**Supplementary Materials**

Supplementary Table 1 Overall analysis in BD after treatments

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Brain Region | Hemisphere | BA | Cluster Size（mm³） | MNI | ALE | Z |
| x | y | z |
| **Overall increase:** |  |  |  |  |  |  |  |  |
| Medial Frontal Gyrus | R | 9 | 2184 | 6 | 50 | 12 | 0.017 | 4.76 |
| Anterior Cingulate | R | 25 | 1304 | 6 | 18 | -14 | 0.014 | 4.21 |
| Inferior Frontal Gyrus | R | 47 | 528 | 36 | 26 | -18 | 0.014 | 4.23 |
| Amygdala | L | NA | 312 | -24 | -4 | -18 | 0.013 | 4.03 |
| Medial Frontal Gyrus | L | 9 | 312 | -6 | 50 | 18 | 0.013 | 4.03 |
| Lingual Gyrus | L | 18 | 296 | -20 | -84 | 2 | 0.014 | 4.15 |
| Angular Gyrus | L | 39 | 288 | -30 | -54 | 44 | 0.013 | 3.98 |
| Inferior Frontal Gyrus | L | 47 | 264 | -34 | 24 | -18 | 0.014 | 4.13 |
| Insula | L | 13 | 256 | -39 | -6 | 8 | 0.013 | 3.91 |
| Claustrum | R | NA | 256 | 38 | -8 | 8 | 0.013 | 3.91 |
|  |  |  |  |  |  |  |  |  |
| **Overall decrease:** |  |  |  |  |  |  |  |  |
| Posterior Cingulate | R | 31 | 520 | 16 | -46 | 28 | 0.010 | 4.43 |

Supplementary Table 2 Analysis of psychotherapy and drug therapy in BD

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Brain Region | Hemisphere | BA | Cluster Size（mm³） | MNI | ALE | Z |
| x | y | z |
| **Psychotherapy increase:** |
| Inferior Frontal Gyrus | L | 47 | 336 | -46 | 18 | -4 | 0.012  | 4.19  |
| Superior Temporal Gyrus | R | 41 | 296 | 46 | -34 | 14 | 0.010  | 3.86  |
|  |  |  |  |  |  |  |  |  |
| **Drug therapy increase:** |
| Anterior Cingulate | R | 25 | 1872 | 6 | 18 | -14 | 0.014  | 4.52  |
| Medial Frontal Gyrus | R | 9 | 936 | 8 | 46 | 16 | 0.015  | 4.64  |
| Anterior Cingulate | L | 32 | 760 | 0 | 46 | 0 | 0.016  | 4.89  |
| Inferior Frontal Gyrus | R | 47 | 744 | 36 | 26 | -18 | 0.014  | 4.54  |
| Inferior Frontal Gyrus | L | 47 | 456 | -34 | 24 | -18 | 0.014  | 4.43  |
| Lingual Gyrus | L | 18 | 456 | -20 | -84 | 2 | 0.014  | 4.43  |
| Insula | L | 47 | 448 | -39 | -6 | 8 | 0.013 | 4.20 |
| Claustrum | R | NA | 448 | 38 | -8 | 8 | 0.013 | 4.20 |
| Amygdala | L | NA | 424 | -24 | -4 | -18 | 0.013  | 4.33  |
| Medial Frontal Gyrus | L | 9 | 400 | -6 | 50 | 18 | 0.013  | 4.30  |
| Angular Gyrus | L | 39 | 384 | -30 | -54 | 44 | 0.013  | 4.27  |
|  |  |  |  |  |  |  |  |  |
| **Drug therapy decrease:** |
| Posterior Cingulate | R | 31 | 520 | 16 | -46 | 28 | 0.010  | 4.43  |

