

## **Abstract**

**BACKGROUND:** Mindfulness-Based Cognitive Therapy (MBCT) has been validated as an efficacious psychological intervention for prevention of depression relapse. Yet, whether its positive effects can be extended to the treatment of acute depression is not yet fully confirmed. Besides, to date, few compelling researches address the mechanisms of change underlying MBCT's effects. Most mechanism studies collected assessment only at two to three time points (pre- and post-intervention and follow-up) which do not address the temporal sequence which is necessary for the establishment of mechanisms of an intervention.

**OBJECTIVE:** This session-by-session repeated measures study of the MBCT aims to examine 1) the effectiveness of MBCT for patients with active depression; 2) the inter-relationships and temporal sequence among the changes of three putative process factors, i.e. mindfulness, rumination and self-compassion, with depressive outcome over MBCT treatment, so as to evaluate their roles as potential mechanisms of MBCT for depression.

**METHODS:** A total of 113 patients who currently met the diagnosis of Major Depressive Disorder or Dysthymic Disorder received an 8-week MBCT. Patients were assessed at 10 time points across treatment, i.e. T0 (pre-group), T1-T8 (sessions 1 to 8), and T9 (3-month follow-up). Changes in depressive symptoms, mindfulness, rumination and self-compassion over MBCT were analyzed using latent growth curve modeling and cross-lagged panel analysis to examine their association and temporality.<sup>ii</sup>

**RESULTS:** Overall, significant changes in expected directions on all outcome and process factors (except reflection subscale of rumination) over MBCT were found. A significantly large pre-post effect size (Cohen's  $d = 1.69$ ) was identified for reduction of depressive symptoms. Most of the treatment effects could be maintained after 3 months. Bivariate latent growth curve modeling confirmed significant associations between the slopes (rates of change) of the three putative process factors and depressive symptoms over MBCT. As for the cross-lagged panel analyses, four competing models of a 5-wave cross-lagged path model of MBCT for depression were tested. A reciprocal model was found between mindfulness and depressive symptoms. Change of self-compassion was found to precede change of depressive symptoms, while change of brooding (a subscale of rumination) followed change of depressive symptoms. Post-hoc modified models by adding indirect effect paths yielded satisfactory fit indexes for all models.

**CONCLUSIONS:** Findings of this study suggest that MBCT can be effective in the treatment of active depression. There are significant temporal associations between the rate of changes of the three putative process factors and depressive symptoms across MBCT. Results also indicated that a bi-directional and reciprocal model for changes of mindfulness and depressive symptoms. While change of rumination (brooding) is likely to be a result of change of depressive symptoms over MBCT, change of self-compassion is found to precede change of depressive symptoms, suggesting its role as a possible MBCT mechanism. Findings of this study fill in the existing knowledge gap about temporal ordering among various change systems in MBCT. Direction for further research in MBCT mechanisms is discussed in the context of strengths and limitations of this study.