Supplementary material

Contents

Questionnaires pre- and post-survey

At the beginning of the study (pre-survey), we assessed several validated questionnaires in order to characterize the sample. The pre-survey assessed depressive symptoms, symptoms of generalized anxiety disorder, trait repetitive negative thinking, and trait mindfulness. Trait repetitive negative thinking and trait mindfulness were also assessed at the end of the study (post-survey).

Depressive symptoms Depressive symptoms were assessed with the Patient Health Questionnaire-8 (PHQ-8; Kroenke et al., 2009; German version of PHQ-9 which has equivalent diagnostic accuracy: Martin et al., 2006). This measure has eight items that are answered on a scale from 0 (*not at all*) to 3 (*nearly every day*). In our sample, the reliability of the PHQ-8 was good (ω = 0.82 (95% *CI* = [0.76, 0.88])).

Symptoms of generalized anxiety disorder Symptoms of generalized anxiety disorder were assessed with the Generalized Anxiety Disorder Questionnaire-7 (GAD-7; German version: Löwe et al., 2008; Spitzer et al., 2006). This measure has seven items that are answered on a scale from 0 (*not at all*) to 3 (*nearly every day*). In our sample, the reliability of the GAD-7 was good: ω = 0.83 (95% *CI* = [0.77, 0.89]).

Trait repetitive negative thinking Trait repetitive negative thinking was assessed with the Repetitive Thinking Questionnaire-10 (RTQ-10; McEvoy et al., 2010; German version by S. Schmidt, C. Heinzel, personal communication, April 30, 2021). This measure has 10 items that are answered on a scale from 0 (*not true at all*) to 5 (*very true*). In our sample, the reliability of the RTQ-10 was good: RTQ-10_{pre}: ω = 0.86 (95% *CI* = [0.81, 0.91]); RTQ-10_{post}: ω = 0.87 (95% *CI* = [0.82, 0.92]).

Trait mindfulness Trait mindfulness was assessed with the Five Facets Mindfulness Questionnaire (FFMQ; Baer et al., 2006; German version: Michalak et al., 2016). This measure has 24 items that are answered on a scale from 1 (*never or very rarely true*) to 5 (*very often or always true*). In our sample, the reliability of the FFMQ was good: $FFMQ_{pre}$: ω = 0.89 (95% *CI* = [0.84, 0.93]); $FFMQ_{post}$: ω = 0.93 (95% *CI* = [0.91, 0.95]).

For each questionnaire, a sum-score was created. Table S1 depicts descriptive statistics of the measures assessed during the pre- and post-survey.

Table S1

Demographics and clinical characteristics of participants.

		Detached mindfulness group (n = 50)		Active control group (n = 50)	
Age in years (*M, SD*)		33.8 (11.2)		34.2 (9.83)	
Gender (*n*, %)					
	female	36 (72)		40 (80)	
	male	12 (24)		9 (18)	
	divers	2 (4)		1 (2)	
Current psychotherapeutic/ psychiatric treatment (*n*, %)					
	no	35 (70)		42 (84)	
	yes	12 (24)		5 (10)	
	not specified	3 (6)		3 (6)	
Prior experience with meditation or mindfulness (*M, SD*)		3.88 (2.03)		3.36 (1.96)	
Questionnaires (*M, SD*)		Pre	Post	Pre	Post
	PHQ-8	9.86 (4.51)		10.4 (4.58)	
	GAD-7	9.76 (3.99)		9.66 (4.77)	
	RTQ-10	34.8 (7.03)	33.4 (7.84)	35.4 (7.18)	36.9 (6.58)
	FFMQ	120 (18.3)	125 (21.1)	118 (20.0)	117 (21.5)

Note: *M* = mean; *SD* = standard deviation; n = number of participants; % = percent of participants; pre = pre-survey at the beginning of the study; post = post-survey at the end of the study; PHQ-8 = Patient Health Questionnaire-8; GAD-7 = Generalized Anxiety Disorder Questionnaire-7; RTQ-10 = Repetitive Thinking Questionnaire-10; FFMQ: Five Facet Mindfulness Questionnaire. Prior experience with meditation or mindfulness was measures on a scale from 1 (*not at all*) to 7 (*very much*).

