Effect of Mindful Self-Compassion Training on Anxiety, Depression and Emotion Regulation

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ABSTRACT

Objective : The present study examined the effectiveness of the mindful self-compassion (MSC) program on anxiety, depression, self-compassion and emotion regulation.

Methods : A total of 29 subjects (mean age 27.5±6.5 years, 15 males and 14 females) participated in a standardized 8-week MSC program. The control group consisted of age- and sex-matched twenty participants (mean age 26.0±2.9 years, 11 males and 9 females). All subjects completed self-report measurements at two weeks before and after the MSC program.

Results : MSC training improved self-compassion as demonstrated by the significant group x time interaction effects on the total Self-Compassion Scale scores ($F[1, 47]=8.324$, $p<0.01$). Regarding the subscale scores, a significant improvement in self-kindness, isolation and mindfulness components of self-compassion was observed after MSC training. A significant group x time interaction was observed on the self-kindness subscale ($F[1, 47]=4.664$, $p<0.05$), with a significant main effect of time ($F[1, 47]=23.723$, $p<0.001$). The isolation subscale showed a significant group x time interaction ($F[1, 47]=8.698$, $p<0.001$). For the mindfulness subscale, there was a significant group x time interaction ($F[1, 47]=6.611$, $p<0.05$) and main effect of time ($F[1, 47]=6.611$, $p<0.05$). MSC training also improved the acceptance emotion regulation strategy, as demonstrated by the significant group x time interaction in the acceptance subscale scores of the Cognitive Emotion Regulation Questionnaire ($F[1, 47]=6.845$, $p<0.05$).

Conclusion : MSC training showed efficacy in fostering self-compassion and improving emotion regulation. Thus, this program might be applicable to improve mental health. (Anxiety and Mood 2022;18(1):10-16)

KEYWORDS : Mindful self-compassion; Anxiety; Depression; Emotion regulation.

Introduction

Emotion regulation is defined as the ability to regulate one's own emotions and emotional responses and a critical component of adaptive coping mechanism for preventing negative outcome of stress.[1,2] Positive emotion regulation strategies such as acceptance, positive reappraisal resulted in reduction of stress-elicited negative emotions. While positive reappraisal was reported significantly more often in a non-clinical sample from the general population, malapative emotion regulation strategies such as self-blame or catastrophizing were reported significantly more often by clinical populations with high levels of anxiety and depression.[3] On the contrary, psychological intervention for anxiety, depression and other psychopathologies improved emotion regulation and symptoms of psychopathologies.[4]

Self-compassion can be viewed as a useful emotion regulation strategy to cope with adversity since it provides soothing oneself with warmth, acceptance, and care. Neff proposed that self-compassion comprises of three components: self-kindness, mindfulness and common humanity.[5] Self-kindness component entails being kind and understanding toward oneself in instances of pain or failure rather than being harshly self-critical. Mindfulness component is referred to as holding painful thoughts and feelings in mindful awareness rather than over-identifying with them. Common humanity component is characterized as perceiving one's experiences as part

of the larger human experience rather than seeing them as isolating. Researches have shown the relationship between self-compassion and psychological well-being and emotion regulation. Self-compassion is related to positive affect, well-being and happiness and negatively associated with negative affect, anxiety, and depression.[6-9] Neff et al. found that students who were higher in self-compassion were more likely to use adaptive emotion regulation strategies such as acceptance and reinterpretation.[10] A recent path analysis showed that reduced difficulties in emotion regulation mediated the association between increased self-compassion and mindfulness and lower psychological distress.[11]

Mindful Self-Compassion (MSC) program focused more exclusively on folstering self-compassion along with mindfulness and value-oriented behavior.[12] The MSC program was associated with beneficial effect on self-compassion, mindfulness and psychological well-being.[13-16] Given the association of self-compassion with anxiety, depression and emotion regulation, MSC training may be helpful to improve mood and adaptive emotion regulation strategies. Especially, the relationship between self-compassion and emotion regulation has not been fully understood. Thus, in the present study, we investigated the effect of MSC program on anxiety, depression and emotion regulation using the 8-week MSC program.

