Cognitive bias modification to prevent depression (COPE):
Results of a randomised controlled trial

[Supplementary Material]

As reported in the trial published protocol and trial registration, the study aimed to conduct all analyses using an intention-to-treat approach when assessing outcomes, which made use of all available data at each time point including available data from participants who did not complete all assessment sessions or who were lost to follow up. No assumptions were made concerning missing data. However, for readers interested in restricting analysis of outcome measures to participants who were classified as ‘compliant completers’ (at least 70% of CBM sessions competed) additional analyses are available in this Supplementary Material. Aside from restricting samples to ‘compliant completers’ the methods of each analysis reported here are identical to those reported in the manuscript.

## Recruitment

Of all participants, 23 participants in the control intervention condition, and 30 participants in the active intervention condition were classifies as compliant completers. The number of cognitive bias intervention sessions completed by these participants varied, though did not differ between participants in the active intervention (Mean = 38.30, SD = 3.65) and control conditions (Mean = 39.26, SD = 3.95),

t(51) = 0.92, *p* = .36.

## Primary outcome - Incidence of major depressive episodes

Fifty-two participants (Control Intervention Condition = 22, Active Intervention Condition = 30) completed a total of 191 SCID-I assessments (17 incomplete assessments) for identifying the occurrence of a major depressive episode. One participant was identified as having met criteria for a major depressive episode across the trial. Table S.1 presents the number of occurrences in which individuals met criteria for a major depressive episode at each assessment point and for each intervention condition. Analyses provided no evidence of an effect of the intervention or assessment time upon the incidence of major depressive episodes, or interaction effect of these factors, over the course of the trial in this sample.

# Table S.1

Table S.1. Number of occurrences and inferential statistics of major depressive episode,
for each assessment time and intervention condition; N.

|  |  |  |
| --- | --- | --- |
|  | **SCID-I Assessment Time (weeks)** | **Regression outcomes** |
| **Intervention condition** | **0** | **11** | **27** | **52** | **Total** | **Effect of assessment time****(within group) *Odds Ratio* (95%CI)** | **Effect of intervention condition****(between group)*Odds Ratio* (95%CI)** |
| Control*MD episode reported**No MD episode reported* | 022 | 018 | 020 | 118 | 1 | 0.00(0.00 to 0.00) | 0.00(0.00 to 0.00) |
| Active*MD episode reported**No MD episode reported* | 030 | 027 | 027 | 028 | 0 |

## Secondary outcome - Incidence of clinically significant levels of depression and change in severity of depressive symptoms

Fifty-two participants (Control Intervention Condition n = 22, Active Intervention Condition n =30) completed a total of 298 (0 incomplete assessments) PHQ-9 assessments. Table S.2 presents descriptive and inferential statistics for the number of occurrences in which these individuals met criteria for clinically significant symptoms of depression at each assessment point and for each intervention condition. Three participants recorded instances of having experienced clinically significant symptoms of depression (PHQ-9 score ≥ 15) across the assessment points. Analysis did not demonstrate a statistically significant main effect of the intervention upon the incidence of major depressive episodes over the course of the trial. No statistically significant effect of assessment time was observed, nor a significant interaction effect between intervention condition and assessment time.

Table S.2 also presents descriptive and inferential statistics of PHQ-9 scores reported by participants at each assessment point and for each intervention condition. Analysis revealed a significant main-effect of assessment time (b= -0.04, 95%CI = -0.07 to -0.01, *p* = 0.012), demonstrating that, in general, PHQ-9 scores reduced across the trial. No significant main-effect of intervention condition or interaction-effect involving assessment time and intervention condition was present.

# Table S.2

Table S.2. Descriptive and inferential statistics for PHQ-9 scores and clinically significant symptoms of depression (PHQ-9 ≥ 15),
for each assessment time and intervention condition.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Assessment Time (Weeks)** | **Regression outcomes** |  |
| **Intervention condition** | **0** | **6** | **17** | **23** | **36** | **45** | **Total** | **Effect of assessment time****(within group)*b* (95%CI)** | **Effect ofintervention condition****(between group)*****b* (95%CI)** | **Effect size ofintervention conditionat Week 45*d* (95%CI)** |
| **PHQ-9 scores; Mean(SD)** |  |  |  |
| Control | 7.91(2.39)N = 22 | 7.30 (3.53)N = 20 | 8.00 (4.30)N = 22 | 7.19(4.64)N = 21 | 6.00 (3.44)N = 21 | 6.38(4.42)N = 21 | 7.14 (3.85) | -0.04\*(-0.07 to -0.01) | 0.59(-1.98 to 0.80) | 0.26 (-0.18 to 0.98) |
| Active | 8.00 (2.69)N = 30 | 7.07 (3.39)N = 29 | 5.82 (2.97)N = 28 | 5.45 (3.36)N = 29 | 5.46 (3.98)N = 28 | 5.37(3.39)N = 27 | 6.22 (3.42) |
| **Clinically significant symptoms; N** |  |  |  |
| Control*Clin. sig. symptoms reported**Clin. sig. symptoms not reported* | 022 | 020 | 121 | 120 | 021 | 120 | 3 | 1.03(0.96 to 1.11) | 0.00(0.00 to 0.00) |  |
| Active*Clin. sig. symptoms reported**Clin. sig. symptoms not reported* | 030 | 029 | 028 | 029 | 028 | 027 | 0 |
| \* Statistically significant effect, *p < .05*. |  |

## Secondary outcome - Change in cognitive bias

Fifty-two participants (Control = 22, Active = 30) completed a total of 215 attentional bias assessments. Table S.3 presents descriptive and inferential statistics of Attentional Bias Index scores included in the model for each assessment time and intervention condition. Analyses did not demonstrate a statistically significant main-effect of assessment time or main-effect of intervention condition. However, the interaction-effect of these two predictors was significant (b= 0.01, 95%CI = 0.03 to 0.51, *p* = 0.029). The nature of this interaction effect revealed that participants in the active intervention group demonstrated a significantly greater increase in attentional bias to negative information, relative to participants in the control group, over the course of the trial. This is in contrast to the anticipated direction of the effect of the attentional bias modification procedure completed by the active intervention group, which was designed to reduce attentional bias to negative information.

Fifty-two participants (Control = 22, Active = 30) completed 228 assessments of negatively biased interpretation of ambiguous information. Table S.3 presents descriptive and inferential statistics of Interpretation Bias Index scores included in the model, for each assessment time and intervention condition. Analysis did not yield a statistically significant main-effect of assessment time or main-effect of intervention condition, nor an interaction-effect between these two factors.

**Table S.3**

Table S.3. Descriptive and inferential statistics for Attentional Bias Index scores and Interpretation Bias Index Scores,
for each assessment time and intervention condition; Mean(SD).

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Assessment Time (Weeks)** | **Regression outcomes** |  |
| **Intervention condition** | **0** | **6** | **11** | **27** | **52** | **Effect ofassessment time****(within group)*****b* (95%CI)** | **Effect ofintervention condition****(between group)*****b* (95%CI)** | **Effect size ofintervention conditionat Week 52*d* (95%CI)** |
| **Attentional Bias Index Scores** |  |  |  |
| Control | -0.09(0.30)N = 18 | -0.12(0.34)N = 19 | -0.09 (0.19)N = 19 | -0.28(0.41)N = 17 | -0.30 (0.42)N = 19 | 0.00(-0.01 to 0.00) | 0.07(-0.12 to 0.25) | -0.80(-1.43 to -0.14) |
| Active | -0.07(0.55)N = 24 | 0.02(0.57)N = 27 | 0.06 (0.73)N = 23 | 0.15(0.59)N = 23 | 0.15(0.65)N = 26 |
| **Interpretation Bias Index Scores** |  |  |  |
| Control | 0.20(0.57)N = 21 | 0.01(0.78)N = 19 | 0.17(0.43)N = 19 | -0.00(0.49)N = 19 | -0.03(0.44)N = 20 | 0.00(-0.01 to 0.00) | -0.11(-0.39 to 0.17) | 0.38(-0.21 to 0.96) |
| Active | 0.30(0.80)N = 26 | -0.06 (0.57)N = 28 | -0.27(0.59)N = 25 | -0.31(0.57)N = 23 | -0.27(0.74)N = 28 |