Supplementary Table 3 Analysis of BD during emotional tasks and cognitive tasks

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Brain Region | Hemisphere | BA | Cluster Size（mm³） | MNI | ALE | Z |
| x | y | z |
| **Emotional tasks increase:** |
| Anterior Cingulate | L | 32 | 528 | 0 | 46 | 0 | 0.014  | 4.69  |
| Anterior Cingulate | L | 25 | 408 | 0 | 8 | -12 | 0.012  | 4.25  |
| Inferior Frontal Gyrus | R | NA | 368 | -46 | 18 | -4 | 0.012  | 4.21  |
|  |  |  |  |  |  |  |  |  |
| **Emotional tasks decrease:** |
| Posterior Cingulate | R | 31 | 520 | 16 | -46 | 28 | 0.010 | 4.45 |
|  |  |  |  |  |  |  |  |  |
| **Cognitive tasks increase:** |
| Superior Temporal Gyrus | R | 41 | 240 | 46 | -34 | 14 | 0.010  | 3.71  |
|  |  |  |  |  |  |  |  |  |
| **Cognitive tasks decrease:** |
| Precuneus | R | 7 | 920 | 24 | -60 | 36 | 0.010 | 4.30 |
| Medial Frontal Gyrus | R | 9 | 888 | 8 | 60 | 8 | 0.007 | 4.45 |

**Search Strategy for PubMed**

((((((((((((((((((((((((((Bipolar Disorders[Title/Abstract]) OR (Disorder, Bipolar[Title/Abstract])) OR (Psychosis, Manic-Depressive[Title/Abstract])) OR (Psychosis, Manic Depressive[Title/Abstract])) OR (Manic-Depressive Psychosis[Title/Abstract])) OR (Manic Depressive Psychosis[Title/Abstract])) OR (Affective Psychosis, Bipolar[Title/Abstract])) OR (Bipolar Affective Psychosis[Title/Abstract])) OR (Psychoses, Bipolar Affective[Title/Abstract])) OR (Psychosis, Bipolar Affective[Title/Abstract])) OR (Psychoses, Manic-Depressive[Title/Abstract])) OR (Manic-Depressive Psychoses[Title/Abstract])) OR (Psychoses, Manic Depressive[Title/Abstract])) OR (Mania[Title/Abstract])) OR (Manias[Title/Abstract])) OR (Manic State[Title/Abstract])) OR (Manic States[Title/Abstract])) OR (State, Manic[Title/Abstract])) OR (States, Manic[Title/Abstract])) OR (Depression, Bipolar[Title/Abstract])) OR (Bipolar Depression[Title/Abstract])) OR (Manic Disorder[Title/Abstract])) OR (Disorder, Manic[Title/Abstract])) OR (Manic Disorders[Title/Abstract])) OR ("Bipolar Disorder"[Mesh])) AND (((((((Therapy[Title/Abstract]) OR (Therapeutics[Title/Abstract])) OR (Therapies[Title/Abstract])) OR (Treatment[Title/Abstract])) OR (Treatments[Title/Abstract])) OR ("Therapeutics"[Mesh])) OR ((((((((psychotherapy[Title/Abstract]) OR (dialectical behavior therapy[Title/Abstract])) OR (cognitive behavior therapy[Title/Abstract])) OR (Mentalization-based treatment[Title/Abstract])) OR (transference focused therapy[Title/Abstract])) OR (Schema Therapy[Title/Abstract])) OR (interpersonal therapy[Title/Abstract])) OR (Mindfulness-based Cognitive Therapy[Title/Abstract])))) AND ((((neuroimaging[Title/Abstract]) OR (brian imaging[Title/Abstract])) OR (fMRI[Title/Abstract])) OR (functional magnetic resonance imaging[Title/Abstract]))

