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Psychological therapies for people with borderline personality disorder (Review)

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Stoffers-Winterling JM, Völlm BA, Rücker G, Timmer A, Huband N, Lieb K.
Psychological therapies for people with borderline personality disorder.
Cochrane Database of Systematic Reviews 2012, Issue 8. Art. No.: CD005652.
DOI: 10.1002/14651858.CD005652.pub2.

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[Intervention Review]

Psychological therapies for people with borderline personality disorder

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Editorial group: Cochrane Developmental, Psychosocial and Learning Problems Group.
Publication status and date: Stable (no update expected for reasons given in 'What's new'), published in Issue 9, 2020.

Citation: Stoffers-Winterling JM, Völlm BA, Rücker G, Timmer A, Huband N, Lieb K. Psychological therapies for people with borderline personality disorder. *Cochrane Database of Systematic Reviews* 2012, Issue 8. Art. No.: CD005652. DOI: 10.1002/14651858.CD005652.pub2.

ABSTRACT

Background

Psychotherapy is regarded as the first-line treatment for people with borderline personality disorder. In recent years, several disorder-specific interventions have been developed. This is an update of a review published in the *Cochrane Database of Systematic Reviews* (*CDSR*) in 2006 and it was superseded by a new review (with the same title) in the *CDSR* in 2020.

Objectives

To assess the effects of psychological interventions for borderline personality disorder (BPD).

Search methods

We searched the following databases: CENTRAL 2010(3), MEDLINE (1950 to October 2010), EMBASE (1980 to 2010, week 39), ASSIA (1987 to November 2010), BIOSIS (1985 to October 2010), CINAHL (1982 to October 2010), Dissertation Abstracts International (31 January 2011), National Criminal Justice Reference Service Abstracts (15 October 2010), PsycINFO (1872 to October Week 1 2010), Science Citation Index (1970 to 10 October 2010), Social Science Citation Index (1970 to 10 October 2010), Sociological Abstracts (1963 to October 2010), ZETOC (15 October 2010) and the metaRegister of Controlled Trials (15 October 2010). In addition, we searched Dissertation Abstracts International in January 2011 and ICTRP in August 2011.

Selection criteria

Randomised studies with samples of patients with BPD comparing a specific psychotherapeutic intervention against a control intervention without any specific mode of action or against a comparative specific psychotherapeutic intervention. Outcomes included overall BPD severity, BPD symptoms (DSM-IV criteria), psychopathology associated with but not specific to BPD, attrition and adverse effects.

Data collection and analysis

Two review authors independently selected studies, assessed the risk of bias in the studies and extracted data.

Main results

Twenty-eight studies involving a total of 1804 participants with BPD were included. Interventions were classified as comprehensive psychotherapies if they included individual psychotherapy as a substantial part of the treatment programme, or as non-comprehensive if they did not.

Among comprehensive psychotherapies, dialectical behaviour therapy (DBT), mentalisation-based treatment in a partial hospitalisation setting (MBT-PH), outpatient MBT (MBT-out), transference-focused therapy (TFP), cognitive behavioural therapy (CBT), dynamic deconstructive psychotherapy (DDP), interpersonal psychotherapy (IPT) and interpersonal therapy for BPD (IPT-BPD) were tested against a control condition. Direct comparisons of comprehensive psychotherapies included DBT versus client-centered therapy (CCT); schema-focused therapy (SFT) versus TFP; SFT versus SFT plus telephone availability of therapist in case of crisis (SFT+TA); cognitive therapy (CT) versus CCT, and CT versus IPT.

Non-comprehensive psychotherapeutic interventions comprised DBT-group skills training only (DBT-ST), emotion regulation group therapy (ERG), schema-focused group therapy (SFT-G), systems training for emotional predictability and problem solving for borderline personality disorder (STEPPS), STEPPS plus individual therapy (STEPPS+IT), manual-assisted cognitive treatment (MACT) and psychoeducation (PE). The only direct comparison of an non-comprehensive psychotherapeutic intervention against another was MACT versus MACT plus therapeutic assessment (MACT+). Inpatient treatment was examined in one study where DBT for PTSD (DBT-PTSD) was compared with a waiting list control. No trials were identified for cognitive analytical therapy (CAT).

Data were sparse for individual interventions, and allowed for meta-analytic pooling only for DBT compared with treatment as usual (TAU) for four outcomes. There were moderate to large statistically significant effects indicating a beneficial effect of DBT over TAU for anger (n = 46, two RCTs; standardised mean difference (SMD) -0.83, 95% confidence interval (CI) -1.43 to -0.22; I^2 = 0%), parasuicidality (n = 110, three RCTs; SMD -0.54, 95% CI -0.92 to -0.16; I^2 = 0%) and mental health (n = 74, two RCTs; SMD 0.65, 95% CI 0.07 to 1.24 I^2 = 30%). There was no indication of statistical superiority of DBT over TAU in terms of keeping participants in treatment (n = 252, five RCTs; risk ratio 1.25, 95% CI 0.54 to 2.92).

All remaining findings were based on single study estimates of effect. Statistically significant between-group differences for comparisons of psychotherapies against controls were observed for BPD core pathology and associated psychopathology for the following interventions: DBT, DBT-PTSD, MBT-PH, MBT-out, TFP and IPT-BPD. IPT was only indicated as being effective in the treatment of associated depression. No statistically significant effects were found for CBT and DDP interventions on either outcome, with the effect sizes moderate for DDP and small for CBT. For comparisons between different comprehensive psychotherapies, statistically significant superiority was demonstrated for DBT over CCT (core and associated pathology) and SFT over TFP (BPD severity and treatment retention). There were also encouraging results for each of the non-comprehensive psychotherapeutic interventions investigated in terms of both core and associated pathology.

No data were available for adverse effects of any psychotherapy.

Authors' conclusions

There are indications of beneficial effects for both comprehensive psychotherapies as well as non-comprehensive psychotherapeutic interventions for BPD core pathology and associated general psychopathology. DBT has been studied most intensely, followed by MBT, TFP, SFT and STEPPS. However, none of the treatments has a very robust evidence base, and there are some concerns regarding the quality of individual studies. Overall, the findings support a substantial role for psychotherapy in the treatment of people with BPD but clearly indicate a need for replicatory studies.

PLAIN LANGUAGE SUMMARY

Psychological therapies for borderline personality disorder

People with borderline personality disorder often have difficulties controlling their emotions and impulses, and find it hard to keep relationships. They can experience feelings of emptiness, suffer quick changes in mood and they may harm themselves. Problems coping with abandonment and a rapidly changing view of other people can form part of their difficulties. All of these things make it hard for them to engage with any treatment they may be offered. Those who are able to engage often find it hard to stick with the treatment and leave before the end. Certain types of psychological treatment ('talking therapies') have been developed in recent years to help people with this disorder. This review summarises what is currently known about the effects of these treatments. It updates a review published in the *Cochrane Database of Systematic Reviews* (*CDSR*) in 2006 and it was superseded by a new review (with the same title) in the *CDSR* in 2020.

We found 28 studies that had involved a total of 1804 people with borderline personality disorder. These studies examined various psychological treatments. Some of these are called 'comprehensive' treatments because the person talks one-to-one with a professional for at least part of the time. Other treatments are called 'non-comprehensive' because they do not involve this one-to-one work.

A number of studies have been carried out on one particular type of comprehensive treatment, called Dialectical Behaviour Therapy. For this treatment, there were sufficient studies for us to pool the results and draw conclusions. The results indicate Dialectical Behaviour Therapy is helpful for people with borderline personality disorder. Effects included a decrease in inappropriate anger, a reduction in self-harm and an improvement in general functioning.

There were generally too few studies to allow firm conclusions to be drawn about the value of all the other kinds of psychotherapeutic interventions evaluated. However, single studies show encouraging findings for each treatment that was investigated, both 'comprehensive' and 'non-comprehensive' types. More research is needed.

Summary of findings 1. Dialectical Behaviour Therapy (DBT) versus treatment as usual (TAU) for people with borderline personality disorder

DBT vs. TAU for people with borderline personality disorder

Patient or population: patients with borderline personality disorder
Settings: outpatient
Intervention: DBT
Comparison: TAU

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Control	DBT				
BPD total severity - DBT vs. TAU mean number of BPD criteria met Follow-up: 6 months	The mean BPD total severity score - DBT vs. TAU in the control groups was **4.2 criteria**	The mean BPD total severity score - DBT vs. TAU in the intervention groups was **0.29 standard deviations lower** (1.17 lower to 0.59 higher)		20 (1 study)	⊕⊕⊝⊝ **low** [1]	SMD -0.29 (-1.17 to 0.59)
Inappropriate anger - DBT vs. TAU STAXI[2] anger out, STAXI anger trait Follow-up: 6-12 months	The mean inappropriate anger score - DBT vs. TAU ranged across control groups from **17.9 to 40.08 points**	The mean inappropriate anger score - DBT vs. TAU in the intervention groups was **0.83 standard deviations lower** (1.43 to 0.22 lower)		46 (2 studies)	⊕⊕⊝⊝ **low** [1]	SMD -0.83 (-1.43 to -0.22)
Impulsivity - DBT vs. TAU BPDSI-IV[3] Follow-up: 12 months	The mean impulsivity score - DBT vs. TAU in the control groups was **1.06 points**	The mean impulsivity score - DBT vs. TAU in the intervention groups was **0.17 standard deviations lower** (0.74 lower to 0.39 higher)		48 (1 study)	⊕⊕⊝⊝ **low** [1]	SMD -0.17 (-0.74 to 0.39)
Suicidality - DBT vs. TAU BSS[4] Follow-up: 6 months	The mean suicidality score - DBT vs. TAU in the control groups was **41.5 points**	The mean suicidality score - DBT vs. TAU in the intervention groups was **1.26 standard deviations lower** (2.24 to 0.29 lower)		20 (1 study)	⊕⊕⊝⊝ **low** [1]	SMD -1.26 (-2.24 to -0.29)
Parasuicidality - DBT vs. TAU acts of self-mutilation Follow-up: 6-12 months	The mean parasuicidality score - DBT vs. TAU ranged across control groups from **1.0 to 41.6 points**	The mean parasuicidality score - DBT vs. TAU in the intervention groups was **0.54 standard deviations lower** (0.92 to 0.16 lower)		110 (3 studies)	⊕⊕⊕⊝ **moderate** [5]	SMD -0.54 (-0.92 to -0.16)

parasuicidality - DBT vs. TAU acts of self-mutilation Follow-up: 6 months	**677 per 1000**	**751 per 1000** (528 to 1000)	**RR 1.11** (0.78 to 1.57)	51 (1 study)	⊕⊕⊖⊖ **low** [1]	
Interpersonal problems - DBT vs. TAU WHOQOL-Bref[6]-social relationships multiplied by (-1) Follow-up: 12 months	The mean interpersonal problems score - DBT vs. TAU in the control groups was **49.73 points**	The mean interpersonal problems score - DBT vs. TAU in the intervention groups was **0.04 standard deviations higher** (0.54 lower to 0.61 higher)		48 (1 study)	⊕⊕⊖⊖ **low** [1]	SMD -0.04 (-0.61 to 0.54)
Dissociation/psychoticism - DBT vs. TAU DES[7] Follow-up: 6 months	The mean dissociation/psychoticism score - DBT vs. TAU in the control groups was **30.6 points**	The mean dissociation/psychoticism score - DBT vs. TAU in the intervention groups was **0.9 standard deviations lower** (1.83 lower to 0.03 higher)		20 (1 study)	⊕⊕⊖⊖ **low** [1]	SMD -0.9 (-1.83 to 0.03)

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1]Total sample size less than 100
[2]Spielberger Anger Expression Scale
[3]Borderline Personality Disorder Severity Index
[4]Beck Scale for Suicidal Ideation
[5]Total sample size less than 400
[6]World Health Organization quality of life assessment
[7]Dissociative Experiences Scale

Summary of findings 2. Dialectical Behaviour Therapy (DBT) versus general management (GM) according to APA guidelines for people with borderline personality disorder

DBT vs. general management according to APA guidelines for people with borderline personality disorders

Patient or population: patients with borderline personality disorder
Settings: outpatient
Intervention: DBT
Comparison: general management (GM)

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	GM	DBT				
BPD total severity ZAN-BPD[1] total Follow-up: mean 12 months	The mean BPD total severity score in the control groups was **8.16 points**	The mean BPD total severity score in the intervention groups was **0.04 standard deviations lower** (0.33 lower to 0.25 higher)		180 (1 study)	⊕⊕⊕⊖ **moderate** [2]	
Inappropriate anger - DBT vs. GM STAXI[3]-anger out Follow-up: mean 12 months	The mean inappropriate anger score - DBT vs. GM in the control groups was **5.11 points**	The mean inappropriate anger score - DBT vs. GM in the intervention groups was **0.03 standard deviations lower** (0.32 lower to 0.26 higher)		180 (1 study)	⊕⊕⊕⊖ **moderate** [2]	
Parasuicidality - DBT vs. GM mean no. of suicidal and self-injurious episodes Follow-up: mean 12 months	The mean parasuicidality score - DBT vs. GM in the control groups was **12.87 points**	The mean parasuicidality score - DBT vs. GM in the intervention groups was **0.23 standard deviations lower** (0.52 lower to 0.06 higher)		180 (1 study)	⊕⊕⊕⊖ **moderate** [2]	
Interpersonal problems - DBT vs. GM IIP-C[4] total Follow-up: mean 12 months	The mean interpersonal problems score - DBT vs. GM in the control groups was **101.58 points**	The mean interpersonal problems score - DBT vs. GM in the intervention groups was **0.03 standard deviations lower** (0.32 lower to 0.26 higher)		180 (1 study)	⊕⊕⊕⊖ **moderate** [2]	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.

Very low quality: We are very uncertain about the estimate.

[1]Zanarini rating scale for borderline personality disorder
[2]Total sample size less than 400
[3]Spielberger Anger Expression Scale
[4]Inventory of interpersonal problems-Circumplex Scales

Summary of findings 3. Dialectical Behaviour Therapy (DBT) versus community treatment by experts (CTBE) for people with borderline personality disorder

DBT compared to community treatment by experts (CTBE) for people with borderline personality disorder

Patient or population: patients with borderline personality disorder
Settings: outpatient
Intervention: DBT
Comparison: CTBE

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Community treatment by experts	DBT				
Suicidality SBQ[1] Follow-up: mean 12 months	The mean suicidality score in the control groups was **32.8 points**	The mean suicidality score in the intervention groups was **0.12 standard deviations lower** (0.54 lower to 0.30 higher)		89 (1 study)	⊕⊕⊝⊝ **low** [2]	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1]Suicidal Behaviours Questionnaire
[2]Total sample size less than 100

Summary of findings 4. Dialectical Behaviour Therapy for BPD with post-traumatic stress disorder (DBT-PTSD) versus waiting list (WL) for people with borderline personality disorder

DBT-PTSD compared to waiting list (WL) for people with borderline personality disorder

Patient or population: patients with borderline personality disorder
Settings: inpatient
Intervention: DBT-PTSD
Comparison: WL

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Waiting list	DBT-PTSD				
BPD total severity BSL[1] Follow-up: mean 3 months	The mean BPD total severity score in the control groups was **2.26 points**	The mean BPD total severity score in the intervention groups was **0.74 standard deviations lower** (1.47 to 0.01 lower)		31 (1 study)	⊕⊕⊝⊝ **low** [2]	
Dissociation DES[3] Follow-up: mean 3 months	The mean dissociation score in the control groups was **19.99 points**	The mean dissociation score in the intervention groups was **0.34 standard deviations lower** (1.06 lower to 0.38 higher)		30 (1 study)	⊕⊕⊝⊝ **low** [2]	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1]Borderline Symptom List
[2]Total sample size less than 100
[2]Dissociative Experiences Scale

Summary of findings 5. Mentalisation-Based Treatment-partial hospitalisation (MBT-PH) versus treatment as usual (TAU) for people with borderline personality disorder

MBT-PH compared to TAU for people with borderline personality disorder

Patient or population: patients with borderline personality disorder
Settings: partial hospitalisation
Intervention: MBT-PH
Comparison: TAU

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	TAU	MBT-PH				
Suicidality no. of participants with suicide attempt (last 6 months) Follow-up: mean 18 months	**632 per 1000**	**51 per 1000** (6 to 366)	**RR 0.08** (0.01 to 0.58)	38 (1 study)	⊕⊕⊝⊝ **low** [1]	
Parasuicidality no. of participants with self-mutilating behaviour (last 6 months) Follow-up: mean 18 months	**842 per 1000**	**371 per 1000** (202 to 682)	**RR 0.44** (0.24 to 0.81)	38 (1 study)	⊕⊕⊝⊝ **low** [1]	
Interpersonal problems IIP[2] Follow-up: mean 18 months	The mean interpersonal problems score in the control groups was **2.6 points**	The mean interpersonal problems score in the intervention groups was **2.22 standard deviations lower** (3.04 to 1.39 lower)		38 (1 study)	⊕⊕⊝⊝ **low** [1]	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval; **RR:** Risk ratio

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1]Total sample size less than 100

[2]Inventory of interpersonal problems

Summary of findings 6. Mentalisation-Based Treatment-outpatient (MBT-out) versus treatment as usual (TAU) for people with borderline personality disorder

MBT-out compared to TAU for people with borderline personality disorder

Patient or population: patients with borderline personality disorder
Settings: outpatient
Intervention: MBT-out
Comparison: TAU

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	TAU	MBT-out				
Suicidality no. of participants with life-threatening suicide attempts (last 6 months) Follow-up: mean 18 months	**254 per 1000**	**28 per 1000** (8 to 117)	**RR 0.11** (0.03 to 0.46)	134 (1 study)	⊕⊕⊕⊖ **moderate** [1]	
Parasuicidality no. of participants with self-harm incidents (last 6 months) Follow-up: mean 18 months	**429 per 1000**	**240 per 1000** (146 to 394)	**RR 0.56** (0.34 to 0.92)	134 (1 study)	⊕⊕⊕⊖ **moderate** [1]	
Interpersonal problems IIP[2] Follow-up: mean 18 months	The mean interpersonal problems score in the control groups was **1.65 points**	The mean interpersonal problems score in the intervention groups was **0.95 standard deviations lower** (1.30 to 0.59 lower)		134 (1 study)	⊕⊕⊕⊖ **moderate** [1]	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval; **RR:** Risk ratio

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1]Total sample size less than 400
[2]Inventory of interpersonal problems

Summary of findings 7. Transference-Focused Psychotherapy (TFP) versus community treatment by experts (CTBE) for people with borderline personality disorder

TFP compared to CTBE for people with borderline personality disorder

Patient or population: patients with borderline personality disorder
Settings: outpatient
Intervention: TFP
Comparison: CTBE

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	CTBE	TFP				
BPD total severity mean number of BPD criteria met. Scale from: 0 to 9. Follow-up: mean 12 months	The mean BPD total severity score in the control groups was **5.63 criteria**	The mean BPD total severity score in the intervention groups was **0.55 standard deviations lower** (0.95 to 0.16 lower)		104 (1 study)	⊕⊕⊕⊖ **moderate** [1]	
Suicidality no. of participants with suicidal act (last 12 months) Follow-up: mean 12 months	**212 per 1000**	**135 per 1000** (57 to 319)	**RR 0.64** (0.27 to 1.51)	104 (1 study)	⊕⊕⊕⊖ **moderate** [1]	
Parasuicidality no. of participants with self-harming behaviour (last 12 months) Follow-up: mean 12 months	**673 per 1000**	**734 per 1000** (565 to 942)	**RR 1.09** (0.84 to 1.40)	104 (1 study)	⊕⊕⊕⊖ **moderate** [1]	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval; **RR:** Risk ratio

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.

Very low quality: We are very uncertain about the estimate.

