
Figures and figure supplements

An observational treatment study of metacognition in anxious-depression

Celine Ann Fox et al.

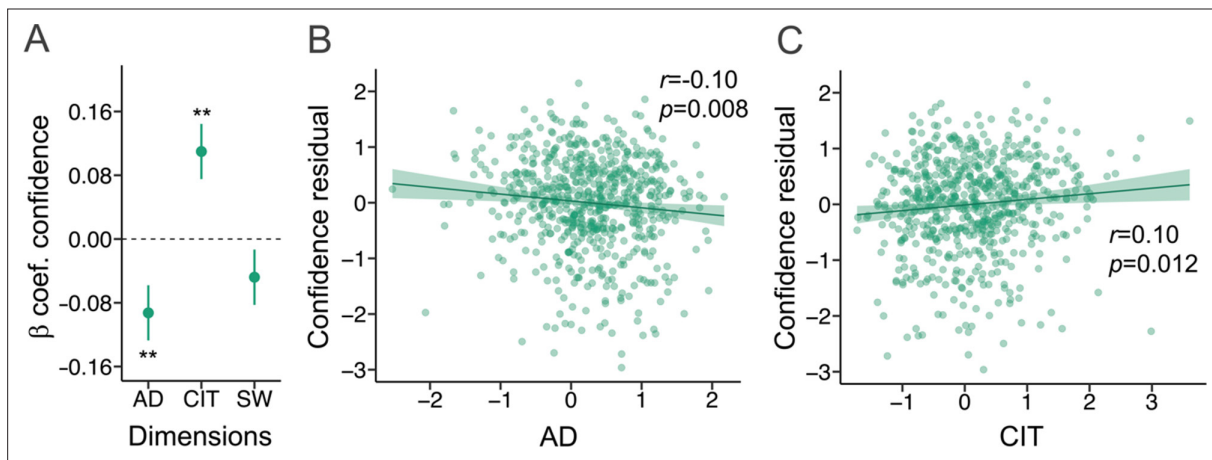


Figure 1. Cross-sectional findings at baseline in the iCBT arm. β =standardised beta coefficient, r =correlation coefficient, p =p-value, AD = Anxious-Depression, CIT = Compulsivity and Intrusive Thought, SW = Social Withdrawal. The error bars represent the standard error around the standardised beta coefficient. $N=649$. (A) AD and CIT were associated with metacognitive bias, while SW was not, using linear regression analysis. (B) The residual values for confidence (controlling for age, gender and education) were negatively correlated with AD. (C) The residual values for confidence (controlling for age, gender and education) were positively correlated with CIT.