((((((((((((((((((((((((((Bipolar Disorders[Title/Abstract]) OR (Disorder, Bipolar[Title/Abstract])) OR (Psychosis, Manic-Depressive[Title/Abstract])) OR (Psychosis, Manic Depressive[Title/Abstract])) OR (Manic-Depressive Psychosis[Title/Abstract])) OR (Manic Depressive Psychosis[Title/Abstract])) OR (Affective Psychosis, Bipolar[Title/Abstract])) OR (Bipolar Affective Psychosis[Title/Abstract])) OR (Psychoses, Bipolar Affective[Title/Abstract])) OR (Psychosis, Bipolar Affective[Title/Abstract])) OR (Psychoses, Manic-Depressive[Title/Abstract])) OR (Manic-Depressive Psychoses[Title/Abstract])) OR (Psychoses, Manic Depressive[Title/Abstract])) OR (Mania[Title/Abstract])) OR (Manias[Title/Abstract])) OR (Manic State[Title/Abstract])) OR (Manic States[Title/Abstract])) OR (State, Manic[Title/Abstract])) OR (States, Manic[Title/Abstract])) OR (Depression, Bipolar[Title/Abstract])) OR (Bipolar Depression[Title/Abstract])) OR (Manic Disorder[Title/Abstract])) OR (Disorder, Manic[Title/Abstract])) OR (Manic Disorders[Title/Abstract])) OR ("Bipolar Disorder"[Mesh])) AND (((((((Therapy[Title/Abstract]) OR (Therapeutics[Title/Abstract])) OR (Therapies[Title/Abstract])) OR (Treatment[Title/Abstract])) OR (Treatments[Title/Abstract])) OR ("Therapeutics"[Mesh])) OR ((((((((drug therapy[Title/Abstract]) OR (medication[Title/Abstract])) OR (pharmacological[Title/Abstract])) OR (pharmacotherapy[Title/Abstract])) OR (antidepressants[Title/Abstract])) OR (antipsychotics[Title/Abstract])) OR (mood stabilizers[Title/Abstract])) OR (lithium[Title/Abstract])))) AND ((((neuroimaging[Title/Abstract]) OR (brian imaging[Title/Abstract])) OR (fMRI[Title/Abstract])) OR (functional magnetic resonance imaging[Title/Abstract]))

**Search Strategy for Cochrane**

#1 MeSH descriptor: [Bipolar Disorder] explode all trees

#2 (Bipolar Disorders):ti,ab,kw OR (Disorder, Bipolar):ti,ab,kw OR (Psychosis, Manic-Depressive):ti,ab,kw OR (Psychosis, Manic Depressive):ti,ab,kw OR (Manic-Depressive Psychosis):ti,ab,kw OR (Manic Depressive Psychosis):ti,ab,kw OR (Affective Psychosis, Bipolar):ti,ab,kw OR (Bipolar Affective Psychosis):ti,ab,kw OR (Psychoses, Bipolar Affective):ti,ab,kw OR (Psychosis, Bipolar Affective):ti,ab,kw OR (Psychoses, Manic-Depressive):ti,ab,kw OR (Manic-Depressive Psychoses):ti,ab,kw OR (Psychoses, Manic Depressive):ti,ab,kw OR (Mania):ti,ab,kw OR (Manias):ti,ab,kw OR (Manic State):ti,ab,kw OR (Manic States):ti,ab,kw OR (State, Manic):ti,ab,kw OR (States, Manic):ti,ab,kw OR (Depression, Bipolar):ti,ab,kw OR (Bipolar Depression):ti,ab,kw OR (Manic Disorder):ti,ab,kw OR (Disorder, Manic):ti,ab,kw OR (Manic Disorders):ti,ab,kw

#3 #1 OR #2

#4 MeSH descriptor: [Borderline Personality Disorder] explode all trees

#5 (Bipolar Disorders):ti,ab,kw OR (Borderline Personality Disorders):ti,ab,kw OR (Disorder, Borderline peronality):ti,ab,kw OR (Disorders, Borderline Personality):ti,ab,kw OR (Personality Disorders, Borderline):ti,ab,kw OR (Personality Disorder, Borderline):ti,ab,kw

#6 #3 OR #4

#7 (psychotherapy):ti,ab,kw OR (therapy):ti,ab,kw OR (treatment):ti,ab,kw OR (cognitive behavior therapy):ti,ab,kw OR (family focused therapy):ti,ab,kw OR (interpersonal and social rhythm therapy):ti,ab,kw OR (mindfulness-based cognitive therapy):ti,ab,kw OR (dialectical behavior therapy):ti,ab,kw OR (cognitive therapy):ti,ab,kw OR (group therapy):ti,ab,kw OR (emotion-focused treatment):ti,ab,kw OR (supportive therapy):ti,ab,kw OR (FFT):ti,ab,kw OR (CBT):ti,ab,kw OR (CT):ti,ab,kw OR (IPSRT):ti,ab,kw OR (EFT):ti,ab,kw OR (SP):ti,ab,kw OR (group counselling):ti,ab,kw OR (psychoeducation):ti,ab,kw OR (MBCT):ti,ab,kw