[1]Total sample size less than 400

Summary of findings 8. Cognitive-Behavioural Therapy (CBT) versus treatment as usual (TAU) for borderline personality disorder

CBT compared to TAU for borderline personality disorder

Patient or population: patients with borderline personality disorder
Settings: outpatient
Intervention: CBT
Comparison: TAU

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	TAU	CBT				
Suicidality - CBT vs. TAU no. of participants with suicidal act (last 12 months) Follow-up: mean 12 months	**438 per 1000**	**342 per 1000** (206 to 556)	**RR 0.78** (0.47 to 1.27)	101 (1 study)	⊕⊕⊕⊖ **moderate** [1]	
Parasuicidality - CBT vs. TAU no. of participants with self-harming behaviour (last 12 months) Follow-up: mean 12 months	**574 per 1000**	**672 per 1000** (494 to 918)	**RR 1.17** (0.86 to 1.6)	99 (1 study)	⊕⊕⊕⊖ **moderate** [1]	
Interpersonal problems score IIP-SC[2] Follow-up: mean 12 months	The mean interpersonal problems score in the control groups was **55 points**	The mean Interpersonal problems score in the intervention groups was **0.23 standard deviations higher** (0.16 lower to 0.63 higher)		99 (1 study)	⊕⊕⊕⊖ **moderate** [1]	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval; **RR:** Risk ratio;

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1]Total sample size less than 400
[2] Inventory of Interpersonal Problems-short form

Summary of findings 9. Dynamic-Deconstructive Psychotherapy (DDP) versus treatment as ususal (TAU) for people with borderline personality disorder

DDP compared to TAU for people with borderline personality disorder

Patient or population: patients with borderline personality disorder
Settings: outpatient
Intervention: DDP
Comparison: TAU

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	TAU	DDP				
BPD total severity BEST[1] Follow-up: mean 12 months	The mean BPD total severity score in the control groups was **38.4 points**	The mean BPD total severity score in the intervention groups was **0.44 standard deviations lower** (1.16 lower to 0.29 higher)		30 (1 study)	⊕⊕⊝⊝ **low** [2]	
Parasuicidality no. of participants with parasuicide (last 3 months) Follow-up: mean 12 months	**600 per 1000**	**534 per 1000** (282 to 1000)	**RR 0.89** (0.47 to 1.67)	30 (1 study)	⊕⊕⊝⊝ **low** [2]	
Dissociation DES[3] Follow-up: mean 12 months	The mean dissociation score in the control groups was **22.3 points**	The mean dissociation score in the intervention groups was **0.25 standard deviations higher** (0.47 lower to 0.97 higher)		30 (1 study)	⊕⊕⊝⊝ **low** [2]	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval; **RR:** Risk ratio

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1]Borderline evaluation of severity over time
[2]Total sample less than 100
[3]Dissociative Experiences Scale

Summary of findings 10. Interpersonal Psychotherapy (IPT) versus clinical management (CM) for people with borderline personality disorder

IPT compared to CM for people with borderline personality disorder

Patient or population: patients with borderline personality disorder
Settings: outpatient
Intervention: IPT
Comparison: CM

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	CM	IPT				
No primary outcomes available Follow-up: mean 6 months				39 (1 study)	⊕⊕⊝⊝ **low**	No primary outcomes available

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval; **RR:** Risk ratio

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

Summary of findings 11. Interpersonal Psychotherapy adapted for BPD (IPT-BPD) versus clinical management (CM) for people with borderline personality disorder

IPT-BPD compared to CM for people with borderline personality disorder

Patient or population: patients with borderline personality disorder
Settings: outpatient
Intervention: IPT-BPD
Comparison: CM

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	CM	IPT-BPD				
BPD total severity BPDSI-IV[1]-total score Follow-up: mean 8 months	The mean BPD total severity score in the control groups was **33.46 points**	The mean BPD total severity score in the intervention groups was **0.03 standard deviations lower** (0.62 lower to 0.56 higher)		44 (1 study)	⊕⊕⊝⊝ **low** [2]	
Anger BPDSI-IV[1]-anger Follow-up: mean 8 months	The mean anger score in the control groups was **5.25 points**	The mean anger score in the intervention groups was **0.01 standard deviations higher** (0.58 lower to 0.60 higher)		44 (1 study)	⊕⊕⊝⊝ **low** [2]	
Affective instability BPDSI-IV[1]-affective instability Follow-up: mean 8 months	The mean affective instability score in the control groups was **6.63 points**	The mean affective instability score in the intervention groups was **0.92 standard deviations lower** (1.54 to 0.30 lower)		44 (1 study)	⊕⊕⊝⊝ **low** [2]	
Chronic feelings of emptiness BPDSI-IV[1]-emptiness Follow-up: mean 8 months	The mean chronic feelings of emptiness score in the control groups was **7.12 points**	The mean chronic feelings of emptiness score in the intervention groups was **0.09 standard deviations higher** (0.50 lower to 0.68 higher)		44 (1 study)	⊕⊕⊝⊝ **low** [2]	
Impulsivity BPDSI-IV[1]-impulsivity Follow-up: mean 8 months	The mean impulsivity in the control groups was **6.26 points**	The mean impulsivity in the intervention groups was **0.91 standard deviations lower** (1.53 to 0.28 lower)		44 (1 study)	⊕⊕⊝⊝ **low** [2]	

Parasuicidality BPDSI-IV[1]-parasuicidal behaviour Follow-up: mean 8 months	The mean parasuicidality score in the control groups was **1.99 points**	The mean parasuicidality score in the intervention groups was **0.02 standard deviations higher** (0.58 lower to 0.61 higher)		44 (1 study)	⊕⊕⊖⊖ **low** [2]
Interpersonal problems BPDSI-IV[1]-interpersonal relationships Follow-up: mean 8 months	The mean interpersonal problems score in the control groups was **6.97 points**	The mean interpersonal problems score in the intervention groups was **0.82 standard deviations lower** (1.44 to 0.20 lower)		44 (1 study)	⊕⊕⊖⊖ **low** [2]
Avoidance of abandonment BPDSI-IV[1]-abandonment Follow-up: mean 8 months	The mean avoidance of abandonment score in the control group was **6.1 points**	The mean avoidance of abandonment score in the intervention groups was **0.01 standard deviations higher** (-0.58 lower to 0.60 higher)		44 (1 study)	⊕⊕⊖⊖ **low** [2]
Identity disturbance BPDSI-IV[1]-identity disturbance Follow-up: mean 8 months	The mean identity disturbance score in the control group was **2.49 points**	The mean identity disturbance score in the intervention group was **0.03 standard deviations lower** (-0.62 lower to 0.56 higher)		44 (1 study)	⊕⊕⊖⊖ **low** [2]
Dissociation/paranoid ideation BPDSI-IV[1]-paranoid ideation Follow-up: mean 8 months	The mean dissociation/paranoid ideation score in the control group was **4.09 points**	The mean dissociation/paranoid ideation score in the intervention group was **0.10 standard deviations higher** (-0.49 lower to 0.70 higher)		44 (1 study)	⊕⊕⊖⊖ **low** [2]

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.

Very low quality: We are very uncertain about the estimate.

[1]Borderline personality disorder severity index
[2]Total sample size less than 100

Summary of findings 12. Dialectical Behaviour Therapy-skills training only (DBT-ST)versus standard group (SG) for borderline personality disorder

DBT skills training only compared to standard group for borderline personality disorder

Patient or population: patients with borderline personality disorder
Settings: outpatient
Intervention: DBT skills training only
Comparison: standard group

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Standard group	DBT skills training only				
BPD total severity CGI-BPD[1]-global Follow-up: mean 3 months	The mean BPD total severity score in the control groups was **4.44 points**	The mean BPD total severity score in the intervention groups was **1.01 standard deviations lower** (1.55 to 0.47 lower)		59 (1 study)	⊕⊕⊖⊖ **low** [2]	
Anger CGI-BPD[1]-anger Follow-up: mean 3 months	The mean anger score in the control groups was **3.88 points**	The mean anger score in the intervention groups was **0.84 standard deviations lower** (1.37 to 0.30 lower)		59 (1 study)	⊕⊕⊖⊖ **low** [2]	
Affective instability CGI-BPD[1]-affective instability Follow-up: mean 3 months	The mean affective instability score in the control groups was **4.66 points**	The mean affective instability score in the intervention groups was **1.07 standard deviations lower** (1.61 to 0.52 lower)		59 (1 study)	⊕⊕⊖⊖ **low** [2]	
Chronic feelings of emptiness CGI-BPD[1]-emptiness Follow-up: mean 3 months	The mean chronic feelings of emptiness score in the control groups was **5.00 points**	The mean chronic feelings of emptiness score in the intervention groups was **0.43 standard deviations lower** (0.95 lower to 0.09 higher)		59 (1 study)	⊕⊕⊖⊖ **low** [2]	

Impulsivity CGI-BPD[1]-impulsivity Follow-up: mean 3 months	The mean impulsivity score in the control groups was **4.11 points**	The mean impulsivity score in the intervention groups was **0.61 standard deviations lower** (1.14 to 0.09 lower)		59 (1 study)	⊕⊕⊖⊖ **low** [2]
Suicidality CGI-BPD[1]-suicidality Follow-up: mean 3 months	The mean suicidality score in the control groups was **2.55 points**	The mean suicidality score in the intervention groups was **0.10 standard deviations lower** (0.61 lower to 0.41 higher)		59 (1 study)	⊕⊕⊖⊖ **low** [2]
Interpersonal problems CGI-BPD[1]-unstable relationships Follow-up: mean 3 months	The mean interpersonal problems score in the control groups was **4.44 points**	The mean interpersonal problems score in the intervention groups was **0.29 standard deviations lower** (0.80 lower to 0.23 higher)		59 (1 study)	⊕⊕⊖⊖ **low** [2]
Dissociation/psychoticism BPRS[3] Follow-up: mean 3 months	The mean dissociation/psychoticism score in the control groups was **11.89 points**	The mean dissociation/psychoticism score in the intervention groups was **-0.66 standard deviations lower** (-1.18 to -0.13 lower)		59 (1 study)	⊕⊕⊖⊖ **low** [2]

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1]Clinical global impression scale for borderline personality disorder patients
[2]Total sample size less than 400
[3]Brief psychiatric rating scale

Summary of findings 13. Emotion regulation group training (ERG) versus treatment as usual (TAU) for borderline personality disorder

ERG compared to TAU for borderline personality disorder

Patient or population: patients with borderline personality disorder
Settings: outpatient

Intervention: ERG
Comparison: TAU

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	TAU	ERG				
BPD total severity BEST[1] Follow-up: mean 4.5 months	The mean BPD total severity score in the control groups was **34.7 points**	The mean BPD total severity score in the intervention groups was **1.02 standard deviations lower** (1.92 to 0.11 lower)		22 (1 study)	⊕⊕⊝⊝ **low** [2]	
Affective instability DERS[3]-emotional dysregulation Follow-up: mean 4.5 months	The mean affective instability score in the control groups was **115.8 points**	The mean affective instability score in the intervention groups was **1.65 standard deviations lower** (2.65 to 0.65 lower)		22 (1 study)	⊕⊕⊝⊝ **low** [2]	
Impulsivity DERS[3]-impulse dyscontrol Follow-up: mean 4.5 months	The mean impulsivity score in the control groups was **17.1 points**	The mean impulsivity score in the intervention groups was **1.30 standard deviations lower** (2.24 to 0.36 lower)		22 (1 study)	⊕⊕⊝⊝ **low** [2]	
Parasuicidality DERS[3]-self-harm frequency (transformed) Follow-up: mean 4.5 months	The mean parasuicidality score in the control groups was **4.48 points**	The mean parasuicidality score in the intervention groups was **0.98 standard deviations lower** (1.88 to 0.09 lower)		22 (1 study)	⊕⊕⊝⊝ **low** [2]	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval;

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1]Borderline Evaluation of Severity over Time
[2]Total sample size less than 100

[3]Difficulties in Emotion Regulation Scale

Summary of findings 14. Schema-Focused Therapy-Group (SFT-G) versus treatment as usual (TAU) for borderline personality disorder

SFT-G compared to TAU for borderline personality disorder

Patient or population: patients with borderline personality disorder
Settings: outpatient
Intervention: SFT-G
Comparison: TAU

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	TAU	SFT-G				
BPD total severity BSI[1] Follow-up: mean 8 months	The mean BPD total severity score in the control groups was **32.75 points**	The mean BPD total severity score in the intervention groups was **1.66 standard deviations lower** (2.54 to 0.78 lower)		28 (1 study)	⊕⊕⊖⊖ **low** [2]	
Affective instability DIB-R[3]-affect Follow-up: mean 8 months	The mean affective instability score in the control groups was **9.83 points**	The mean affective instability score in the intervention groups was **1.41 standard deviations lower** (2.26 to 0.57 lower)		28 (1 study)	⊕⊕⊖⊖ **low** [2]	
Impulsivity DIB-R[3]-impulses Follow-up: mean 8 months	The mean impulsivity score in the control groups was **5.58 points**	The mean impulsivity score in the intervention groups was **1.92 standard deviations lower** (2.85 to 1.00 lower)		28 (1 study)	⊕⊕⊖⊖ **low** [2]	
interpersonal problems DIB-R[3]-interpersonal Follow-up: mean 8 months	The mean interpersonal problems score in the control groups was **12 points**	The mean interpersonal problems score in the intervention groups was **1.94 standard deviations lower** (2.87 to 1.02 lower)		28 (1 study)	⊕⊕⊖⊖ **low** [2]	
Dissociation/psychoticism DIB-R[3]-cognition Follow-up: mean 8 months	The mean dissociation/psychoticism score in the control groups was **4.25 points**	The mean dissociation/psychoticism score in the intervention groups was **1.37 standard deviations lower** (2.21 to 0.53 lower)		28 (1 study)	⊕⊕⊖⊖ **low** [2]	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval;

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1]Borderline Syndrome Index
[2]Total sample size less than 100
[3]Diagnostic Interview for BPD-Revised

Summary of findings 15. Systems training for emotional predictability and problem solving for borderline personality disorder (STEPPS) versus treatment as usual (TAU) for borderline personality disorder

STEPPS compared to TAU for borderline personality disorder

Patient or population: patients with borderline personality disorder
Settings: outpatient
Intervention: STEPPS
Comparison: TAU

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	TAU	STEPPS				
BPD total severity BEST[1] Follow-up: mean 5 months	The mean BPD total severity score in the control groups was **34.1 points**	The mean BPD total severity score in the intervention groups was **0.17 standard deviations lower** (0.52 lower to 0.19 higher)		124 (1 study)	⊕⊕⊕⊖ **moderate** [2]	
Affective instability ZAN-BPD[3]-affective subscale Follow-up: mean 5 months	The mean affective instability score in the control groups was **4.9 points**	The mean affective instability score in the intervention groups was **0.32 standard deviations lower** (0.67 lower to 0.04 higher)		124 (1 study)	⊕⊕⊕⊖ **moderate** [2]	

Impulsivity BIS[4] Follow-up: mean 5 months	The mean impulsivity score in the control groups was **76.8 points**	The mean impulsivity score in the intervention groups was **0.29 standard deviations lower** (0.64 lower to 0.07 higher)		124 (1 study)	⊕⊕⊕⊖ **moderate** [2]
Interpersonal problems ZAN-BPD[3]-disturbed relations Follow-up: mean 5 months	The mean interpersonal problems score in the control groups was **3.2 points**	The mean interpersonal problems score in the intervention groups was **0.42 standard deviations lower** (0.78 to 0.06 lower)		124 (1 study)	⊕⊕⊕⊖ **moderate** [2]
Dissociation/psychoticism ZAN-BPD[3]-cognitive subscale Follow-up: mean 5 months	The mean dissociation/psychoticism score in the control groups was **3.00 points**	The mean dissociation/psychoticism score in the intervention groups was **0.42 standard deviations lower** (0.78 lower to 0.06 higher)		124 (1 study)	⊕⊕⊕⊖ **moderate** [2]

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval;

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1]Borderline Evaluation of Severity over Time
[2]Total sample size less than 200
[3]Zanarini rating scale for borderline personality disorder
[4]Barrett Impulsiveness Scale

Summary of findings 16. Systems training for emotional predictability and problem solving for borderline personality disorder + individual therapy (STEPPS+IT) versus treatment as usual (TAU) for borderline personality disorder

STEPPS+IT compared to TAU for borderline personality disorder

Patient or population: patients with borderline personality disorder
Settings: outpatient
Intervention: STEPPS+IT

Comparison: TAU

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	TAU	STEPPS+IT				
BPD total severity BPD-40[1] Follow-up: mean 4.5 months	The mean BPD total severity score in the control groups was **95.1 points**	The mean BPDtotal severity score in the intervention groups was **0.55 standard deviations lower** (1.11 lower to 0.00 higher)		52 (1 study)	⊕⊕⊝⊝ **low** [2]	
Impulsivity no. of participants scoring above BPDSI-IV[3] impulsivity cut-off score Follow-up: mean 4.5 months	**733 per 1000**	**682 per 1000** (484 to 946)	**RR 0.93** (0.66 to 1.29)	58 (1 study)	⊕⊕⊝⊝ **low** [2]	
Parasuicidality no. of participants scoring above BPDSI-IV[3] parasuicide cut-off score Follow-up: mean 4.5 months	**433 per 1000**	**572 per 1000** (338 to 962)	**RR 1.32** (0.78 to 2.22)	58 (1 study)	⊕⊕⊝⊝ **low** [2]	
Interpersonal problems WHOQOL-BREF[4]-social relationships (mean scores multiplied by -1) Follow-up: mean 4.5 months	The mean interpersonal problems score in the control groups was **-12.00 points**	The mean interpersonal problems score in the intervention groups was **0.27 standard deviations lower** (0.81 lower to 0.27 higher)		53 (1 study)	⊕⊕⊝⊝ **low** [2]	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval; **RR:** Risk ratio;

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1]Borderline Personality Disorder Checklist-40
[2]Total sample size less than 100

[3]Borderline Personality Disorder Severity Index
[4]World Health Organization Quality of Life Assessment-Bref

Summary of findings 17. Manual-assisted cognitive treatment (MACT) versus treatment as usual (TAU) for borderline personality disorder

MACT compared to TAU for borderline personality disorder

Patient or population: patients with borderline personality disorder
Settings: outpatient
Intervention: MACT
Comparison: TAU

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	TAU	MACT				
Suicidality SBQ[1] Follow-up: mean 1.5 months	The mean suicidality score in the control groups was **17.67 points**	The mean suicidality score in the intervention groups was **0.86 standard deviations lower** (1.63 to 0.07 lower)		28 (1 study)	⊕⊕⊝⊝ **low** [2]	
Parasuicidality PHI[3]-deliberate self-harm frequency Follow-up: mean 1.5 months	The mean parasuicidality score in the control groups was **3.63 points**	The mean parasuicidality score in the intervention groups was **0.88 standard deviations lower** (1.67 to 0.10 lower)		28 (1 study)	⊕⊕⊝⊝ **low** [2]	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval;

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1]Suicidal Behaviours Questionnaire
[2]Total sample size less than 100
[3]Parasuicide History Interview

Summary of findings 18. Psychoeducation (PE) versus waiting list (WL) for borderline personality disorder

Psychoeducation compared to waiting list for borderline personality disorder

Patient or population: patients with borderline personality disorder
Settings: outpatient
Intervention: psychoeducation
Comparison: waiting list

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Waiting list	Psychoeducation				
Impulsivity ZAN-BPD[1]-impulsivity baseline to endpoint change Follow-up: mean 3 months	The mean impulsivity score in the control groups was **0.05 points**	The mean impulsivity score in the intervention groups was **0.47 standard deviations lower** (1.04 lower to 0.10 higher)		50 (1 study)	⊕⊕⊝⊝ **low** [2]	
Interpersonal problems ZAN-BPD[1]-stormy relationships baseline to endpoint change Follow-up: mean 3 months	The mean interpersonal problems score in the control groups was **-0.05 points**	The mean interpersonal problems score in the intervention groups was **0.75 standard deviations lower** (1.33 to 0.16 lower)		50 (1 study)	⊕⊕⊝⊝ **low** [2]	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval;

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1]Zanarini Rating scale for Borderline Personality Disorder
[2]Total sample size less than 100

BACKGROUND

Description of the condition

According to current diagnostic criteria, borderline personality disorder (BPD) is characterised by a pervasive pattern of instability in affect regulation, impulse control, interpersonal relationships and self-image. Clinical hallmarks include emotional dysregulation, impulsive aggression, repeated self-injury and chronic suicidal tendencies (Lieb 2004). Whereas some authors have suggested that BPD is a variant of affective disorders (Akiskal 2004), others claim only partially overlapping aetiologies (Paris 2007). Despite its controversial nature, borderline personality disorder is the focus of great interest. Its importance stems from the huge suffering of the persons concerned, the functional impairment (Skodol 2002) caused and from the significant impact it has on mental health services (Zanarini 2004Zanarini 2004a).

The *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR) (APA 2000a) definition of BPD comprises nine criteria that cover the above features; for a definite diagnosis five of these must be met, and a probable diagnosis requires four. The competing *International Classification of Diseases* in its 10th edition (ICD-10) refers to the condition 'Emotionally Unstable Personality Disorder' (F60.3), of which there is an impulsive type (F60.30) and a borderline type (F60.31) (WHO 2003). The latter essentially overlaps with the DSM-IV definition of BPD. A significant problem with this type of definition is that it is possible for two people to satisfy the criteria and yet have very different personalities. This heterogeneity is a major problem in assessing the impact of an intervention. Additional to the specific BPD criteria, DSM-IV-TR and ICD-10 provide general diagnostic criteria for any personality disorder that must also be met.

The prevalence of BPD is estimated at about 1.5% in the general population (Torgersen 2005), but higher (up to 20%) among psychiatric inpatients and prison populations, and it is predominantly diagnosed in women (75%; APA 2000APA 2000a). There are particular problems with its diagnosis in adolescents and young adults where existential dilemmas may mistakenly be classified as BPD (DSM-IV). BPD commonly co-occurs with mood disorders, substance misuse, eating disorders and post-traumatic stress disorder (PTSD), and is also associated with other personality disorders (McGlashan 2000). Recent findings also suggest a close association between BPD and adult attention-deficit/hyperactivity disorder (ADHD). Prevalence estimates of comorbid adult ADHD in people with BPD range from 16% (Philipsen 2008) up to 38% (Ferrer 2010), and genetic analyses underline a genetic correlation of traits of both disorders (Distel 2011). Suicidal behaviour is reported to occur in up to 84% of patients with BPD (Soloff 2002), with comorbid mood disorders or substance use being the most relevant risk factors for completion (Black 2004).

Although the short- to medium-term outcome of BPD is poor, similar to that of schizophrenia, there is some evidence that the long-term follow-up course is more favourable with remission rates of about 88% within 10 years (Zanarini 2007). However, remission here only means that diagnostic criteria are not fulfilled and not the absence of any symptoms. Indeed, whereas acute symptoms, such as self-mutilation, help-seeking suicide threats or attempts and impulsivity decrease with time in most cases, affective symptoms reflecting areas of chronic dysphoria, such as chronic feelings of emptiness, intense anger or profound abandonment, largely remain (Zanarini 2007). The majority of people with BPD thus continue to experience significant levels of symptoms. Risk factors for a poorer long-term outcome are a comorbid substance use disorder; PTSD; an anxious cluster disorder (Zanarini 2005, Zanarini 2007); family history of psychiatric disorder (especially mood disorder and substance use disorder), and demographic factors, such as older age, longer treatment history, pathological childhood experiences, temperament problems and poor adult psychosocial functioning (Zanarini 2007). It is estimated that about 60% to 70% of patients with BPD make suicide attempts, although the rate of completed suicides is far less. Zanarini and colleagues found suicide rates of 4% during a 10-year follow-up (Zanarini 2007).

Description of the intervention

Psychotherapeutic interventions for BPD encompass a broad range of treatments. As for any other mental disorder, established psychotherapies from the major psychotherapeutic schools are used, such as psychodynamic psychotherapy, cognitive behaviour therapy (CBT) or client-centered therapy. In addition, several specific psychotherapeutic approaches have been developed in the last decades to meet the challenges of BPD treatment. These disorder-specific approaches are based on principles of the established psychotherapeutic schools, but they are usually precisely structured and manualised. Strategies are provided for addressing interpersonal difficulties, which are a core problem for people with BPD and lead to difficulties in forming a therapeutic alliance. Most BPD-specific psychotherapies include treatment contracts, actively take measures to minimise premature non-completion of treatment and provide a crisis intervention protocol (De Groot 2008).

Among the psychological interventions used with people with BPD, the most commonly used are transference-focused therapy (TFP), dialectical behaviour therapy (DBT), mentalisation-based treatment (MBT), schema-focused therapy (SFT) and the systems training for emotional predictability and problem solving (STEPPS). Most of these treatments are designed as outpatient psychotherapies of six to 12 months duration with one or two weekly individual sessions. Some also include additional group therapy sessions.

In this review, we categorise therapies involving substantial one-to-one work as 'comprehensive' and those without this element as 'non-comprehensive'.

How the intervention might work

According to the treatment guidelines of the American Psychiatric Association (APA), "clinical experience suggests that most patients with borderline personality disorder will need some form of extended psychotherapy in order to resolve interpersonal problems and attain and maintain lasting improvements in their personality and overall functioning" (APA 2001, p.18), whereas drug treatment is accredited an adjunctive role.