Methods

Participant population

A total of 32 subjects consists of 24 medical students, 7 clinical psychologists, and one psychiatric resident participated in the 8-week MSC class. There were 3 dropouts in the intervention group due to participants' personal reasons. The control group included 18 medical students and two psychiatric residents. Psychiatric illness was evaluated via a psychiatric interview conducted by a psychiatrist for both groups before program enrollment. For the healthy control group, volunteers with a current psychiatric disorder or a history of psychiatric disorder were excluded. All subjects agreed to participate in the present study and provided written informed consent. The Institutional Review Board (IRB) approval was obtained for this study.

Procedures

The intervention group recruited from a university hospital via a campus announcement. All subjects in the intervention group attended the weekly 2.5-hour, 8-session MSC program which was delivered by an experienced MSC-certified teacher and a teacher trainer. Control groups were recruited from the same medical college and hospital via advertisement and put on a wait list. The intervention and control group completed self-report questionnaires at 2 weeks before and after the MSC program.

MSC program

MSC is a protocol-standardized intervention aimed at increasing mindfulness and self-compassion and reducing the suffering associated with experiential avoidance.[15] The central components of the MSC program are formal meditation together with self-compassion practices aimed at developing the cognitive, behavioral and physical capacities to soothe and comfort oneself when distressed. Session 1 included general introduction and brief review of self-compassion. In session 2, foundational knowledge and practice of mindfulness were provided. Session 3 focused on practicing loving-kindness including introduction of loving-kindness and key practices such as loving-kindness for a loved one and finding loving-kindness phrases. Session 4 focused on helping participants recognize their inner critic and discovering a compassionate inner voice. Session 5 practiced discovering core values and finding hidden values in suffering. In session 6, participants practiced skills to deal with difficult emotions. Session 7 and 8 respectively taught skills for dealing with challenging interpersonal relationships and relating to positive aspects of oneself and one's life with appreciation. After the class, the feedback was discussed and reflected in the next session. There were no significant program-related problems reported by the participants.

Measures

Beck Depression Inventory-II (BDI-II)

The 21-item BDI-II is a widely used self-reported measure of the severity of depressive symptoms and has robust reliability and validity across a variety of populations.[17] The items in this scale are measured on a 4-point Likert scale ranging from 0 to 3 and the total score ranges from 0 to 63. In the present study, the Korean version of the BDI-II, which has excellent reliability and validity for both depressive patient and normal population by several studies (a sensitivity 0.935, a specificity 0.981, and Cronbach's α=0.834–0.880,[18] or a sensitivity 0.850, a specificity 0.881, and Cronbach's α=0.940 was used.[19]

State-Trait Anxiety Inventory (STAI)

The STAI is a self-reported scale consisting of 20 items that measure state and trait anxiety.[20] The items in this scale are measured on a 4-point Likert scale from 1 (not at all) to 4 (very much so) and the total score ranges from 20 to 80. The Korean version of the STAI exhibited excellent psychometric properties with an internal consistency of α=0.92 for SAI and 0.90 for TAI.[21]

Self-Compassion Scale (SCS)

A 26-item SCS, which assesses the positive and negative aspects of self-compassion consisting of three main elements (six subscales in total) was developed by Neff.[22] Responses to each statement (e.g., "I'm kind to myself when I'm experiencing suffering") are measured on a 5-point scale ranging from 1 (almost never) to 5 (almost always) and averaged for each subscales. A mean score of self-compassion is then calculated and higher scores indicate greater tendency toward self-compassion. The Korean validated version of the SCS was used in the present study.[23] The Cronbach's α was 0.92 in Neff's study, 0.87 in Korean validation study.