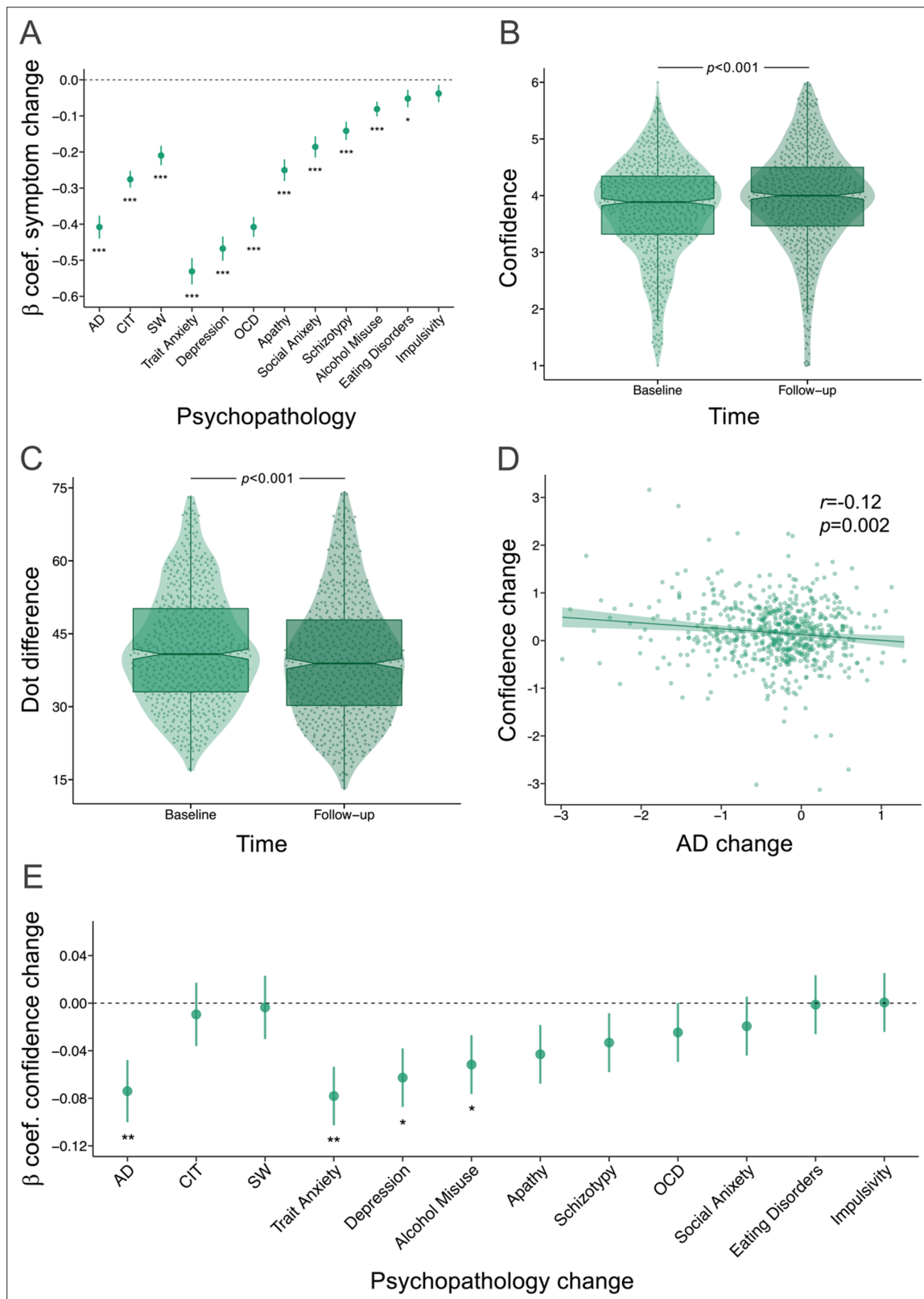


Figure 2. Treatment findings in the iCBT arm. β =standardised beta coefficient, AD = Anxious-Depression, CIT = Compulsivity and Intrusive Thought, SW = Social Withdrawal, OCD = Obsessive compulsive disorder, r =correlation coefficient, p =p-value (unadjusted), ***= $p < 0.001$, **= $p < 0.01$, *= $p < 0.05$. The error bars represent the standard error around the standardised beta coefficient. Regression analyses were used for all tests. $N=649$.

(A) Psychopathology symptoms improved with four weeks of iCBT. (B) Confidence was significantly higher and, (C) the task was more difficult at 4-

Figure 2 continued on next page

Figure 2 continued

week follow-up. (D) Those with the largest improvements in AD had the greater increases in confidence. (E) Change in confidence also scaled with improvements in trait anxiety, depression and alcohol misuse.

Outcome	β	SE	t	p	effect size (r^2)
Dimensions					
AD	-0.41	0.03	-12.80	<0.001	0.04
CIT	-0.28	0.02	-11.85	<0.001	0.02
SW	-0.21	0.03	-7.84	<0.001	0.01
Scale scores					
Trait Anxiety	-0.53	0.04	-14.53	<0.001	0.07
Depression	-0.47	0.03	-13.94	<0.001	0.05
OCD	-0.41	0.03	-14.80	<0.001	0.04
Apathy	-0.25	0.03	-8.34	<0.001	0.02
Social Anxiety	-0.19	0.03	-6.32	<0.001	0.009
Schizotypy	-0.14	0.03	-5.65	<0.001	0.005
Alcohol Misuse	-0.08	0.02	-3.97	<0.001	0.002
Eating Disorders	-0.05	0.02	-2.14	0.033	<0.001
Impulsivity	-0.04	0.02	-1.58	0.114	<0.001

Figure 2—figure supplement 1. Changes in psychiatric dimensions and scale scores from baseline to follow-up in the iCBT arm (N=649) using regression analyses. β = standardised beta coefficient, SE = standardised error, t = t-value, p = p-value (unadjusted), AD = Anxious-depression, CIT = Compulsivity and intrusive thought, SW = Social withdrawal, OCD = Obsessive compulsive disorder.