Psychotherapeutic treatments are based on their specific assumptions about the aetiology and maintenance of the disorder. Broadly speaking, psychoanalytic therapies aim to help their patients understand and reflect on their inner mental processes and make links between their past and current difficulties. Treatments based on CBT place emphasis on self-directed learning processes; patients are encouraged to identify their core beliefs,

evaluate and modify their behaviour accordingly and gain new experiences.

As mentioned previously, numerous disorder-specific approaches have been derived from the major psychotherapeutic schools. Some of the most prominent are dialectical behavioural therapy, mentalisation-based therapy, schema-focused therapy and transference-focused psychotherapy.

Dialectical behavioural therapy (DBT) (Linehan 1993) is a complex psychological intervention that was developed using some of the principles of CBT in combination with mindfulness-based and systemic strategies. It aims to change behaviour and the ability to contain difficult feelings by focusing on improving skills, stress tolerance, emotion regulation, interpersonal behaviour and mindfulness.

Mentalisation-based therapy (MBT) (Bateman 2004) is a complex psychoanalytically-based psychological intervention that aims to increase the reflective or mentalising capacity of the individual, helping the person to understand and recognise the feelings they evoke in others and the feelings they experience themselves.

Schema-focused therapy (SFT) (Young 2003) draws from both behavioural and psychoanalytic theories and helps people with BPD to identify their self-defeating core themes arising from unmet emotional needs in childhood and presenting as maladaptive coping styles in adulthood. The goal of SFT is to aid patients in getting their needs met.

Transference-focused psychotherapy (TFP) (Clarkin 1999) strives to achieve integrated representations of self and others, modification of primitive defence operations and resolution of identity diffusion by analysis of the transference within the therapeutic relationship. Primitive object relations (for example, split, polarised) may be transformed to advanced ones (for example, differentiated, integrated).

In summary, psychotherapeutic approaches claim slightly different mechanisms of action, according to their underlying specific aetiology models. A common element is that they aim to ameliorate BPD pathology by use of verbal communication. Psychoanalytically-based therapies usually emphasise and use the therapeutic relationship as a model for other relationships, whereas cognitive behaviour therapy-based therapies primarily aim at acquiring new learning experiences and general self-management skills.

Why it is important to do this review

In addition to the suffering experienced by people with BPD and their relatives, considerable direct costs arise from the significant demands they make on health professionals. In medical settings, people with BPD often present after having self-harmed or in suicidal crisis and are treated in emergency settings. In many cases, repeated psychiatric hospitalisations occur. Additionally, according to a US study more than 80% of patients with BPD are in individual psychotherapy for at least half of a six-year period (Zanarini 2004), though treatment settings and provisions for patients with BPD vary across different countries. However, it remains unclear which treatments are helpful. This review aims to provide a systematic summary of the evidence from randomised controlled trials to help people with BPD and their health care workers make informed decisions about their treatment.

This is an update of a Cochrane review previously published in 2006 (Binks 2006). At that time, the authors concluded that "some of the problems frequently encountered by people with borderline personality disorder may be amenable to talking/behavioural treatments but all therapies remain experimental and the studies are too few and small to inspire full confidence in their results." A number of new studies on this topic has become available in the meantime, so that an update of the evidence seems timely.

OBJECTIVES

To evaluate the effects of psychological interventions for people with borderline personality disorder (BPD).

METHODS

Criteria for considering studies for this review

Types of studies

Randomised studies involving parallel-arm comparisons examining psychotherapeutic interventions for people with BPD were included. Data from randomised cross-over studies up to the point of first cross-over were eligible for inclusion (first phase only). We excluded data from subsequent phases of cross-over trials because of the characteristically unstable course of BPD. In studies where participants served as their own controls (within-subject comparisons), we used first period data only (Elbourne 2002). For further details, see Unit of analysis issues.

Types of participants

Adults (aged 18 years or over) with a diagnosis of BPD according to DSM criteria (see table below), however diagnosed. Since the introduction of the diagnosis in 1980, the operational criteria have only changed marginally. Studies in which at least 70% participants had a formal diagnosis of BPD were included.

DSM-III (APA 1980)	**DSM-IV-TR (APA 2000)**
301.83 Borderline Personality Disorder	**301.83 Borderline Personality Disorder**
Diagnostic criterion A (5 of the following are required)	***Diagnostic criterion A: A pervasive pattern of instability of interpersonal relationships, self-image, and affects, and marked impulsivity beginning by early adulthood and present in a variety of contexts, as indicated by five (or more) of the following:***

(6) intolerance of being alone, e.g., frantic efforts to avoid being alone, depressed when alone	(1) frantic efforts to avoid real or imagined abandonment - note: do not include suicidal or self-mutilating behavior covered in criterion 5
(2) a pattern of unstable and intense interpersonal relationships, e.g., marked shifts of attitude, idealization, devaluation, manipulation (consistently using others for one's own ends)	(2) a pattern of unstable and intense interpersonal relationships characterized by alternating between extremes of idealization and devaluation
(4) identity disturbance manifested by uncertainty about several issues relating to identity, such as self-image, gender identity, long-term goals or career choice, friendship patters, values, and loyalties, e.g., 'Who am I', 'I feel like I am my sister when I am good'	(3) identity disturbance: markedly and persistently unstable self-image or sense of self
(1) impulsivity or unpredictability in at least two areas that are potentially self-damaging, e.g., spending, sex, substance use, shoplifting, overeating, physically self-damaging acts	(4) impulsivity in at least two areas that are potentially self-damaging (e.g., spending, sex, substance abuse, reckless driving, binge eating) - note: do not include suicidal or self-mutilating behavior covered in criterion 5
(7) physically self-damaging acts, e.g., suicidal gestures, self-mutilation, recurrent accidents or physical fights	(5) recurrent suicidal behavior, gestures, or threats, or self-mutilating behavior
(5) affective instability: marked shifts from normal mood to depression, irritability, or anxiety, usually lasting a few hours and only rarely more than a few days, with a return to normal mood	(6) affective instability due to a marked reactivity of mood (e.g., intense episodic dysphoria, instability, or anxiety usually lasting a few hours and only rarely more than a few days)
(8) chronic feelings of emptiness or boredom	(7) chronic feelings of emptiness
(3) inappropriate, intense anger or lack of control of anger, e.g., frequent displays of temper, constant anger	(8) inappropriate, intense anger or difficulty controlling anger (e.g., frequent displays of temper, constant anger, recurrent physical fights)
	(9) transient, stress-related paranoid ideation or severe dissociate symptoms
Diagnostic criterion B: If under 18, does not meet the criteria for Identity Disorder	

Types of interventions

Experimental interventions

Experimental interventions comprised any well-defined, theory-driven psychotherapeutic treatment. According to the index of Medical Subject Headings (MeSH), the thesaurus of the US National Library of Medicine's controlled vocabulary, psychotherapy was defined as "treatment of mental illness or emotional disturbances primarily by verbal or nonverbal communication" (NLM 2009). We considered all types of psychotherapy, regardless of theoretical orientation or treatment setting, including, for example, psychodynamic therapy, CBT, systemic therapy or eclectic therapies designed for BPD treatment. We also included any kind of treatment setting, that is, inpatient, outpatient or partially hospitalised. Trials on relaxation techniques and patient education programs were also eligible.

After all relevant trials had been identified and the variety of types of interventions became clear, we decided to arrange the results according to classes of interventions, and defined these classes as follows:

a) comprehensive psychotherapies: includes individual psychotherapy as substantial part of the intervention; additional group therapy may or may not be included; duration of at least three months;

b) non-comprehensive psychotherapeutic interventions: does not include individual psychotherapy as a substantial part of the intervention.

If the same interventions were tested in different settings (that is, outpatient, inpatient, partially hospitalised), we did not pool them together but treated them as different kinds of interventions.

Comparator interventions

Eligible comparator interventions were grouped as follows:

- unspecific control interventions; includes clinical management (CM), standard care (SC), treatment as usual (TAU) or waiting list (WL) (these are conditions without any specific mode of action);
- comparative specific psychotherapeutic interventions; well-defined and theory-driven (head-to-head comparison).

Concomitant drug treatment was allowed if applied to both treatment conditions.

Types of outcome measures

Outcomes were either self-rated or interviewer-assessed. Only adequately validated measures were included. Studies were only included if they provided data that could be used for effect size calculation for at least one of the primary or secondary outcomes defined below.

If a study provided more than one measure for the same construct (for example, depression), the measure most often used in the whole pool of included studies was used for effect size calculation in order to minimise heterogeneity of outcomes in form and content. If a study reported the data of two assessment instruments that were equally frequently used, two review authors (JS, BV) discussed the issue and chose the one that they judged was most adequate for assessment of patients with BPD. Self-rated measures were preferred. We combined self- and observer-rated measures in the same analysis if no self-reported measure was available and it seemed appropriate to do so in terms of content validity. The possibility of heterogeneity was examined by considering I^2 values and a visual inspection of forest plots (see Assessment of heterogeneity).

Primary outcomes

The following outcomes were defined as primary outcomes.

- Overall BPD severity
- Severity of single BPD criteria according to DSM, subsumed into the following symptom clusters:
  - affective dysregulative cluster symptoms
    - anger
    - affective instability
    - chronic feelings of emptiness
  - impulsive cluster symptoms
    - impulsivity
    - suicidality: severity of intent of killing oneself. Includes continuous measures of intent severity or numbers of suicidal acts and dichotomous measures of proportions of participants with suicidal acts.
    - parasuicidality: tendency or severity of intent of doing self-inflicted harm. Includes continuous measures of severity and dichotomous measures of proportion of participants with parasuicidal episodes.
  - interpersonal cluster symptoms
    - interpersonal problems general
    - avoidance of abandonment
  - cognitive cluster symptoms
    - identity disturbance
    - dissociation/stress-related paranoid ideation

'Summary of findings' tables are provided for the primary outcomes.

Secondary outcomes

- Depression
- Anxiety
- General psychopathology: composite measures of current general psychpathology)
- Mental health status/functioning: measures of general psychosocial functioning on a hypothetical continuum of mental health to mental illness or full function to disability.
- Leaving the study early
- Adverse effects

Search methods for identification of studies

Electronic searches

We searched the following databases.

- Cochrane Central Register of Controlled Trials (CENTRAL), 2010, Issue 3, part of *The Cochrane Library*
- MEDLINE, 1950 to current, searched 15 October 2010
- EMBASE, 1980 to 2010, Week 39, searched 15 October 2010
- ASSIA, 1987 to current, searched 17 November 2010
- BIOSIS, 1985 to current, searched 12 October 2010
- CINAHL, 1982 to current, searched 8 October 2010
- Dissertation Abstracts International, searched 31 January 2011
- ICTRP, searched August 2011
- metaRegister of Controlled Trials, searched 15 October 2010
- National Criminal Justice Reference Service Abstracts, searched 15 October 2010
- PsycINFO, 1872 to October Week 1 2010
- Science Citation Index, 1970 to 10 October 2010
- Social Science Citation Index, 1970 to 10 October 2010
- Sociological Abstracts, 1963 to current, searched 11 October 2010
- Zetoc (conference search), searched 15 October 2010

We included search terms for all types of personality disorder in the search strategy as this is one of a series of personality disorder reviews. Search terms and syntax were modified as necessary for each database (Appendix 1). There were no restrictions on language, date or document format.

Searching other resources

Relevant journals such as the *Journal of Personality Disorders*, the *American Journal of Psychiatry*, *Archives of General Psychiatry*, the *British Journal of Psychiatry* and the *Journal of Clinical Psychiatry* were surveyed on a regular basis. Additionally, we contacted the lead authors of published RCTs via e-mail and kept track of any developments presented at relevant international meetings including the conferences of the International Society for the Study of Personality Disorders (ISSPD; ISSPD 2007; ISSPD 2009; ISSPD 2011) and the 1st International Congress of the European Society for the Study of Personality Disorders (ESSPD 2010). We also searched trial registers in order to identify any ongoing research (see Appendix 2). Cross-references from relevant literature were also traced.

Data collection and analysis

Selection of studies

Database and clinical trial register searches yielded 38,701 records, which were imported into ProCite reference management software. After electronic and manual deduplication, there were 28,535 records. We used the global search in ProCite to identify obviously irrelevant records (for example, about "borderline hypertension" or "borderline fractures"). The remaining 2458 records were divided up amongst various review authors (NH, MF, NS, MP) to assess study eligibility using titles and abstracts. All were double-checked by a second review author (JD). After exclusion of 1955 records, the remaining 503 references were made available in full text and assessed by two review authors independently (JD, JS). At this stage, multiple reports of the same study were linked together. If the two review authors disagreed, a third person (BV) adjudicated upon inclusion or exclusion. At the end of this process, 91 records for 28 RCTs were included in quantitative synthesis (see Figure 1)

Figure 1. Study flow diagram

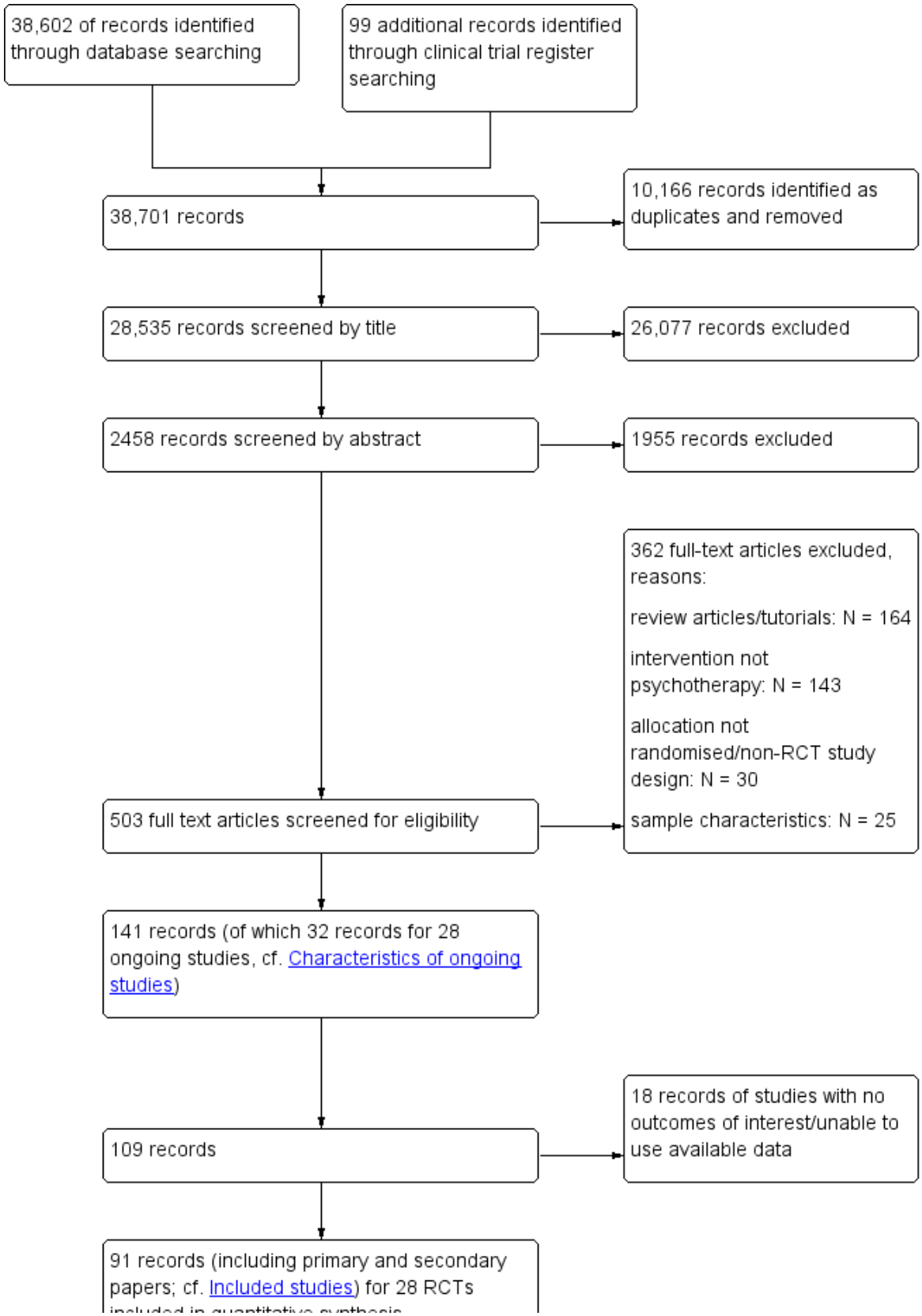


Figure 1. (Continued)

papers; cf. Included studies) for 28 RCTs included in quantitative synthesis

Data extraction and management

Data were independently extracted by two review authors (JS, BV) using standardised data extraction forms and double-entry into the Review Manager software. Any discrepancies were resolved through discussion or, if required, by an adjudicator (KL). We contacted study authors where publications reported incomplete data or where relevant subsample data were lacking.

Assessment of risk of bias in included studies

Risk of bias was assessed using The Cochrane Collaboration's tool for assessing risk of bias (Higgins 2011). Assessments included ratings of the likelihood for selection bias (random sequence generation, concealment of allocation), detection bias (blinding of outcome assessors), reporting bias (selective reporting), performance bias (treatment adherence), bias due to allegiance effects and attention bias.

Selection bias and reporting bias were assessed using the criteria for judging respective risks of bias as delineated in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011).

Though the importance of blinding and the possibility of bias due to lack of blinding are beyond question, it is still unclear how this issue should best be dealt with in research practice (Boutron 2008). We did not judge the likelihood of detection bias due to inadequate blinding of patients and personnel, since in psychotherapy outcome research it is quite impossible to blind therapists and patients, and both also need to be informed about theoretical frameworks of the therapy provided to gain an in-depth understanding of the conditions and postulated mechanisms of change. However, if interviewer-rated measures were used, we assessed the likelihood of detection bias due to inadequate blinding of outcome assessors.

In addition, we assessed the likelihood of performance bias due to inadequate treatment adherence. The risk of bias was judged low if any means had been undertaken to assure adequate treatment adherence, for example, by regular supervision or use of adherence ratings of videotaped or audiotaped therapy sessions.

Psychotherapy trials are especially prone to bias due to "allegiance bias". That means, that "despite care in design, the therapeutic allegiance of the experimenter might in some way influence the results" (Luborsky 1975, p. 1003). However, the existence of the allegiance bias hypothesis, that advantageous findings result from the investigators' allegiances rather than from their inherent superiority, has yet to be proved (Leykin 2009).

Last, the likelihood of bias due to different amounts of attention given to the treatment groups was rated (attention bias). Findings of beneficial effects by one treatment may primarily result from simply being paid attention to or being provided with any kind of intervention rather than from a specific mechanism of action. If there was a substantial difference of attention, this was regarded as possibly introducing bias, irrespective of other treatment options the participants may have used from other providers.

The 'Risk of bias' tool was applied by two review authors independently (JS, BV), and discrepancies were discussed in order to arrive at a consensus. A third person (KL) could have been called upon, but that was not necessary. All 'Risk of bias' domains mentioned above were included in a graph (see Figure 2) and summary (Figure 3). Trials were included irrespective of risk of bias, but possible impacts on effect estimates are discussed (see Quality of the evidence).

Figure 2. 'Risk of bias' graph: review authors' judgements about each risk of bias item presented as percentages across all included studies

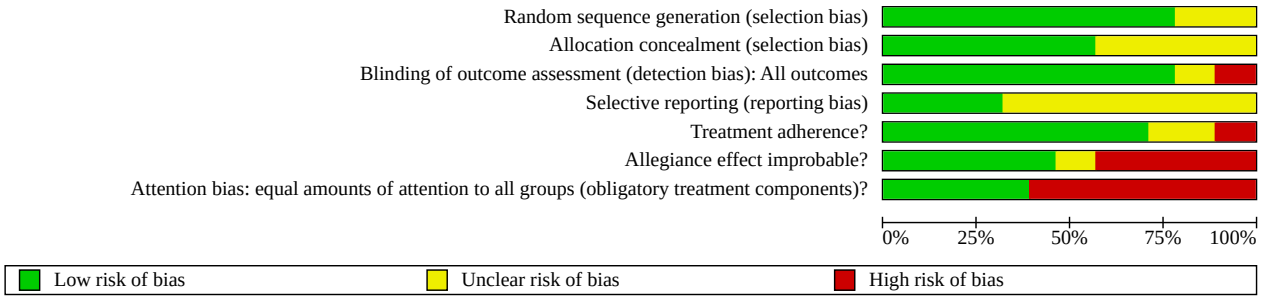


Figure 3. 'Risk of bias' summary: review authors' judgements about each risk of bias item for each included study

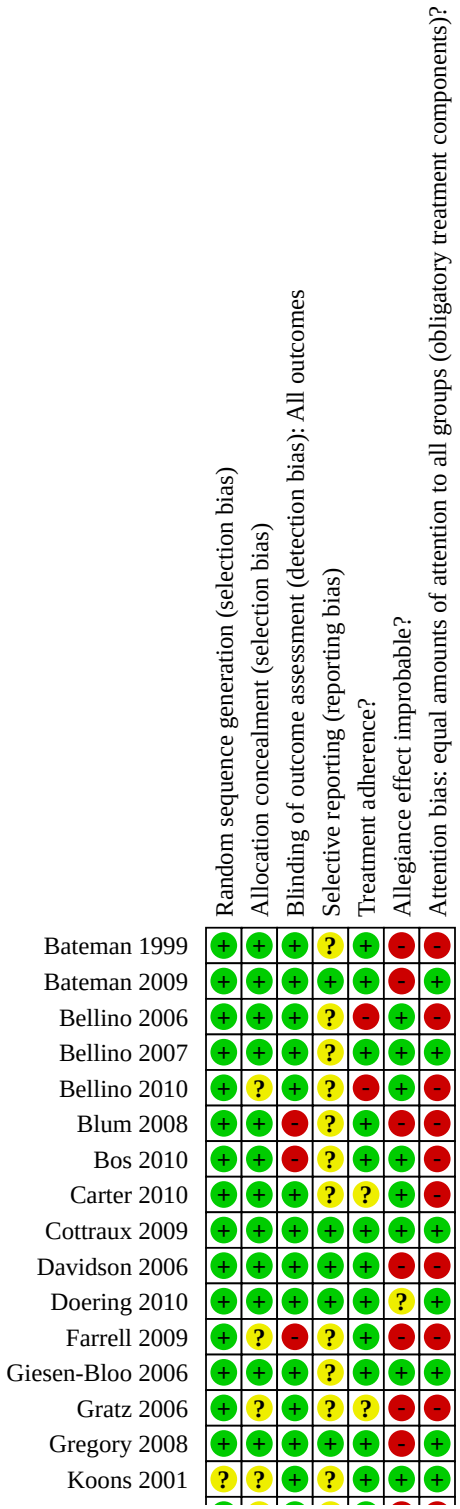
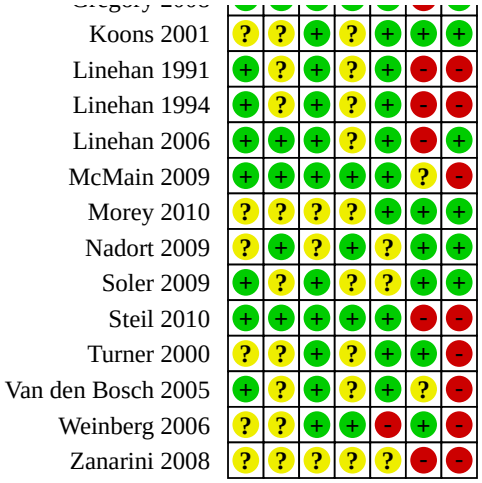


Figure 3. (Continued)



Measures of treatment effect

Continuous data

Standardised mean differences (SMDs) were calculated on the basis of post-treatment group results. If the direction of a scale was opposite to most of the other scales, the corresponding mean values were multiplied by -1. Following (Cohen 1988), SMD scores around 0.20 were regarded small, scores of 0.50 as moderate and scores of 0.80 or more as large.