#8 (drug therapy):ti,ab,kw OR (therapy):ti,ab,kw OR (treatment):ti,ab,kw OR (medication):ti,ab,kw OR (pharmacotherapy):ti,ab,kw OR (pharmacological):ti,ab,kw OR (antidepressants):ti,ab,kw OR (antipsychotics):ti,ab,kw OR (mood stabilizers):ti,ab,kw OR (lithium):ti,ab,kw

#9 (neuroimaging):ti,ab,kw OR (Brain Imaging):ti,ab,kw OR (imaging, Brain):ti,ab,kw OR (fMRI):ti,ab,kw OR (functional magnetic resonance imaging):ti,ab,kw OR (magnetic resonance imaging):ti,ab,kw

#10 #3 AND #7 AND #9

#11 #3 AND #8 AND #9

#12 #6 AND #7 AND #9

#13 #3 AND #8 AND #9

**Search Strategy for Embase**

'bipolar disorder'/exp OR 'bipolar disorders':ti,ab OR 'disorder, bipolar':ti,ab OR 'psychosis, manic-depressive':ti,ab OR 'psychosis, manic depressive':ti,ab OR 'manic-depressive psychosis':ti,ab OR 'manic depressive psychosis':ti,ab OR 'affective psychosis, bipolar':ti,ab OR 'bipolar affective psychosis':ti,ab OR 'psychoses, bipolar affective':ti,ab OR 'psychosis, bipolar affective':ti,ab OR 'psychoses, manic-depressive':ti,ab OR 'manic-depressive psychoses':ti,ab OR 'psychoses, manic depressive':ti,ab OR 'mania':ti,ab OR 'manias':ti,ab OR 'manic state':ti,ab OR 'manic states':ti,ab OR 'state, manic':ti,ab OR 'states, manic':ti,ab OR 'depression, bipolar':ti,ab OR 'bipolar depression':ti,ab OR 'manic disorder':ti,ab OR 'disorder, manic':ti,ab OR 'manic disorders':ti,ab

'drug therapy':ti,ab OR 'therapy':ti,ab OR 'treatment':ti,ab OR 'therapy, drug':ti,ab OR 'drug therapies':ti,ab OR 'therapies, drug':ti,ab OR 'chemotherapy':ti,ab OR 'chemotherapies':ti,ab OR 'pharmacotherapy':ti,ab OR 'pharmacotherapies':ti,ab OR 'medication':ti,ab

'psychotherapy':ti,ab OR 'therapy':ti,ab OR 'treatment':ti,ab OR 'cognitive behavior therapy':ti,ab OR 'family focused therapy':ti,ab OR 'interpersonal and social rhythm therapy':ti,ab OR 'mindfulness-based cognitive therapy':ti,ab OR 'dialectical behavior therapy':ti,ab OR 'cognitive therapy':ti,ab OR 'group therapy':ti,ab OR 'emotion-focused treatment':ti,ab OR 'supportive therapy':ti,ab OR 'group counselling':ti,ab OR 'psychoeducation':ti,ab OR 'cbt':ti,ab OR 'fft':ti,ab OR 'ipsrt':ti,ab OR 'ct':ti,ab OR 'eft':ti,ab OR 'sp':ti,ab OR 'mbct':ti,ab

'neuroimaging'/exp OR 'brain imaging':ti,ab OR 'imaging, brain':ti,ab OR 'fmri':ti,ab OR 'functional magnetic resonance imaging':ti,ab OR 'magnetic resonance imaging':ti,ab

**Search Strategy for WOS**

TS= (Bipolar Disorder OR Bipolar Disorders OR Disorder, Bipolar OR Psychosis, Manic-Depressive OR Psychosis, Manic Depressive OR Manic-Depressive Psychosis OR Manic Depressive Psychosis OR Affective Psychosis, Bipolar OR Bipolar Affective Psychosis OR Psychoses, Bipolar Affective OR Psychosis, Bipolar Affective OR Psychoses, Manic-Depressive OR Manic-Depressive Psychoses OR Psychoses, Manic Depressive OR Mania OR Manias OR Manic State OR Manic States OR State, Manic OR States, Manic OR Depression, Bipolar OR Bipolar Depression OR Manic Disorder OR Disorder, Manic OR Manic Disorders) AND (neuroimaging OR functional magnetic resonance imaging OR fMRI OR magnetic resonance imaging OR brain imaging) AND (therapy OR treatment OR psychotherapy OR cognitive behavior therapy OR family focused therapy OR interpersonal and social rhythm therapy OR mindfulness-based cognitive therapy OR dialectical behavior therapy OR cognitive therapy OR group therapy OR emotion-focused treatment OR supportive therapy OR group counselling OR psychoeducation OR CBT OR FFT OR IPSRT OR CT OR EFT OR SP OR MBCT)

