







Research Article

# Adding Mindfulness to CBT in Group Counseling: A Randomized Pilot Study on Self-Efficacy, Cognitive Flexibility, and Self-Compassion

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## ABSTRACT

This study examined the impact of an eight-session group counseling program that combined cognitive behavioral therapy (CBT) with mindfulness meditation on three key aspects: self-efficacy, cognitive flexibility, and self-compassion. The study group consisted of 17 university students from several faculties at a public university in Southern Anatolia, Türkiye. The data were gathered using the Cognitive Flexibility Inventory, the Self-Compassion Scale, and the Self-Efficacy Scale. The experimental group engaged in an 8-week program that combined CBT and mindfulness-based group counseling, whereas the control group received no intervention. The results of this study indicated that, in the experimental group, participants' self-efficacy, cognitive flexibility, and self-compassion post-test scores were significantly higher than pre-test scores. The results also suggest that although no significant differences were obtained in self-efficacy post-test scores between the experimental and control groups, participants who received the intervention demonstrated higher post-test scores in cognitive flexibility and self-compassion than those in the control group.

**Keywords:** group counseling, mindfulness integrated CBT, self-efficacy, self-compassion, cognitive flexibility

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## Introduction

College life can be characterized as a period of significant changes, during which the importance of adaptation skills increases even further with new developments such as hybrid teaching (Gelles et al., 2020; Lee & Lee, 2022). In this transitional period, called emerging adulthood, the individual has reached the end of adolescence but has not yet fully assumed the role of an adult (Arnett, 2015). During these years, individuals try to gain independence in various fields while trying to separate themselves from their families. College students undergo numerous transformations as they come to understand themselves. Key developmental tasks during this time include identifying and preparing for adult responsibilities, achieving independence, pursuing a career, realizing personal potential, and adapting socially (Aktaş, 1997). Locke et al. (2016) stated that the main problems encountered during college life are depression, anxiety, stress, family relationships, relationship problems, mourning, academic performance, interpersonal skills, unstable emotional state, and adaptation to a new environment. Pedrelli et al. (2015) reported that anxiety disorders, depression, suicide, eating disorders, and substance abuse are common mental health problems among university students. According to Coşkun (2018), while the primary motivations for university students to visit counseling centers are related to professional and educational concerns, a significant number of students also seek assistance for issues involving interpersonal relationships, such as enhancing assertiveness, forming friendships, and resolving conflicts.

One of the concepts considered critical during university years is cognitive flexibility, which helps students cope with issues that negatively impact their quality of life and adjustment (Parvizi & Özabacı, 2022). Cognitive flexibility refers to the ability to reorganize one's cognitive processes in order to respond effectively to unexpected events or changing environmental conditions (Cañas et al., 2006). According to the cognitive approach, a person's problems in a situation stem from the inflexibility of the cognitions they develop in response to the event (Cañas et al., 2003). A person with strong cognitive flexibility sees multiple options in a situation and has the self-efficacy to adapt to it (Martin & Rubin, 1995). Dennis and Vonder Wal (2010) proposed that people with strong cognitive flexibility comprehend challenging situations as manageable, recognize various interpretations and

alternatives in these circumstances, and can generate multiple solutions to such difficulties.

As one's cognitive flexibility improves, there is a corresponding increase in self-compassion (Martin et al., 2011) and self-efficacy (Heydari et al., 2022). Self-compassion is defined as an understanding, compassionate, and sensitive approach to oneself in which the person recognizes and accepts the painful emotions instead of avoiding them (Neff, 2003). In other words, self-compassion involves the acceptance, kindness, and compassion we show to ourselves when faced with painful experiences. Instead of avoiding pain, people with high self-compassion accept that pain is universal and that every person can make mistakes. In essence, those with high levels of compassion exhibit empathy not only towards themselves but also towards people around them, reflecting their awareness of common humanity (Germer, 2009).