Sensitivity Analyses

Influence of listening duration

Participants did not always listen to the complete audio-files. We explored whether how long participants listened to the exercises[1] was related to the effects of the exercise and whether the groups differed in these relationships.

Analysis

We estimated three Bayesian linear multilevel models with a 2-level structure (beeps nested in persons), one for each of the following dependent variables: RNT, negative affect, and positive affect. Predictor variables were timepoint (t0 vs. t1 vs. t2), group (active control vs. detached mindfulness), and a new metric variable representing the actual listening duration (replacing the predictor *phase* in the original models). This new variable (i.e., audio_duration_perc_cut_bi_c) was set to zero for all assessments of the baseline phase, indicating that the participants did not listen to any exercise. The variable was set to the actual listening duration in percent for each assessment in the exercise phase. We centered the variable by subtracting -50 from all values to make the interpretation for meaningful.

We tested specific contrasts to examine our research questions. Firstly, we tested whether the differences between t0 and t1 or between t0 and t2, respectively, were clearly more negative (for RNT and negative affect; indicating a stronger decrease), or more positive (for positive affect; indicating a stronger increase), when the listening duration was 1SD above the mean than when it was 1SD below the mean. Next, we tested whether the above-mentioned differences were stronger for the detached mindfulness group than for the active control group.

For more information on the specific contrasts as well as the exact model specifications and the convergence of the models, see the respective html file at https://osf.io/z2e83/.

Results

RNT

RNT decreased clearly stronger from t0 to t1 when the listening duration was 1SD above the mean than when it was 1SD below the mean, across groups, b = -0.26 (95% *CI* = [-0.38, -0.14], $PP(b < 0) > 0.999$). Similarly, RNT decreased clearly stronger from t0 to t2 when the listening duration was 1SD above the mean than when it was 1SD below the mean, across groups, b = -0.23 (95% *CI* = [-0.36, -0.1], $PP(b < 0) > 0.999$).

However, the stronger decrease from t0 to t1 when the listening duration was 1SD above the mean than when it was 1SD below the mean did not differ between the detached mindfulness and the active control group, b = 0.03 (95% *CI* = [-0.21, 0.27], $PP(b < 0) = 0.42$). Similarly, the stronger decrease from t0 to t2 when the listening duration was 1SD above the mean than

[1] During the exercise phase, some participants listened to more than 100% of the audio files (e.g., 115%; indicating that they started the audio file again after it was finished). We set the percentages of these 71 occasions (5% of all audio files listened to) to 100%.

when it was 1SD below the mean did not differ between the detached mindfulness and the active control group, $b = 0.18$ (95% CI = [-0.08, 0.44], $PP(b < 0) = 0.09$).

Negative affect

Negative affect decreased clearly stronger from t0 to t1 when the listening duration was 1SD above the mean than when it was 1SD below the mean, across groups, $b = -0.14$ (95% CI = [-0.23, -0.06], $PP(b < 0) > 0.999$). Similarly, RNT decreased clearly stronger from t0 to t1 when the listening duration was 1SD above the mean than when it was 1SD below the mean, across groups, $b = -0.13$ (95% CI = [-0.23, -0.04], $PP(b < 0) > 0.999$).

However, the stronger decrease in negative affect from t0 to t1 when the listening duration was 1SD above the mean than when it was 1SD below the mean did not differ between the detached mindfulness and the active control group, $b = 0.03$ (95% CI = [-0.14, 0.2], $PP(b < 0) = 0.38$). Similarly, the stronger decrease in negative affect from t0 to t2 when the listening duration was 1SD above the mean than when it was 1SD below the mean did not differ between the detached mindfulness and the active control group, $b = 0.06$ (95% CI = [-0.13, 0.24], $PP(b < 0) = 0.27$).