In single studies, for example Giesen-Bloo 2006, effect sizes could not be calculated for some outcomes since data were not reported in a format usable for SMD calculation.

Dichotomous data

Regarding dichotomous outcomes, the risk ratio (RR) was computed on an intention-to-treat (ITT) basis. We made the conservative assumption that all participants who were lost to post-treatment assessment had an unfavourable outcome, for example, they had left because the treatment had not been acceptable for them. All calculations were done using the latest release of the Review Manager software (RevMan 2011).

Unit of analysis issues

Repeated observations

Study estimates were calculated on basis of post-treatment group results. Interim observations were not used.

Cross-over trials

Elbourne 2002

Though cross-over studies were eligible, no such study was available for inclusion. See Appendix 3 for information about future updates of this review.

Cluster-randomised trials

We intended to follow the guidance on statistical methods for cluster-randomised trials described in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011a). We would have sought direct estimates of the effect (for example, an odds ratio with its confidence interval) from an analysis that properly accounted for the cluster design. Alternatively, we would have extracted or calculated effect estimates and their standard errors as for a parallel group trial and adjusted the standard errors to account for the clustering (Donner 1980). This would have required information on an intra-class correlation coefficient (ICC), which describes the relative variability in outcome within and between clusters (Donner 1980). We would have extracted this information from the articles if available; otherwise, we would have contacted the authors or used external estimates obtained from similar studies. We would have searched for closest matching scenarios (with regard to both outcome measures and types of clusters) from existing databases of ICCs (Ukoumunne 1999) and if we had been unable to identify any, we would have performed sensitivity analyses using a high ICC of 0.1, a moderate ICC of 0.01 and a small ICC of 0.001. We recognise that these values are relatively arbitrary but would have preferred to use them to adjust the effect estimates and their standard errors due to the implausibility that the ICC is actually zero. Subsequently, we would have combined the estimates and their corrected standard errors from the cluster-randomised trials with those from parallel designs using the generic inverse variance method in Review Manager 5 (RevMan 2011).

None of the included studies applied a cluster-randomisation procedure.

Multi-arm trials

We would have included all eligible outcome measures for all trial arms in this review. If there had been more than two arms of a trial meeting the inclusion criteria, each referring to a different treatment, we would have included them as different comparisons (Higgins 2011a). If two or more arms referred to the same type of treatment, we would have combined these groups to create a single pair-wise comparison (Higgins 2011b).

There were no multi-arm trials.

Dealing with missing data

In cases of incomplete reporting of outcomes stated as having been assessed, we contacted the study authors.

Effect sizes were preferably calculated on the basis of ITT data. If only available case analysis (ACA) data were reported, we calculated effect sizes on this basis. In case of dichotomous data that were not presented on the basis of ITT data, the number of participants lost in each group were added to the participants with unfavourable results, acting on the assumption that most patients with BPD do not get lost at random.

For continuous outcomes we used per protocol analysis as available from the reports (that is, results are based on the number of patients at follow-up). If data were not reported in an immediately usable way but required processing before being analysed, a statistician (GR) was consulted. This was the case for the study of Blum 2008 where standard deviations of mean values had to be calculated from standard errors.

Assessment of heterogeneity

We assessed studies for clinical homogeneity with respect to type of therapy, therapy setting and control group. For any studies judged as clinically homogeneous and adequate for pooling, statistical heterogeneity was investigated by both visual inspection of the graphs and the I^2 statistics (Higgins 2003). An I^2 score of > 75% was regarded as representing considerable heterogeneity (Higgins 2011c).

We intended to carry out meta-analyses even if there was substantial concern about heterogeneity, but to interpret the results with caution, discuss possible reasons and investigate them by conducting subgroup analyses.

Assessment of reporting biases

We planned to use funnel plots for comparisons with sufficient primary studies. No single comparison included sufficient effect estimates to allow for drawing of a conclusive funnel plot.

However, we drew a funnel plot for the one outcome (parasuicidality) for which data were available from 18 out of the 22 included controlled comparisons. Some studies reported continuous and some dichotomous measures, but the majority used continuous measures; we therefore decided to re-express dichotomous outcomes as SMDs using the approach of Chinn 2000.

Data synthesis

If several effect estimates were available, these were pooled and their 95% confidence interval (CI) calculated. The random-effects model was used, as some degree of clinical heterogeneity was present in most cases.

Separate comparisons were performed by type of intervention, that is, all approaches were analysed separately (for example, DBT versus control, MBT versus control), as were comparisons of the same type of psychotherapy to different kinds of controls (for example, DBT versus treatment as usual; DBT versus general management). In addition, separate comparisons were done if the same psychotherapy was delivered in different treatment settings (that is, MBT-partially hospitalised setting versus control, MBT-outpatient versus control).

Subgroup analysis and investigation of heterogeneity

Pre-planned subgroup analyses according to participant characteristics (sex, presence of distinct psychiatric comorbidities such as depression, addictive behaviour or post-traumatic stress disorder, having undergone psychotherapy previously) or treatment characteristics (duration less or more than one year) could not be performed due to lack of studies.

There were only single studies available per comparison except for DBT versus TAU (Analysis 1.2; Analysis 1.8; Analysis 1.17; Analysis 1.18). The DBT versus TAU studies studies did not vary clinically with regard to predefined subgroup criteria, so we did not perform subgroup analyses.

Statistical heterogeneity in terms of an I^2score exceeding 75% was only found for one analysis (Analysis 1.18). We discussed reasons (Effects of interventions, 1.1.9) and undertook a post-hoc sensitivity analysis (Analysis 1.19).

Sensitivity analysis

Sensitivity analyses for the primary outcomes were planned to be performed as follows.

- Trials requiring participants to have a certain psychiatric comorbidity in addition to BPD were to be excluded.
- Only ITT-data based outcomes were to be included.

Given the small numbers of effect estimates per comparison and outcome, we did not conduct sensitivity analyses, as this would only have led to omitting results. Instead, we strived to make trial characteristics as well as all potential shortcomings of methodological quality explicit (compare Characteristics of included studies tables and Risk of bias in included studies section of the Description of studies section) and to critically discuss all findings.

RESULTS

Description of studies

Results of the search

All electronic databases and search periods are listed in the Methods section (see Electronic searches) and in Appendix 1 and Appendix 2. There were no language, date or document format restrictions. This review is part of a series of reviews on interventions for personality disorders and so a very comprehensive search strategy was used covering all psychotherapeutic and/or pharmacological treatment of any personality disorder.

The searches generated 38,701 records altogether, of which 10,166 were identified as duplicates. After screening of titles and abstracts, 503 citations merited closer inspection. Assessment of full texts lead to the exclusion of 362 records: 164 were not trials; 143 did not have psychotherapy as the intervention; 30 were not RCTs, and 25 were excluded on the grounds of sample characteristics. This left 141 records. 32 of those records related to 28 different ongoing studies (see Ongoing studies). Eighteen records related to eight different RCTs that either had not assessed any of the pre-defined outcomes of interest of this review or did not provide usable data were excluded. This left 91 eligible papers altogether (see Included studies), that is, primary or secondary publications of primary studies, conference proceedings and trial register entries, covering 28 different RCTs that were included in quantitative syntheses (see Figure 1).

Included studies

For essential characteristics of the 28 included studies, please see Characteristics of included studies. The studies were published between 1991 and 2010: three during the 1990s, another three between 2000 and 2005 and a much larger number (22) between 2006 and 2010.

Design

All primary studies were randomised, parallel-arm trials. Most studies (n = 19) were conducted at a single site. The remaining nine had several participating study centres, that is, n = 2 (Koons 2001; Bateman 2009; Cottraux 2009; McMain 2009; Bos 2010; Doering 2010), n = 3 (Davidson 2006), n = 4 (Giesen-Bloo 2006) or n = 8 (Nadort 2009) study sites.

Sample sizes

The sample sizes ranged from n = 16 to n = 180. Altogether, n = 1804 participants were included (mean = 64.4, SD = 42.7). Six trials had sample sizes of more than 100 participants (Davidson 2006; Linehan 2006; Blum 2008; Bateman 2009; McMain 2009; Doering 2010).

Setting

All but two trials were conducted in an outpatient setting. In contrast, participants of the Bateman 1999 study were partially hospitalised if allocated to the experimental group, but remained outpatients if allocated to the control group. The study of Steil 2010 tested DBT-PTSD, an adaption of DBT for the treatment of patients with BPD with comorbid posttraumatic stress disorder. It includes several stages from a diagnostic outpatient phase to an inpatient stay and an additional outpatient booster session after the end of inpatient treatment. However, the main interventions were conducted in an inpatient setting.

Participants

Sex

Twelve studies consisted of female participants only (Linehan 1991; Linehan 1994; Koons 2001; Van den Bosch 2005; Gratz 2006; Linehan 2006; Weinberg 2006; Zanarini 2008; Farrell 2009; Carter 2010; Doering 2010; Steil 2010). All remaining studies were mixed but predominantly female. More than 75% of participants were female in Turner 2000; Davidson 2006; Giesen-Bloo 2006; Bellino 2007; Blum 2008; Gregory 2008; Bateman 2009; Cottraux 2009; McMain 2009; Nadort 2009;Soler 2009; Bos 2010; Morey 2010. Only three studies had less than 75% female participants (Bateman 1999: 57.9%; Bellino 2006: 60.0%; Bellino 2010: 67.3%).

Diagnostic criteria and means of assessment

Participants were diagnosed as having BPD according to DSM-III (Linehan 1991), DSM-III-R (Koons 2001; Linehan 1994; Bateman 1999; Turner 2000; Farrell 2009) or DSM-IV (Van den Bosch 2005; Bellino 2006; Davidson 2006; Giesen-Bloo 2006; Gratz 2006; Linehan 2006; Weinberg 2006; Bellino 2007; Blum 2008; Gregory 2008; Zanarini 2008; Bateman 2009; Cottraux 2009; McMain 2009; Nadort 2009;Soler 2009; Bellino 2010; Bos 2010; Carter 2010; Doering 2010; Morey 2010; Steil 2010).

The presence of BPD was confirmed by some standardised means of assessment in all studies. The most frequently used assessment instrument was the Structured Clinical Interview for DSM-III-R (Spitzer 1985) or DSM-IV (First 1997) personality disorders (SCID-II). It was used by Linehan 1994; Bateman 1999; Koons 2001; Van den Bosch 2005; Bellino 2006; Davidson 2006; Giesen-Bloo 2006; Linehan 2006; Weinberg 2006; Bellino 2007; Gregory 2008; Bateman 2009; Nadort 2009; Soler 2009; Bellino 2010; Bos 2010; Doering 2010. Other DSM-oriented means of assessment were the Structured Interview for DSM-IV Personality (SIDP-IV; Pfohl 1997), which was used by Blum 2008, and the International Personality Disorder Examination (IPDE; Loranger 1995), which was used by Carter 2010, Steil 2010 and McMain 2009. Carter 2010 specifically used the IPDE-self rating screening questionnaire the preliminary findings of which were confirmed in clinical interviews by a psychiatrist. Turner 2000 used a preceding version of IPDE, the Personality Disorders Examination (PDE; Loranger 1988). The Diagnostic Interview for DSM-IV Personality Disorders (DIPD-IV; Zanarini 1987) was used in the studies of Gratz 2006; Zanarini 2008 and Morey 2010). Another frequently used standardised interview was the DIB (Gunderson 1981) or DIB-R (Zanarini 1989), which was originally developed to categorically assess BPD not as defined by DSM but as conceptualised by J.G. Gunderson and his group before publication of DSM-III. It is indicative of a diagnosis of BPD but can not be relied upon to make a DSM diagnosis due to its somewhat different conceptualisation (Rush 2005). It was used additionally to another DSM-oriented interview by Linehan 1994; Bateman 1999; Turner 2000; Weinberg 2006; Zanarini 2008; Soler 2009. It was used as only standardised means of diagnostic assessment by Cottraux 2009 and Linehan 1991, but the DSM diagnosis was additionally confirmed by clinical interviews. Farrell 2009 also used DIB-R but also the Borderline Syndrome Index (BSI; Conte 1980).

Exclusion criteria

People with evidence of mental impairment, organic brain disorder, insufficient commend of the language spoken, severe disabling organic conditions, dementia or neurologic diseases, place of residence too far from the study centre or being in coercive treatment were not eligible for most studies. Comorbid personality disorders were no reason for exclusion from most trials, but Koons 2001; Giesen-Bloo 2006; Cottraux 2009; Carter 2010; Doering 2010; and Nadort 2009 excluded those with antisocial features or full antisocial personality disorder and Bellino 2010 did not include people with any comorbid personality disorder. Of the axis-I disorders, schizophrenia, schizoaffective and other psychotic disorders were reasons for exclusion from all studies except Bos 2010. Bipolar disorder, mostly not further specified, was also a very common reason for exclusion, except for the studies of Blum 2008; Gregory 2008; Cottraux 2009; Farrell 2009; McMain 2009; Bos 2010; Morey 2010. Gratz 2006; Zanarini 2008; Bateman 2009; McMain 2009 specified that only people with bipolar I disorder were excluded. Other common reasons for exclusion were substance-related disorders. People with current substance abuse were not eligible for the studies of Bateman 1999; Bellino 2006; Bellino 2007; Bellino 2010; Morey 2010. Dependence was a reason for exclusion from the trials of Bateman 2009 (opiates); Linehan 1991; Linehan 1994; Koons 2001; Davidson 2006; Gratz 2006; Weinberg 2006; Zanarini 2008; Cottraux 2009; McMain 2009; Soler 2009; Doering 2010 (any substance). People with acute substance dependence were excluded from the studies of Giesen-Bloo 2006 and Nadort 2009 if clinical detoxification was required but could enter the trial afterwards. In contrast, all participants of Gregory 2008 had a current diagnosis of alcohol abuse or dependence. Both Giesen-Bloo 2006 and Nadort 2009 excluded possible participants with a dissociative identity disorder and those with attention-deficit/hyperactivity disorder. Soler 2009 was

the only study explicitly excluding people with a current major depressive episode. Severity-related reasons for exclusion were rare. For the Soler 2009 study, people with a CGI-S score of ≧ 4, that is, moderately ill or worse, were not eligible. Acute danger to self and/or others as reason for ineligibility was explicitly specified only by Gratz 2006; Weinberg 2006; Bos 2010.

Severity of illness/level of functioning

There was no standard way of reporting or describing the overall severity of illness or the level of functioning of study participants.

The Global Assessment of Functioning Scale (GAF; APA 1987) was used by five trials. On a scale from one (persistent danger of severely hurting self or others) to 100 (superior functioning), participants of Bateman 2009 and Farrell 2009 scored between 41 and 50 and thus had "serious symptoms (for example, suicidal ideation, severe obsessional rituals, frequent shoplifting) OR any serious impairment in social, occupational, or school functioning (for example, no friends, unable to keep a job)". Participants of Zanarini 2008; McMain 2009; Doering 2010 scored between 51 and 60 and therefore had "moderate symptoms (for example, flat affect and circumstantial speech, occasional panic attacks) OR moderate difficulty in social, occupational, or school functioning (for example, few friends, conflicts with peers or co-workers)".

Another trial used the Global Assessment Scale (GAS; Endicott 1976), the scale that the GAF originally was derived from. It also uses a 1 to 100 continuum, with 1 indicating the lowest level of functioning in a hypothetical continuum of mental illness to health. Participants of Linehan 1994 scored between 31 and 40 on average at baseline, which indicates "major impairment in several areas, such as work, family relations, judgment, thinking or mood OR some impairment in reality testing or communication OR single serious suicide attempt".

Another widely used measure was the Clinical Global Impression Scale (CGI, Guy 1976). Scores on its Severity of Illness Subscale (CGI-S) range from 1 = "not ill at all" to 7 = "among the most extremely ill". In primary studies included here, the average CGI-S baseline scores described samples as "mildly to moderately ill" (Bellino 2007), "moderately to markedly ill" (Bellino 2006) or "markedly to severely ill" (Blum 2008; Cottraux 2009; Bellino 2010).

An adaptation of CGI for BPD (Clinical Global Impression-Scale for Borderline Personality Disorder Patients; CGI-BPD; Pérez 2007) was used in one trial (Soler 2009), indicating a "moderately to markedly ill" sample of patients on average.

Another indicator of severity of illness was the reported mean number of fulfilled BPD criteria (five out of nine are required for a diagnosis). These were 6.8 for the samples of Koons 2001 and Nadort 2009, 6.9 for Giesen-Bloo 2006, 7.4 for Van den Bosch 2005 and 7.5 for Gratz 2006.

Davidson 2006 used the SFQ (Social Functioning Questionnaire; Tyrer 2005). The score range is 0 to 24, and a score of 10 or more indicates poor social functioning. The mean SFQ score of the sample was 14.6, comparable to psychiatric emergencies.

The remaining studies reported no standardised measures of severity.

Interventions

The duration of trial interventions ranged from 1.5 to 36 months. The mean duration was 10.19 months (SD = 7.02). Seven trials with interventions of predominantly psychoeducational character had a duration of less than six months (Gratz 2006; Weinberg 2006; Blum 2008; Zanarini 2008; Soler 2009; Bos 2010; Morey 2010). In addition, the inpatient treatment in the study of Steil 2010 was also of less than six months duration, that is, three months. The studies of Koons 2001; Bellino 2006; Bellino 2007; Carter 2010 lasted six months, those of Farrell 2009 and Bellino 2010 eight months. The major part of 10 studies (Linehan 1991; Linehan 1994; Turner 2000; Van den Bosch 2005; Davidson 2006; Linehan 2006; Gregory 2008; Cottraux 2009; McMain 2009; Doering 2010) were of one year's duration. The three studies of Bateman 1999; Bateman 2009; Nadort 2009 lasted 18 months, and the trial of Giesen-Bloo 2006 was the longest with a duration of 36 months.

In the following, the interventions tested in the included RCTs will be described briefly. However, it is not possible to provide a comprehensive account of each psychological intervention. Only very short descriptions will be given and relevant references indicated.

Comprehensive psychotherapies

As depicted above, comprehensive psychotherapies were defined as including individual psychotherapy as substantial part of the intervention. Duration must have been three months or more. Group therapy may or may not be delivered.

Dialectical behaviour therapy (DBT) and modified DBT-related treatments (eight studies: Carter 2010; Koons 2001; Linehan 1991; Linehan 1994; Linehan 2006; McMain 2009; Turner 2000; van den Bosch 2005)

Dialectical behavioural therapy (DBT; Linehan 1993a; Linehan 1993b) is a multi-module psychological intervention that was developed using some of the principles of CBT in combination with mindfulness-based techniques. It aims to change behaviour by improving skills and the ability to contain difficult feelings, but also applies supportive elements, for example, in the principles of validation of emotions and acceptance. Problem-oriented behaviour "skills" are targeted at enhanced stress tolerance, interpersonal situations, emotion regulation and mindfulness. DBT was originally designed as an outpatient treatment. It includes weekly individual sessions along with weekly "skills group training", and telephone access for patients to individual therapists in times of crisis. Therapists meet in teams for regular supervision and exchange. Usually DBT is delivered for a period of 12 months.

Dialectical behaviour therapy (DBT) according to Linehan (Linehan 1993a; Linehan 1993b) was used in eight studies (Linehan 1991; Linehan 1994; Turner 2000; Koons 2001; Van den Bosch 2005; Linehan 2006; McMain 2009; Carter 2010). A summary of major modifications and/or adaptations is given in the table below.

Study	Modifications
Carter 2010	• duration: six months (treatment of 12 months length, but outcome assessment after six)

	• telephone access was available but not from participants' individual therapists but other DBT therapists or the local psychiatric hospital
Koons 2001	• duration: six months • length of skills training group and therapist consultation meeting shortened to 90 minutes per week
Linehan 1991	no major modifications
Linehan 1994	no major modifications
Linehan 2006	no major modifications
McMain 2009	no major modifications
Turner 2000	• psychodynamic techniques incorporated to conceptualise patients' behavioural, emotional and cognitive relationship schemata • no skills group, skills training provided during individual therapy sessions
Van den Bosch 2005	no major modifications

DBT for Borderline Personality Disorder with Severe Posttraumatic Stress Disorder after Childhood Sexual Abuse (DBT-PTSD; one study: Steil 2010)

DBT-PTSD aims at meeting the special demands of people with both BPD and chronic post-traumatic stress disorder (PTSD) after sexual abuse in childhood (Steil 2010a). It draws from and employs principles and modules of standard DBT but enhances them by PTSD specific cognitive restructuring and exposure techniques. DBT-PTSD was delivered in an inpatient setting of three months duration in the study of Steil 2010.

Mentalisation-based treatment (MBT; two studies: Bateman 1999; Bateman 2009)

Mentalisation-based therapy (MBT; Bateman 2004; Bateman 2006) is a complex psychoanalytically and attachment theory-based treatment. It aims to increase the reflective or mentalising capacity of the participant, helping them to understand and recognise the feelings they evoke in others and the feelings they experience themselves as a result of others. Thus, "mentalising" means the implicit and explicit interpretation of the actions of oneself and others as meaningful in view of intentional mental states such as desires, feelings, and needs.

MBT was used in two trials, one in a partial hospitalised setting (MBT-PH; Bateman 1999) and the other outpatient (MBT-OUT; Bateman 2009).