Outcome	β	SE	t	p
Dimensions				
AD	-0.07	0.03	-2.83	0.005
CIT	-0.01	0.03	-0.36	0.723
SW	-0.004	0.03	-0.13	0.894
Scale scores				
Trait Anxiety	-0.08	0.02	-3.18	0.002
Depression	-0.06	0.02	-2.54	0.011
Alcohol Misuse	-0.05	0.02	-2.09	0.037
Apathy	-0.04	0.02	-1.74	0.082
Schizotypy	-0.03	0.02	-1.34	0.180
OCD	-0.02	0.02	-0.99	0.320
Social Anxiety	-0.02	0.02	-0.78	0.434
Eating Disorders	-0.001	0.02	-0.05	0.959
Impulsivity	-0.001	0.02	0.02	0.981

Figure 2—figure supplement 2. The interaction effect of time and psychiatric dimension/scale change on mean confidence in the iCBT arm (N=649) using regression analyses. β =standardised beta coefficient, SE = standardised error, t=t-value, p=p-value (unadjusted), AD = Anxious-depression, CIT = Compulsivity and intrusive thought, SW = Social withdrawal, OCD = Obsessive compulsive disorder.

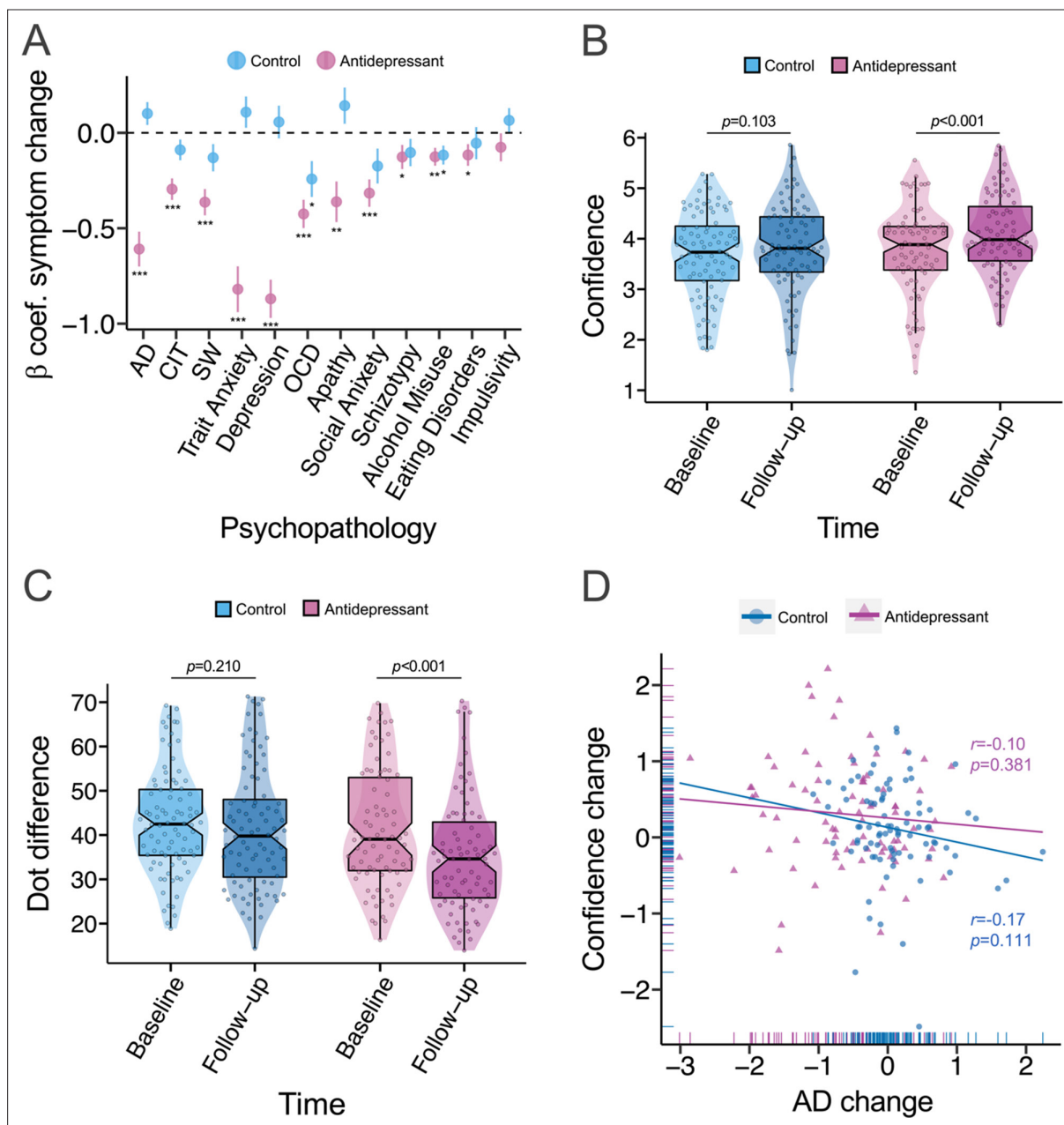


Figure 3. Comparing iCBT, antidepressant and control groups. β =standardised beta coefficient, AD = Anxious-Depression, CIT = Compulsivity and Intrusive Thought, SW = Social Withdrawal, OCD = Obsessive compulsive disorder, r =correlation coefficient, p =p-value, ***= $p < 0.001$, **= $p < 0.01$, *= $p < 0.05$. The error bars represent the standard error around the standardised beta coefficient. Regression analyses were used for tests. **(A)** The majority of psychiatric scales improved in the antidepressant arm ($N=82$) after 4 weeks of treatment, while the controls ($N=88$) only had significant reductions in OCD symptoms and alcohol misuse at follow-up. **(B)** While confidence increased in the antidepressant arm, there was no significant change in confidence among