Positive affect

Positive affect increased clearly stronger from t0 to t1 when the listening duration was 1SD above the mean than when it was 1SD below the mean, across groups, $b = 0.16$ (95% CI = [0.07, 0.25], $PP(b > 0) > 0.999$). Similarly, positive affect increased clearly stronger from t0 to t1 when the listening duration was 1SD above the mean than when it was 1SD below the mean, across groups, $b = 0.14$ (95% CI = [0.04, 0.23], $PP(b > 0) > 0.999$).

However, the stronger increase in positive affect from t0 to t1 when the listening duration was 1SD above the mean than when it was 1SD below the mean did not differ between the detached mindfulness and the active control group, $b = -0.06$ (95% CI = [-0.24, 0.12], $PP(b > 0) = 0.26$). Similarly, the stronger increase from t0 to t1 in positive affect when the listening duration was 1SD above the mean than when it was 1SD below the mean did not differ between the detached mindfulness and the active control group, $b = -0.10$ (95% CI = [-0.28, 0.09], $PP(b > 0) = 0.16$).

Influence of success of implementation

After each exercise, participants were asked how well they had been able to implement the exercise. We explored whether the success of implementation was related to the effects of the exercise and whether the groups differed in these relationships.

Analysis

We estimated three Bayesian linear multilevel models with a 2-level structure (beeps nested in persons), one for each of the following dependent variables: RNT, negative affect, and positive affect. Predictor variables were timepoint (t0 vs. t1 vs. t2), group (active control vs. detached mindfulness), and a new metric variable representing the success of implementation (replacing the predictor *phase* in the original models). This new variable (i.e., umsetzen_bi_c) was set to 1 for all assessments in the baseline phase. The variable was set to participants' actual success rating for each assessment in the exercise phase. We centered the variable by subtracting -4 from all values to make the interpretation for meaningful.

We tested specific contrasts to examine our research questions. Firstly, we tested whether the differences between t0 and t1 or between t0 and t2, respectively, were clearly more negative (for RNT and negative affect; indicating a stronger decrease), or more positive (for positive affect; indicating a stronger increase), when the success of implementation was 1SD above the mean than when it was 1SD below the mean. Next, we tested whether the above-mentioned differences were stronger for the detached mindfulness group than for the active control group.

For more information on the specific contrasts as well as the exact model specifications and the convergence of the models, see the respective html file at https://osf.io/z2e83/.

Results

RNT

RNT decreased clearly stronger from t0 to t1 when the success of implementation was 1SD above the mean than when it was 1SD below the mean, across groups, b = -0.31 (95% CI = [-0.43, -0.2], $PP(b < 0) > 0.999$). Similarly, RNT decreased clearly stronger from t0 to t1 when the success of implementation was 1SD above the mean than when it was 1SD below the mean, across groups, b = -0.3 (95% CI = [-0.43, -0.18], $PP(b < 0) > 0.999$).

However, the stronger decrease from t0 to t1 when the success of implementation was 1SD above the mean than when it was 1SD below the mean did not differ between the detached mindfulness and the active control group, b = -0.01 (95% CI = [-0.23, 0.23], $PP(b < 0) = 0.52$). Similarly, the stronger decrease from t0 to t2 when the success of implementation was 1SD above the mean than when it was 1SD below the mean did not differ between the detached mindfulness and the active control group, b = 0.10 (95% CI = [-0.15, 0.34], $PP(b < 0) = 0.22$).

Negative affect

Negative affect decreased clearly stronger from t0 to t1 when the success of implementation was 1SD above the mean than when it was 1SD below the mean, across groups, b = -0.14 (95% CI = [-0.22, -0.05], $PP(b < 0) > 0.999$). Similarly, RNT decreased clearly stronger from

t0 to t1 when the success of implementation was 1SD above the mean than when it was 1SD below the mean, across groups, b = -0.14 (95% *CI* = [-0.23, -0.05], *PP*(b < 0) > 0.999).