Cognitive-behavioural approaches (CBT; three studies: Bellino 2007; Cottraux 2009; Davidson 2006)

Cognitive-behavioural therapy (CBT) as a generic term refers to treatments that combine cognitive and behavioural techniques. Today, neither of them is practiced without the other, so the combined term has prevailed. Originially, cognitive techniques were compiled by AT Beck who developed his approach initially for the treatment of depression (Beck 1979). Current CBT is problem-focused, with therapeutical processes strongly oriented towards pre-defined and both patient- and therapist-agreed-upon treatment targets. Overall, the major goal is to help patients to develop adaptive (instead of maladaptive and dysfunctional) beliefs about self and others by self-directed learning processes. Participants are encouraged to identify their core beliefs, evaluate and modify their behaviour accordingly and gain new experiences (Beck 1990; Beck 1995). Cognitive-behavioural approaches (CBT) were used in three RCTs.

In the trial of Bellino 2007, the participants of which all had an additional major depressive episode, CBT was delivered according to the basic works of Beck (Beck 1990; Beck 1995). Cottraux 2009 delivered CBT based on further developments of A T Beck's working group for the treatment of people with personality disorders (esp.: Layden 1993; Young 1994). Davidson 2006 used a CBT approach based on AT Beck work that she has specially formulated for the practical treatment of those with Cluster B personality disorders (Davidson 2000).

Interpersonal Psychotherapy (IPT) and related treatments (IPT-BPD; three studies: Bellino 2006; Bellino 2007; Bellino 2010)

Interpersonal Psychotherapy (IPT) is a brief and highly structured manual-based psychotherapy that addresses interpersonal issues. It was originally developed for the treatment of depression, to the exclusion of all other foci of clinical attention (Klerman 1984). It acts on the assumption that interpersonal factors play an important role in the development and maintenance of psychological problems, and emphasises interpersonal processes rather than intrapsychic ones. Participants are encouraged to acquire interpersonal skills and thus adapt their behaviour to current roles and situations.

IPT was used in the studies of Bellino 2006 and Bellino 2007. In a more recent trial (Bellino 2010), a BPD-specific adaptation of IPT, called IPT-BPD, was used (Markowitz 2005; Markowitz 2006).

Transference-Focused Psychotherapy (TFP; two studies: Doering 2010; Giesen-Bloo 2006)

Another popular psychodynamically-based approach is the one of transference-focused psychotherapy (TFP; Clarkin 1999). By

analysis of the transference within the therapeutic relationship, integrated representations of self and others, modification of primitive defensive operations and resolution of identity diffusion are to be achieved. Primitive object relations (for example, split, polarised into 'good' and 'bad') are to be transformed to advanced ones (for example, differentiated, integrated).

TFP was used in two trials. Doering 2010 compared TFP with a control condition, and it served as comparison treatment for SFT in the study of Giesen-Bloo 2006.

Schema-focused therapy (SFT; two studies: Giesen-Bloo 2006; Nadort 2009)

Schema-focused therapy (SFT; Young 2003) draws from both behavioural as well as psychoanalytic theories and helps patients to identify their self-defeating core themes that evolved from unmet emotional needs in childhood and implicate maladaptive coping styles in adulthood. The goal of SFT is to aid patients to get their needs met.

SFT was tested in two trials, those of Giesen-Bloo 2006 and Nadort 2009. The first one strongly stuck to the original SFT treatment regimen. Nadort 2009 investigated the effects of standard SFT in a regular mental health care setting and SFT plus additional crisis telephone support by individual therapists outside the office hours (SFT+).

Client-centered therapy (CCT) and related treatments (two studies: Cottraux 2009; Turner 2000)

Client-centered (or patient-centered) therapy (CCT; Rogers 1951) is a non-directive approach that aims at encouraging participants to find their own solutions to their problems. This is achieved by creating a safe, non-judgmental therapy setting in which therapists meet their clients with un-conditional respect, demonstrating warmth, empathy, and genuineness while "active listening". Participants are encouraged to explore their own experiences in-depth and express their feelings, so they can decide for themselves in what ways they need to change.

CCT based on C Rogers' work was one of the conditions of the RCT of Cottraux 2009. Turner 2000 used R Carkhuff's approach, a further development of Rogers' CCT (Carkhuff 1969; Carkhuff 1976), emphasising therapeutic core conditions as crucial for the client's growth and development.

Dynamic deconstructive psychotherapy (DDP; one study: Gregory 2008)

Dynamic deconstructive psychotherapy (DDP) has been developed to treat those people with BPD having co-occurring disorders, such as substance use disorders or additional personality disorders (Gregory 2008a; Gregory 2010). BPD is regarded a disorder of aberrant processing of emotional experiences. Therefore, DDP aims to enhance neurocognitive self-capacities by elaborating affect-laden interpersonal experiences and integrate attributions by narrative construction through association techniques. Thus, a differentiated view of self versus others is to be developed, supported by novel experiences within the patient-therapist relationship.

DDP was used in a RCT conducted by its developer (Gregory 2008).

Non-comprehensive psychotherapeutic interventions

As depicted above, non-comprehensive psychotherapies were defined as not including individual psychotherapy as substantial part of the intervention. They mainly focus on psychoeducation as delivered in a group-therapy settings, are of limited duration (that is, beyond six months) and focus on impartation of knowledge rather than individual therapy. These interventions may or may not be administered as an adjunctive module to ongoing individual treatments, but individual psychotherapy is not part of these interventions themselves.

DBT-skills training only (DBT-ST; one study: Soler 2009)

One trial investigated the effects of DBT-skills training only (Soler 2009): three months of standard-DBT based skills training sessions were delivered to people who did not receive any of the remaining usual DBT components.

Emotion regulation group training (ERG; one study: Gratz 2006)

ERG is an eclectic treatment approach that draws from Acceptance and Commitment Therapy (ACT; Hayes 1999), DBT and includes aspects of emotion-focused psychotherapy (Greenberg 2002) as well as behavioural therapy. ERG was delivered for a duration of 3.5 months in the trial of Gratz 2006.

Schema-focused therapy-group (SFT-G; one study: Farrell 2009)

Farrell 2009 used a shortened group-only format of SFT (SFT-G), based on schema change work according to J. Young (Young 1994; Young 2003) in combination with BPD psychoeducation, emotional awareness training and distress management training (Farrell 1994). This intervention was delivered for eight months.

Manual-assisted cognitive treatment (MACT; two studies: Morey 2010; Weinberg 2006)

Weinberg 2006 and Morey 2010 tested MACT, a bibliotherapeutic approach for acutely self-harming patients. The intervention comprises six individual sessions that are each structured around a chapter of a self-help book (Schmidt 2004). Weinberg 2006 compared MACT with a control group, whereas Morey 2010 tested the effects of both standard MACT as well as MACT enhanced by a therapeutic assessment (MACT+TA). The therapeutic assessment comprised an individualised collaborative assessment including development of questions the client would like to be answered by the test results and development of individualised treatment goals.

Systems training for emotional predictability and problem solving for borderline personality disorder (STEPPS; two studies: Blum 2008; Bos 2010)

Two studies (Blum 2008; Bos 2010) applied the "Systems training for emotional predictability and problem solving for borderline personality disorder" (STEPPS) training. STEPPS is a 20-week seminar-like group treatment program. It combines cognitive-behavioural elements and skills training with a systematic approach by involving participants' relatives and other treatment providers. Blum 2008 employed the generic STEPPS training as an add-on to any ongoing individual treatments, whereas Bos 2010 combined STEPPS with a complementary individual therapy (STEPPS-IT) aiming to help consolidate the skills that had been acquired during STEPPS group into the individual lives of patients. However, the authors explicitly refer to the individual sessions as "limited individual [...] developed as an adjunct to STEPPS to help consolidate the newly acquired skills and to stimulate

their use" (Bos 2010, p. 300). Thus, the STEPPS group remains the core element, and we decided to classify STEPPS+IT as non-comprehensive psychotherapeutic intervention.

Psychoeducation only (PE; one study: Zanarini 2008)

Zanarini 2008 used a very generic form of psychoeducation. People newly diagnosed with BPD participated in a single, half-day workshop. Topics of the workshop curriculum were phenomenology, aetiology, treatment and course of BPD.

Comparisons

Comparisons included both active as well as classic control conditions.

Controls

- Treatment as usual (TAU): TAU was the most commonly used control condition. TAU means that participants are allowed to use any kind of treatment they would or would not have used in case they had not been involved in the actual trial. However, TAU conditions differ slightly, especially in the extent to which the use of any alternative treatment was obligatory or not, the extent to which alternative treatments reflect the supposed usual treatment and the extent to which alternative treatments were homogenous among all participants assigned to that condition.
  - obligatory/all control participants in some kind of treatment:
    - Bateman 1999: homogeneous; standard treatment in the general psychiatric services, excluding formal psychotherapy
    - Bateman 2009: homogeneous; structured clinical management according to best generic practice for BPD offered by non-specialist practitioners within UK psychiatric services
    - Bos 2010: homogeneous; standard treatment for BPD as offered at the participating sites
    - Davidson 2006: homogeneous; standard treatment a patient would have received if the trial had not been in place as offered at the study sites
    - Farrell 2009: homogeneous; participants had to be in any individual psychotherapy to be eligible for study participation, and they had to continue this treatment for the duration of the study
    - Gratz 2006: homogeneous; participants had to be in any individual therapy and continue during the study
    - Koons 2001: homogeneous; participants received 60 minutes of weekly individual therapy with a clinician of the participating clinics of different orientations (none DBT) and were offered attendance of several supportive and psychoeducational group
    - Van den Bosch 2005: homogeneous; clinical management from the original referral source, that is, addiction treatment centres or psychiatric services; generally no more than two sessions per month
    - Weinberg 2006: heterogeneous; all participants took part in additional, ongoing treatments
  - optional/treatment usage:
    - Blum 2008: heterogeneous; participants "encouraged to continue their usual care" of any kind
    - Carter 2010: heterogeneous; treatment as usual plus waiting list (six months)
    - Gregory 2008: heterogeneous; participants (all with either alcohol abuse or dependence) were referred to an alcohol rehabilitation centre and given names of psychiatric clinics and therapists in the community but were also allowed to keep their current psychotherapist, if any
    - Linehan 1991: heterogeneous; participants were given alternative therapy referrals
    - Linehan 1994: heterogeneous; participants received alternative therapy referrals and were allowed to participate in any type of treatment available in the community
    - Steil 2010: heterogeneous; treatment as usual plus waiting list (six months)
- Community treatment by experts (CTBE): all participants allocated to the control condition received treatment by experienced psychotherapists in the community. Thus, treatment was obligatory, and it was standardised in that all psychotherapists were known experts through long-term experience in that field.
  - Doering 2010: treatment by community psychotherapists who were known as experienced and particularly interested in people with BPD
  - Linehan 2006: community treatment by experts who had been nominated by community mental health leaders; the treatment provided was uncontrolled by the study but therapists' characteristics (sex, experience, mean number of clients etc.) were balanced among both groups
- Non-specific comparison programmes: treatments mainly designed to control for attention biases or the like by providing an alternative programme. Specific techniques or putative efficacious interventions are explicitly avoided. Those treatments are subsumed in an extra category since they will usually not be found in usual health care settings.
  - Soler 2009: "Standard group therapy" (SGT); "oriented to provide a relational experience allowing people with BPD to share their characteristic difficulties"; therapists present to conduct group interaction
- Clinical management (CM):
  - Bellino 2006: appointments with a psychiatrist, fluoxetine medication (both groups received fluoxetine)
  - Bellino 2010: appointments with the local Service for Personality Disorders, fluoxetine medication (both groups received fluoxetine)
- Waiting list without treatment (WL):
  - Zanarini 2008: waiting list, weekly screening appointments but no psychiatric treatment for the duration of the waiting period (12 weeks)

Active comparators

The following studies compared two active treatments (description of interventions see above).

- Bellino 2007: cognitive therapy versus interpersonal therapy
- Cottraux 2009: cognitive therapy versus client-centered therapy

- Giesen-Bloo 2006: schema-focused therapy versus transference-focused therapy
- McMain 2009: dialectical behaviour therapy versus APA guidelines-based treatment algorithm (general psychiatric management derived from the American Psychiatric Association (APA) guideline recommendations; combination of psychodynamically informed therapy and symptom-targeted medication management)
- Morey 2010: manual assisted cognitive therapy versus manual-assisted cognitive therapy plus therapeutic assessment
- Nadort 2009: schema-focused therapy versus schema-focused therapy plus therapist telephone crisis support outside office hours
- Turner 2000: dialectical behaviour therapy versus client-centered therapy

Outcomes

In the case of availability of several measures relating to the same outcome construct (for example, data from several questionnaires for the assessment of depression), the one most often used in the whole pool of included studies was used for effect size calculation, in order to minimise heterogeneity of outcomes in form and content. If a study reported data of two assessment instruments that were equally frequently used, two review authors (JS, BV) discussed the issue and chose the one which was in its content most appropriate for assessing BPD-relevant pathology. Self-rated measures were preferred. If there was more than one post-treatment assessment available, we used the one which was assessed closest to the end of psychotherapeutic treatment. For the studies of Steil 2010 and Zanarini 2008, several assessments were considered for use as post-treatment data: Steil 2010 reported data that were assessed immediately at end of the three months inpatient treatment and, additionally, data that were assessed after a subsequent booster session six weeks after dismissal. As the booster session was a pre-defined part of treatment, we used the post-booster session data. Zanarini 2008 conducted a singular psychoeducation workshop and assessed data on a weekly basis up to week 12. We decided to use the data from week 12 to ensure observation periods throughout the whole pool of studies were as homogeneous as possible.

All available outcomes that were included in this review are listed below as well as specific measures and the respective studies that used them.

Primary outcomes

1. BPD severity
   a. Borderline evaluation of severity over time (BEST): Gratz 2006; Blum 2008; Gregory 2008
   b. Borderline personality disorder checklist-40 (BDP-40) - total score: Bos 2010
   c. Borderline personality disorder severity index (BPDSI-IV) - total score: Giesen-Bloo 2006; Nadort 2009; Bellino 2010
   d. Borderline symptom list (BSL): Steil 2010
   e. Borderline syndrome index (BSI): Farrell 2009
   f. Clinical global impression scale for borderline personality disorder patients (CGI-BPD) - global: Soler 2009
   g. Mean number of DSM-IV diagnostic criteria for BPD: Koons 2001; Doering 2010
   h. Personality assessment inventory - borderline features scale total (PAI-BOR-total): Morey 2010
   i. Zanarini rating scale for borderline personality disorder (ZAN-BPD) - total score: McMain 2009
2. Affective dysregulative cluster symptoms
   a. anger
      i. Borderline personality disorder severity index (BPDSI-IV) - anger: Bellino 2010
      ii. Clinical global impression scale for borderline personality disorder patients (CGI-BPD) - anger: Soler 2009
      iii. Spielberger anger expression scale (STAXI) - anger out: Koons 2001; McMain 2009
      iv. Spielberger anger expression scale (STAXI) - trait anger: Linehan 1994
      v. Target behaviour rating (TBR) - anger: Turner 2000
   b. affective instability
      i. Borderline personality disorder severity index (BPDSI-IV) - affective instability: Bellino 2010
      ii. Clinical global impression scale for borderline personality disorder patients (CGI-BPD) - affective instability: Soler 2009
      iii. Diagnostic Interview for BPD-Revised (DIB-R) - affect subscale: Farrell 2009
      iv. Difficulties in emotion regulation scale (DERS) - emotion dysregulation: Gratz 2006
      v. Personality assessment inventory - affective instability (PAI-BOR-A): Morey 2010
      vi. Zanarini rating scale for borderline personality disorder (ZAN-BPD) - affective instability: Blum 2008
   c. chronic feelings of emptiness
      i. Borderline personality disorder severity index (BPDSI-IV) - emptiness: Bellino 2010
      ii. Clinical global impression scale for borderline personality disorder patients (CGI-BPD) - emptiness: Soler 2009

3. Impulsive cluster symptoms
   a. impulsivity
      i. Barrett impulsiveness scale (BIS): Blum 2008
      ii. Borderline personality disorder severity index (BPDSI-IV) - impulsivity: Van den Bosch 2005; Bellino 2010
      iii. Clinical global impression scale for borderline personality disorder patients (CGI-BPD) - impulsivity: Soler 2009
      iv. Diagnostic Interview for BPD-Revised (DIB-R) - impulsive subscale: Farrell 2009
      v. Difficulties in emotion regulation scale (DERS) - impulse dyscontrol: Gratz 2006
      vi. Eysenck impulsivity venturesomeness empathy questionnaire (IVE) - impulsivity: Cottraux 2009
      vii. Number of participants scoring above BPDSI-IV-impulsivity cut-off score: Bos 2010
      viii. Target behaviour rating (TBR) - impulsiveness: Turner 2000
      ix. Zanarini rating scale for borderline personality disorder (ZAN-BPD) - impulsivity: Zanarini 2008
   b. suicidality
      i. Beck hopelessness scale (BHS): Cottraux 2009
      ii. Beck scale for suicidal ideation (BSS): Turner 2000; Koons 2001
      iii. Clinical global impression scale for borderline personality disorder patients (CGI-BPD) - suicidality: Soler 2009
      iv. Number of participants with suicide attempt during previous six-month period: Bateman 1999; Bateman 2009
      v. Number of participants with suicidal act during previous 12 months:Davidson 2006; Doering 2010
      vi. Personality assessment inventory - suicidal ideation (PAI-SI): Morey 2010
      vii. Suicidal behaviours questionnaire (SBQ): Linehan 2006; Weinberg 2006
   a. parasuicidality
      a. Borderline personality disorder severity index (BPDSI-IV) - parasuicidal behaviour score: Bellino 2010
      b. Deliberate self-harm inventory (DSHI) - frequency score: Gratz 2006
      c. LPC-self-mutilative acts during previous three-month period: Van den Bosch 2005
      d. Mean number of suicidal and self-injurious episodes: McMain 2009
      e. Mean number of self-harming acts during previous three-month period: Koons 2001
      f. Number of patients scoring above BPDSI-IV-parasuicide cut-off: Bos 2010
      g. Number of patients with parasuicide during previous three-month period: Gregory 2008
      h. Number of patients with self-harming behaviour during previous six-month period: Bateman 1999; Bateman 2009; Carter 2010
      i. Number of patients with self-harming behaviour during previous 12-month period: Linehan 1991; Doering 2010; Davidson 2006
      j. Personality assessment inventory - borderline features scale self-harm (PAI-BOR-S): Morey 2010
      k. Parasuicide history interview (PHI) - deliberate self-harm frequency: Weinberg 2006
      l. Self-harming behaviours checklist (SHBCL): Cottraux 2009
      m. Target behaviour rating (TBR) - frequency of parasuicide: Turner 2000

1. Interpersonal cluster symptoms
   a. interpersonal problems general
      i. Borderline personality disorder severity index (BPDSI-IV) - interpersonal relationships: Bellino 2010
      ii. Clinical global impression scale for borderline personality disorder patients (CGI-BPD) - unstable relations: Soler 2009
      iii. Diagnostic interview for BPD-revised (DIB-R) - interpersonal subscale: Farrell 2009
      iv. Inventory of interpersonal problems (IIP): Bateman 1999; Bateman 2009
      v. Inventory of interpersonal problems (IIP-C): McMain 2009
      vi. Inventory of interpersonal problems-short form (IIP-SC): Davidson 2006
      vii. Personality assessment inventory - borderline features scale negative relationships (PAI-BOR-N): Morey 2010
      viii. World Health organization quality of life assessment-Bref (WHOQOL-Bref) - social relationships score: Bos 2010; Carter 2010
      ix. Zanarini rating scale for borderline personality disorder (ZAN-BPD) - disturbed relationships score: Blum 2008; Zanarini 2008
   b. avoidance of abandonment
      i. Borderline personality disorder severity index (BPDSI-IV) - abandonment: Bellino 2010

2. Cognitive cluster symptoms
   a. identity disturbance
      i. Borderline personality disorder severity index (BPDSI-IV) - identity disturbance: Bellino 2010
      ii. Personality assessment inventory - borderline features scale - identity disturbance: Morey 2010
   b. dissociation/stress-related paranoid ideation
      i. Borderline personality disorder severity index (BPDSI-IV) - paranoid ideation: Bellino 2010
      ii. Brief psychiatric rating scale (BPRS): Turner 2000; Soler 2009;
      iii. Diagnostic interview for BPD-revised (DIB-R) - cognitive subscale: Farrell 2009
      iv. Dissociative experiences scale (DES):Koons 2001; Gregory 2008; Steil 2010
      v. Zanarini rating scale for borderline personality disorder - cognitive subscale: Blum 2008

Secondary outcomes

1. Depression
   a. Beck depression inventory (BDI): Bateman 1999; Turner 2000; Koons 2001; Blum 2008; Gregory 2008; Bateman 2009; Cottraux 2009; McMain 2009; Doering 2010
   b. Beck depression inventory-II (BDI-II): Davidson 2006; Steil 2010
   c. Depression anxiety stress scales (DASS) - depression: Gratz 2006
   d. Hamilton depression inventory (Ham-D): Bellino 2006; Bellino 2007; Bellino 2010
   e. Hamilton depression inventory - 17-item (Ham-D-17): Linehan 2006; Soler 2009
2. Anxiety
   a. Beck anxiety inventory (BAI):Turner 2000; Cottraux 2009;
   b. Depression anxiety stress scales (DASS) - anxiety: Gratz 2006
   c. Hamilton anxiety rating scale (HARS): Koons 2001; Bellino 2006; Bellino 2007; Soler 2009; Bellino 2010
   d. Spielberger state-trait anxiety inventory (STAI) - state: Steil 2010
   e. Spielberger state-trait anxiety inventory (STAI) - trait: Bateman 1999; Davidson 2006; Doering 2010
3. General psychopathology
   a. Brief symptom inventory (BSI) - global severity index (BSI-GSI): Davidson 2006; Doering 2010
   b. Symptom checklist-90-revised - (SCL-90-R) - global severity index (SCL-90-R-GSI): Bateman 1999; Blum 2008; Bateman 2009; Farrell 2009; McMain 2009; Soler 2009; Steil 2010
   c. Symptom checklist-90-Dutch version (SCL-90-R-DV): Giesen-Bloo 2006; Nadort 2009; Bos 2010
4. Mental health status/functioning
   a. Brief disability questionnaire (BDQ) - days out of role: Carter 2010
   b. Clinical global impressions scale (CGI) - severity of illness (CGI-S): Bellino 2006; Bellino 2007; Blum 2008; Cottraux 2009; Bellino 2010
   c. Clinical global impressions scale (CGI) - improvement, patient-rated (CGI-I-SR): Soler 2009
   d. Global assessment of functioning scale (GAF): Bateman 2009; Farrell 2009; Doering 2010
   e. Global assessment scale (GAS): Linehan 1994
   f. Social functioning questionnaire (SFQ): Davidson 2006
5. Leaving the study early
   a. Number of participants lost after randomisation for any reason; available or calculable for all primary studies
6. Adverse effects: no data available from any primary study

Excluded studies

The main primary studies that readers might be expected to be included but in fact were not are listed in the Characteristics of excluded studies table with individual reasons for exclusion. Please note that only one reason may be listed, though actually several inclusion criteria may not have been met.