Cognitive Emotion Regulation Questionnaire (CERQ)

The CERQ[24] is a 36-item questionnaire composed of nine conceptually different subscales and measures the following cognitive emotion regulation strategies: self-blame, thoughts of putting the blame for what you have experienced on yourself; other-blame, thoughts of putting the blame for what you have experienced on the environment or another person; rumination or focus on thought, thinking about the feelings and thoughts associated with the negative event; catastrophizing, thoughts explicitly emphasizing the terror of what you have experienced; putting into perspective, thoughts of brushing aside the seriousness of the event/emphasizing the relativity when comparing it with other events; positive refocusing, thinking about joyful and pleasant issues instead of thinking about the actual event; positive reappraisal, thoughts of creating a positive meaning to the event in terms of personal growth; acceptance, thoughts of accepting what you have experienced and resigning yourself to what has happened; and refocus on planning, thinking about what steps to take and how to handle the negative event. An individual's tendency to engage in each strategy is measured on a 5-point Likert scale from 1 (almost never) to 5 (almost always) and the higher score of each subscale shows more frequent usage of that cognitive emotion regulation strategy. The reliability and validity of the CERQ scales were good in the clinical and non-clinical samples with Cronbach's α ranging from 0.68 to 0.86.[3] The Korean version of the CERQ displayed good reliability and validity for the college student population (n=300, Cronbach's α of 9 subscale ranging between 0.53 to 0.85)[25] and Korean clinical sample (n=230, α=0.86).[26]

Data analysis

Demographic findings between the two groups were compared using Chi-square test for categorical variables and Student's t-test for continuous variables. Paired t-tests or Wilcoxon signed-rank tests were used to compare the significance of pre- vs. post- difference of a specific score on the self-compassion scale and cognitive emotion regulation questionnaire before and after the program within each group. To investigate the effect of MSC training on self-compassion and cognitive emotion regulation strategy, general linear model repeated measures analysis of variance (ANOVA) with time (pre- vs. post-intervention) as a within-subject factor and group (MSC vs. control) as a between-subject factor was conducted. Also, a rank-based nonparametric mixed model statistical method with an F1-LD-F1 design was applied and the ANOVA-type statistics (ATS) were reported for some variables which do not meet normality assumption. Statistical significance was defined as $p < 0.05$ (two-tailed). Statistical analyses were performed using R, version 4.0.3(https://www.r-project.org/). Nonparametric tests were performed using nparLD package.[27]

Results

Baseline characteristics of participants

Demographic data including age, gender, marital status, religion, and socioeconomic status of the subjects are summa-

Table 1. Demographic characteristics of the mindful self-compassion group and control group

	Intervention group (n=29)	Control group (n=20)	p-value
Age (years)	27.5±6.5	26.0±2.9	NS
Gender (M:F)	15:14	11:9	NS
Marital status (unmarried)	24 (82.8)	19 (95.0)	NS
Religion status (yes)	17 (58.5)	6 (30.0)	NS
Economic status			NS
Low	5 (17.2)	4 (20.0)	
Middle	8 (27.6)	5 (25.0)	
High	16 (55.2)	11 (55.0)	

Data are expressed as number (%) or mean+standard deviation. NS, non-significant

rized in Table 1. The mean age of participants was not significantly different between the two groups (27.5±6.5 years for the intervention group; 26.0±2.9 years for the control group). Additionally, other characteristics such as gender, marital status, religion and socioeconomic status were not significantly different between the two groups.

The effect of MSC training on anxiety and depression

Regarding the effects of MSC intervention on mood, results showed statistically significant improvement in BDI score for both the MSC intervention (p<0.001) and control groups (p<0.05). Also, MSC intervention group showed significant improvement on TAI scores (p<0.05). However, a mixed design statistical test showed no statistically significant interaction effect between groups and time on BDI, SAI and TAI scores.