However, the stronger decrease from t0 to t1 when the success of implementation was 1SD above the mean than when it was 1SD below the mean did not differ between the detached mindfulness and the active control group, b = 0.05 (95% *CI* = [-0.12, 0.22], *PP*(b < 0) = 0.28). Similarly, the stronger decrease from t0 to t2 when the success of implementation was 1SD above the mean than when it was 1SD below the mean did not differ between the detached mindfulness and the active control group, b = 0.05 (95% *CI* = [-0.13, 0.22], *PP*(b < 0) = 0.31).

Positive affect

Positive affect increased clearly stronger from t0 to t1 when the success of implementation was 1SD above the mean than when it was 1SD below the mean, across groups, b = 0.18 (95% *CI* = [0.09, 0.27], *PP*(b > 0) > 0.999). Similarly, positive affect increased clearly stronger from t0 to t1 when the success of implementation was 1SD above the mean than when it was 1SD below the mean, across groups, b = 0.14 (95% *CI* = [0.05, 0.23], *PP*(b > 0) > 0.999).

However, the stronger increase from t0 to t1 when the success of implementation was 1SD above the mean than when it was 1SD below the mean did not differ between the detached mindfulness and the active control group, b = -0.01 (95% *CI* = [-0.19, 0.17], *PP*(b > 0) = 0.46). Similarly, the stronger increase from t0 to t2 when the success of implementation was 1SD above the mean than when it was 1SD below the mean did not differ between the detached mindfulness and the active control group, b = -0.03 (95% *CI* = [-0.22, 0.16], *PP*(b > 0) = 0.38).

Influence of being in treatment

In the beginning of the study, the pre-survey assessed whether participants were currently in psychotherapeutic and/or psychiatric treatment. At a descriptive level, there were more participants in the detached mindfulness than in the active control group that indicated that they were currently in treatment (12 vs. 5, see Table 1). Since this might confound our results, we calculated an additional analysis where we removed these subjects with parallel treatment.

Analyses

We reran out main analyses but only included the data of those participants who indicated that they were currently not in treatment (n = 77; n = 23 were excluded because they indicated that they were currently in psychotherapeutic and/or psychiatric treatment or did not answer this question). Specifically, we estimated a Bayesian linear multilevel model with a 3-level structure (beeps nested in days, nested in persons) for the dependent variable non-judgmental acceptance. Predictor variables were phase (baseline vs. exercise), timepoint (t0 vs. t1 vs. t2), group (active control vs. detached mindfulness), and their interactions. The factors phase and timepoint varied within persons, whereas the factor group varied between persons. Factors were effect coded. We added the factor time-window (morning vs. midday vs. evening) as a within-person predictor to model potential fluctuations of dependent variables within each day. The intercept as well as the predictors phase, timepoint, and their interaction were all added as random effects in a way that represents the maximal random structure permitted by the study design. For more details, see manuscript at section data analysis.

Results

Overall, the sensitivity analyses resulted in comparable estimates as our main analysis (see detailed results for all outcomes below as well as results from main analyses for comparison in bracket). Thus, our conclusions did not change when only analyzing individuals currently not in psychotherapeutic and/or psychiatric treatment.

RNT

There was a clearly stronger decrease in RNT from t0 to t1 during the exercise phase than during the baseline phase, across groups, b = -0.27 (95% CI = [-0.42, -0.11], $PP(b < 0)$ > 0.999) [main analysis: b = -0.26 (95% CI = [-0.38, -0.14], $PP(b < 0)$ > 0.999)]. Similarly, there was a clearly stronger decrease from t0 to t2 during the exercise phase than during the baseline phase, across groups, b = -0.26 (95% CI = [-0.41, -0.12], $PP(b < 0)$ > 0.999) [main analysis: b = -0.25 (95% CI = [-0.38, -0.12], $PP(b < 0)$ > 0.999)]. However, the stronger decrease from t0 to t1 during the exercise phase than during the baseline phase did not differ between the detached mindfulness and the active control group, b = 0.01 (95% CI = [-0.29, 0.26], $PP(b < 0)$ = 0.54) [main analysis: b = 0.02 (95% CI = [-0.22, 0.27], $PP(b < 0)$ = 0.43)]. Similarly, the stronger decrease from t0 to t2 during the exercise phase than during the baseline phase did not differ between the detached mindfulness and the active control group, b = 0.11 (95% CI = [-0.18, 0.41], $PP(b < 0)$ = 0.23) [main analysis: b = 0.18 (95% CI = [-0.08, 0.44], $PP(b < 0)$ = 0.09)].

