Supplemental Materials Table 1. Sample demographics and descriptive statistics

Variable	Valid n	Mean	SD	Min	Max	Skew	Kurtosis	n	%
Age	88	47.61	12.72	20	85	0.16	-0.48		
Gender	88								
Female								68	77.3
Male								20	22.7
Race/ethnicity	88								
African American								1	1.1
Asian American								1	1.1
Latino								1	1.1
Multiracial								4	4.5
Other								1	1.1
White								79	89.8
College graduate	88							82	93.2
MCSD	93	4.71	2.83	0	12	0.18	-0.82		
FFMQ pre	96	118.39	20.27	65	177	0.21	0.23		
FFMQ post	89	139.37	17.76	99	182	0.13	0.01		
MAAS pre	96	52.25	12.93	22	88	-0.03	0.04		
MAAS post	89	61.67	11.15	23	85	-0.44	0.60		
DASS pre	96	24.86	18.05	0	88	0.94	0.52		
DASS post	89	15.37	13.48	0	67	1.51	2.42		
BCT pre	91	0.96	0.06	0.69	1	-2.58	7.72		
BCT post	85	0.97	0.03	0.85	1	-1.81	3.26		
PQM pre	93	66.3	16.95	29.43	100	0.01	-0.76		
PQM post	81	77.68	15.37	38.43	99.29	-0.58	-0.39		
Single-item PQM ratings	570	5.87	1.80	1	10	-0.23	-0.20		
Single-item PQM count	96	5.94	1.43	2	8	-1.27	0.86		
Single-item PQM slope	96	0.12	0.12	-0.25	0.35	-0.76	0.72		
Average daily formal mins	96	27.87	11.81	0	60	0.08	-0.29		
Average daily informal mins	96	17.52	16.62	1.07	87	2.20	5.30		
Average daily total mins	96	45.38	21.66	8.75	147	1.59	4.72		

Note: Valid n = non-missing n; SD = standard deviation; Min = minimum value; Max =

maximum value; MCSD = Marlow Crowne Social Desirability Scale – Short Form; FFMQ =

Five Facet Mindfulness Questionnaire; MAAS = Mindful Attention Awareness Scale; DASS =

Depression Anxiety and Stress Scales; BCT = Breath Counting Task accuracy; PQM = full

Practice Quality – Mindfulness; Single-item PQM slope = random slopes extracted from longitudinal models of single-item PQM; mins = average daily practice time.

Supplemental Materials Table 2. Multilevel model used to assess change in single-item practice

quality scores over time

$$Y_{ij} = \beta_{00} + \beta_{10}(Time) + [U_{0_j} + U_{1_j}(Time) + e_{ij}] \qquad \text{(Equation 1)}$$

where Y_{ij} are single-item PQM ratings made by participant j at week i. The fixed intercept (β_{00})

reflects the overall mean rating at baseline across all participants. The fixed slope (β_{10}) reflects

the overall mean change in single-item PQM scores per additional week of MBSR. The

parameters inside the brackets represent random effects that could vary across participants.

These included a random intercept (U_{0j}) representing each participants' deviation from the

overall intercept and a random slope (U_{1j}) representing each participants' deviation from the

fixed slope. Finally, e_{ij} reflects the residual error, unique for each participant at each time point.

Models also included random intercepts (not displayed in Equation 1) to account for nesting of

participants within instructors and groups.