controls. The larger increase in confidence in the antidepressant arm compared to controls was trended towards significant. **(C)** The antidepressant arm had a greater increase in task difficulty (a reduction in dot difference across stimuli) from baseline to follow-up, relative to controls. **(D)** Although not significant, the association between change in confidence and change in anxious-depression was in the expected negative direction in the antidepressant arm and among controls.

Outcome	Antidepressant Arm				Controls			
	β	SE	t	p	β	SE	t	p
Dimensions								
AD	-0.70	0.11	-6.65	<0.001	0.13	0.08	1.68	0.096
CIT	-0.30	0.06	-5.22	<0.001	-0.12	0.07	-1.65	0.103
SW	-0.35	0.07	-5.27	<0.001	-0.16	0.09	-1.83	0.071
Scale scores								
Trait Anxiety	-0.82	0.12	-6.83	<0.001	0.11	0.08	1.32	0.189
Depression	-0.87	0.10	-8.68	<0.001	0.06	0.09	0.66	0.511
OCD	-0.43	0.07	-5.73	<0.001	-0.24	0.09	-2.58	0.012
Apathy	-0.36	0.11	-3.40	0.001	0.14	0.09	1.50	0.137
Social Anxiety	-0.32	0.07	-4.39	<0.001	-0.17	0.09	-1.90	0.060
Schizotypy	-0.13	0.06	-2.00	0.049	-0.10	0.07	-1.44	0.152
Alcohol Misuse	-0.13	0.05	-2.67	0.009	-0.12	0.05	-2.37	0.021
Eating Disorders	-0.12	0.06	-2.04	0.045	-0.05	0.08	-0.64	0.522
Impulsivity	-0.08	0.07	-1.03	0.306	0.06	0.06	1.01	0.314

Figure 3—figure supplement 1. Changes in psychiatric dimensions and scale scores from baseline to follow-up in antidepressant (N=82) and control (N=88) arms using regression analyses. β =standardised beta coefficient, SE = standardised error, t=t-value, p=p-value (unadjusted), AD = Anxious-depression, CIT = Compulsivity and intrusive thought, SW = Social withdrawal, OCD = Obsessive Compulsive Disorder.