Negative affect

There was a clearly stronger decrease in negative affect from t0 to t1 during the exercise phase than during the baseline phase, across groups, b = -0.14 (95% CI = [-0.23, -0.04], $PP(b < 0) > 0.999$) [main analysis: b = -0.14 (95% CI = [-0.22, -0.06], $PP(b < 0) > 0.999$)]. Similarly, there was a clearly stronger decrease from t0 to t2 during the exercise phase than during the baseline phase, across groups, b = -0.15 (95% CI = [-0.24, -0.05], $PP(b < 0) > 0.999$) [main analysis: b = -0.14 (95% CI = [-0.23, -0.05], $PP(b < 0) > 0.999$)]. However, the stronger decrease from t0 to t1 during the exercise phase than during the baseline phase did not differ between the detached mindfulness and the active control group, b = 0.01 (95% CI = [-0.20, 0.18], $PP(b < 0) = 0.53$) [main analysis: b = 0.03 (95% CI = [-0.14, 0.2], $PP(b < 0) = 0.35$)]. Similarly, the stronger decrease from t0 to t2 during the exercise phase than during the baseline phase did not differ between the detached mindfulness and the active control group, b = 0.06 (95% CI = [-0.26, 0.13], $PP(b < 0) = 0.73$) [main analysis: b = 0.06 (95% CI = [-0.12, 0.24], $PP(b < 0) = 0.26$)].

Positive affect

There was a clearly stronger increase in positive affect from t0 to t1 during the exercise phase than during the baseline phase, across groups, b = 0.17 (95% CI = [0.06, 0.28], $PP(b > 0) > 0.999$) [main analysis: b = 0.14 (95% CI = [0.05, 0.23], $PP(b > 0) > 0.999$)]. Similarly, there was a clearly stronger increase from t0 to t2 during the exercise phase than during the baseline phase, across groups, b = 0.16 (95% CI = [0.06, 0.28], $PP(b > 0) > 0.999$) [main analysis: b = 0.14 (95% CI = [0.05, 0.23], $PP(b > 0) > 0.999$)]. However, the stronger increase from t0 to t1 during the exercise phase than during the baseline phase did not differ between the detached mindfulness and the active control group, b = -0.04 (95% CI = [-0.26, 0.17], $PP(b > 0) = 0.35$) [main analysis: b = -0.04 (95% CI = [-0.22, 0.15], $PP(b > 0) = 0.35$)]. Similarly, the stronger increase from t0 to t2 during the exercise phase than during the baseline phase did not differ between the detached mindfulness and the active control group, b = -0.06 (95% CI = [-0.28, 0.16], $PP(b > 0) = 0.30$) [main analysis: b = -0.04 (95% CI = [-0.22, 0.15], $PP(b > 0) = 0.35$)].

Influence of prior experience with mindfulness or meditation

At the end of the study, we assessed participants' prior experience with meditation or mindfulness on a scale from 1 (not at all) to 7 (very much). We calculated sensitivity analyses controlling for this prior experience.

Analyses

We reran our main analyses but included prior experience with meditation or mindfulness as a covariate in all models. Specifically, we estimated a Bayesian linear multilevel model with a 3-level structure (beeps nested in days, nested in persons) for the dependent variable non-judgmental acceptance. Predictor variables were phase (baseline vs. exercise), timepoint (t0 vs. t1 vs. t2), group (active control vs. detached mindfulness), and their interactions. The factors phase and timepoint varied within persons, whereas the factor group varied between persons. Factors were effect coded. We added the factor time-window (morning vs. midday vs. evening) as a within-person predictor to model potential fluctuations of dependent variables within each day. Additionally, we added prior experience with mindfulness or meditation (i.e., post_mindfulness) as a level-2 predictor. The intercept as well as the predictors phase, timepoint, and their interaction were all added as random effects in a way that represents the maximal random structure permitted by the study design. For more details, see manuscript at section data analysis.