The effect of MSC training on self-compassion

To evaluate the effects of the MSC program on self-compassion, 2 group (MSC vs. control)×2 time (baseline vs. post) mixed design statistical test was conducted (Table 2). The result showed a significant interaction between group and time (F[1, 47]=8.324, p=0.006, ηp2=0.150) on the total SCS scores. There was a significant main effect of time (F[1, 47]=15.668, p<0.001, ηp2 = 0.250), but no significant main effect of group on the total SCS scores (F[1, 47]=0.042, p=0.839, ηp2=0.001). Descriptive statistics and paired t-tests showed that while control group did not show significant changes (baseline: 20.1± 2.2, post: 20.6±2.7, t=0.984, p=0.337), the MSC group showed significant improvement on the total SCS scores after intervention (baseline: 19.2±3.7, post: 21.8±3.4, t=4.631, p<0.001), indicating the effect of MSC training on the general improvement of self-compassion.

Regarding subscales scores, a significant group x time interaction was observed on the self-kindness subscale (F[1, 47]= 4.664, p=0.036, ηp2=0.090), with a significant main effect of time (F[1, 47]=23.723, p<0.001, ηp2=0.335), but no significant main effect of group was observed (F[1, 47]=0.147, p=0.704, ηp2=0.003). The isolation subscale showed a significant group ×time interaction (F[1, 47]=8.698, p=0.005, ηp2=0.335), with

Table 2. Baseline and post-intervention changes of clinical variables of the mindful self-compassion group and control group

Scales	MSC (n=29)			Control (n=20)			Interaction*	
	Baseline (Mean±SD)	Post (Mean±SD)	p-value	Baseline (Mean±SD)	Post (Mean±SD)	p-value	Statistics	p-value
BDI	9.3 (±6.3)	5.7 (±4.2)	0.000	5.2 (±4.3)	3.3 (±3.4)	0.014	0.211	0.646
SAI	42.4 (±8.6)	40.5 (±6.3)	0.106	40.9 (±6.7)	39.9 (±7.9)	0.385	0.067	0.795
TAI	45.2 (±4.6)	43.7 (±3.8)	0.038	44.5 (±3.5)	44.1 (±4.5)	0.557	0.299	0.583
SCS total	19.2 (±3.7)	21.8 (±3.4)	0.000	20.1 (±2.2)	20.6 (±2.7)	0.337	8.324	0.006
Self-kindness	2.8 (±0.9)	3.4 (±0.8)	0.000	2.9 (±0.4)	3.2 (±0.5)	0.031	4.664	0.036
Self-judgement	3.3 (±0.8)	3.5 (±0.8)	0.014	3.1 (±0.6)	3.3 (±0.8)	0.340	0.949	0.330
Common humanity	3.2 (±0.7)	3.6 (±0.8)	0.012	3.6 (±0.6)	3.5 (±0.6)	0.685	3.981	0.052
Isolation	3.5 (±0.7)	4.0 (±0.8)	0.002	3.7 (±0.8)	3.5 (±0.9)	0.343	8.698	0.005
Mindfulness	3.2 (±0.6)	3.6 (±0.7)	0.000	3.6 (±0.4)	3.6 (±0.7)	1.000	6.611	0.013
Overidentification	3.2 (±1.0)	3.6 (±0.9)	0.008	3.2 (±0.8)	3.5 (±0.9)	0.096	0.554	0.460
CERQ total								
Acceptance	13.9 (±3.2)	15.6 (±2.1)	0.001	15.3 (±2.4)	15.2 (±2.5)	0.827	6.845	0.012
Positive refocusing	9.6 (±3.7)	11.3 (±3.9)	0.020	11.6 (±3.3)	14.1 (±2.9)	0.001	0.698	0.408
Positive reappraisal	13.2 (±3.5)	14.6 (±3.7)	0.022	14.9 (±2.1)	14.7 (±2.3)	0.745	3.834	0.056
Putting into perspective	11.9 (±3.7)	13.1 (±3.5)	0.084	12.9 (±2.5)	13.6 (±1.8)	0.221	0.295	0.590
Refocus on planning	16.1 (±3.5)	16.8 (±2.2)	0.096	16.8 (±2.0)	16.8 (±1.5)	1.000	0.011	0.916
Self-blame	12.9 (±3.2)	12.8 (±2.8)	0.828	12.5 (±2.5)	11.7 (±2.6)	0.328	0.640	0.428
Other-blame	8.4 (±3.3)	7.5 (±2.8)	0.035	8.7 (±3.3)	8.3 (±3.0)	0.537	0.423	0.519
Focus on thought	12.2 (±3.7)	12.3 (±3.3)	0.845	12.6 (±2.4)	12.2 (±2.9)	0.538	0.374	0.544
Catastrophizing	8.1 (±3.2)	6.7 (±2.6)	0.000	8.7 (±2.8)	7.8 (±2.8)	0.216	0.459	0.502