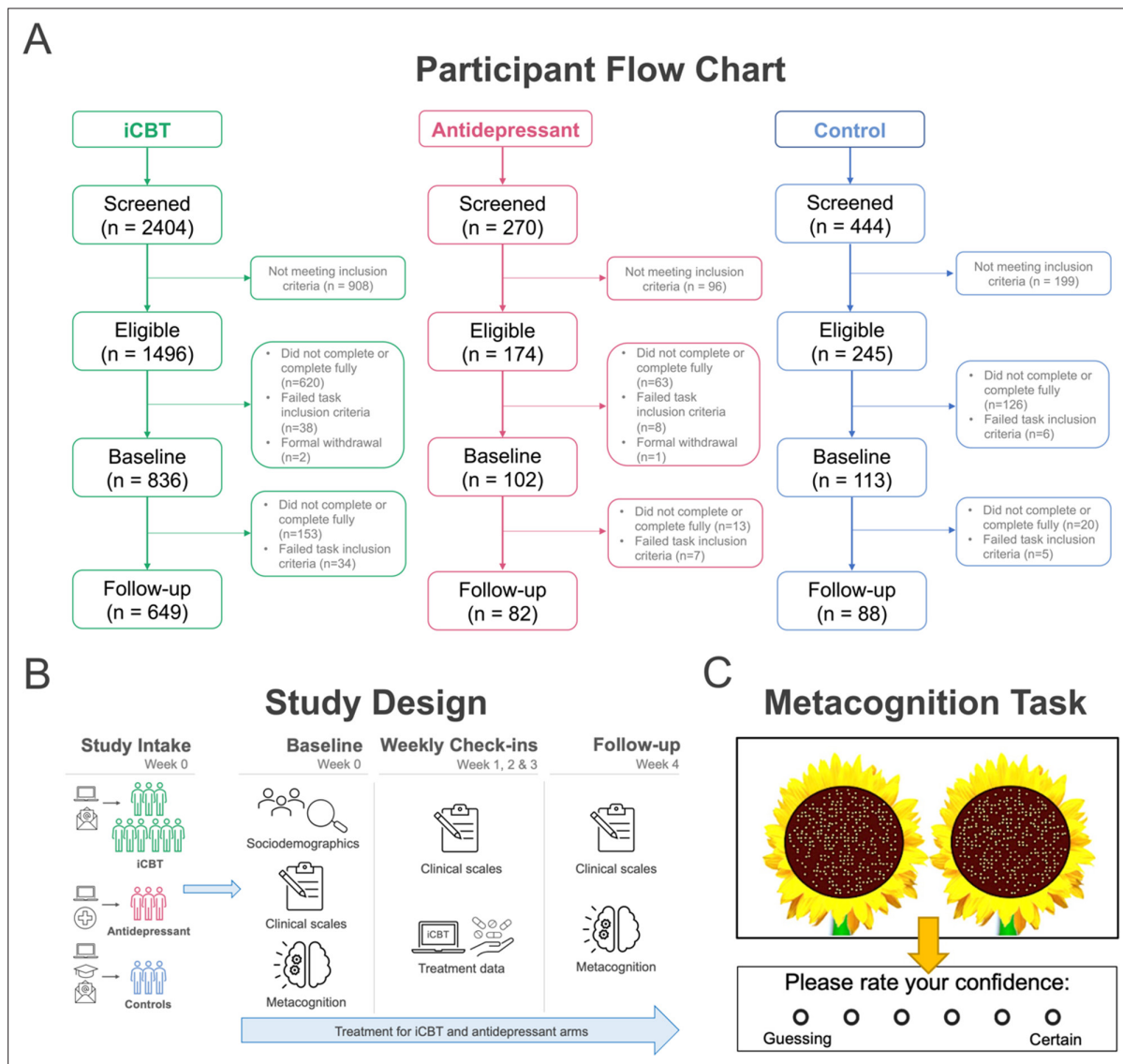


Figure 4. Study methods. **(A)** Participant flow chart (CONSORT chart). Participants were considered 'completers' if they had metacognitive and transdiagnostic psychiatric dimension data at baseline and follow-up and met task inclusion criteria. **(B)** Overview of study design from study intake (week 0) to follow-up (week 4) assessments across groups. **(C)** Metacognitive (visuo-perceptual decision-making) task design (N=210 trials). On each trial, participants were asked to judge and choose the sunflower that contained more seeds (i.e. higher number of dots) and then provide a confidence rating on their decision.