

Supplementary file to “Components of smartphone cognitive-behavioural therapy for subthreshold depression: A fully factorial randomized controlled trial”

eTable 1. Combinations of iCBT component

	PE	SM	CR	BA	AT	PS	Order	n
C1	1	1	1	1	1	1	PE AT PS SM CR BA	17
C2	1	1	1	1	1	1	PE SM BA CR AT PS	17
C3	1	1	1	1	1	0	PE SM CR BA AT	17
C4	1	1	1	1	1	0	PE AT SM BA CR	17
C5	1	1	1	1	0	1	PE PS SM CR BA	17
C6	1	1	1	1	0	1	PE SM BA CR PS	17
C7	1	1	1	1	0	0	PE SM CR BA	17
C8	1	1	1	1	0	0	PE SM BA CR	17
C9	1	1	1	0	1	1	PE SM CR AT PS	17
C10	1	1	1	0	1	1	PE AT PS SM CR	17
C11	1	1	1	0	1	0	PE SM CR AT	17
C12	1	1	1	0	1	0	PE AT SM CR	17
C13	1	1	1	0	0	1	PE SM CR PS	17
C14	1	1	1	0	0	1	PE PS SM CR	17
C15	1	1	1	0	0	0	PE SM CR	17
C16	1	1	1	0	0	0	PE SM CR	17
C17	1	1	0	1	1	1	PE SM BA AT PS	17
C18	1	1	0	1	1	1	PE AT PS SM BA	17
C19	1	1	0	1	1	0	PE SM BA AT	17
C20	1	1	0	1	1	0	PE AT SM BA	17
C21	1	1	0	1	0	1	PE SM BA PS	17
C22	1	1	0	1	0	1	PE PS SM BA	17
C23	1	1	0	1	0	0	PE SM BA	17
C24	1	1	0	1	0	0	PE SM BA	17
C25	1	1	0	0	1	1	PE SM AT PS	17
C26	1	1	0	0	1	1	PE AT PS SM	17
C27	1	1	0	0	1	0	PE SM AT	17
C28	1	1	0	0	1	0	PE AT SM	17
C29	1	1	0	0	0	1	PE SM PS	17
C30	1	1	0	0	0	1	PE PS SM	17
C31	1	1	0	0	0	0	PE SM	17
C32	1	1	0	0	0	0	PE SM	17
C33	1	0	1	1	1	1	PE CR BA AT PS	17
C34	1	0	1	1	1	1	PE AT PS BA CR	17
C35	1	0	1	1	1	0	PE AT CR BA	17

C36	1	0	1	1	1	0	PE				BA	CR	AT		17
C37	1	0	1	1	0	1	PE				CR	BA		PS	17
C38	1	0	1	1	0	1	PE		PS		BA	CR			17
C39	1	0	1	1	0	0	PE				CR	BA			17
C40	1	0	1	1	0	0	PE				BA	CR			17
C41	1	0	1	0	1	1	PE				CR		AT	PS	17
C42	1	0	1	0	1	1	PE	AT	PS		CR				17
C43	1	0	1	0	1	0	PE				CR		AT		17
C44	1	0	1	0	1	0	PE	AT			CR				17
C45	1	0	1	0	0	1	PE				CR			PS	17
C46	1	0	1	0	0	1	PE		PS		CR				17
C47	1	0	1	0	0	0	PE				CR				17
C48	1	0	1	0	0	0	PE				CR				17
C49	1	0	0	1	1	1	PE					BA	AT	PS	17
C50	1	0	0	1	1	1	PE	AT	PS			BA			17
C51	1	0	0	1	1	0	PE					BA	AT		17
C52	1	0	0	1	1	0	PE	AT				BA			17
C53	1	0	0	1	0	1	PE					BA		PS	17
C54	1	0	0	1	0	1	PE		PS			BA			17
C55	1	0	0	1	0	0	PE					BA			17
C56	1	0	0	1	0	0	PE					BA			17
C57	1	0	0	0	1	1	PE						AT	PS	17
C58	1	0	0	0	1	1	PE	AT	PS						17
C59	1	0	0	0	1	0	PE						AT		17
C60	1	0	0	0	1	0	PE	AT							17
C61	1	0	0	0	0	1	PE							PS	17
C62	1	0	0	0	0	1	PE		PS						17
C63	1	0	0	0	0	0	PE								17
C64	1	0	0	0	0	0	PE								17