Supplemental Materials Table 3. Association between baseline variables

	1	2	3	4	5
1. MCSD					
2. FFMQ	.29**				
3. MAAS	.16	.77***			
4. DASS	-.29**	-.49***	-.40***		
5. BCT	.01	.03	.02	.02	
6. PQM	.42***	.35***	.33**	-.27**	.14

Note: MCSD = Marlowe Crowne Social Desirability Scale – Short Form; FFMQ = Five Facet

Mindfulness Questionnaire; MAAS = Mindful Attention Awareness Scale; DASS = Depression

Anxiety and Stress Scales; BCT = Breath Counting Task; PQM = full seven-item Practice

Quality – Mindfulness. Values represent standardized regression coefficients (β) from multilevel

models accounting for nesting of participants within MBSR groups and instructors. *$p < .05$, **p

$< .01$, ***$p < .001$, $^t p < .100$

Supplemental Materials Table 4. Intraclass correlation coefficients at participant-, group-, and

instructor-levels

Variable	Participant	Group	Instructor
MCSD		.00	.00
FFMQ pre		.00	.01
FFMQ post		.00	.00
MAAS pre		.00	.00
MAAS post		.00	.00
DASS pre		.00	.00
DASS post		.00	.01
BCT pre		.00	.00
BCT post		.00	.00
PQM pre		.01	.00
PQM post		.05	.00
Weekly single-item PQM ratings	.55	.00	.00
Weekly formal mins	.38	.05	.00
Weekly informal mins	.63	.05	.00
Weekly total mins	.60	.00	.00
Single-item PQM slope		.00	.00
Average daily formal mins		.08	.00
Average daily informal mins		.08	.00
Average daily total mins		.02	.00

Note: Participant-level intraclass correlation coefficients (*ICC*s) only available for measures

collected weekly. Values indicate the proportion of variance associated with the particular level

of nesting.

Supplemental Materials Table 5. Results of multilevel model comparisons

Model	Log-likelihood	χ^2	df	p
Empty	-1021.2			
Fixed effect only	-1008.3	25.71	1	< .001
Fixed and random	-1001.3	14.01	6	0.030
Fixed, random, and quadratic	-1001.2	0.20	1	0.652

Note: Empty model = no fixed or random effects; subsequent models added fixed, random,

and/or quadratic time effects.

Supplemental Materials Table 6. Longitudinal model assessing changes in single-item PQM

scores over time

Random effects		Variance			
Participant	Intercept	1.81			
	Week	0.034			
Class	Intercept	0.00			
	Week	0.00			
Instructor	Intercept	0.00			
	Week	0.00			
Residual		1.26			

| Fixed effects	Estimate	*SE*	*df*	*t*	*p*
Intercept	5.21	0.19	95.06	27.43	$< .001$
Week	0.12	0.03	86	4.01	$< .001$

Supplemental Materials Table 7. Multilevel mediation model sensitivity analyses

Outcome	Predictor	Mediator	Primary	Raw mins	Formal mins	MCSD	Bootstrapped
FFMQ	Time	Qual	.14***	.14***	.20***	.13**	.13**
MAAS	Time	Qual	.12***	.12**	.10**	.11**	.12**
DASS	Time	Qual	-.06	-.08*	-.08*	-.05	-.06^{t}
BCT	Time	Qual	-.02	-.05	.00	-.02	-.02