*Statistical analysis-overall repeated measures ANOVA tests on the measures by training (F, interaction pre- vs. post-training) and their effect size (partial eta-square [ES]). MSC, Mindful-Self Compassion; SD, standard deviation; BDI, Beck Depression Inventory-II; SAI, State-anxiety of the State-trait anxiety inventory; TAI, Trait-anxiety of the State-trait anxiety inventory; SCS, Self-Compassion Scale; FFMQ, Five Facet Mindfulness Questionnaire; CERQa, Cognitive Emotion Regulation Questionnaire-adaptive coping; CER-Qm, Cognitive Emotion Regulation Questionnaire-maladaptive coping

no significant main effect of time (F[1, 47]=2.224, p=0.143, ηp2=0.045) and group (F[1, 47]=0.420, p=0.520, ηp2=0.009). For the mindfulness subscale, there was a significant group× time interaction (F[1, 47]=6.611, p=0.013, ηp2=0.123) and main effect of time (F[1, 47]=6.611, p=0.013, ηp2=0.123), but no significant effect of group (F[1, 47]=0.889, p=0.351, ηp2=0.019). These results on the subscales of SCS show that MSC training improved self-kindness, isolation and mindfulness for the participants.

All other SCS subscale scores did not show any significant results on mixed design statistical test.

The effects of MSC training on emotion regulation

Table 2 shows findings of the effect of MSC program on emotion regulation. The subscale scores of acceptance showed significant group×time interaction (F[1, 47]=6.845, p=0.012, ηp2=0.127) and significant main effect of time (F[1, 47]=5.346, p=0.025, ηp2=0.102), but no significant main effect of group (F[1, 47]=0.460, p=0.501, ηp2=0.010) was observed. Descriptive statistics and paired t-tests showed that while control group did not show significant changes (baseline: 15.3±2.4, post: 15.2±2.5, t=0.221, p=0.827), the MSC group showed significant improvement on acceptance scores after intervention (baseline: 13.9±3.2, post: 15.6±2.1, t=3.619, p<0.005). These results indicated that acceptance domain of emotion regulation strategies has improved after MSC training.

Although positive reappraisal subscale score has improved after MSC training, it did not reach statistical significance with marginal significance level (group×time interaction, F[1, 47]= 3.834, p=0.056, ηp2=0.075). All the other subscales of the CERQ did not show statistical significance with mixed design statistical tests, although some subscales of the CERQ showed improvement on after intervention with paired t-tests.

Discussion

In the present study, the 8-week MSC training effectivley improved self-compassion, especially, self-kindness, isolation and mindfulness components. Also, the training resulted in significant improvement on acceptance emotion regulation strategy.

Previous studies have demonstrated the effectiveness of the MSC program on self-compassion for clinical psychology trainees and healthcare professionals.[13,28] Simiar to the previous researches, the participants of the present study were medical students, clinical psychologists and a psychiatric resident.

Since healthcare professionals are exposed to demanding and stressful work environment, they often experience professional burnout, depression, anxiety, alcohol and drug use.[29-31] To overcome these negative psychological consequences, self-compassion interventsions have been applied to healthcare professionals and led to significant improvement on stress, depression and anxiety.[32] This suggests that training program for cultivating self-compassion might be valuable in healthcare professional training such as medical trainees and psychologist trainees.[33,34] In this regard, recently developed self-compassion training for healthcare communities (SCHC) is a good news for healthcare professionals.[28] The SCHC is brief 6 hour program aimed to improve wellbeing and personal resilience by teaching mindful self-compassion skils to deal with distressing emotional situations.