Note: For the overall Healthy Campus Trial, 64 groups were constructed by combining five components and one type of reordering to see the order effect of BA and CR. In the present study, the analysis was conducted as 32 groups to examine the effects of the five components only.
 AT: assertiveness training, BA: behavioral activation, CR: cognitive restructuring, PS: problem solving, SM: self-monitoring

eTable 2. iCBT use and retention by each component

	Components																				
	Total		SM		BA		CR		AT		PS										
	N	1093	Presence 544	Absence 549	Presence 552	Absence 541	Presence 544	Absence 549	Presence 547	Absence 546	Presence 546	Absence 547									
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD									
Total access time per component for all randomised (minutes)	24.8	34.8	17.8	15.1	18.2	27.5	29.1	88.7	30.2	19.9	26.1	21.4									
Total access time per component for completers (minutes)	27.3	36.2	18.8	14.6	20.9	28.7	33.0	95.7	33.6	18.5	30.5	19.2									
Worksheets completed			3.83	6.29	14.9	125	3.38	2.43	1.79	1.24	2.17	1.84									
Completed component			n	%	n	%	n	%	n	%	n	%									
Completed assessment																					
Week 1	1010	92%	506	93%	504	92%	520	94%	490	91%	506	93%									
Week 2	997	91%	499	92%	498	91%	502	91%	495	91%	500	92%									
Week 3	977	89%	493	91%	484	88%	491	89%	486	90%	493	90%									
Week 4	993	91%	489	90%	504	92%	498	90%	495	91%	500	92%									
Week 5	930	85%	471	87%	459	84%	466	84%	464	86%	465	85%									
Week 6	924	85%	466	86%	458	83%	470	85%	454	84%	459	84%									
Week 7	938	86%	472	87%	466	85%	468	85%	470	87%	465	85%									
Week 8	1011	92%	502	92%	509	93%	507	92%	504	93%	501	92%									

AT: assertiveness training, BA: behavioral activation, CR: cognitive restructuring, PS: problem solving, SM: self-monitoring

eTable 3. iCBT use and retention by component order

	Component order									
	1st		2nd		3rd		4th		5th	
n	1060		884		545		208		36	
	n	%	n	%	n	%	n	%	N	%
Completed component	988	93%	747	85%	420	77%	146	70%	22	61%
	M	SD	M	SD	M	SD	M	SD	M	SD
Total access time per component for all randomised	27.2	20.2	23.8	23.5	23.9	64.2	20.9	23.7	11.9	16.7
Total access time per component for completers	27.7	19.9	26.0	23.1	28.8	71.8	28.4	23.7	19.5	17.7

eTable 4. Unadjusted means and change scores for PHQ-9 by each component (N = 1,093)

PHQ9 score	Component																					
	Total		SM				BA				CR				AT				PS			
			Presence		Absence		Presence		Absence		Presence		Absence		Presence		Absence		Presence		Absence	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Baseline	8.10	2.76	8.21	2.88	7.99	2.64	8.15	2.82	8.04	2.70	8.06	2.69	8.14	2.84	8.17	2.77	8.03	2.76	8.04	2.70	8.15	2.83
Week 1	7.20	3.51	7.40	4.10	7.00	3.63	7.32	3.66	7.08	4.07	7.17	3.77	7.23	3.98	7.41	3.89	6.99	3.85	7.29	3.94	7.12	3.80
Week 2	6.81	3.53	6.85	3.88	6.77	3.90	6.85	3.84	6.77	3.94	7.08	4.12	6.54	3.62	6.84	3.85	6.78	3.92	6.70	3.92	6.92	3.84
Week 3	6.67	3.78	6.68	4.14	6.66	4.10	6.73	4.15	6.61	4.10	6.69	4.17	6.66	4.08	6.90	4.13	6.43	4.10	6.61	4.20	6.73	4.05
Week 4	6.47	3.82	6.30	4.04	6.63	4.14	6.51	4.16	6.42	4.03	6.55	4.16	6.38	4.03	6.62	4.20	6.31	3.99	6.44	4.19	6.49	4.00
Week 5	6.55	3.90	6.49	4.13	6.62	4.44	6.66	4.23	6.45	4.34	6.78	4.41	6.33	4.15	6.51	4.23	6.60	4.34	6.51	4.31	6.60	4.26
Week 6	6.40	4.01	6.41	4.36	6.39	4.34	6.34	4.31	6.46	4.39	6.60	4.34	6.21	4.35	6.56	4.45	6.25	4.25	6.36	4.35	6.44	4.35
Week 7	6.28	3.99	6.33	4.34	6.23	4.26	6.34	4.40	6.23	4.20	6.26	4.29	6.30	4.31	6.40	4.30	6.16	4.30	6.13	4.41	6.43	4.18
Week 8	6.16	4.11	6.30	4.39	6.01	4.15	6.12	4.34	6.19	4.20	6.12	4.27	6.19	4.28	6.29	4.32	6.02	4.22	6.20	4.45	6.11	4.09
Baseline-Week 8 change score	-1.93	4.13	-1.87	4.12	-2.00	3.88	-2.00	4.05	-1.87	3.96	-1.95	3.90	-1.92	4.11	-1.90	3.94	-1.97	4.07	-1.83	4.02	-2.04	3.99
Difference of change score			0.13				-0.13				-0.02			0.08			0.21					

