



# Brief App-Based Mindfulness and Mood Monitoring Interventions Reduce Symptoms of Depression, Anxiety, and Urges to Self-Injure in First-Year College Students: A Randomized Controlled Trial

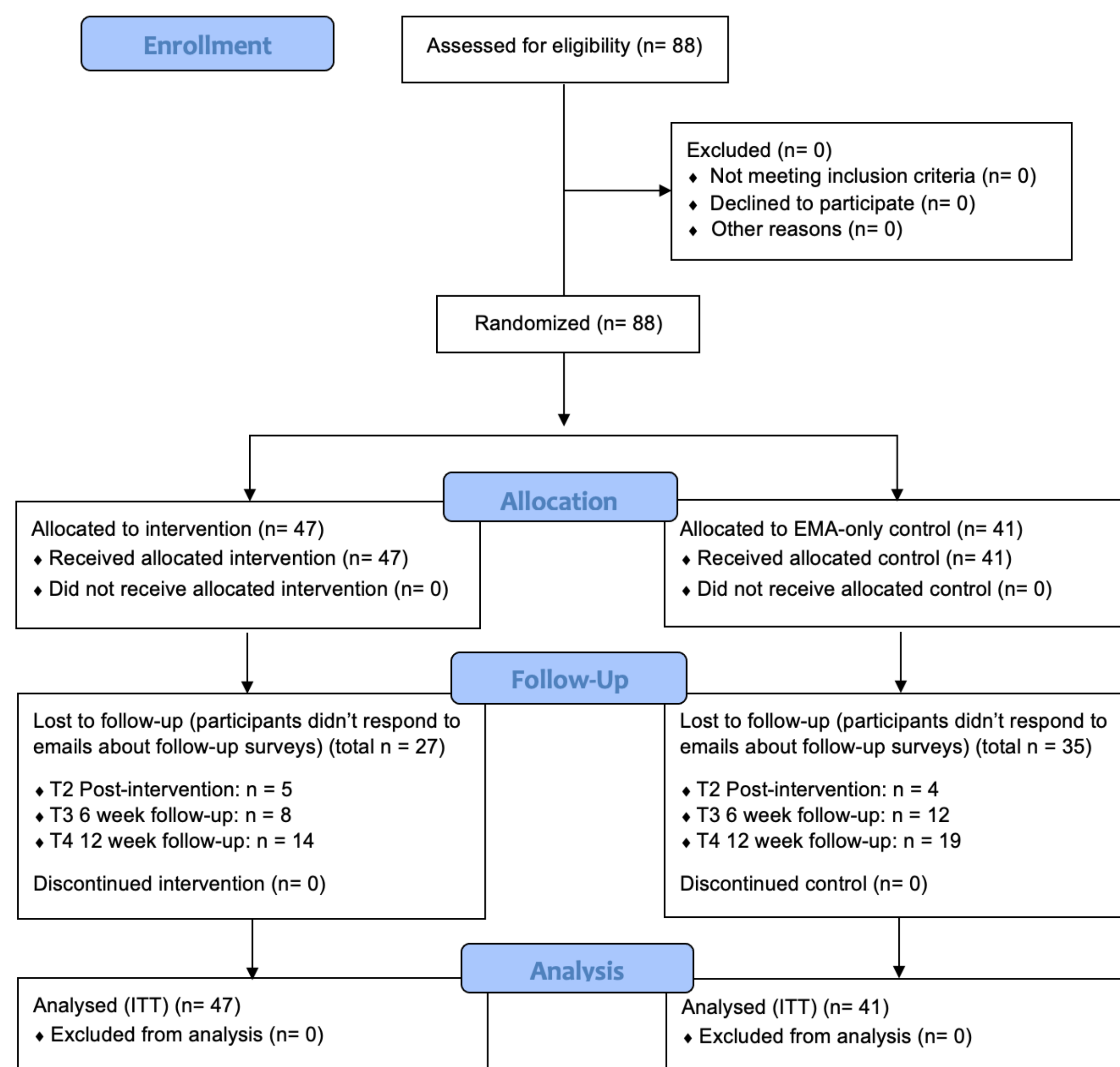
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## BACKGROUND

- First-year college students face challenges such as adjusting to new surroundings and stressors that confer risk for developing symptoms of depression and anxiety, and self-injurious behaviors (Argento et al., 2020; Conley et al., 2013; Flett et al., 2018).
- Mood monitoring and mindfulness have been shown to reduce these outcomes in first-year college students (Dark-Freudeman et al., 2021; Goldberg et al., 2018; Matthews & Doherty, 2011).
- We examined the effects of a mobile-app mindfulness intervention combined with mood monitoring (i.e., the CARE app) in reducing these outcomes in first-year college students compared to mood monitoring alone and an external assessment-only control.

## METHODS



\*This CONSORT flow diagram represents the RCT. An external, assessment-only control group (n=39) was recruited a year later to control for the effect of time.

## Participants:

- First-year college students who did not report any serious suicidal concerns were eligible for this study ( $M_{age} = 18.65$  years;  $SD = .84$ ; 41.3% White and 41.3% Asian; 68.50% women).

## Procedure:

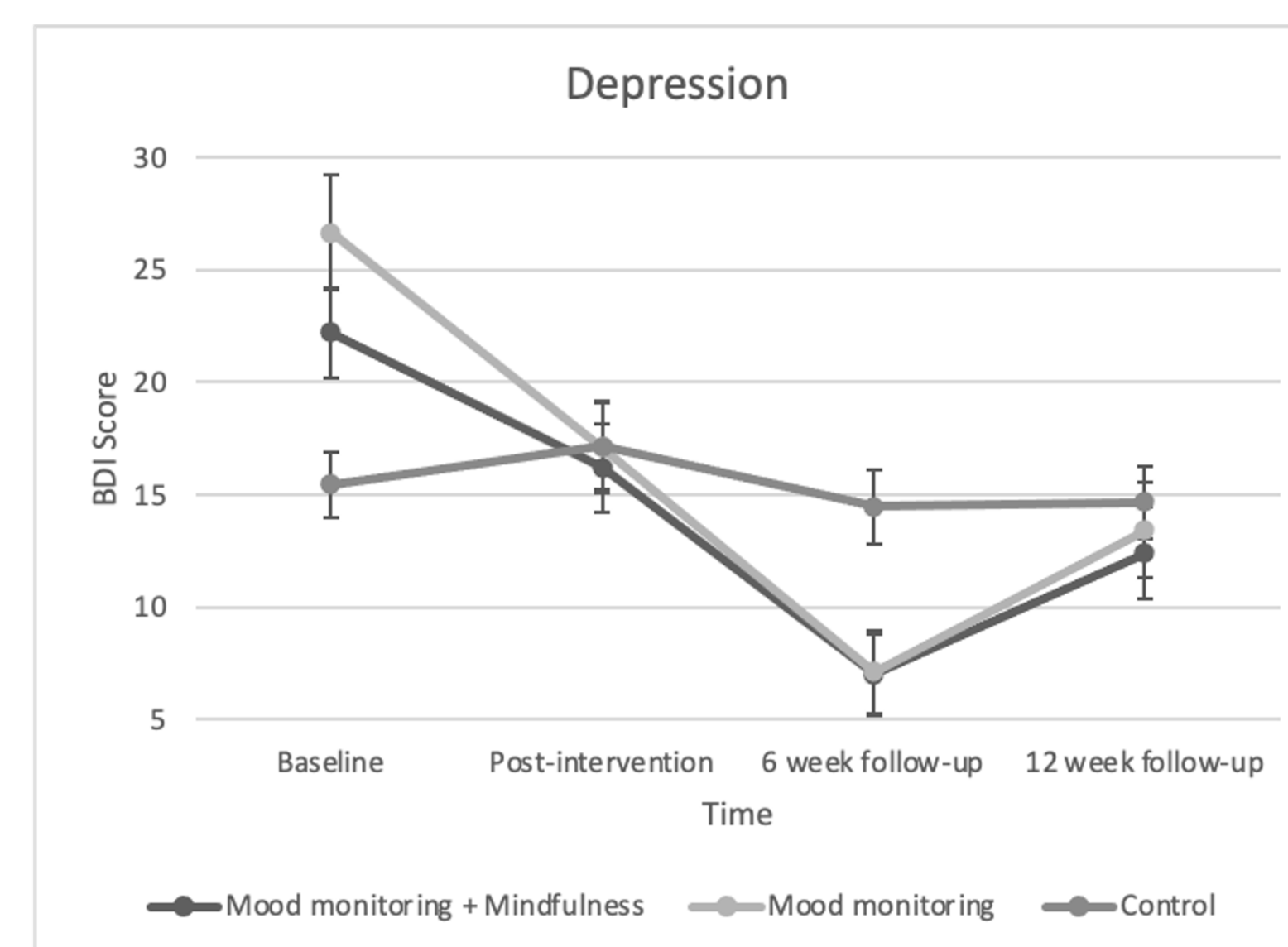
- Participants in the RCT used the app thrice a day for 3 consecutive weeks and completed self-report questionnaires at baseline, post-intervention, 6 weeks, and 12 weeks later.
- Participants in the assessment-only control were only asked to fill out questionnaires at all four time points.

## Measures:

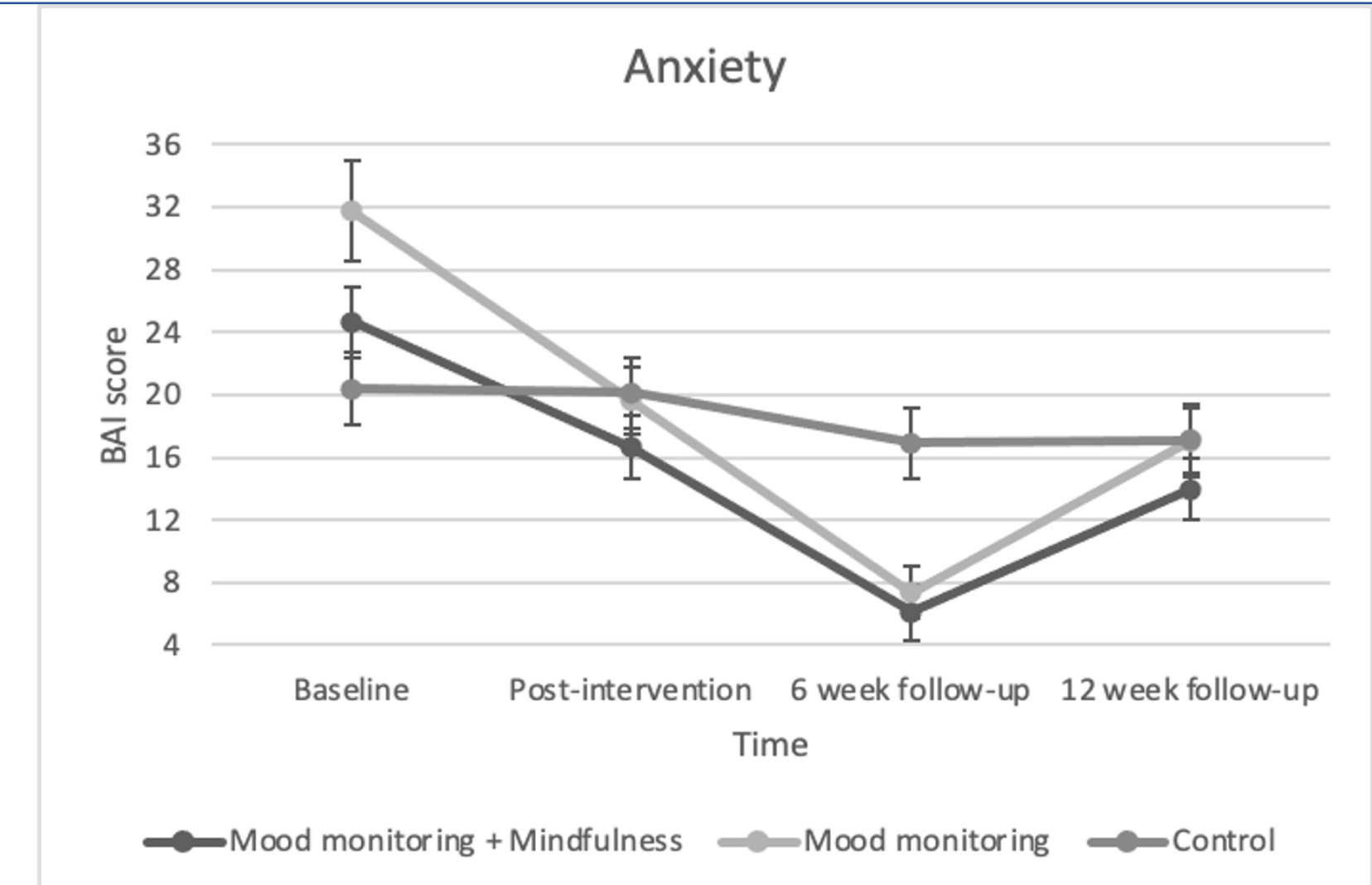
- Beck Depression Inventory (Beck et al., 1996)
- Beck Anxiety Inventory (Beck et al., 1988)
- Alexian Brothers Urge to Self-Injure Scale (Washburn et al., 2010)

## RESULTS

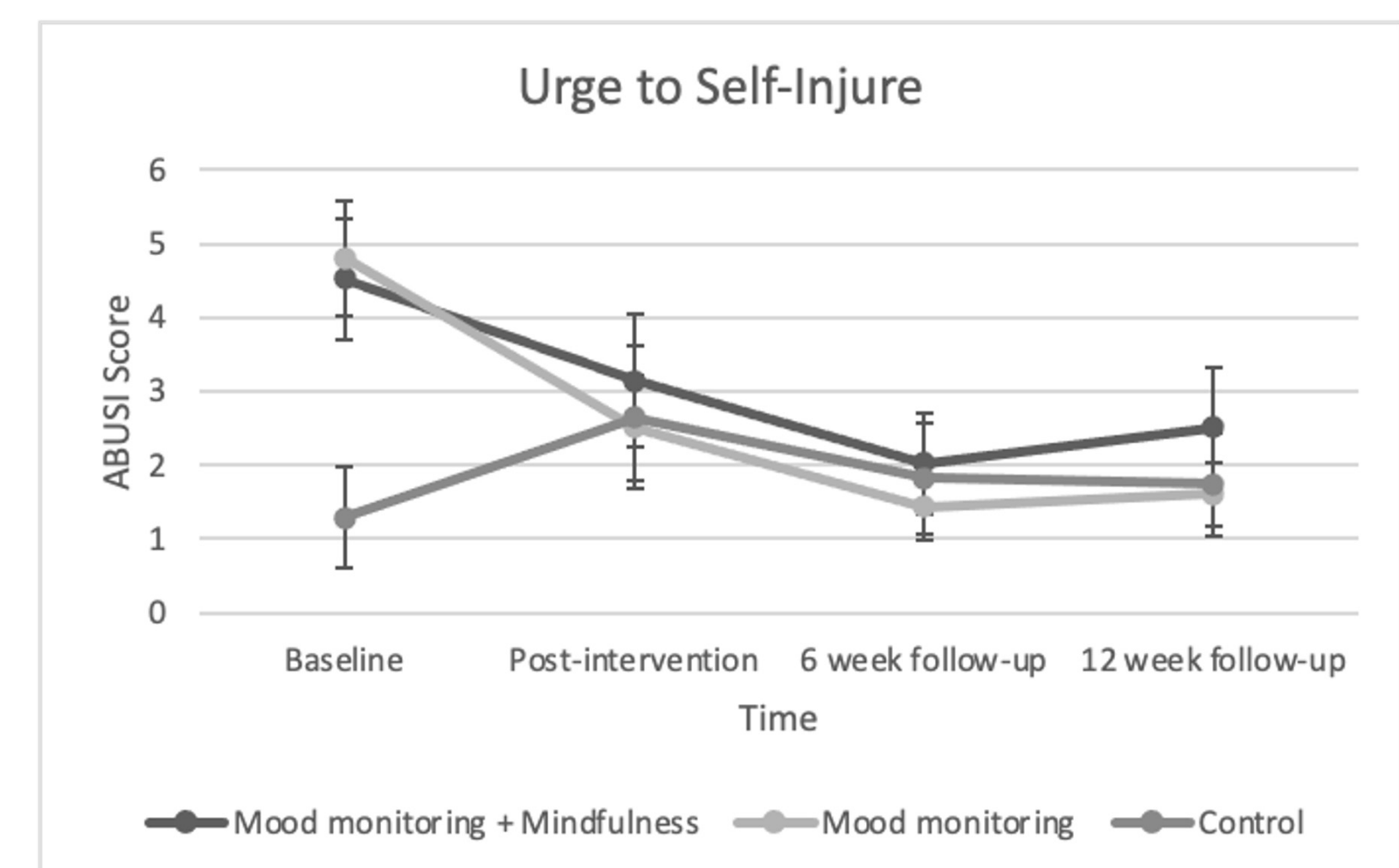
- We used the carry-forward intention-to-treat approach and conducted repeated-measures ANOVAs to examine changes in first-year students' depressive and anxiety symptoms and urges to self-injure as a function of condition over time.
- There were significant Condition X Time interactions for depressive symptoms, anxiety symptoms, and urges to self-injure.
- Participants in the mood monitoring with mindfulness and mood monitoring conditions had significant reductions in symptoms of depression and anxiety and urges to self-injure as compared to participants in the control group. These effects lasted throughout the 12-week follow-up period.



$F(6, 244) = 6.27; p < 0.001; \eta_p^2 = 0.134$



$F(6, 242) = 5.80; p < 0.001; \eta_p^2 = 0.126$



$F(6, 140) = 2.60; p = 0.020; \eta_p^2 = 0.103$

## DISCUSSION

- In line with past RCT findings, we found that brief use of a mindfulness-based mobile app was associated with significant reductions in participants' depressive and anxiety symptoms and urge to self-injure from baseline through the 12-week follow-up, as compared to participants who did not engage in any mindfulness practice (Abbott, 2018; Flett et al., 2018; MacPherson et al., 2013; Pistorello et al., 2012). **Both mindfulness and mood monitoring, in combination and as stand-alone interventions, were effective in reducing these symptoms.**
- A limitation of this study is that the assessment-only control group was recruited at a later time point which may explain baseline differences between the control and RCT groups in depressive and anxiety symptoms.
- Group differences in depression and anxiety symptoms were most pronounced at 6 weeks post-intervention, and it is likely that continued practice would be required to sustain effects longer-term.
- The benefits, accessibility, and scalability of these interventions may bolster their use by young adults to mitigate their mental health concerns with greater ease and autonomy.