Results

Overall, this sensitivity analyses resulted in comparable estimates as our main analysis (see detailed results for all outcomes below as well as results from main analyses for comparison in bracket). Thus, our conclusions did not change when included prior experience as a covariate in all models.

RNT

There was a clearly stronger decrease in RNT from t0 to t1 during the exercise phase than during the baseline phase, across groups, b = -0.26 (95% *CI* = [-0.38, -0.14], *PP*(b < 0) > 0.999) [main analysis: b = -0.26 (95% *CI* = [-0.38, -0.14], *PP*(b < 0) > 0.999)]. Similarly, there was a clearly stronger decrease from t0 to t2 during the exercise phase than during the baseline phase, across groups, b = -0.25 (95% *CI* = [-0.38, -0.12], *PP*(b < 0) > 0.999) [main analysis: b = -0.25 (95% *CI* = [-0.38, -0.12], *PP*(b < 0) > 0.999)]. However, the stronger decrease from t0 to t1 during the exercise phase than during the baseline phase did not differ between the detached mindfulness and the active control group, b = 0.02 (95% *CI* = [-0.22, 0.27], *PP*(b < 0) = 0.42) [main analysis: b = 0.02 (95% *CI* = [-0.22, 0.27], *PP*(b < 0) = 0.43)]. Similarly, the stronger decrease from t0 to t2 during the exercise phase than during the baseline phase did not differ between the detached mindfulness and the active control group, b = 0.18 (95% *CI* = [-0.08, 0.44], *PP*(b < 0) = 0.09) [main analysis: b = 0.18 (95% *CI* = [-0.08, 0.44], *PP*(b < 0) = 0.09)].

Negative affect

There was a clearly stronger decrease in negative affect from t0 to t1 during the exercise phase than during the baseline phase, across groups, b = -0.14 (95% *CI* = [-0.23, -0.05], *PP*(b < 0) > 0.999) [main analysis: b = -0.14 (95% *CI* = [-0.22, -0.06], *PP*(b < 0) > 0.999)].

Similarly, there was a clearly stronger decrease from t0 to t2 during the exercise phase than during the baseline phase, across groups, b = -0.14 (95% CI = [-0.24, -0.05], $PP(b < 0)$ > 0.999) [main analysis: b = -0.14 (95% CI = [-0.23, -0.05], $PP(b < 0) > 0.999$)]. However, the stronger decrease from t0 to t1 during the exercise phase than during the baseline phase did not differ between the detached mindfulness and the active control group, b = 0.03 (95% CI = [-0.14, 0.20], $PP(b < 0)$ = 0.55) [main analysis: b = 0.03 (95% CI = [-0.14, 0.2], $PP(b < 0)$ = 0.35)]. Similarly, the stronger decrease from t0 to t2 during the exercise phase than during the baseline phase did not differ between the detached mindfulness and the active control group, b = 0.06 (95% CI = [-0.12, 0.24], $PP(b < 0)$ = 0.27) [main analysis: b = 0.06 (95% CI = [-0.12, 0.24], $PP(b < 0) = 0.26$)].

Positive affect

There was a clearly stronger increase in positive affect from t0 to t1 during the exercise phase than during the baseline phase, across groups, b = 0.16 (95% CI = [0.06, 0.25], $PP(b > 0)$ > 0.999) [main analysis: b = 0.16 (95% CI = [0.07, 0.25], $PP(b > 0) > 0.999$)]. Similarly, there was a clearly stronger increase from t0 to t2 during the exercise phase than during the baseline phase, across groups, b = 0.14 (95% CI = [0.05, 0.23], $PP(b > 0) > 0.999$) [main analysis: b = 0.14 (95% CI = [0.05, 0.23], $PP(b > 0) > 0.999$)]. However, the stronger increase from t0 to t1 during the exercise phase than during the baseline phase did not differ between the detached mindfulness and the active control group, b = -0.04 (95% CI = [-0.22, 0.15], $PP(b > 0)$ = 0.35) [main analysis: b = -0.04 (95% CI = [-0.22, 0.15], $PP(b > 0) = 0.35$)]. Similarly, the stronger increase from t0 to t2 during the exercise phase than during the baseline phase did not differ between the detached mindfulness and the active control group, b = -0.08 (95% CI = [-0.27, 0.11], $PP(b > 0)$ = 0.20) [main analysis: b = -0.08 (95% CI = [-0.27, 0.11], $PP(b > 0) = 0.25$)].