AT: assertiveness training, BA: behavioral activation, CR: cognitive restructuring, PHQ-9: Patient Health Questionnaire-9, PS: problem solving, SM: self-monitoring

eTable 5. Interaction by each component

Interaction	Estimate	95% CI
SM*BA	0.04	-0.92 to 0.99
SM*CR	0.03	-0.92 to 0.99
SM*AT	0.09	-0.87 to 1.04
SM*PS	-0.99	-1.95 to -0.04
BA*CR	0.43	-0.53 to 1.38
BA*AT	0.25	-0.71 to 1.21
BA*PS	0.06	-0.94 to 0.97
CR*AT	0.39	-0.57 to 1.34
CR*PS	-0.34	-1.30 to 0.62
AT*PS	-0.06	-1.02 to 0.90

AT: assertiveness training, BA: behavioral activation, CR: cognitive restructuring, PS: problem solving, SM: self-monitoring

eTable 6. Analysis of secondary outcomes

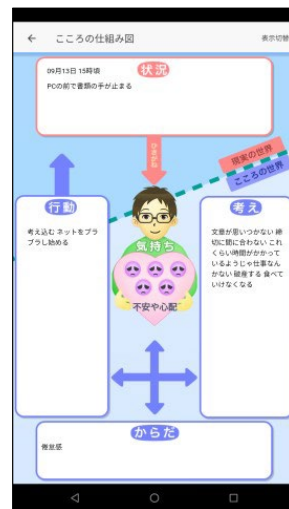
Component	n	CBT Skills*													
		GAD7*		SM		BA		CR		AT		PS		Presenteeism**	
		Week 8	Difference (95% CI)	Week 8	Difference (95% CI)	Week 8	Difference (95% CI)	Week 8	Difference (95% CI)	Week 8	Difference (95% CI)	Week 8	Difference (95% CI)	Week 8	Difference (95% CI)
SM															
Presence	544	-0.88	0.39	0.77	0.06									0.30	0.03
Absence	549	-1.27	(-0.05 to 0.82)	0.70	(-0.28 to 0.40)									0.35	(-0.51 to 0.57)
BA															
Presence	552	-1.13	-0.10			1.13	0.04							0.34	0.34
Absence	541	-1.02	(-0.54 to 0.33)			1.10	(-0.36 to 0.43)							0.32	(-0.20 to 0.88)
CR															
Presence	544	-0.99	0.17					1.15	0.36					0.31	0.05
Absence	549	-1.16	(-0.26 to 0.61)					0.80	(0.03 to 0.67)					0.34	(-0.49 to 0.59)
AT															
Presence	547	-0.95	0.25							1.26	0.35			0.40	0.39
Absence	546	-1.20	(-0.18 to 0.68)							0.91	(0.02 to 0.68)			0.25	(-0.15 to 0.93)
PS															
Presence	546	-1.06	0.02									-0.75	0.10	0.44	0.32
Absence	547	-1.08	(-0.41 to 0.46)									-0.85	(-0.16 to 0.36)	0.21	(-0.21 to 0.87)

*Estimated least squares mean change scores

**Estimated change scores

AT: assertiveness training, BA: behavioral activation, CR: cognitive restructuring, GAD-7: Generalized Anxiety Disorder-7, PS: problem solving, SM: self-monitoring, Presenteeism: WHO Health and Work Performance Questionnaire-presenteeism scale

Self-monitoring



Behavioral activation



Cognitive restructuring



Assertiveness training



Problem-solving training



eFigure. Screenshots from each component of iCBT app “Resilience Training”