TS= (Bipolar Disorder OR Bipolar Disorders OR Disorder, Bipolar OR Psychosis, Manic-Depressive OR Psychosis, Manic Depressive OR Manic-Depressive Psychosis OR Manic Depressive Psychosis OR Affective Psychosis, Bipolar OR Bipolar Affective Psychosis OR Psychoses, Bipolar Affective OR Psychosis, Bipolar Affective OR Psychoses, Manic-Depressive OR Manic-Depressive Psychoses OR Psychoses, Manic Depressive OR Mania OR Manias OR Manic State OR Manic States OR State, Manic OR States, Manic OR Depression, Bipolar OR Bipolar Depression OR Manic Disorder OR Disorder, Manic OR Manic Disorders) AND (neuroimaging OR functional magnetic resonance imaging OR fMRI OR magnetic resonance imaging OR brain imaging) AND (therapy OR treatment OR drug therapy OR medication OR pharmacotherapy OR Pharmacotherapies OR Therapy, Drug OR Drug Therapies OR Therapies, Drug OR Chemotherapy OR Chemotherapies OR antidepressants OR antipsychotics OR mood stabilizers OR lithium)

**Search Strategy for PsycIinfo and Ovid**

 (Bipolar Disorder OR Bipolar Disorders OR Disorder, Bipolar OR Psychosis, Manic-Depressive OR Psychosis, Manic Depressive OR Manic-Depressive Psychosis OR Manic Depressive Psychosis OR Affective Psychosis, Bipolar OR Bipolar Affective Psychosis OR Psychoses, Bipolar Affective OR Psychosis, Bipolar Affective OR Psychoses, Manic-Depressive OR Manic-Depressive Psychoses OR Psychoses, Manic Depressive OR Mania OR Manias OR Manic State OR Manic States OR State, Manic OR States, Manic OR Depression, Bipolar OR Bipolar Depression OR Manic Disorder OR Disorder, Manic OR Manic Disorders) AND (neuroimaging OR functional magnetic resonance imaging OR fMRI OR magnetic resonance imaging OR brain imaging) AND (therapy OR treatment OR psychotherapy OR cognitive behavior therapy OR family focused therapy OR interpersonal and social rhythm therapy OR mindfulness-based cognitive therapy OR dialectical behavior therapy OR cognitive therapy OR group therapy OR emotion-focused treatment OR supportive therapy OR group counselling OR psychoeducation OR CBT OR FFT OR IPSRT OR CT OR EFT OR SP OR MBCT)

 (Bipolar Disorder OR Bipolar Disorders OR Disorder, Bipolar OR Psychosis, Manic-Depressive OR Psychosis, Manic Depressive OR Manic-Depressive Psychosis OR Manic Depressive Psychosis OR Affective Psychosis, Bipolar OR Bipolar Affective Psychosis OR Psychoses, Bipolar Affective OR Psychosis, Bipolar Affective OR Psychoses, Manic-Depressive OR Manic-Depressive Psychoses OR Psychoses, Manic Depressive OR Mania OR Manias OR Manic State OR Manic States OR State, Manic OR States, Manic OR Depression, Bipolar OR Bipolar Depression OR Manic Disorder OR Disorder, Manic OR Manic Disorders) AND (neuroimaging OR functional magnetic resonance imaging OR fMRI OR magnetic resonance imaging OR brain imaging) AND (therapy OR treatment OR drug therapy OR medication OR pharmacotherapy OR Pharmacotherapies OR Therapy, Drug OR Drug Therapies OR Therapies, Drug OR Chemotherapy OR Chemotherapies OR antidepressants OR antipsychotics OR mood stabilizers OR lithium)