In the present study, self-kindness, mindfulness, isolation component of self-compassion scale were improved. Self-kindness is a central quality of self-compassion and it's soothing quality is likely to reduce depression and anxiety.[35] Mindfulness invovles acknowledging negative thoughts or emotions without judgement, that is, neither ignores nor ruminates on disliked aspects of oneself or one's life. Shared variance between the changes in mindfulness and the changes in self-compassion is in line with the present finding that showed both mindfulness and self-compassion scores improved after the MSC program.[12,13] MSC program enhances a sense of relatedness and reduces the feelings of isolation by encouraging the perception of common humanity that imperfection is part of the human condition. A meta-analysis that showed improvement of isolation component supports the findings of the present MSC intervention.[32] In fact, self-compassion-based interventions led to improvement of different component of SCS with large effect size for over-identification, moderate effect size for self-kindnes and isolation, and a small effect for mindfulness.[32] This differential effect on each component was not explained, but could be due to different sample sizes, participant's characteristics and adherence to the program.[13]

To the best of our knowledge, this was the first study evaluating the effects of the MSC program on emotion regulation strategies. The present study showed that MSC program improved acceptance emotion regulation strategy. A previous study showed that acceptance strategy significantly reduced self-reported negative affect and physiological responses during emotion provocation tasks.[36] There have been some researches demonstrating possible role of self-compassion on acceptance strategy. Being self-compassionate may protect

against poor clinical psychological outcomes by enabling adaptive emotion-regulation strategies such as acceptance, re-appraisal, self-soothing.[34] In addition, self-compassion suggested to be a central mechanism by which acceptance-based interventions impact psychological health.[37,38] Also, Leary et. al found that self-compassion was associated with more acceptance when prompted to recall and imagine real and perceived failures.[39] Althought the exact mechanism by which the MSC program improves emotion regulation, previous studies reporting the relationship between self-compassion and emotion regulation provide some clues. That is, habitual use of self-compassion impacts mental health potentially by enabling negative emotions to be processed.[40] This processing of negative emotion enables reducing the deployment of maladaptive emotion regulation strategies such as avoidance.[15] One reason why some negative emotion regulation strategies did not show improvement could be explained by the fact that the participants in the current study were not clinical samples. A previous study showed that non-clinical samples reported self-blame and catastrophizing less often at baseline, thus, the changes of the scores between two time points may not show statistical significance in the present study.[41] Also, small sample size may have small power to detect differences. In addition, it is worth studying whether different types of therapy may have differential or similar effect on emotion regulation strategies. For example, cognitive processing therapy was effective treatment for individuals exposed to trauma even with high levels of self-blame.[42] However, for cognitive behavioral therapy, acceptance of emotions may be a critical component to clinical improvement in SAD which is in agreement with the present study.[43]

The current study has some limitations. The participants for this study were medical students and clinical psychologists with relatively small sample sizes, thus, can not be generalized to general population. One reason for non-significant finding of the depression and anxiety might be due to the fact that participants were healthy non-clinical samples even though the structured clinical interview for psychiatric diagnoses was not applied. Further researches that investigate the effect of the MSC program on emotion regulation including clinical samples are needed. Finally, measuring mood and anxiety using subjective questionnaires limits the interpretation of the current study since the use of systematized clinical interview measures and randomized controlled design may provide more objective evidence.

Conclusions

The standard 8-week MSC program was promising to improve self-compassion and adaptive emotion regulation strategies in medical students and clinical psychologists. Since MSC specifically focuses on fostering self-compassion, which is not easily found in the healthcare profession training environment, the authors believe that including a MSC program into regular curriculum would be beneficial to healthcare profession.

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