Risk of bias in included studies

Figure 2 and Figure 3 show the review authors' judgements about each risk of bias item for each single study and across all studies.

Allocation

Sequence generation

All trials were stated to be randomised. Those providing further information on how the randomisation sequence had been achieved, or that a minimisation or matching method had been used, were judged as having 'low' risks of bias (Linehan 1991; Linehan 1994; Van den Bosch 2005; Davidson 2006; Giesen-Bloo 2006; Gratz 2006; Linehan 2006; Bellino 2007; Blum 2008; Gregory 2008; Bateman 2009; Cottraux 2009; Farrell 2009; McMain 2009; Soler 2009; Bellino 2010; Bos 2010; Carter 2010; Steil 2010). The remaining trials (Bateman 1999; Turner 2000; Koons 2001; Bellino 2006; Weinberg 2006; Zanarini 2008; Doering 2010; Morey 2010) did not describe how treatment allocation had exactly been achieved, and the risk of bias was judged 'unclear'. However, there is evidence that poor reporting of randomisation increases the odds of presenting 'significant' outcomes (Chalmers 1983; Schulz 1995).

Allocation concealment

Those trials reporting on confident, off-site randomisation or notification of assignment by research coordinators not involved in therapy delivery were rated as having a 'low' risk of bias (Davidson 2006; Giesen-Bloo 2006; Linehan 2006; Gregory 2008; Bateman 2009; Cottraux 2009; McMain 2009; Nadort 2009; Bos 2010; Carter 2010; Doering 2010; Steil 2010). All remaining trials did not provide further information to judge about adequacy of allocation concealment, and the risk of bias was judged 'unclear' (Linehan 1991; Linehan 1994; Bateman 1999; Turner 2000; Koons 2001;Van den Bosch 2005; Bellino 2006; Gratz 2006; Weinberg 2006; Bellino 2007; Blum 2008; Zanarini 2008; Farrell 2009; Nadort 2009; Soler 2009; Bellino 2010; Morey 2010).

Blinding

It is almost impossible to keep psychotherapy trials participants blind to treatment allocation. Thus, the risk of bias due to non-blindness of participants is present in psychotherapy trials throughout.

One trial report stated clearly that there was no blinding. Since only self-rated outcomes were used, we judged there was no risk of bias due to lack of blinding (Gratz 2006). The majority of trials report that outcome assessors were intended to be kept blind to treatment allocation (Linehan 1991; Linehan 1994; Turner 2000; Koons 2001; Van den Bosch 2005; Bellino 2006; Davidson 2006; Giesen-Bloo 2006; Gratz 2006; Linehan 2006; Weinberg 2006; Bellino 2007; Blum 2008; Gregory 2008; Bateman 2009; Cottraux 2009; McMain 2009; Soler 2009; Bellino 2010; Carter 2010; Doering 2010; Morey 2010; Steil 2010). Some of them (Van den Bosch 2005; Giesen-Bloo 2006; Gratz 2006; Blum 2008; Gregory 2008; Cottraux 2009; McMain 2009; Soler 2009; Carter 2010) also discussed the issue of partial non-maintenance of blindness throughout the whole course of the study, since patients may have unintendedly indicated which group they were in, although they had been told not to do so. These studies were, nevertheless, rated as having a 'low' risk of bias due to partial break of blindness, since we felt it was not appropriate to downgrade these studies that discuss issues that may also have concerned those studies that did not discuss them. Nadort 2009 clearly reported that outcome assessors could not be kept blind to treatment conditions. However, since most outcomes were self-assessed by the trial participants, the risk of bias was judged 'unclear'.

Two trials did not mention blinding of outcome assessors (Bateman 1999; Zanarini 2008), and the risk of bias was judged 'unclear'. One trial (Farrell 2009) providing mainly interviewer-assessed outcomes reported that the interviewers were not blind to treatment allocation, and the risk of bias was judged likely.

Selective reporting

For seven studies (Davidson 2006; Gregory 2008; Bateman 2009; Cottraux 2009; McMain 2009; Nadort 2009; Doering 2010), study protocols were available from trial registers, and there was no indication of selective outcome reporting. The detailed study protocol of Steil 2010 was also available, and there was also no indication of selective reporting. Those eight studies were rated as having a 'low' risk of bias in this regard.

For the study of Blum 2008, the study protocol was also available from a study register, but the information provided did not permit judgement of the presence of selective reporting. For the remaining studies (Linehan 1991; Linehan 1994; Bateman 1999; Turner 2000; Koons 2001; Van den Bosch 2005; Bellino 2006; Giesen-Bloo 2006; Gratz 2006; Linehan 2006; Weinberg 2006; Bellino 2007; Zanarini 2008; Farrell 2009; Soler 2009; Bellino 2010; Bos 2010; Carter 2010; Morey 2010), no protocols were available. The risk of bias was judged 'unclear' for these trails.

Other potential sources of bias

Insufficient treatment adherence

Most trials specified either routine supervision and/or objective means assessment to assure treatment adherence. All trials reporting any means of treatment adherence assurance were rated as having a 'low' risk of bias in this regard (Linehan 1991; Linehan 1994; Bateman 1999; Koons 2001; Van den Bosch 2005; Davidson 2006; Giesen-Bloo 2006; Linehan 2006; Bellino 2007; Blum 2008; Gregory 2008; Bateman 2009; Cottraux 2009; Farrell 2009; McMain 2009; Nadort 2009; Bos 2010; Doering 2010; Morey 2010; Steil 2010). One study reported that the only therapist was the developer of the treatment, so adherence to the original treatment regimen should be assured, and the risk of bias was also rated as 'low' (Gratz 2006).

Carter 2010 reports regular therapist supervision groups, but also says that there may have been "a possible inferiority of training of DBT therapists to that of those in other studies or inferior adherence to the DBT methods despite adequate training." (Carter 2010, p. 170). However, there were no objective means of adherence assessment, so the risk of bias was judged 'unclear'. Three studies depicted therapists as experienced, but did not make mention of any kind of routine supervision or objective adherence assessment. The risk was judged 'unclear' for these trials (Bellino 2006; Soler 2009; Bellino 2010). Zanarini 2008 did neither specify the therapists' training nor any means of assurance of treatment integrity, so the risk of bias was also judged 'unclear'.

Weinberg 2006 reports that "this study did not monitor adherence and competence" (Weinberg 2006, p. 482). The risk of bias was rated 'probable' for this study.

Allegiance bias

The possibility of allegiance bias was judged possible for the trials of Linehan 1991; Linehan 1994; Bateman 1999, Davidson 2006; Gratz 2006; Linehan 2006; Blum 2008; Gregory 2008; Zanarini 2008; Bateman 2009; Farrell 2009; Steil 2010 since the treatment developers were directly involved as main investigators.

Attention bias

Only 10 studies (Koons 2001; Giesen-Bloo 2006; Linehan 2006; Bellino 2007; Bateman 2009; Cottraux 2009; Nadort 2009; Soler 2009; Doering 2010; Morey 2010) were rated as providing similar amounts of attention as obligatory components of the study protocol to all trial groups.The participants allocated to the control group of Gregory 2008 did not get an obligatory control treatment, but were referred to alternative treatments in the community and had not less but markedly more professional contact hours during most of the study period. The risk of attention bias was therefore also judged low for this trial. All remaining trials provided more attention (that is, in terms of frequency of appointments, involvement in additional group treatments etc.) to one group, usually the experimental group (EG).

Effects of interventions

See: **Summary of findings 1** Dialectical Behaviour Therapy (DBT) versus treatment as usual (TAU) for people with borderline personality disorder; **Summary of findings 2** Dialectical Behaviour Therapy (DBT) versus general management (GM) according to APA guidelines for people with borderline personality disorder; **Summary of findings 3** Dialectical Behaviour Therapy (DBT) versus community treatment by experts (CTBE) for people with borderline personality disorder; **Summary of findings 4** Dialectical Behaviour Therapy for BPD with post-traumatic stress disorder (DBT-PTSD) versus waiting list (WL) for people with borderline personality disorder; **Summary of findings 5** Mentalisation-Based Treatment-partial hospitalisation (MBT-PH) versus treatment as usual (TAU) for people with borderline personality disorder; **Summary of**

findings 6 Mentalisation-Based Treatment-outpatient (MBT-out) versus treatment as usual (TAU) for people with borderline personality disorder; **Summary of findings 7** Transference-Focused Psychotherapy (TFP) versus community treatment by experts (CTBE) for people with borderline personality disorder; **Summary of findings 8** Cognitive-Behavioural Therapy (CBT) versus treatment as usual (TAU) for borderline personality disorder; **Summary of findings 9** Dynamic-Deconstructive Psychotherapy (DDP) versus treatment as ususal (TAU) for people with borderline personality disorder; **Summary of findings 10** Interpersonal Psychotherapy (IPT) versus clinical management (CM) for people with borderline personality disorder; **Summary of findings 11** Interpersonal Psychotherapy adapted for BPD (IPT-BPD) versus clinical management (CM) for people with borderline personality disorder; **Summary of findings 12** Dialectical Behaviour Therapy-skills training only (DBT-ST)versus standard group (SG) for borderline personality disorder; **Summary of findings 13** Emotion regulation group training (ERG) versus treatment as usual (TAU) for borderline personality disorder; **Summary of findings 14** Schema-Focused Therapy-Group (SFT-G) versus treatment as usual (TAU) for borderline personality disorder; **Summary of findings 15** Systems training for emotional predictability and problem solving for borderline personality disorder (STEPPS) versus treatment as usual (TAU) for borderline personality disorder; **Summary of findings 16** Systems training for emotional predictability and problem solving for borderline personality disorder + individual therapy (STEPPS +IT) versus treatment as usual (TAU) for borderline personality disorder; **Summary of findings 17** Manual-assisted cognitive treatment (MACT) versus treatment as usual (TAU) for borderline personality disorder; **Summary of findings 18** Psychoeducation (PE) versus waiting list (WL) for borderline personality disorder

No adverse effects data were available for any included study.

1 Comprehensive psychotherapies versus control

1.1 Dialectical behaviour therapy (DBT) versus treatment as usual (TAU)

Five studies were included in this comparison: Carter 2010 (female outpatients; six months treatment; N = 73), Koons 2001 (female outpatients; six months treatment; N = 28); Linehan 1991 (female outpatients; 12 months treatment; N = 61); Linehan 1994 (female outpatients; 12 months treatment; N = 26); Van den Bosch 2005 (female outpatients; high proportion of substance abusers, that is, 53% of those who actually started treatment; 12 months treatment; N = 64).

1.1.1 BPD total severity

Koons 2001 provided data on BPD total severity indicating no significant difference but a tendency in favour of DBT treatment (standardised mean difference (SMD) -0.29; N = 20, one RCT, 95% confidence interval (CI) -1.17 to 0.59; Analysis 1.1).

1.1.2 Affective dysregulative cluster symptoms

Anger symptoms were reported in two studies (Linehan 1994; Koons 2001). The pooled effect estimates indicate a large, significant effect of DBT in terms of anger reduction (SMD -0.83; N = 46, two RCTs, 95% CI -1.43 to -0.22; Analysis 1.2). No specific data were available from relevant studies regarding affective instability or chronic feelings of emptiness.

1.1.3 Impulsive cluster symptoms

BPD-specific impulsivity in general was reported upon by Van den Bosch 2005. The data indicated a small, non-significant difference (SMD -0.17; N = 48, one RCT, 95% CI-0.74 to 0.39). One study (Koons 2001) indicated a very large significant effect in favour of DBT concerning the reduction of suicidality (SMD -1.26; N = 20, one RCT, 95% CI -2.24 to -0.29; Analysis 1.6). Three studies reported on parasuicidality in terms of the mean number of parasuicidal acts (Linehan 1991; Koons 2001; Van den Bosch 2005). Their pooled effect estimates indicated a moderate significant effect of parasuicidality reduction by DBT (SMD -0.54; N = 110; three RCTs, 95% CI -0.92 to -0.16; Analysis 1.8). Carter 2010, however, found no significant difference in the proportion of participants with self-harm between both groups (risk ratio (RR) 1.11; N = 51, one RCT; 95% CI 0.78 to 1.57; Analysis 1.9).

1.1.4 Interpersonal cluster symptoms

Carter 2010 report data indicating no statistically significant difference between treatment and control conditions regarding interpersonal problems, resulting in a negligible effect size (SMD -0.04, N = 48, one RCT, 95% CI -0.54 to 0.61; Analysis 1.10). No data were available from any relevant studies on avoidance of abandonment.

1.1.5 Cognitive cluster symptoms

Koons 2001 report data indicating no statistically significant difference but favouring DBT with regard to dissociative symptoms, resulting in a large effect size (SMD -0.90; N = 20, one RCT, 95% CI -1.83 to 0.03; Analysis 1.13). No data are available for any other cognitive cluster symptoms.

1.1.6 Depression

Koons 2001 report data indicating a large, statistically significant difference between treatment and control conditions in depression (SMD -1.12; N = 20, one RCT, 95% CI -2.08 to -0.16; Analysis 1.14).

1.1.7 Anxiety

Koons 2001 report data indicating a large, statistically significant difference in favour of DBT (SMD -1.22; N = 20, one RCT, 95% CI -2.20 to -0.25; Analysis 1.15).

1.1.8 Mental health status/functioning

Carter 2010 and Linehan 1994 report on the level of functioning. The pooled effect estimates yield a moderate, significant effect in favour of DBT (SMD 0.65; N = 74, two RCTs, 95% CI 0.07 to 1.24; Analysis 1.17).

1.1.9 Leaving the study early

Reported data indicate no statistically significant difference between treatment and control conditions for leaving the study early if considering all participants randomised (RR 1.25; N = 252; five RCTs; 95% CI 0.54 to 2.92; Analysis 1.18). However, the corresponding I^2 score of 77% suggests substantial heterogeneity. A possible reason for this may be a higher likelihood of drop-out in rural areas. A post-hoc sensitivity analysis restricting the results to non-rural areas, that is, leaving out the results of Carter 2010, resulted in a more homogenous effect (RR 0.80; N = 179; four RCTs; 95% CI 0.47 to 1.36; I^2 = 35%; Analysis 1.19) supporting this hypothesis.

No data were available for the outcome of general psychopathology. See Table 1 for an overview of primary effect outcome effect estimates.

1.2 Dialectical behaviour therapy (DBT) versus general management (GM) according to APA guidelines

One study was included in this comparison: McMain 2009 (outpatients, 92% female; 12 months treatment; N = 180).

1.2.1 BPD total severity

McMain 2009 reported data on this outcome indicating a marginal, non-statistically significant difference (SMD -0.04; N = 180, 95% CI -0.33 to 0.25; Analysis 1.1).

1.2.2 Affective dysregulative cluster symptoms

Data on anger symptoms indicated a very small, statistically non-significant difference between the two treatments (SMD -0.03; N = 180, 95% CI -0.32 to 0.26; Analysis 1.2).

1.2.3 Impulsive cluster symptoms

The findings indicate no significant difference in terms of the mean number of suicidal and/or self-injurious episodes, but favour DBT (SMD -0.23; N = 180, 95% CI -0.52 to 0.06; Analysis 1.8) with a small difference. No data were available for effects on impulsivity in general.

1.2.4 Interpersonal cluster symptoms

McMain 2009 report data indicating a marginal, statistically non-significant difference between treatment and control conditions in this regard (SMD -0.03, N = 180, 95% CI-0.32 to 0.26; Analysis 1.10).

1.2.5 Depression

McMain 2009 report data indicating a small, statistically, non-significant difference between both groups (SMD -0.17; N = 180, 95% CI -0.46 to 0.12; Analysis 1.14).

1.2.6 General psychopathology

McMain 2009 report data indicating a marginal, non-significant difference between both groups (SMD -0.01; N = 180, 95% CI -0.30 to 0.28; Analysis 1.16).

1.2.7 Leaving the study early

Reported data indicate no statistically significant difference between treatment and control conditions for leaving the study early if considering all participants randomised (RR 1.03; N = 180; 95% CI 0.71 to 1.49; Analysis 1.18).

No data were available for the following outcomes: cognitive cluster-related symptoms, anxiety and mental health status/functioning. See Table 1 for an overview of primary effect outcome effect estimates.

1.3 Dialectical behaviour therapy (DBT) versus community treatment by experts (CTBE)

One study was included in this comparison: Linehan 2006 (female outpatients; 12 months treatment; N = 101).

1.3.1 Impulsive cluster symptoms

Linehan 2006 report data indicating a small, statistically non-significant difference between treatment and control conditions in terms of suicidality (SMD -0.12; N = 89, 95% CI -0.54 to 0.30; Analysis 1.6).

1.3.2 Depression

Linehan 2006 report data indicating a small to moderate, statistically non-significant difference between groups but favouring DBT (SMD -0.39; N = 89, 95% CI -0.81 to 0.04; Analysis 1.14).

1.3.4 Leaving the study early

Reported data indicate a statistically significant difference between treatment and control conditions for leaving the study early if considering all participants randomised, favouring DBT (RR 0.43; N = 101; 95% CI 0.28 to 0.67; Analysis 1.18).

No data were available for the following outcomes: BPD total severity; affective dysregulative, interpersonal and cognitive cluster symptoms; anxiety, general psychopathology, mental health status/functioning. See Table 1 for an overview of primary effect outcome effect estimates.

1.4 DBT adapted for BPD + post-traumatic stress disease (DBT-PTSD) versus waiting list (WL)

One trial was included in this comparison: Steil 2010 (inpatients; 100% females with comorbid PTSD from childhood sexual abuse; three months inpatient treatment plus additional booster session 6 months after discharge; N = 32).

1.4.1 BPD total severity

Steil 2010 report data indicating a moderate to large, statistically significant difference between experimental and control conditions in terms of overall BPD severity after treatment,favouring DBT-PTSD (SMD -0.74; N = 31; 95% CI -1.47 to -0.01; Analysis 1.1).

1.4.2 Cognitive cluster symptoms

Reported data indicate a small to moderate, statistically non-significant difference between experimental and control conditions in terms of dissociation (SMD -0.34; N = 30; 95% CI -1.06 to 0.38; Analysis 1.13).

1.4.3 Depression

Steil 2010 provided data indicating a large, statistically significant difference between both conditions, with less pathology for the DBT-PTSD-treated group (SMD -1.06; N = 30; 95% CI -1.84 to -0.29; Analysis 1.14).

1.4.4 Anxiety

Data also indicate a large, statistically significant difference between experimental and control conditions for the outcome of anxiety, favouring the experimental intervention (SMD -0.96; N = 30; 95% CI -1.72 to -0.20; Analysis 1.15).

1.4.5 General psychopathology

No statistically significant difference is indicated by the reported data for the outcome of general psychopathology (SMD -0.70; N = 30; 95% CI -1.45 to 0.04; Analysis 1.16). However, the data indicate a favourable moderate to large effect.

1.4.6 Leaving the study early

Reported data indicate no statistically significant difference between treatment and control conditions for leaving the study

early if considering all participants randomised exclusive of those that were excluded due to meeting exclusion criteria, which became clear after randomisation but before start of treatment (RR 1.94; N = 32; 95% CI 0.44 to 8.57; Analysis 1.18).

No data were available for the following outcomes: affective-dysregulative, impulsive and interpersonal cluster symptoms; mental health status/functioning. See Table 1 for an overview of primary effect outcome effect estimates.

1.5 Mentalisation based treatment - partial hospitalisation (MBT-PH) versus treatment as usual (TAU)

One study was included in this comparison: Bateman 1999 (partially hospitalised versus outpatient participants, 58% females; 18 months treatment; N = 44).

1.5.1 Impulsive cluster symptoms

No data available on general impulsivity. Bateman 1999 report data indicating large, significant effects on both less suicidality (RR 0.08; N = 38, 95% CI 0.01 to 0.58; Analysis 1.7) and parasuicidality (RR 0.44; N = 38, 95% CI 0.24 to 0.81; Analysis 1.9) favouring the experimental group.

1.5.2 Interpersonal cluster symptoms

Bateman 1999 report data indicating a very large, significant effect of less interpersonal pathology in partially-hospitalised MBT patients (SMD -2.22; N = 38, 95% CI -3.04 to -1.39; Analysis 1.10). No further data on avoidance of abandonment available.

1.5.3 Depression

Bateman 1999 report data indicating a very large, statistically significant difference in favour of MBT-PH (SMD -1.98; N = 38, 95% CI -2.78 to -1.19; Analysis 1.14).

1.5.4 Anxiety

Bateman 1999 report data indicating a moderate, statistically non-significant difference in terms of anxious pathology (SMD -0.49; N = 38, 95% CI -1.14 to 0.16; Analysis 1.15).

1.5.5 General psychopathology

Bateman 1999 report data indicating a small to moderate, statistically non-significant difference (SMD -0.39; N = 38, 95% CI -1.03 to 0.26; Analysis 1.16).

1.5.6 Leaving the study early

Reported data indicate no statistically significant difference between treatment and control conditions for leaving the study early if considering all participants randomised (RR 1.00; N = 44; 95% CI 0.23 to 4.42; Analysis 1.18).

No data were available for the following outcomes: BPD total severity; affective-dysregulative and cognitive cluster symptoms; mental health status/functioning. SeeTable 2 for an overview of primary effect outcome effect estimates.

1.6 Mentalisation based treatment - outpatient (MBT-out) versus treatment as usual (TAU)

One study was included in this comparison: Bateman 2009 (outpatients, 80% females; 18 months treatment; N = 134).

1.6.1 Impulsive cluster symptoms

No data available on general impulsivity. Bateman 2009 report data indicating large, significant effects of smaller proportions of participants with both suicidality (RR 0.11; N = 134, 95% CI 0.03 to 0.46; Analysis 1.7) and parasuicidality (RR 0.56; N = 134, 95% CI 0.34 to 0.92; Analysis 1.9) in the experimental group.

1.6.2 Interpersonal cluster symptoms

Bateman 2009 report data indicating a large, statistically significant difference in favour or MBT-outpatient treatment in terms of interpersonal pathology (SMD -0.95; N = 134, 95% CI -1.30 to -0.59; Analysis 1.10). No further data on avoidance of abandonment available.

1.6.3 Depression

Bateman 2009 report data indicating a moderate, statistically significant difference in favour of MBT-out (SMD -0.45; N = 134, 95% CI -0.79 to -0.10; Analysis 1.14).