Note: All values represent average causal mediation effect (ACME; Tingley et al., 2014) with changes in practice quality mediating the link between practice time and outcome; Primary = primary model including total practice time with unlikely practice time values (i.e., daily formal or informal practice > 120 minutes) removed; Raw mins = model with unlikely practice time values retained; Formal mins = model with only formal practice time included (i.e., without informal practice time); MCSD = model controlling for social desirability (Marlow Crowne Social Desirability Scale – Short Form); Bootstrapped = model using nonparametric bootstrapped confidence intervals (not accounting for instructor and group due to inability to derive bootstrapped confidence intervals within multilevel mediation in R); FFMQ = Five Facet Mindfulness Questionnaire; MAAS = Mindful Attention Awareness Scale; DASS = Depression Anxiety and Stress Scales; BCT = Breath Counting Task; Time = practice time; Qual = changes in single-item Practice Quality – Mindfulness (PQM) as random slopes extracted from longitudinal models. Sample sizes for mediation models are $n = 89$ for FFMQ, MAAS, and DASS and $n = 82$ for BCT. *$p < .05$, **$p < .01$, ***$p < .001$, $^{t}p < .100$
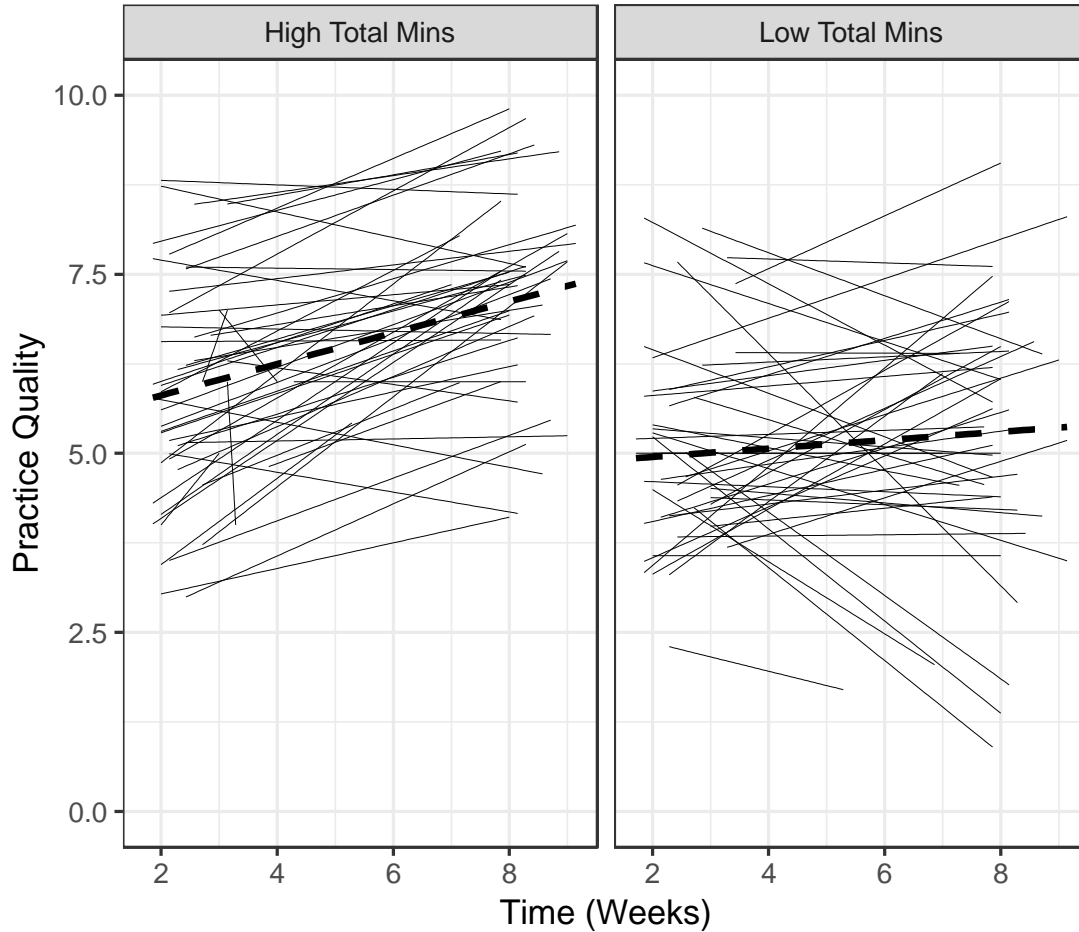
Supplemental Materials Figure 1. Practice time predicts improvement in practice quality over the course of mindfulness-based stress reduction (MBSR). Regression lines represent within-participant change in single-item Practice Quality – Mindfulness (PQM) scores over the course of MBSR. Plots display the significant cross-level interaction between average daily practice time and week ($p < .001$). A median split was used to separate those with high practice time (High Total Mins) and low practice time (Low Total Mins) for display purposes only.