Self-efficacy, another related concept, also helps college students adapt to academic challenges and new learning environments. Bandura (1977) introduced the concept of self-efficacy, which is rooted in the principle of reciprocal determinism in social-cognitive theory. Self-efficacy, as a concept, refers to an individual's self-assessment of their ability to navigate diverse challenges (Bandura, 1982). This pertains to one's judgment of their capabilities to effectively handle the particular circumstances they encounter. Self-efficacy is related to both external (reward-punishment) and internal (belief-thought-expectation) factors. These factors shape behavior; therefore, self-efficacy plays a crucial role in achieving success (Bandura, 2000). Research has demonstrated a positive relationship between mindfulness and self-efficacy (Jin et al., 2020; Latorre et al., 2023). According to findings by Sharma and Kumra (2022), self-efficacy plays an intermediary role in the connection between mindfulness and several psychological conditions, such as stress, depression, and anxiety. Furthermore, correlational and meta-analytic studies (Iskender, 2009; Liao et al., 2021; Souza & Hutz, 2016) have revealed a positive association between self-compassion and self-efficacy. Findings from correlational research indicate that practicing self-compassion techniques may lead to improvements in both self-efficacy (Moeini et al., 2019) and cognitive flexibility (Sadeghi et al., 2018).

## Group counseling for college students

Many universities have counseling centers, where college students can request individual, group, and career counseling or guidance related to various concerns. Group counseling can help individuals get feedback from others, try new skills, and understand that they are not alone in their struggles (Corey et al., 2013). Previous studies examining group interventions for college students have found CBT-based interventions (Alavi et al., 2021; Özer & Yalçın, 2020; Yıldız & Aslan, 2017) and group interventions based on mindfulness (Li et al., 2023; Parcover et al., 2018) to be effective in reducing psychological distress and improving psychological well-being.

CBT enables individuals to question dysfunctional assumptions and beliefs, and to investigate these beliefs from different angles by developing cognitive flexibility (Mitchell et al., 2013). As noted earlier, cognitive flexibility refers to an individual's capacity to identify alternative courses of action in challenging situations and to adaptively reassess these options by modifying their cognitive appraisals. Mindfulness, on the other hand, is a tool for enhancing psychological flexibility and is an integral part of the various therapeutic modalities within the third wave of CBT (Baer, 2003). Unlike cognitive flexibility, psychological flexibility involves one's capacity to remain in the present moment, accept troubling thoughts and emotions without attempting to change them, and act in accordance with one's values, rather than acting on difficult internal experiences (Aslan & Turk, 2022). According to Kabat-Zinn (2003), mindfulness is a form of conscious awareness that arises when individuals intentionally focus on the present moment and observe their experiences without judgment.

Studies consistently demonstrate the positive effects of mindfulness on psychological functioning. For example, Latorre et al. (2023) reported that mindfulness was directly associated with self-compassion and indirectly related to self-efficacy. Similarly, Tovilović et al. (2022) found that university students who completed a mindfulness-based self-help program showed greater psychological flexibility, reduced ruminative thinking, and improved attentional flexibility. Beyond these individual findings, research across different developmental stages indicates that both CBT-based group interventions and mindfulness-based practices contribute to improvements in key psychological variables. Specifically, these interventions have been

shown to enhance cognitive flexibility (Abedi et al., 2023; Bahrami et al., 2022), self-efficacy (Hyun et al., 2005), and self-compassion (Hamedani et al., 2023; Kurtoğlu & Başgöl, 2023; Taylor et al., 2020). When focusing specifically on emerging adults, the findings remain consistent. Studies indicate that CBT-based group interventions increase university students' cognitive flexibility (Fazeli et al., 2015; Nazarzadeh et al., 2015) and self-efficacy (Zeidi et al., 2020), while mindfulness-based group interventions improve self-compassion and self-efficacy (Taylor et al., 2020).