1.6.4 General psychopathology

Bateman 2009 report data indicating a moderate to large statistically significant difference between the two treatment conditions in favour of MBT-outpatient treatment (SMD -0.67, N = 134, 95% CI -1.02 to -0.33; Analysis 1.16).

1.6.5 Mental health status/functioning

Bateman 2009 report data indicating a statistically significant difference between the two treatment conditions in favour of MBT-outpatient treatment (SMD 0.55, N = 134, 95% CI 0.20 to 0.89; Analysis 1.17).

1.6.6 Leaving the study early

Reported data indicate no statistically significant difference between treatment and control conditions for leaving the study early if considering all participants randomised (RR 1.05; N = 134; 95% CI 0.59 to 1.87; Analysis 1.18).

No data were available for the following outcomes: BPD severity; affective-dysregulative and cognitive cluster symptoms; anxiety. SeeTable 2 for an overview of primary effect outcome effect estimates.

1.7 Transference-focused therapy (TFP) versus community treatment by experts (CTBE)

One study was included in this comparison: Doering 2010 (female outpatients; 12 months treatment; N = 104).

1.7.1 BPD total severity

Data reported by Doering 2010 indicate a moderate, statistically significant effect in favour of TFP concerning overall BPD severity reduction (SMD -0.55; N = 104, 95% CI -0.95 to -0.16; Analysis 1.1).

1.7.2 Impulsive cluster symptoms

Doering 2010 report data indicating no statistically significant difference in the proportion of participants with any suicidal act (RR 0.64; N = 104, 95% CI 0.27 to 1.51; Analysis 1.7) or any self-harming behaviour (RR 1.09; N = 104, 95% CI 0.84 to 1.40; Analysis 1.9). No data available on impulsivity in general.

1.7.3 Depression

Doering 2010 report data indicating a very small, statistically non-significant difference between the groups in terms of depression (SMD 0.12; N = 104, 95% CI -0.26 to 0.51; Analysis 1.14).

1.7.4 Anxiety

Doering 2010 report data indicating a marginal, statistically non-significant difference between the groups regarding anxiety (SMD 0.04; N = 104, 95% CI -0.35 to 0.42; Analysis 1.15).

1.7.5 General psychopathology

Doering 2010 report data indicating a marginal, statistically non-significant difference between the groups in terms of general psychopathology(SMD 0.08; N = 104, 95% CI -0.31 to 0.46; Analysis 1.16).

1.7.6 Mental health status/functioning

Doering 2010 report data indicating a small, statistically non-significant difference between the groups in terms of overall functioning (SMD 0.34; N = 104, 95% CI -0.05 to 0.73; Analysis 1.17).

1.7.7 Leaving the study early

Reported data indicate a statistically significant difference between treatment and control conditions for leaving the study early if considering all participants randomised, favouring TFP (RR 0.57; N = 104; 95% CI 0.39 to 0.85; Analysis 1.18).

No data were available for the following outcomes: Affective-dysregulative, interpersonal and cognitive cluster symptoms. See Table 3 for an overview of primary effect outcome effect estimates.

1.8 Cognitive-behavioural therapy (CBT) versus TAU

One study was included in this comparison: Davidson 2006 (outpatients, 84% females; 12 months treatment; N = 106).

1.8.1 Impulsive cluster symptoms

Reported data indicate a smaller proportion of participants with any suicidal act in the CBT group (RR 0.78; N = 101; 95% CI 0.47 to 1.27; Analysis 1.7, but a higher proportion of participants with any self-mutilation (RR 1.17; N = 99; 95% CI 0.86 to 1.60; Analysis 1.9). Neither of these effects was statistically significant.

1.8.2 Interpersonal cluster symptoms

Data indicate a small, but statistically non-significant difference in terms of interpersonal pathology between the two conditions (SMD 0.23; N = 99; 95% CI -0.16 to 0.63; Analysis 1.10).

1.8.3 Depression

We found only a very small, statistically non-significant difference between both groups in terms of depression (SMD -0.11; N = 99; 95% CI -0.50 to 0.29; Analysis 1.14).

1.8.4 Anxiety

There was no indication of a statistically significant difference between both conditions in terms of anxious pathology, the effect size was only marginal in size (SMD -0.03; N = 99; 95% CI -0.42 to 0.37; Analysis 1.15).

1.8.5 General psychopathology

General psychopathological burden was not found to differ statistically significant between both groups, and was also marginal in size (SMD -0.03; N = 99, 95% CI -0.43 to 0.36; Analysis 1.16).

1.8.6 Mental health status/functioning

Data indicated no statistically significant difference between both groups in terms of the level of functioning at the end of treatment (SMD 0.00; N = 99, 95% CI -0.39 to 0.39; Analysis 1.17). The numerical effect size indicated no difference between the two treatment groups.

1.8.7 Leaving the study early

Reported data indicate no statistically significant difference between treatment and control conditions for leaving the study early if considering all participants randomised (RR 0.48; N = 106; 95% CI 0.09 to 2.52; Analysis 1.18).

No data were available for the following outcomes: BPD total severity; affective-dysregulative and cognitive cluster symptoms. See Table 4 for an overview of primary effect outcome effect estimates.

1.9 Deconstructive dynamic psychotherapy (DDP) versus treatment as usual (TAU)

One study was included in this comparison: Gregory 2008 (outpatients, 80% females, all with active alcohol abuse or dependence; 12 months treatment; N = 30)

1.9.1 BPD total severity

Reported data indicate a moderate, statistically non-significant difference between both conditions (SMD -0.44; N = 30; 95% CI -1.16 to 0.29; Analysis 1.1).

1.9.2 Affective dysregulative cluster symptoms

No data available.

1.9.3 Impulsive cluster symptoms

Gregory 2008 report data that indicate no statistically significant difference between both conditions in terms of proportion of participants with self-mutilating behaviour (RR 0.89; N = 30; 95% CI 0.47 to 1.67, Analysis 1.9).

1.9.4 Cognitive cluster symptoms

As for dissociation, reported data indicate no statistically significant difference between the two conditions (SMD 0.25; N = 30; 95% CI -0.47 to 0.97; Analysis 1.13).

1.9.5 Depression

Reported data indicate a moderate but statistically non-significant difference between the conditions in terms of depression (SMD -0.52; N = 30; 95% CI -1.24 to 0.21; Analysis 1.14).

1.9.6 Leaving the study early

Reported data indicate no statistically significant difference between treatment and control conditions for leaving the study early if considering all participants randomised (RR 0.83; N = 30; 95% CI 0.32 to 2.15; Analysis 1.18).

No data were available for the following outcomes: interpersonal cluster symptoms; anxiety, general psychopathology, mental health status/functioning. See Table 5 for an overview of primary effect outcome effect estimates.

1.10 Interpersonal psychotherapy (IPT) + fluoxetine versus clinical management (CM) + fluoxetine

One trial was included in this comparison: Bellino 2006 (outpatients, all with current major depressive episode, 60% females; six months treatment; additional antidepressive medication was given (fluoxetine 20-40mg/d) to participants of both conditions; N = 39).

1.10.1 Depression

Reported data indicate a large, statistically significant difference between both conditions favouring combined treatment (that is, IPT plus medication; SMD -0.90; N = 32; 95% CI -1.63 to -0.16; Analysis 1.14).

1.10.2 Anxiety

There is no indication of a statistically significant difference between both groups (SMD 0.20; N = 32; 95% CI -0.49 to 0.90; Analysis 1.15). Data indicated a small effect.

1.10.3 Mental health status/functioning

Again, there is no indication of a statistically significant difference, with a very small effect size (SMD 0.12; N = 32; 95% CI -0.57 to 0.81; Analysis 1.17).

1.10.4 Leaving the study early

Reported data indicate no statistically significant difference between treatment and control conditions for leaving the study early if considering all participants randomised (RR 0.79; N = 39; 95% CI 0.20 to 3.07; Analysis 1.18).

No data were available for the following outcomes: BPD total severity; affective-dysregulative, impulsive, interpersonal and cognitive cluster symptoms; general psychopathology. See Table 6 for an overview of primary effect outcome effect estimates.

1.11 IPT adapted to BPD (IPT-BPD) + fluoxetine versus clinical management + fluoxetine

One trial was included in this comparison: Bellino 2010 (outpatients, 67% females; eight months treatment, additional antidepressive medication was given (fluoxetine 20-40 mg/d) to participants of both conditions; N = 55).

1.11.1 BPD total severity

Bellino 2010 report data that indicate no clinical or statistically significant difference between both conditions (SMD -0.03; N = 44; 95% CI -0.62 to 0.56; Analysis 1.1).

1.11.2 Affective dysregulative cluster symptoms

Reported data indicate no clinical or statistically significant differences between both conditions in terms of inappropriate anger (SMD 0.01; N = 44; 95% CI -0.58 to 0.60; Analysis 1.2) and chronic feelings of emptiness (SMD 0.09; N = 44; 95% CI -0.50 to 0.68; Analysis 1.4). A large, statistically significant difference is indicated for affective instability, favouring IPT-BPD (SMD -0.92; N = 44; 95% CI -1.54 to -0.30; Analysis 1.3).

1.11.3 Impulsive cluster symptoms

Bellino 2010 report data indicating only a marginal, statistically non-significant difference between both groups in terms of parasuicidality (SMD 0.02; N = 44; 95% CI -0.58 to 0.61; Analysis 1.8) but in terms of general impulsivity, favouring IPT-BPD with a large effect (SMD -0.91; N = 44; 95% CI-1.53 to -0.28; Analysis 1.5).

1.11.4 Interpersonal cluster symptoms

There is indication for a statistically significant difference between both groups in terms of interpersonal problems, favouring IPT-BPD with a large effect (SMD -0.82; N = 44; 95% CI -1.44 to -0.20; Analysis 1.10). However, both groups did not different in terms of avoidance of abandonment (SMD 0.01; N = 44; 95% CI -0.58 to 0.60; Analysis 1.11).

1.11.5 Cognitive cluster symptoms

Reported data indicate neither a statistically significant difference between both groups for the outcome of identity disturbance (SMD -0.03; N = 44; 95% CI -0.62 to 0.56; Analysis 1.12) nor for the outcome of paranoid ideation (SMD 0.10; N = 44; 95% CI -0.49 to 0.70; Analysis 1.13), with very small effect sizes for both outcomes.

1.11.6 Depression

No indication is given for a statistically significant difference between both conditions in terms of depression (SMD -0.05; N = 44; 95% CI -0.64 to 0.55; Analysis 1.14).

1.11.7 Anxiety

There is no indication for a statistically significant difference between both groups (SMD -0.52; N = 44, 95% CI -1.12 to 0.08; Analysis 1.15). However, data indicate a moderate favourable effect of IPT-BPD.

1.11.8 Mental health status/functioning

Reported data indicate no statistically significant difference between both groups with regard to this outcome (SMD -0.04; N = 44; 95% CI -0.63 to 0.55; Analysis 1.17).

1.11.9 Leaving the study early

Reported data indicate no statistically significant difference between treatment and control conditions for leaving the study early if considering all participants randomised (RR 0.35; N = 55; 95% CI 0.08 to 1.57; Analysis 1.18).

No data were available for the outcome of general psychopathologiy burden. See Table 6 for an overview of primary effect outcome effect estimates.

2 Non-comprehensive psychotherapeutic interventions versus control

2.1 Dialectical behaviour therapy-skills training only (DBT-ST) versus standard group (SG)

One study was included in this comparison: Soler 2009 (outpatients, 83% females; three months treatment; N = 60).

2.1.1 BPD total severity

Reported data indicate a very large, statistically significant difference at end of treatment between both conditions, favouring DBT-ST (SMD -1.01; N = 59; 95% CI-1.55 to -0.47; Analysis 2.1).

2.1.2 Affective dysregulative cluster symptoms

Data indicate large to very large statistically significant differences in favour of DBT-ST concerning inappropriate anger (SMD-0.84; N = 59; 95% CI -1.37 to -0.30; Analysis 2.2) and affective instability (SMD -1.07; N = 59; 95% CI -1.61 to -0.52; Analysis 2.3). No statistically significant difference was found for the outcome of chronic feelings of emptiness, with a moderate effect size (SMD -0.43; N = 59; 95% CI -0.95 to 0.09; Analysis 2.4).

2.1.3 Impulsive cluster symptoms

Available data indicate a moderate, statistically significant difference favouring DBT-ST in terms of impulsivity (SMD -0.61; N = 59; 95% CI -1.14 to -0.09; Analysis 2.5) but not suicidality (SMD -0.10; N = 59; 95% CI -0.61 to 0.41; Analysis 2.7). For suicidality, the effect size indicates only a very small to marginal difference.

2.1.4 Interpersonal cluster symptoms

There was no indication of a statistically significant difference concerning interpersonal pathology, with a small effect size (SMD -0.29; N = 59; 95% CI -0.80 to 0.23; Analysis 2.10).

2.1.5 Cognitive cluster symptoms

Data indicate a moderate to large statistically significant difference favouring DBT-ST in terms of psychotic symptoms (SMD -0.66; N = 59; 95% CI -1.18 to -0.13; Analysis 2.11).

2.1.6 Depression

A large, statistically significant difference is indicated by the reported data favouring DBT-ST with regard to depressive pathology (SMD -0.97; N = 59; 95% CI -1.51 to -0.43; Analysis 2.12).

2.1.7 Anxiety

There is also an indication of statistically superiority with regard to anxious pathology with a moderate effect size (SMD -0.67; N = 59; 95% CI -1.20 to -0.15; Analysis 2.13).

2.1.8 General psychopathology

A small to moderate, but statistically non-significant difference was found for general psychopathology (SMD -0.42; N = 59; 95% CI -0.93 to 0.10; Analysis 2.14).

2.1.9 Mental health status/functioning

Data indicated a small but statistically non-significant difference regarding the overall level of functioning (SMD -0.29; N = 59; 95% CI -0.80 to 0.22; Analysis 2.15).

2.1.10 Leaving the study early

Reported data indicate no statistically significant difference between treatment and control conditions for leaving the study early if considering all participants randomised (RR 0.58; N = 60; 95% CI 0.34 to 1.00; Analysis 2.16).

See Table 7 for an overview of primary effect outcome effect estimates.

2.2 Emotion regulation group (ERG) versus treatment as usual (TAU)

One trial was included in this comparison: Gratz 2006 (female outpatients; 3.5 months treatment; N = 24)

2.2.1 BPD total severity

Reported data indicate a very large, statistically significant difference favouring ERG treatment (SMD -1.02; N = 22; 95% CI -1.92 to -0.11; Analysis 2.1).

2.2.2 Affective dysregulative cluster symptoms

Available data indicate a very large, statistically significant difference favouring ERG over TAU alone regarding affective instability (SMD -1.65; N = 22; 95% CI -2.65 to -0.55; Analysis 2.3).

2.2.3 Impulsive cluster symptoms

Data indicate very large, statistically significant differences between both conditions favouring ERG regarding the outcomes of impulsivity (SMD -1.30; N = 22; 95% CI -2.24 to -0.36; Analysis 2.5) and parasuicidality (SMD -0.98; N = 22; 95% CI -1.88 to -0.09; Analysis 2.8).

2.2.4 Depression

Reported data indicate very large, statistically significant difference (SMD -1.20; N = 22; 95% CI -2.13 to -0.28; Analysis 2.12).

2.2.5 Anxiety

There was also indication of a large, statistically significant difference regarding anxious pathology (SMD -0.89; N = 22; 95% CI -1.78 to -0.01; Analysis 2.13).

2.2.6 Leaving the study early

Reported data indicate no statistically significant difference between treatment and control conditions for leaving the study early if considering all participants randomised (RR 0.58; N = 60; 95% CI 0.34 to 1.00; Analysis 2.16).

No data were available for the following outcomes: interpersonal and cognitive cluster symptoms; general psychopathology, mental health status/functioning. See Table 8 for an overview of primary effect outcome effect estimates.

2.3 Schema-focused therapy - group intervention (SFT-G) versus treatment as usual (TAU)

One study was included in this comparison: Farrell 2009 (female outpatients; 8 months treatment; N = 32).

2.3.1 BPD total severity

Farrell 2009 report data indicating a very large, statistically significant effect in favour of SFT-G (SMD -1.66; N = 28, 95% CI -2.54 to -0.78; Analysis 2.1).

2.3.2 Affective dysregulative cluster symptoms

Reported data indicate a very large, statistically significant difference with regard to general affective instability (SMD -1.41; N = 28, 95% CI -2.26 to -0.57; Analysis 2.3).

2.3.3 Impulsive cluster symptoms

Farrell 2009 found a very large, statistically significant difference favouring SFT-G with regard to BPD-specific impulsivity (SMD -1.92; N = 28, 95% CI -2.85 to -1.00; Analysis 2.5).

2.3.4 Interpersonal cluster symptoms

There was a very large, statistically significant difference between both groups with regard to interpersonal pathology in favour of SFT-G (SMD -1.94, N = 28, 95% CI -2.87 to-1.02; Analysis 2.10).

2.3.5 Cognitive cluster symptoms

Reported data indicate a very large, statistically significant difference in favour of SFT-G with regard to cognitive-cluster symptoms (SMD -1.37, N = 28, 95% CI -2.21 to -0.53; Analysis 2.11).

2.3.6 General psychopathology

Farrell 2009 report data indicating a very large, statistically significant difference between the two conditions with better outcomes for the SFT-G group (SMD -1.06, N = 28, 95% CI -1.87 to -0.25; Analysis 2.14).

2.3.7 Mental health status/functioning

Again, Farrell 2009 report data indicating a very large, statistically significant difference in favour of SFT-G (SMD 1.20; N = 28, 95% CI 0.38 to 2.03; Analysis 2.15).

2.3.8 Leaving the study early

Reported data indicate no statistically significant difference between treatment and control conditions for leaving the study early if considering all participants randomised (RR 0.11; N = 32; 95% CI 0.01 to 1.91; Analysis 2.16).

No data were available for the following outcomes: depression, anxiety. See Table 9 for an overview of primary effect outcome effect estimates.

2.4 Manual-assisted cognitive treatment (MACT) versus treatment as usual (TAU)

One trial was included in this comparison: Weinberg 2006 (female outpatients; 1.5 months treatment; N = 30)

2.4.1 Impulsive cluster symptoms

Reported data indicate statistically significant differences favouring MACT for the outcomes of suicidality (SMD -0.86; N = 28; 95% CI -1.64 to -0.07; Analysis 2.7) and parasuicidality (SMD -0.88; N = 28; 95% CI -1.67 to -0.10; Analysis 2.8) with large effects.

2.4.2 Leaving the study early

Reported data indicate no statistically significant difference between treatment and control conditions for leaving the study early if considering all participants randomised (RR 0.20; N = 30; 95% CI 0.01 to 3.85; Analysis 2.16).

No data were available for the following outcomes: BPD total severity; affective-dysregulative, interpersonal and cognitive cluster symptoms; depression, anxiety, general psychopathology, mental health status/functioning. See Table 10 for an overview of primary effect outcome effect estimates.

2.5 Systems training for emotional predictability and problem solving for BPD (STEPPS) versus treatment as usual (TAU)

One trial was included in this comparison: Blum 2008 (outpatients, 83% females; five months treatment; N = 124).

2.5.1 BPD total severity

Reported data indicate a small, statistically non-significant difference between the treatment groups (SMD -0.17; N = 124; 95% CI -0.52 to 0.19; Analysis 2.1).

2.5.2 Affective dysregulative cluster symptoms

There was a small, statistically non-significant difference between conditions in terms of affective instability (SMD -0.32; N = 124; 95% CI -0.67 to 0.04; Analysis 2.3).

2.5.3 Impulsive cluster symptoms

Available data indicate a small, statistically non-significant difference between both groups for BPD-speciifc impulsivity (SMD -0.29; N = 124; 95% CI -0.64 to 0.07; Analysis 2.5).

2.5.4 Interpersonal cluster symptoms

We found a small to moderate statistically significant difference favouring STEPPS treatment for the outcome of interpersonal pathology (SMD -0.42; N = 124; 95% CI -0.78 to -0.06; Analysis 2.10).

2.5.5 Cognitive cluster symptoms

There was also a small to moderate statistically significant difference with better outcomes of cognitive cluster symptoms in the STEPPS group (SMD -0.42; N = 124; 95% CI -0.78 to -0.06; Analysis 2.11).

2.5.6 Depression

Data indicate a small, but statistically non-significant difference between conditions for the outcome of depression (SMD -0.24; N = 124; 95% CI -0.59 to 0.11; Analysis 2.12).

2.5.7 General psychopathology

There was a small, statistically non-significant difference for the outcome of general psychopathology (SMD -0.29; N = 124; 95% CI -0.64 to 0.07; Analysis 2.14).

2.5.8 Mental health status/functioning

The treatment groups differed statistically significantly at the end of treatment with a small to moderate effect indicating better results for STEPPS, that is, better mental health status (SMD 0.38; N = 124; 95% CI 0.02 to 0.73; Analysis 2.15).

2.5.9 Leaving the study early

Reported data indicate a statistically significant difference between both condition in terms of different proportion of those leaving the study early (RR 2.27; N = 124; 95% CI 1.08 to 4.76; Analysis 2.15), with a higher drop-out rate for STEPPS.

No data were available for the outcome of anxiety. See Table 11 for an overview of primary effect outcome effect estimates.

2.6 Systems training for emotional predictability and problem solving for BPD + individual therapy (STEPPS) versus treatment as usual (TAU)

One study was included in this comparison: Bos 2010 (outpatients, 86% females; 6 months treatment; N = 79)

2.6.1 BPD total severity

Bos 2010 report data indicating a moderate, statistically non-significant difference between both conditions, but the boundaries of the 95% CI are very close to significance, favouring STEPPS + IT (SMD -0.55; N = 52; 95% CI -1.11 to 0.00; Analysis 2.1).

2.6.2 Impulsive cluster symptoms

There are no statistically significant differences between both conditions in terms of proportion of those participants beyond the cut-off scores of clinically relevant impulsivity (RR 0.93; N = 58; 95% CI 0.66 to 1.29; Analysis 2.6) and clinically relevant parasuicidality (RR 1.32; N = 58; 95% CI 0.78 to 2.22; Analysis 2.9).

2.6.3 Interpersonal cluster symptoms

Data indicate a small, statistically non-significant difference between both treatment groups in terms of interpersonal pathology (SMD -0.27; N = 53; 95% CI -0.81 to 0.27; Analysis 2.10).

2.6.4 General psychopathology

There was a moderate, statistically significant difference between both conditions in favour of STEPPS + IT (SMD -0.60; N = 51; 95% CI -1.16 to -0.04; Analysis 2.14).

2.6.5 Leaving the study early

Reported data indicate no statistically significant difference between treatment and control conditions for leaving the study early if considering all participants randomised (RR 1.47; N = 79; 95% CI 0.59 to 3.65; Analysis 2.16).

No data were available for the following outcomes: affective-dysregulative and cognitive cluster symptoms; depression, anxiety, mental health status/functioning. See Table 11 for an overview of primary effect outcome effect estimates.

2.7 Psychoeducation (PE) versus waiting list (WL)

The only study included in this comparison was Zanarini 2008 (newly-diagnosed female outpatients; three months treatment; N = 50)

2.7.1 Impulsive cluster symptoms

Data indicate a small to moderate but statistically non-significant difference between both groups in terms of impulsivity baseline to endpoint change scores (SMD -0.47; N = 50; 95% CI -1.04 to 0.10; Analysis 2.5).

2.7.2 Interpersonal cluster symptoms

We found a moderate to large, statistically significant difference between both groups in terms of interpersonal pathology baseline to endpoint change scores (SMD -0.75; N = 50; 95% CI -1.33 to -0.16; Analysis 2.10).

2.7.3 Leaving the study early

All participants attended every visit, there were no non-attendances in either group.

No data were available for the following outcomes: BPD total severity; affective-dysregulative and cognitive cluster symptoms; depression, anxiety, general psychopathology, mental health status/functioning. See Table 12 for an overview of primary effect outcome effect estimates.

3 Comprehensive psychotherapies: active versus active conditions

3.1 Dialectical behaviour therapy (DBT) versus Client-centered therapy (CCT)

This comparison included one trial: Turner 2000 (outpatients, 79% females; 12 months therapy; N = 24)

3.1.1 Affective dysregulative cluster symptoms

Data indicate a tendency towards better results of DBT with a large effect for the outcome of anger, but no statistically significant difference (SMD -0.79; N = 24; 95% CI -1.62 to 0.05; Analysis 3.2).

3.1.2 Impulsive cluster symptoms

Reported data indicate large to very large statistically significant differences between both groups for impulsive symptom cluster outcomes, all favouring DBT over CCT (impulsivity: SMD -1.05, N = 24, 95% CI -1.92 to -0.19, Analysis 3.3; suicidality: SMD -0.87, N = 24, 95% CI -1.71 to -0.02, Analysis 3.4; parasuicidality: SMD -1.28, N = 24, 95% CI -2.17 to -0.38, Analysis 3.5).

3.1.3 Cognitive cluster symptoms

There was also a very large, statistically significant difference for the outcome of psychotic symptoms, favouring DBT over CCT treatment (SMD -1.11; N = 24; 95% CI -1.98 to -0.24; Analysis 3.6).

3.1.4 Depression

Available data also indicate a very large, significant difference for the outcome of depression, with lower burden in DBT-treated participants (SMD -1.26; N = 24; 95% CI -2.15 to -0.37; Analysis 3.7).

3.1.5 Anxiety

Data indicate no significant difference between both conditions for the outcome of anxiety, but a moderate to large difference (SMD -0.70; N = 24; 95% CI -1.53 to 0.13; Analysis 3.8).

3.1.6 Leaving the study early

Reported data indicate no statistically significant difference between treatment and control conditions for leaving the study early if considering all participants randomised (RR 0.50; N = 24; 95% CI 0.16 to 1.55; Analysis 3.11).

No data were available for the following outcomes: BPD total severity; interpersonal cluster symptoms; general psychopathology, mental health status/functioning.

3.2 Schema-focused therapy (SFT) versus Transference-focused therapy (TFP)

One trial was included in this comparison: Giesen-Bloo 2006 (outpatients, 93% females; 36 months treatment; N = 88).

3.2.1 BPD total severity

Giesen-Bloo 2006 report data indicating a moderate, statistically significant difference between both treatment groups. SFT-treated participants showed significantly lower levels of BPD total severity (SMD -0.45; N = 86; 95% CI -0.88 to -0.02; Analysis 3.1)

3.2.2 General psychopathology

Data indicate no statistically significant difference between both conditions for the outcome of general psychopathology (SMD -0.09; N = 86; 95% CI -0.52 to 0.33; Analysis 3.9), with a marginal effect size.

3.2.3 Leaving the study early

Reported data indicate a statistically significant difference between both condition in terms of a different proportion of those leaving the study early (RR 0.52; N = 88; 95% CI 0.30 to 0.92; Analysis 3.11), with a smaller drop-out rate for SFT.

No data were available for the following outcomes: affective-dysregulative, impulsive, interpersonal and cognitive cluster symptoms; depression, anxiety, mental health status/functioning.

3.3 Schema-focused therapy (SFT) versus Schema-focused therapy + Therapist Telephone Availability (SFT+TTA)

One trial was included in this comparison: Nadort 2009 (outpatients, 9´7% females; 18 months treatment; N = 62).

3.3.1 BPD total severity

Data indicate no clinically or statistically significant difference between both conditions for the outcome of BPD total severity (SMD -0.03; N = 61; 95% CI -0.53 to 0.47; Analysis 3.1).

3.3.2 General psychopathologiy

Data indicate a very small, statistically non-significant difference between both conditions for the outcome of general psychopathology (SMD 0.14; N = 61; 95% CI -0.37 to 0.64; Analysis 3.9).

3.3.3 Leaving the study early

Reported data indicate no statistically significant difference between both conditions in terms of a different proportion of those leaving the study early (RR 0.91; N = 62; 95% CI 0.35 to 2.41; Analysis 3.11).

No data were available for the following outcomes: affective-dysregulative, impulsive, interpersonal and cognitive cluster symptoms; depression, anxiety, mental health status/functioning.

3.4 Cognitive therapy (CT) versus Client-centered therapy (CCT)

One trial was included in this comparison: Cottraux 2009 (outpatients, 77% females; 12 months treatment; N = 65)

3.4.1 Impulsive cluster symptoms

Data were available for the outcomes of impulsivity, suicidality and parasuicidality. Neither indicated a statistically significant difference between the experimental conditions (impulsivity: SMD -0.22, N = 38, 95% CI -0.86 to 0.41, Analysis 3.3; suicidality: SMD 0.13, N = 38, 95% CI -0.51 to 0.77, Analysis 3.4; parasuicidality: SMD 0.59, N = 38, 95% CI -0.06 to 1.24, Analysis 3.5). The data favoured CT for impulsivity with a small effect, and CCT for the outcomes of suicidality (very small effect) and parasuicidality (moderate effect).

3.4.2 Depression

Data indicate a very small, statistically non-significant difference between the two conditions (SMD 0.10; N = 38; 95% CI -0.54 to 0.73; Analysis 3.7).

3.4.3 Anxiety

There was also no indication of a statistically significant difference between the two conditions in terms of anxious pathology, with a moderate effect favouring CT (SMD -0.51; N = 38; 95% CI -1.16 to 0.13; Analysis 3.8).

3.4.4 Mental health status/functioning

The two treatments did also not differ in a statistically significant way regarding the outcome of general psychopathological burden, with a small effect favouring CT (SMD 0.30; N = 38; 95% CI -0.34 to 0.94; Analysis 3.10).

3.4.5 Leaving the study early

Reported data indicate no statistically significant difference between treatment and control conditions for leaving the study early if considering all participants randomised (RR 0.90; N = 65; 95% CI 0.51 to 1.60; Analysis 3.11).

No data were available for the following outcomes: BPD total severity; affective-dysregulative, interpersonal and cognitive cluster symptoms; general psychopathology.

3.5 Cognitive therapy (CT) versus Interpersonal psychotherapy (IPT)

One study was included in this comparison: Bellino 2007 (outpatients with concurrent major depressive disorder, 79% females; six months treatment; N = 32).

3.5.1 Depression

Data indicated no statistically significant difference between both conditions with regard to the outcome of depression, with a marginal effect size (SMD -0.07; N = 26; 95% CI -0.84 to 0.70; Analysis 3.7).

3.5.2 Anxiety

There was also no indication of a statistically significant difference between the two conditions in terms of anxious pathology (SMD -0.53; N = 26; 95% CI -1.32 to 0.26; Analysis 3.8). However, the effect was moderate in size, favouring CT.

3.5.3 Mental health status/functioning

Data indicated no statistically significant difference between both conditions with regard to the outcome of the level of functioning, favouring CT with a small effect (SMD 0.19; N = 26; 95% CI -0.58 to 0.97; Analysis 3.10).

3.5.4 Leaving the study early

Reported data indicate no statistically significant difference between treatment and control conditions for leaving the study early if considering all participants randomised (RR 2.00; N = 32; 95% CI 0.42 to 9.42; Analysis 3.11).

No data were available for the following outcomes: BPD total severity; affective-dysregulative, impulsive, interpersonal and cognitive cluster symptoms; general psychopathology.

4. Non-comprehensive psychotherapeutic interventions: active versus active conditions

4.1 Manual-assisted cognitive therapy (MACT) versus manual-assisted cognitive therapy plus therapeutic assessment (MACT +TA)

One study was included in this comparison: Morey 2010 (outpatients, 81% females; six weekly sessions; N = 16)

4.1.1 BPD total severity

Data indicated a small, statistically non-significant difference between both conditions with regard to the outcome of BPD total severity (SMD -0.33; N = 16; 95% CI -1.32 to 0.66; Analysis 4.1).

4.1.2 Affective dysregulative cluster symptoms

Available data indicated a moderate to large, statistically non-significant difference in terms of affective instability scores after treatment, favouring MACT (SMD -0.71; N = 16; 95% CI -1.73 to 0.31; Analysis 4.2).

4.1.3 Impulsive cluster symptoms

Morey 2010 reported both on suicidality as well as parasuicidality. Both rendered marginal, statistically not different between-group effects (suicidality: SMD -0.03; N = 16; 95% CI -1.01 to 0.95; Analysis 4.3; parasuicidality: SMD 0.08; N = 16; 95% CI -0.90 to 1.06; Analysis 4.4).

4.1.4 Interpersonal cluster symptoms

Data indicated a marginal, statistically non-significant difference between both conditions with regard to the outcome of interpersonal problems (SMD -0.04; N = 16; 95% CI -1.02 to 0.94; Analysis 4.5).

4.1.5 Cognitive cluster symptoms

There was also no indication of a statistically significant difference between the two conditions in terms of identity disturbance, with a small to moderate effect favouring MACT (SMD -0.45; N = 16; 95% CI -1.44 to 0.55; Analysis 4.6).

4.1.6 Leaving the study early

Reported data indicate no statistically significant difference between treatment and control conditions for the risk of non-completing all six therapy sessions (RR 0.80; N = 16; 95% CI 0.33 to 1.92; Analysis 4.7).

No data were available for the following outcomes: depression, anxiety, general psychopathology, mental health status/ functioning.

DISCUSSION

Summary of main results

The following summary is ordered according to the overall number of trials available for a certain treatment or adaptations of the "original" treatment. For a summary of primary outcome effect estimates of controlled comparisons, see Table 1 to Table 12.

Dialectical Behaviour Therapy (DBT) and DBT-derived treatments have been studied most intensively among the included trials. Findings from five studies comparing DBT to treatment as usual (TAU) (Koons 2001; Linehan 1991; Linehan 1994; Van den Bosch 2005; Carter 2010) indicate statistically significantly beneficial effects for the broadest range of outcomes relative to remaining treatments. The comparison of DBT to TAU was the only comparison that allowed for meta-analytic pooling of effect estimates from several studies, but only for the outcomes of anger, parasuicidality and mental health status. Standard DBT was found to have beneficial effects in terms of anger (large effect), suicidal behaviour (very large effect) and parasuicidality (moderate effect), associated psychopathology such as depression (very large effect) and anxiety (very large effect) and overall mental health status (moderate to large effect). The remaining statistically non-significant findings were based on single study results each, yielding a large effect for the outcome of dissociation and small effects for the outcomes of overall BPD severity, impulsivity and interpersonal problems.

However, if compared to more rigorous control conditions, that is, general management according to the APA guidelines (McMain 2009) or community treatment by experts (CTBE) (Linehan 2006), there were no statistically significant group differences for pathology-related outcomes, but DBT was statistically superior to CTBE in terms of treatment retention. DBT was only marginally superior to APA guidelines general management (BPD severity, anger, interpersonal problems, general psychopathology), and small differences were found for the outcomes of parasuicidality and depression, favouring DBT. Compared with CTBE, there was a very small effect favouring DBT in terms of suicidality, and a small to moderate effect in terms of less depression in DBT-treated patients.

DBT-PTSD, a modified DBT approach developed to meet the specific needs of those with comorbid PTSD, was also found to be effective in the reduction of overall BPD severity, depression and anxiety (Steil 2010), with moderate (BPD severity) and very large (depression, anxiety), statistically significant effects. Statistically non-significant effects were found for the outcomes of general psychopathology (moderate to large effect) and dissociation (small effect).

As compared to Client-Centered Therapy CCT (the effects of which have not been tested against a control condition in BPD treatment up to now, and the efficacy of which thus is unclear), DBT showed better results in the reduction of impulsivity, suicidality, parasuicidality, dissociative pathology and depression, with large to very large, statistically significant effects throughout (Turner 2000). DBT had also favourable results for the outcomes of anger, depression and anxiety, with moderate to very large, but statistically non-significant effects.

These findings are consolidated by trials of short-term interventions derived from or including elements of DBT. A trial of DBT skills training only (DBT-ST) as compared to a non-specific standard group (Soler 2009) resulted in statistically significant results favouring DBT-ST for BPD severity, anger, affective instability, impulsivity, dissociation, depression and anxiety with moderate to very large effects. Small to moderate, statistically non significant effects were found for the outcomes of chronic feelings of emptiness, suicidality, interpersonal problems, general psychopathology and overall mental health status, each favouring DBT-ST.

Emotion Regulation Group Training (ERG), which was developed as a short-time, group-based approach and combines elements of DBT and Acceptance and Commitment Therapy (ACT), also

showed encouraging, statistically significant results in terms of amelioration of BPD severity, affective instability, impulsivity, parasuicidality, depression and anxiety, with large to very large effects (Gratz 2006).

In sum, DBT and related treatments provide the most solid (but not sufficiently robust) evidence of efficacy relative to all treatments that have been investigated in RCTs so far.

Mentalisation-Based treatment (MBT) is, second to DBT, the one treatment that provides most robust evidence of its efficacy. It has been compared with control groups in two trials, one testing MBT in a partial hospitalisation (MBT-PH; Bateman 1999) and one testing MBT in an outpatient setting (MBT-out; Bateman 2009). Both show consistently beneficial effects concerning the reduction of suicidality, parasuicidality, interpersonal problems and depression, with very large, statistically significant effects. In addition, data indicate beneficial effects also in terms of amelioration of general psychopathology and overall functioning for the outpatient setting. Small to moderate, statistically non-significant effects were found for the reduction of anxiety and general psychopathology by MBT-PH.

Transference-Focused Psychotherapy (TFP) was tested in an outpatient study against an unspecific control therapy (CTBE; treatment period 12 months; Doering 2010) and directly against SFT (treatment period three years; Giesen-Bloo 2006). Though tested against a rigorous comparison treatment (CTBE), TFP was found to have encouraging effects for the reduction of BPD severity (statistically significant, moderate effect) and treatment retention. There were small, unfavourable but statistically non-significant effects for the outcomes of parasuicidality, depression, anxiety and general psychopathology, and a small, statistically non-significant effect in favour of TFP for the outcome of overall functioning. As compared to Schema-Focused Therapy (SFT), results indicated statistical superiority of SFT over TFP in the reduction of overall BPD severity (moderate effect) and treatment retention. As concerns general psychopathology, both treatments differed only marginally, resulting in a non-significant finding.

SFT and derived treatments were subject to three trials: First, SFT was compared with TFP (Giesen-Bloo 2006), with the above reported results of SFT being more effective in reducing overall BPD severity and keeping patients in treatment, but not in terms of reducing general psychopathology. Second, modified SFT in a group only format (SFT-G) was subject to another trial (Farrell 2009). The authors report findings resulting in very large, statistically significant effects for all reported pathology-related outcomes, that is, BPD severity, affective instability, impulsivity, interpersonal problems, dissociative/psychotic symptoms, general psychopathology, and overall mental health status. Third, SFT was compared with a modified form of SFT with additional therapist telephone availability in times of crisis (SFT+TTA; Nadort 2009). Both treatments did not differ in a statistically significant way, with marginal effects in terms of BPD severity and general psychopathology.

Interpersonal Psychotherapy (IPT) (Bellino 2006) and IPT adapted for BPD (IPT-BPD; Bellino 2010) were supported by statistically significant findings of single trials each. IPT had statistically significant beneficial effects in terms of an amelioration of depression, with a large effect, though effects on BPD core pathology were not assessed and remain unclear. IPT-BPD, however, showed large, statistically significant effects in the reduction of affective instability impulsivity and interpersonal problems. The remaining statistically non-significant effects were marginal in size (anger, chronic feelings of emptiness, parasuicidality, avoidance of abandonment, identity disturbance, dissociative/psychotic symptoms, depression and mental health status). However, there was a moderate, statistically non significant effect favouring IPT-BPD for the outcome of anxiety.

Cognitive-Behaviour Therapy (CBT) was compared with TAU in a single trial (Davidson 2006). There were no statistically significant between-group differences at post-treatment for any out outcome. There was a trend of better results for CBT for the outcomes of suicidality, depression, anxiety, general psychopathology and mental health status. For two outcomes, the effects were opposite, favouring the control group with very small (parasuicidality) and small (interpersonal problems), statistically non-significant effects.

Cognitive Therapy (CT) was compared with two alternate active treatments, that is, CCT (Cottraux 2009) and IPT (Bellino 2007). Both comparisons yielded no statistically significant differences for any outcome. As compared to CCT, results indicated a superiority of CT over CCT for the outcomes of impulsivity, suicidality, anxiety and mental health status with very small to moderate effects, and superiority of CCT for parasuicidality (moderate effect) and depression (very small effect). As compared to IPT, better results were found for CT for the outcomes anxiety (moderate effect) and mental health status (small effect). For the outcome of depression, the difference was marginal in size.

Dynamic Deconstructive Psychotherapy (DDP) was also investigated in a single trial only (Gregory 2008). There were no statistically significant results, but DDP was indicated to be superior to the control group in terms of BPD severity and parasuicidality and depression with small to moderate effects.

Systems training for emotional predictability and problem solving for borderline personality disorder (STEPPS) was subject to two trials. First, STEPPS was compared with TAU (Blum 2008). All results favoured STEPPS with statistically significant, small to moderate effects for interpersonal problems, dissociation and mental health status, and small, statistically non-significant effects for the outcomes of overall BPD severity, affective instability, impulsivity, depression and general psychopathology. Notably, there was a statistically significant higher drop-out rate in the STEPPS group. Another trial compared STEPPS plus limited individual therapy (STEPPS + IT; Bos 2010) to TAU. There was a statistically significant, moderate effect indicating beneficial effects of STEPPS in terms of general psychopathology. Statistically non-significant, favourable effects were found for the reduction of BPD severity (moderate in size), impulsivity (small effect), and interpersonal problems (small effect). For the outcome of parasuicidality, there was statistically non-significant effect indicating more such pathology in the STEPPS + IT group.

Manual-Assisted Cognitive Treatment (MACT) was also tested in two trials: First, it was compared with TAU (Weinberg 2006). There were two large, significant effects favouring MACT over TAU in terms of suicidality and parasuicidality. Second, MACT was compared with MACT enhanced by pre-treatment individual therapeutic assessment (Morey 2010). There were no statistically significant differences, with a moderate to large effect for affective instability, a moderate for identity disturbance and a small one for BPD

severity, all favouring MACT. Differences in terms of suicidality and parasuicidality were marginal.

At last, a very generic psychoeducative intervention (PE) was compared with a waiting list (WL) control group (Zanarini 2008). There was a nearly large, statistically significant effect for the reduction of interpersonal problems, and an almost moderate but non-significant effect for the reduction of impulsivity by this intervention.

Overall completeness and applicability of evidence

Participants

Most trial participants were women. Overall, 89% of included participants were female, and there was not a single study with more men than women, or even balanced proportions. This pattern may reflect reality in clinical settings, where about 75% of all BPD diagnoses are given to women (APA 2000). However, some doubt that the 'real' prevalence of BPD is actually higher in women than men, and there are contradictory findings of balanced proportions or even higher prevalence rates in men (Torgersen 2009). Men with BPD may exhibit another clinical picture than women, and especially antisocial features may be more prevalent in men than women with BPD (Skodol 2009). From a clinical point of view, this may yield different treatment approaches or special requirements that may not be reflected in the actual findings from the RCT evidence. In contrast, antisocial features or full antisocial personality disorder were reasons for exclusion in several trials (see Types of participants). Thus, the applicability of findings of this review, and most BPD research findings, to men may be confined.

Objective measures of levels of functioning at baseline were not available from all studies, and if so, different measures were used, rendering comparability of single study samples difficult. Overall, drawing from those studies that reported objective measures such as GAF, GAS, CGI or SFQ, the severity of illness ranged between major impairment, comparable to psychiatric emergencies, and mild illness, with the majority of samples exhibiting serious to moderate levels of illness. Regarding comorbidity, those with comorbid "severe mental disorders" such as psychotic and/or bipolar disorders were not eligible for study participation in most trials, as were those with mental impairments, organic brain disorder and severe organic conditions. Substance-related disorders were also common reasons for exclusion (17 studies; some differentiated between substance abuse and addiction or specific substances, some did not (see. Types of participants). Some studies, however, concentrated on participants with distinct comorbid conditions, such as alcohol abuse or dependence (Gregory 2008), post-traumatic stress disorder (Steil 2010) or major depressive disorder episodes (Bellino 2006; Bellino 2007).

Notably, acute endangerment of self and/or others was explicitly specified a reason for exclusion only in three trials. However, it seems not improbable that others may also have excluded patients in acute crisis. However, anxiety-related disorders or eating disorders were not explicit reasons of exclusion in any study. There was only one trial that explicitly did not include patients with concurrent major depressive episode (Soler 2009).

Most studies were conducted either in Western Europe (14 trials: Bateman 1999; Van den Bosch 2005; Bellino 2006; Davidson 2006; Giesen-Bloo 2006; Bellino 2007; Bateman 2009; Cottraux 2009; Nadort 2009; Soler 2009; Bellino 2010; Bos 2010; Doering 2010; Steil 2010) or North America (13 trials: Linehan 1991; Linehan 1994; Turner 2000; Koons 2001; Gratz 2006; Linehan 2006; Weinberg 2006; Blum 2008; Gregory 2008; Zanarini 2008; Farrell 2009; McMain 2009; