habits and stereotypes, what can I do to turn my automatic reactions into consciously chosen responses, what can I do to include compassion and self-compassion, one of the mindfulness attitudes, into my life? to research.

Exercises: Mindful movement/yoga, sitting meditation, body scan, compassion meditation

Session 8

Subject: Farewell and a New Beginning

Purpose: To talk about how we can apply the experiences gained in the program to life and ways to support ourselves in doing so. Deciding with which exercises we want to continue our life after the program. Participants are told to write a letter about what they want to remember from what they learned in the course and whatever they want to read 6 months from now.

Exercises: Body scan, sitting meditation, letter writing.

4. Results

In this section, the findings obtained from the demographic information form prepared by the researcher are included.

As seen in Table 1, 16.7% of the participants are male, 83.3% are female, 5.6% are married, 94.4% single, 50% unemployed, 50% are working, 5.6% are secondary school graduates, 50% are undergraduates, 44.4% of them have a master's degree or higher, 100% do not have a psychiatric disease, 100% do not have a physical disease.

As seen in Table 3, when the findings were examined, a significant difference was found between the mean scores of the pre-test and post-test rankings from the Cognitive Flexibility Scale ($z=-2.159$, $p<0.05$). It was determined that the Cognitive Flexibility Scale post-test scores were significantly higher than the pre-test scores.

As seen in Table 4, when the findings were analyzed, it was found that Social Isolation/Insecurity sub-dimension ($z=-2.26$, $p<0.05$), Abandonment sub-dimension ($z=-2.14$, $p<0.05$), Failure sub-dimension ($z=-2.28$, There was a significant difference between the pre-test post-test mean scores of $p<0.05$), Self-Sacrifice sub-dimension ($z=-2.07$, $p<0.05$), High Standards sub-dimension ($z=-2.81$, $p<0.05$). detected. According to these results, it was determined that the participants' Social Isolation/Insecurity, Abandonment,

Failure, Self-Sacrifice, High Standards post-test scores were significantly lower than their pre-test scores.

Emotional Deprivation, Flawlessness, Suppression of Emotions, Nesting/Dependence, Intolerance to Threats,

Pessimism, Privilege/Insufficient Punishment, Approval Seeking sub-dimension scores were not significantly different between pre-test post-test mean scores ($p>0.05$).

Table 1. Demographic Characteristics of the Participants

		n	%
Gender	Male	3	16.7
	Female	15	83.3
	Total	18	100.0
Marital status	Married	1	5.6
	Single	17	94.4
	Total	18	100.0
Working Status	I am not working	9	50.0
	I am working	9	50.0
	Total	18	100.0
Educational Status	secondary education	1	5.6
	Licence	9	50.0
	Master's and Above	8	44.4
	Total	18	100.0
Psychiatric Disease	No	18	100.0
Physical Illness	No	18	100.0

Table 2. Descriptive Statistics Regarding the Ages of the Participants

	n	Min	Maks	\bar{X}	Ss.
Age	18	18	42	27	5

Table 3. Findings Related to Comparison of Cognitive Flexibility Scale, Pre-Test-Post-Test Scores

		n	S.O	S.T	Z	p
Cognitive Flexibility Scale Post-Test – Cognitive Flexibility Scale Pre-Test	Negative Rows	4	7.75	31.00	-2.16	0.031*
	Positive Rows	13	9.38	122.00		
	Equal	1				
	Total	18				

Table 4. Findings Related to the Comparison of Young Schema Scale Pre-Test-Post-Test Score

		n	S.O	S.T	Z	p
Emotional Deprivation PostTest -Emotional Deprivation PreTest	Negative Rows	6	5.33	32.00	-1.15	0.252
	Positive Rows	3	4.33	13.00		
	Equal	9				
	Total	18				
Social Isolation/Insecurity Post-Test-Social Isolation/Insecurity Pre-Test	Negative Rows	13	8.58	111.50	-2.26	0.024*
	Positive Rows	3	8.17	24.50		
	Equal	2				
	Total	18				
Imperfection Post-Test – Imperfection Pre-Test	Negative Rows	4	7.25	29.00	-0.78	0.438
	Positive Rows	5	3.20	16.00		
	Equal	9				
	Total	18				
Suppressing Emotions Post-Test–Suppressing Emotions Pre-Test	Negative Rows	8	7.88	63.00	-0.66	0.508
	Positive Rows	6	7.00	42.00		
	Equal	4				
	Total	18				
Nesting/Dependency Posttest– Nesting Addiction Pretest	Negative Rows	7	6.79	47.50	-0.67	0.504
	Pozitif Sıralar	5	6.10	30.50		
	Equal	6				
	Total	18				
Abandonment Post-Test-Abandonment Pre-Test	Negatif Sıralar	10	5.70	57.00	-2.14	0.033*
	Pozitif Sıralar	1	9.00	9.00		
	Equal	7				
	Totalm	18				
Invulnerability to Threats Post-Test Invulnerability to Threats Pre-Test	Negative Rows	9	6.89	62.00	-1.16	0.248
	Positive Rows	4	7.25	29.00		
	Equal	5				
	Total	18				

Table 4. Continued

Failure Post-Test-Failure Pre-Test	Negative Rows	11	9.09	100.00	-2.28	0.022*
	Positive Rows	4	5.00	20.00		
	Equal	3				
	Total	18				
Pessimism Post-Test-Pessimism-Pre-Test	Negative Rows	9	9.78	88.00	-1.03	0.300
	Positive Rows	7	6.86	48.00		
	Equal	2				
	Toplam	18				
Privilege/Insufficient Self-Control Post-Test-Privileged/Insufficient Self-Control Pre-Test	Negative Rows	10	8.80	88.00	-1.04	0.300
	Positive Rows	6	8.00	48.00		
	Equal	2				
	Toplam	18				
Self-Sacrifice Post-Test-Self-Sacrifice Pre-Test	Negative Rows	12	11.04	132.50	-2.07	0.038*
	Positive Rows	6	6.42	38.50		
	Equal	0				
	Toplam	18				
Punishment Post-Test-Punishment Pre-Test	Negative Rows	10	8.85	88.50	-1.06	0.287
	Positive Rows	6	7.92	47.50		
	Equal	2				
	Total	18				
High Standards Post-Test-High Standards Pre-Test	Negative Rows	13	8.38	109.00	-2.81	0.005*
	Positive Rows	2	5.50	11.00		
	Equal	3				
	Total	18				
Approval Seeking-Post-Test-Approval-Seeking-Pre-Test	Negative Rows	10	7.85	78.50	-1.06	0.291
	Positive Rows	5	8.30	41.50		
	Equal	3				
	Total	18				

* $p < 0.05$ Test Used: Wilcoxon Test of Signed Orders

5. Discussion

The aim of this study is to examine the effect of mindfulness-based stress reduction program on cognitive flexibility and early maladaptive schemas in a group of young adults. In this context, the adults participating in the research were asked to answer the questions on the cognitive flexibility scale and early maladaptive schemas scale before and after the program. It was investigated whether there was a significant difference between the mean scores obtained before and after the program. As a result of the analysis, it is seen that the mindfulness-based stress reduction program is effective in increasing the cognitive flexibility of the participants. According to another result, it was found that the mindfulness-based stress reduction program was effective in some sub-dimensions of the participants' early maladaptive schemas.

Mindfulness approach refers to the state of being aware of what is happening in the present moment as they are [38]. The importance of mindfulness studies in the fields of mental health and physical health has increased in recent years and has brought a new perspective to psychotherapy approaches [1]. When the literature is examined, MBSR (conscious awareness-based stress reduction program), in which mindfulness methods are included, appears in various studies to test its effect on physical and mental problems. And, according to the results of these studies, it is reported that physical and psychological disorders decreased and well-being increased in individuals who participated in the 8-week mindfulness-based stress reduction program [24], [34]. With the application of mindfulness methods, the person learns strategies for coping with problems, accepting internal and external experiences and getting away from these problems [13].

Mindfulness-based interventions: It aims for individuals to focus on their experiences right now, right now, and accept them without ignoring their thoughts and feelings, without judging them [15]. Mindfulness practices involve meeting internal and external experiences with openness and acceptance in the present moment. Accepting the experience prevents the person from displaying a judgmental and rigid view of their experiences. One of the main aims of the program we implement is for the participants to adopt an accepting approach to their experiences. Not avoiding experiences, being emotionally open to them and having an accepting approach is a state of cognitive flexibility [30]. In this study, it was found that the MBSR program had a positive and significant relationship with the cognitive flexibility variable. Accordingly, it can be said that mindfulness-based stress reduction program increases the cognitive flexibility levels of individuals. This result is in line with the relevant literature.

In a study, it was stated that there are positive and significant relationships between mindfulness and cognitive flexibility [35]. Moore and Malinowski [23] also state that there is a positive and significant relationship

between meditation-based awareness and cognitive flexibility in their study. According to the results of a recent study examining the relationship between mindfulness and cognitive flexibility of university students, cognitive flexibility increases as people's mindfulness increases [27]. Shapiro, Astin, Bishop, and Cordova [31] reported that mindfulness-based stress reduction program increased self-control, flexibility in emotion and thought [14].

Individuals with strong cognitive flexibility can achieve the desired gain from life as they approach difficult situations with alternative solutions and appropriate reactions [11]. Imiroğlu, Demir and Murat [17], found in their study that cognitive flexibility is effective on individuals' subjective well-being. Based on the studies mentioned in the literature and this research, it is possible to say that mindfulness-based stress reduction program can support problem solving skills and subjective well-being processes by increasing the cognitive flexibility of individuals.

According to our results, mindfulness-based stress reduction program seems effective in some sub-areas of early maladaptive schemas. These sub-areas are: Social Isolation/Insecurity, Abandonment, Failure, Self-Sacrifice, High Standards. The post-test scores of the individuals in the mentioned sub-areas showed a significant decrease compared to the pre-test scores. On the other hand, the program we implemented had no effect on some of the early maladaptive schema sub-dimensions. These sub-dimensions can be listed as follows: Emotional Deprivation, Flawlessness, Emotional Suppression, Introversion/Dependence, Invulnerability in the Face of Threats, Pessimism, Privilege/Insufficient Self-Control, Punishment, Approval Seeking.

Although studies on mindfulness-based approaches have increased in recent years, experimental studies are rare in the relevant literature. The concepts of schema and mindfulness are seen in limited numbers in the literature. This limits our effort to compare our results. However, existing research shows that there is a significant relationship between mindfulness and early maladaptive schemas.

In a study conducted on university students, a significant negative correlation was found between early maladaptive schemas and mindfulness. It is known that early maladaptive schemas create an obstacle to awareness [39]. In a study conducted only with women, it was found that there was a significant negative correlation between early maladaptive schemas and mindfulness [33]. Similarly, in another study conducted only with men, it was reported that mindfulness and early maladaptive schemas were negatively and significantly correlated [32].

Early maladaptive schemas occur as a result of the negative experiences of the individual with caregivers or peers during childhood and adolescence. Early maladaptive schemas negatively affect individuals'

self-perception and their relationship with the environment, and this negative effect continues throughout life in the form of repetitive, dysfunctional patterns [42].

On the other hand, conscious awareness, is the ability to recognize the situation we are experiencing now, without judgment, by accepting possible situations that have been experienced in the past or that may be experienced in the future [4]. Conscious awareness includes approaching the experience of the present moment with a simple attention, perceiving the stimuli around us as if they are encountering them for the first time, not making judgments such as good-bad, beautiful-ugly [21]. With conscious awareness, individuals can evaluate other possibilities independently of their old thoughts and be open to new options.

In the light of this information, we can say that mindfulness helps people to evaluate today in a more objective way, not with the effect of their early experiences. Considering the relevant literature, there is a negative significant relationship between people's conscious awareness and early maladaptive schemas.

The study reveals the importance of mindfulness-based stress reduction program with positive results. revealing the contribution of individuals to have a more positive outlook on their lives and to increase their functional actions shows the significance of this study.

6. Limitations

This research has some limitations. A comparison could not be made with a mindfulness-based experimental study whose effect on schema domains was examined in the literature. Comparisons have been made with studies examining the relationship between the concept of mindfulness and early maladaptive schemas. Therefore, it is recommended to conduct more experimental research on this subject. There is no control group in our study. This is within the limitations of the research. Our study was conducted with young adult individuals. Larger samples with different characteristics can be included in future studies.

Lack of cognitive flexibility brings along many problems in individuals. Cognitive flexibility is very important in order to produce solutions to the problems that arise in our lives and to adapt to changes. The mindfulness-based program we implemented in this study seems to support cognitive flexibility in individuals. Likewise, it is known that this program is effective on some schema areas that are formed in the early stages of life and affect the present. From this point of view, it can be said that it can be beneficial to use mindfulness approaches in psychotherapy processes.

It may be suggested to add a possible personality questionnaire to other studies to be conducted similarly and to examine its relationship with cognitive flexibility or maladaptive schemas.

Author Contributions

Conflict of Interest

The author has no conflict of interest to declare.

Financial Disclosure

This article has no financial support.

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