Over the past few years, events such as the COVID-19 pandemic and the 2023 Türkiye-Syria earthquake have occasionally necessitated the delivery of higher education through distance or hybrid learning methods. The shift to distance education, along with restrictions on social life, significantly altered individuals' daily routines, learning experiences, and social interactions. During this period, college students faced various challenges, including academic difficulties, career concerns, financial concerns, restrictions on activities, and social isolation (Salimi et al., 2021; Son et al., 2020). A study by Von Keyserlingk et al. (2022) examined students' stress levels, self-efficacy, and self-regulation both prior to and after the COVID-19 pandemic. The findings revealed that while stress levels generally increased following the beginning of the pandemic, students who possessed high self-regulation and self-efficacy stated a smaller increase in stress compared to their peers. Investigations into students' transition back to classroom-based education in the aftermath of the COVID-19 pandemic have identified a widespread deterioration in their emotional well-being and overall quality of life compared to pre-pandemic levels. The findings suggest that student-focused strategies may support learners in regulating their mental states and enhancing overall well-being by strengthening factors such as self-efficacy, adaptive coping skills, and engagement in physical activity (Liverpool et al., 2023). Although several years have passed since the acute phase of the COVID-19 pandemic, evidence indicates that its educational and psychosocial consequences may persist, particularly during key developmental transitions. In this context, university students may still face adaptation challenges when navigating in-person academic and social environments. Accordingly, the present study focused on enhancing college students' cognitive flexibility, self-efficacy, and self-compassion, with the

aim of supporting their ongoing adjustment to social contexts and facilitating more effective management of developmental challenges.

Our study employed an experimental design with an intervention (experimental) group and a no-intervention control group. The experimental group participated in an eight-session group therapy program combining CBT and mindfulness meditation, whereas the control group received no intervention. The effects of the program were assessed in terms of changes in participants' cognitive flexibility, self-compassion, and self-efficacy. Our first hypothesis suggested that there would be a significant increase in the cognitive flexibility, self-compassion, and self-efficacy scores of students in the experimental group from pre-test to post-test. Our second hypothesis proposed that the post-test scores of cognitive flexibility, self-efficacy, and self-compassion for university students in the experimental group would be significantly higher than the post-test scores of the control group.

## Method

This study employed an experimental methodology featuring a control group allocated through randomization, with evaluations conducted prior to and following the study. This study used a  $2 \times 2$  split-plot factorial design, comparing pretest-post test results between the intervention and control groups.

## Participants

The study group initially consisted of 18 participants, randomly assigned to either an experimental or control group (i.e., 9 participants per group). However, after the first session, one group member dropped out. Thus, the final sample comprised 17 undergraduate students, 8 (one male, seven females) of whom were allocated to the experimental group, and 9 (2 males, 7 females) allocated to the control group. Participants' age ranged from 18 to 21, with a mean age of 18.75 years ( $SD = 1.164$ ). All participants were enrolled in different departments at a public university located in Türkiye. To be eligible for participation, individuals had to meet three criteria: they did not have a diagnosed psychiatric condition, they were not receiving any psychological treatment, they would not receive any psychological

treatment until the study was completed, and they would willingly agree to participate in the study (i.e., the participation was voluntary).

## Instruments

### *The Cognitive Flexibility Inventory (CFI)*

The CFI, initially established by Dennis and Vander Wal (2010), underwent cultural adaptation for use in Türkiye by Sapmaz and Doğan (2013). This assessment tool comprises 20 items, each evaluated on a seven-point Likert scale. The CFI is structured into two distinct subscales: control and alternatives. The control subscale consisted of 7 items ( $\alpha = .84$ ), the alternatives subscale consisted of 13 items ( $\alpha = .90$ ), and the Cronbach's alpha value for the overall cognitive flexibility value was .90.

### *The Self-Compassion Scale (SCS)*

Neff (2003) developed the SCS, which was subsequently translated into Turkish by Akin et al. (2007). The instrument comprises 26 items which were evaluated on a five-point Likert scale and divided into six subscales: self-kindness ( $\alpha = .77$ ,  $n = 5$ ), self-judgment ( $\alpha = .72$ ,  $n = 4$ ), common humanity ( $\alpha = .72$ ,  $n = 4$ ), isolation ( $\alpha = .80$ ,  $n = 4$ ), mindfulness ( $\alpha = .74$ ,  $n = 4$ ), and over-identification ( $\alpha = .74$ ,  $n = 5$ ). The test-retest reliability coefficients were .69, .59, .66, .60, .69, and .56, in the same order.

### *The Self-Efficacy Scale (SES)*

Sherer et al. (1982) initially developed the SES, which was later adapted for use in Turkish by Yıldırım and İlhan (2010). SES consisted of 17 items evaluated on a five-point Likert scale. The original scale demonstrated a Cronbach's alpha coefficient of .86. For the Turkish version, the internal consistency coefficient was calculated as .80, while the test-retest reliability coefficient was .69.

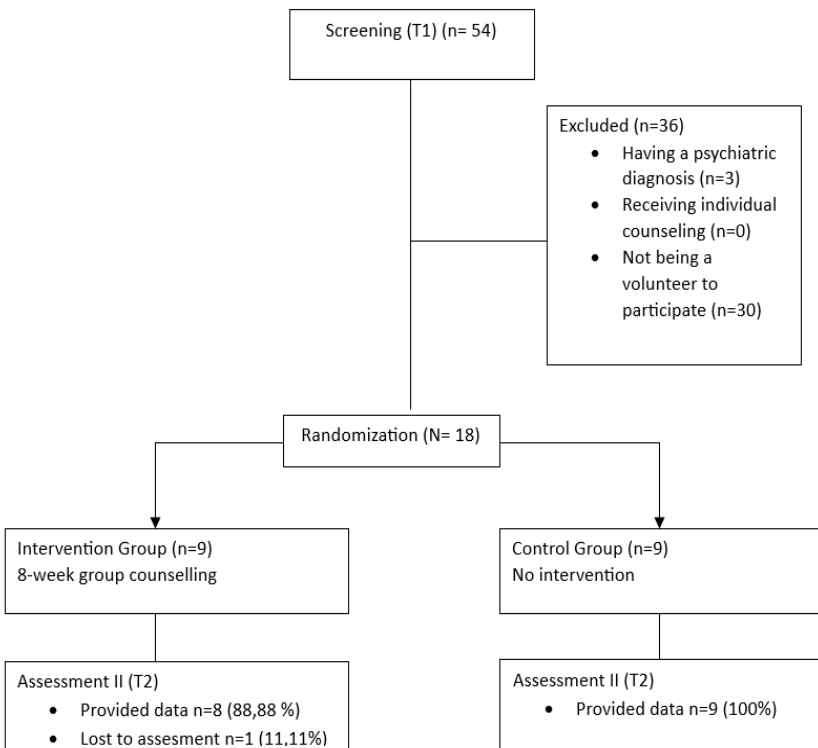
## Procedure

Following approval from the university's ethics committee, the students were informed about the counseling group through various online channels. A group of 54 students filled out a personal information form that contained details relevant to the inclusion criteria. Following this, a short screening interview (~15 minutes), including questions about the group

counseling process, participation, and inclusion criteria, was held individually with each participant ( $n = 54$ ) in person. After the initial screening interviews, the researchers selected students who met the inclusion criteria ( $n = 18$ ) and randomly allocated them to groups. The experimental group was briefed by the research team on the content, duration, and meeting location of the counseling group. All participants provided signed informed consents. The authors confirm that this study was conducted in accordance with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. This study was approved by the Ethics Committee of Akdeniz University (21.11.2022/ No. 426, Antalya, Türkiye). The flow of the study is summarized in Figure 1.

**Figure 1**

*Study Flow*



Both members of the experimental and control groups completed the scales at the start (pre-test) and end (post-test) of the program. One participant in the experimental group withdrew after the initial session. The experimental group participated in an 8-week group counseling program that integrated CBT and mindfulness. The control group did not receive any intervention during or after the study.

### Group counseling based on CBT combined with mindfulness meditation

The theoretical basis of the group counseling program was CBT and mindfulness. The program used CBT-based techniques, exercises, and mindfulness meditation practices. The activities and exercises were designed by researchers using various mindfulness sources (Alidina, 2020; Germer, 2009; Kabat-Zinn, 2012; Stahl & Goldstein, 2019; Williams & Penman, 2012), CBT (Beck, 2016; Cully & Teten, 2008; Türkçapar, 2018), and group counseling activities (e.g., Altınay, 2017; Corey et al., 2013; Voltan-Acar, 2013). During each meeting, the group focused on the problem of one member volunteering to work on it. Other group participants actively contributed by engaging in discussions, offering feedback, and sharing their experiences. Group counseling sessions aim to help group members improve their ability to regulate emotions, restructure maladaptive thoughts, and adopt more adaptive behavioral responses. The cognitive aspect of the program was reflected in the theoretical knowledge of the skills intended for participants to acquire during the sessions. Meanwhile, the emotional component of the program involved participants expressing feelings related to in-session activities. The behavioral component was represented by the exercises conducted during the sessions and the assigned homework tasks.

Students in the experimental group participated in the program for 90 minutes per week over eight weeks. The sessions were conducted face-to-face at the same time, day, and place every week. Each session began with a warm-up activity and discussions on homework experience. Mindfulness exercises were incorporated at the end of each session, and the participants were given homework assignments. Furthermore, at the end of every group session, attendees were encouraged to express their thoughts and feelings regarding their experiences during the session.

The first session of the eight-week program included a general introduction to the group counseling sessions and their rules; besides, group members got to know each other, members' goals were discussed, and basic concepts of CBT and mindfulness were presented. In the second session, a volunteer member's problem was used to demonstrate the relationships among "event-thought-emotion-behavior," and the ABC model was introduced. The ABC model explains how an activating event (A) triggers an individual's beliefs (B), which, in turn, leads to emotions and behaviors (C). In addition, mindful breathing was introduced. The third session focused on information regarding cognitive distortions, and participants learned about and experienced mindfulness meditation. They practiced mindfulness at the end of each subsequent session. The fourth session involved thought analysis and mindfulness meditation. The fifth session focused on cognitive distortion and mindfulness meditation. The sixth session focused on CBT's behavioral experiment exercises and mindfulness meditation. The seventh session involved role-playing focused on each member's goals, conducting behavioral experiments, and practicing mindfulness exercises. The eighth session addressed termination, and the program was evaluated (for more details about the content of each session, see the Appendix). Upon completion of the group counseling program, attendees received a certificate acknowledging their participation.

### Data analytic plan

Initial exploratory analyses were performed to assess the assumptions underlying the primary analysis. Nonparametric statistical methods were employed for analysis because the Kolmogorov-Smirnov and Shapiro-Wilk tests indicated that the data did not follow a normal distribution, and the sample size of this study was relatively small. The Wilcoxon signed-rank test was utilized to examine the changes between the pre- and post-intervention scores. The Mann-Whitney U test (MWU) was applied to determine whether a significant difference existed between the pre-test and post-test scores of the experimental and control groups. Effect sizes were examined and interpreted using Cohen's criteria (Cohen, 1988).

## Results

### Pre-test and Post-test Comparisons of Cognitive Flexibility, Self-Efficacy, and Self-Compassion in the Experimental and Control Groups

To determine if significant changes occurred in the experimental group's pre-test and post-test scores for cognitive flexibility, self-efficacy, and self-compassion, we employed the Wilcoxon signed-rank test.

**Table 1**

*Pre- and Post-Test Comparisons of Outcomes in the Experimental Group*

	Pre- Post	<i>n</i>	Measurement	Mean	Mean Rank	Sum of Ranks	<i>z</i>	<i>p</i>
Cognitive flexibility	Negative Ranks	2	Pre-test	71.63	1.50	3.00	-2.10	.035*
	Positive Ranks	6	Post-test	83.25	5.50	33.00		
	Ties	0						
Self-efficacy	Negative Ranks	7	Pre-test	51.75	.00	.00	-2.37	.018*
	Positive Ranks	0	Post-test	63.38	4.00	28.00		
	Ties	1						
Self- compassion	Negative Ranks	7	Pre-test	80.86	0	.00	-2.36	.018*
	Positive Ranks	0	Post-test	107.13	4.00	28.00		
	Ties	1						

Note. \* $p < .05$

The findings in Table 1 reveal statistically significant differences between the initial and final assessment scores across the measures. Specifically, our findings suggest that participants in the experimental group experienced significant changes in cognitive flexibility, self-efficacy, and self-compassion from pre-test to post-test.

According to the results of the Wilcoxon signed-rank test for the control group, no significant differences were found between the pre-test and post-test measurements of cognitive flexibility ( $z = -0.51, p = .61$ ), self-efficacy ( $z = -0.77, p = .44$ ), and self-compassion ( $z = -0.63, p = .52$ ).