Exploratory Analyses

Effects on non-judgmental acceptance

We examined the effects of detached mindfulness on an additional outcome variable, namely non-judgmental acceptance. Similar to the other dependent variables, we explored whether the exercise phase was associated with a stronger increase of non-judgmental acceptance from t0 to t1 and from t0 to t2 than the baseline phase. Further, we explored whether these increases were stronger in the detached mindfulness group than in the active control group.

Assessment and material

Non-judgmental acceptance was assessed via ESM. Participants answered to three items assessing non-judgmental acceptance after answering to the items assessing RNT, negative and positive affect. Non-judgmental acceptance was assessed with three items: "I thought some of my thoughts/feelings were slightly off.", "Things went through my mind that I should not really be engaging myself with.", and "I thought I could have acted more appropriately at a certain time." All items were derived from the respective subscale of the Multidimensional State Mindfulness Questionnaire (Blanke & Brose, 2017). In order to refer to the same time frame as for all other ESM items, we did not use the original stem "In the period since the last measurement" but "How much do these statements apply to you at the moment?" and changed the verbs from past to present tense. In our sample, the reliability of the non-judgmental acceptance scale was very good (within person: $\omega = 0.82$ (95% *CI* = [0.82, 0.83]); between-person: $\omega = 0.92$ (95% *CI* = [0.90, 0.95]). A total score for the scale was created by calculating the mean across all items.

Analysis

We calculated the same model that we used for the hypothesis testing of the other dependent variables but chose non-judgmental acceptance as dependent variable. Specifically, we estimated a Bayesian linear multilevel model with a 3-level structure (beeps nested in days, nested in persons) for the dependent variable non-judgmental acceptance. Predictor variables were phase (baseline vs. exercise), timepoint (t0 vs. t1 vs. t2), group (active control vs. detached mindfulness), and their interactions. The factors phase and timepoint varied within persons, whereas the factor group varied between persons. Factors were effect coded. We added the factor time-window (morning vs. midday vs. evening) as a within-person predictor to model potential fluctuations of dependent variables within each day. The intercept as well as the predictors phase, timepoint, and their interaction were all added as random effects in a way that represents the maximal random structure permitted by the study design. For more details, see manuscript at section data analysis.

For more information on the exact model specifications, the convergence of the models and the specific contrasts we tested, see the respective html file at https://osf.io/z2e83/ and manuscript at section Data analysis.

Results

There was a clearly stronger increase in non-judgmental acceptance from t0 to t1 during the exercise phase than during the baseline phase, across groups, $b = 0.20$ (95% *CI* = [0.1, 0.31],

PP(*b* > 0) > 0.999). Similarly, there was a clearly stronger increase from t0 to t2 during the exercise phase than during the baseline phase, across groups, *b* = 0.18 (95% *CI* = [0.06, 0.3], *PP*(*b* > 0) > 0.999). However, the stronger increase from t0 to t1 in the exercise than in the baseline phase did not differ between the detached mindfulness and the active control group, *b* = -0.09 (95% *CI* = [-0.3, 0.13], *PP*(*b* > 0) = 0.22). Similarly, the stronger increase from t0 to t2 in the exercise than in the baseline phase did not differ between the detached mindfulness and the active control group, *b* = -0.13 (95% *CI* = [-0.37, 0.12], *PP*(*b* > 0) = 0.15).

Day to day changes in levels of RNT and affect before each exercise

We explored whether the continuous engagement in the detached mindfulness exercises showed medium-term effects on the levels of RNT and affect assessed before each exercise (base levels) over the course of the 5-day exercise phase. Accordingly, we examined whether the t0 assessments changed more strongly from day to day during the exercise phase than during the baseline phase and whether these changes were stronger in the detached mindfulness group than in the active control group.

Analysis

We estimated three Bayesian linear multilevel models with a 2-level structure (beeps nested in persons), one for each of the following dependent variables: RNT, negative affect, and positive affect. Predictor variables were phase (baseline vs. exercise), group (active control vs. detached mindfulness), and a new metric variable representing a counter for the days of each phase (dayphase_counter). Values could range from 1-5 (i.e., 1st to 5th day). We centered the variable by subtracting 3 from all its values to make the interpretation for meaningful. We also entered the interaction among all three predictors. Factors were effect coded. Lastly, we added the factor time-window (morning vs. midday vs. evening) as a within-person predictor to account for potential fluctuations of dependent variables within each day. The intercept as well as the predictors phase, dayphase_counter, and their interaction were all added as random effects in a way that represents the maximal random structure permitted by the study design.

For more information on the exact model specifications, the convergence of the models and the specific contrasts we tested, see the respective html file at https://osf.io/z2e83/.

Results

RNT

Base levels of RNT decreased clearly stronger from day to day during the exercise phase than during the baseline phase, across groups, b = -0.12 (95% CI = [-0.22, -0.02], $PP(b < 0)$ > 0.999). However, there was no difference between the groups in these decreases, b = 0.01 (95% CI = [-0.09, 0.11], $PP(b < 0)$ = 0.41).

Negative affect

Base levels of negative affect did not decrease clearly stronger from day to day during the exercise phase than during the baseline phase, across groups, b = -0.06 (95% CI = [-0.15, 0.02], $PP(b < 0)$ = 0.93). There was no difference between the groups in these decreases, b = 0.04 (95% CI = [-0.05, 0.12], $PP(b < 0)$ = 0.41).

Positive affect

Base levels of positive affect did not increase clearly stronger from day to day during the exercise phase than during the baseline phase, across groups, b = 0.05 (95% CI = [-0.02, 0.11], $PP(b > 0)$ = 0.92). There was no difference between the groups in these increases, b = -0.01 (95% CI = [-0.08, 0.05], $PP(b > 0)$ = 0.35).

Pre to post changes in trait RNT and trait mindfulness

We explored whether there was a reduction in trait RNT (RTQ-10) and an increase in trait mindfulness (FFMQ) from the pre to the post-survey and whether these changes were stronger in the detached mindfulness group than in the active control group. The pre-survey was completed in the very beginning of the study, thus, before starting with the baseline phase. The post-survey was completed at the very end of the study, thus, after finishing the exercise phase.

Analysis

We estimated two Bayesian linear multilevel models with a 2-level structure (beeps nested in persons), one for each of the following dependent variables: RTQ-10 total scores and FFMQ total scores. We entered the factors time (pre- vs. post-survey), group (active control vs. detached mindfulness), and their interaction as predictors into each model. Factors were effect coded.

For more information on the exact model specifications, the convergence of the models and the specific contrasts we tested, see the respective html file at https://osf.io/z2e83/.

Results

Trait RNT

Trait RNT did not decrease from pre- to the post-survey, across groups, $b = 0.04$ (95% *CI* = [-1.47, 1.56], $PP(b < 0) = 0.49$. There was no group difference in the change in trait RNT from pre- to post-survey, $b = -2.96$ (95% *CI* = [-5.91, 0.03], $PP(b < 0) = 0.97$.

Trait mindfulness

Trait mindfulness did not clearly increase from the pre- to the post-survey, across groups, $b = 1.57$ (95% CI = [-0.95, 4.14], $PP(b > 0) = 0.89$. However, the detached mindfulness group had a clearly stronger increase in trait mindfulness from pre- to post-survey as compared to the active control group, $b = 6.59$ (95% CI = [1.54, 11.62], $PP(b > 0) > 0.99$.

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