### Post-test Comparisons of Cognitive Flexibility, Self-Efficacy, and Self-Compassion between the Experimental and Control Groups

A series of MWU tests was applied to examine whether there were significant differences between the experimental and control groups before the program was implemented. The MWU results for the pre-test indicated no significant difference between the two groups in terms of cognitive flexibility ( $p = .25$ ), self-efficacy ( $p = .56$ ), and self-compassion ( $p = .39$ ).

Similarly, a series of MWU tests was employed to determine whether there were statistically significant differences between the two groups on the post-test scores. Statistically significant differences between the experimental and control group were found for cognitive flexibility,  $r = .55$ , and self-compassion,  $r = .78$ . In contrast, no significant group difference in self-efficacy was observed at post-test.

**Table 2**

#### *Post-Test Comparisons of Outcomes Between Experimental and Control Groups*

Scale	Group	<i>N</i>	Mean Rank	Sum of Ranks	<i>U</i>	<i>z</i>	<i>p</i>
Cognitive flexibility	Experimental	8	11.94	95.50	12.50	-2.26	.023*
	Control	9	6.39	57.50			
Self-efficacy	Experimental	8	11.50	92.00	16.00	-1.93	.054
	Control	9	6.78	61.00			
Self-compassion	Experimental	8	13.19	105.50	2.50	-3.22	.001*
	Control	9	5.28	47.50			

Note. \* $p < .05$

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## Discussion

This study aimed to evaluate the effects of a CBT-based group counseling program combined with mindfulness meditation on three key psychological aspects: cognitive flexibility, self-efficacy, and self-compassion. In this study, participants were taught CBT techniques that enabled them to recognize alternative thinking patterns, thereby enhancing their cognitive flexibility. Additionally, mindfulness exercises were implemented to help participants develop skills in staying present in the moment, which might have contributed to an increase in self-compassion. Moreover, by learning to generate alternative thoughts and behaviors, participants gained awareness of how to improve their self-efficacy, which might have also led to an increase in their overall levels of self-compassion. There are studies in the literature indicating a positive association between self-compassion and self-efficacy (Liao et al., 2021), as well as a significant relationship between unconditional self-acceptance and self-compassion (Faustino et al., 2020). However, the present study did not test the direction of this relationship, and future research is needed to clarify the underlying mechanisms. These findings suggest that integrating CBT techniques and mindfulness practices supports the development of psychological skills and enhances participants' ability to cope with challenges, ultimately improving their emotional well-being. Although these findings are promising, the study design prevents us from definitively concluding that the combination of CBT and mindfulness caused these changes, rather than CBT or mindfulness alone.

The results of the present study showed that participants in the experimental group exhibited significantly improved scores in all three areas at post-test compared to pre-test – a finding that supports our initial hypothesis. In contrast, no significant changes were observed in the control group. This finding suggests that cognitive-behavioral group counseling with mindfulness enhances participants' levels of self-efficacy, cognitive flexibility, and self-compassion.

Regarding our second hypothesis, participants in the experimental group demonstrated higher post-scores in cognitive flexibility and self-compassion compared to those in the control group. However, no significant group differences were observed in self-efficacy post-scores ( $p = .054$ ). This

nonsignificant result was slightly above the .05 threshold. Considering the limited number of participants in our study, the observed difference might have been significant in a larger sample. Literature consistently reports similar outcomes for interventions based solely on CBT or mindfulness. In a study conducted by Nazarzadeh et al. (2015), researchers observed that college students experienced an increase in cognitive flexibility and a decrease in perfectionism after participating in a cognitive-behavioral group therapy program. The findings of this study are largely in line with prior research highlighting the effectiveness of mindfulness-based and cognitive-behavioral interventions on university students' psychological well-being. For example, the observed increases in self-compassion are consistent with the results of Taylor et al. (2020), who reported enhanced self-compassion and coping self-efficacy among university students following an 8-week mindfulness program. Similarly, Richards and Martin (2012) found that even brief mindfulness-based interventions can significantly enhance self-compassion, and Huberty et al. (2019) observed similar outcomes in students who completed an app-based mindfulness program. The improvements in cognitive flexibility observed in the current study were also supported by Mehr et al. (2021), who reported that divorced women exhibited greater cognitive flexibility and resilience after participating in a mindfulness-based group intervention. Regarding self-efficacy, the present findings align with earlier studies demonstrating that CBT-based group programs can significantly improve self-efficacy in both adolescents and university students (Hyun et al., 2005; Ilkhchi et al., 2011; Sahranavad et al., 2019). Taken together, the consistency of our findings with those of previous studies reinforces the potential benefits of integrating CBT and mindfulness techniques into group interventions designed to enhance self-efficacy, cognitive flexibility, and self-compassion among university students. No contradictory findings emerged in the context of current outcomes.

Our findings revealed a notable change in self-efficacy scores between pre-test and post-test for the experimental group. However, when the post-test results of the experimental and control groups were compared, no substantial differences were observed. There are several possible explanations for this unexpected result. First, many variables can affect self-efficacy. When studies conducted with university students are examined, we see that self-efficacy is related to student engagement, motivational and

cognitive variables (Honicke & Broadbent, 2016), coping strategies (Freire et al., 2020), achievement, effort, and persistence (Ritchie, 2016), and teacher-student interaction (Li & Yang, 2021). Furthermore, a review study by Bartimote-Aufflick et al. (2016), focusing on university students, found that self-efficacy is interconnected with various psychological constructs. These include value, metacognition, intrinsic motivation, self-regulation, use of learning strategies, and locus of control. Emerging adulthood is associated with the exploration of identity, self-focus, a sense of in-betweenness, possibilities/optimism, and instability (Arnett, 2014). During this period, individuals develop self-efficacy by making their own decisions (Twenge, 2014). To strengthen internal validity, subsequent research could include assessments of possible confounding constructs and incorporate them as covariates in analyses. This would help clarify whether the increase in self-efficacy observed in the experimental group from pre-test to post-test was truly due to the intervention or influenced by other factors. One possible explanation for the lack of a significant between-group difference at post-test, despite the within-group improvement observed in the experimental group, is that the magnitude of the observed change may not have been sufficient to exceed time- and measurement-related effects (e.g., testing effects) that may have occurred in the control group. In addition, the relatively small sample size may have resulted in limited statistical power, thereby reducing the ability to detect between-group differences even in the presence of a true effect. Future studies with larger samples may help to better understand these findings.

## Conclusion

Overall, our findings contribute to previous research on CBT-based group work involving mindfulness by providing evidence regarding its potential effects on cognitive flexibility, self-efficacy, and self-compassion. Previous studies have reported similar results that applied CBT by incorporating mindfulness-based interventions. For example, Ong et al. (2008) investigated the impact of CBT combined with mindfulness meditation on insomnia. In a related study, Rapgay et al. (2011) explored the outcomes of integrating CBT with mindfulness-based approaches for treating generalized anxiety disorder. However, to our knowledge, no previous study has explored the effects of group counseling that incorporates

both CBT and mindfulness meditation on cognitive flexibility, self-efficacy, and self-compassion among university students in the post-COVID-19 era. This gap underscores the distinctive contributions of this study. While this study offers significant insights, it is important to acknowledge certain limitations that warrant consideration, particularly the small sample size, which represents a significant limitation and should be emphasized when interpreting the results. As the current study did not include a follow-up test, the permanence of its effectiveness could not be examined. Follow-up tests are recommended for future studies. Furthermore, while the experimental group exhibited a notable increase in self-efficacy levels following group counselling sessions, the levels of self-efficacy in the experimental group at post-test did not differ from those in the control group. Therefore, the content of the sessions can be organized in relation to this variable. For example, various activities related to self-control and physical activity, which are related to self-efficacy (Bandura, 1982), can be added to the session content. In our study, the pre- and post-test results of the experimental group revealed a statistically significant difference, whereas no significant difference was observed in the pre- and post-test results of the control group. These findings suggest that the program is effective. Furthermore, since the intervention was administered in a combined format, it is not possible to determine whether the improvements can primarily be attributed to CBT, mindfulness, or the combined effect of both. Future research should use designs with separate groups (CBT+ mindfulness, CBT only, mindfulness only, and control) to assess each component's value and better isolate their individual and combined effects.

Despite these limitations, our results suggest that group counseling sessions based on CBT with mindfulness meditation can positively contribute to students' cognitive flexibility, self-compassion, and self-efficacy levels. The study demonstrated the program's feasibility (i.e., participants understood the content and were actively engaging in intervention exercises), and the absence of significant challenges during the implementation indicates that the program can be effectively delivered in similar contexts. Further, there are several considerations for practitioners conducting such groups. Notably, the implementation of the intervention by the two leaders was particularly beneficial for facilitating in-session exercises, as one leader guided the activity, while the other observed the

group and provided support to members in need. However, it may be advisable for mindfulness exercises to be consistently led by the same leader, including in a two-leader group process, to enhance group members' engagement and focus. Additionally, displaying materials (e.g., posters listing cognitive distortions) on the wall before and throughout the sessions facilitated participants' recall of these concepts. Overall, our study may provide university counseling centers with useful information on how to expand their services and offer various intervention programs to increase the psychological well-being of emerging adults facing personal challenges, as well as other difficulties, including those related to COVID-19 and the global economic crisis.

### *Conflict of interest*

We have no conflicts of interest to disclose.

### *Data availability statement*

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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## Appendix

<p><b>1<sup>st</sup> Session:</b>          Gaining insight into the group counseling program's objectives, organization, and methodology,          Detailing the process for conducting sessions,          Determining group rules,          Determining the expectations,          Setting individual goals          Giving brief information about mindfulness and CBT  <b>Exercise:</b> Blind walk</p>	<p><b>2<sup>nd</sup> Session:</b>          Examining the relationship between "situation-thought-feeling-behavior" on a volunteer member's problem,          Explaining automatic thoughts,          Recognizing the significance of breath and clarifying the notion of mindful awareness,  <b>Exercises:</b> A three-minute mindfulness meditation  <b>Homework:</b> A three-minute mindfulness meditation, Situation-thoughts-emotion-behavior worksheet.</p>
<p><b>3<sup>rd</sup> Session:</b>          Identifying and understanding cognitive distortions  <b>Exercises:</b> Willow in the wind exercise, Mindfulness meditation (adding number at the end of breathing out)  <b>Homework:</b> A four-minute mindfulness meditation exercise, Situation-thoughts- emotion-behavior worksheet.</p>	<p><b>4<sup>th</sup> Session:</b>          Warm up activity,          Control of homework,          Identifying alternative thoughts,          Cognitive Restructuring of Automatic Thoughts  <b>Exercises:</b> Group sculpture, breath counting exercise  <b>Homework:</b> An eight-minute mindfulness meditation exercise</p>
<p><b>5<sup>th</sup> Session:</b>          The cognitive distortions are acted out by the group members and the volunteer member who shares the problem generates alternative thoughts against these cognitive distortions.  <b>Exercises:</b> Deserted island exercise, breath counting exercise</p>	<p><b>6<sup>th</sup> Session:</b>          Establishing an exposure hierarchy linked to objectives,          Designing behavior experiment with behavior experiment guide form,          Executing the behavioral experiment with role-playing  <b>Exercises:</b> a 16-minute breathing mindfulness meditation exercise</p>

<p><b>Homework:</b> a 12-minute mindfulness meditation exercise</p>	<p><b>Homework:</b> Behavioral experiment worksheet and recording chart, 16-minute breathing mindfulness</p>
<p><b>7<sup>th</sup> Session:</b>                  Executing the behavioral experiment with role-playing  <b>Exercises:</b> a 20-minute breathing mindfulness meditation exercise  <b>Homework:</b> Behavioral experiment recording chart, 20-minute mindfulness meditation exercise</p>	<p><b>8<sup>th</sup> Session:</b>                  Concluding all sessions,                  Gathering program evaluations and perspectives,                  Conducting final assessment at program completion,                  Distributing certificates of attendance and wrapping up  <b>Exercise:</b> Love bombing</p>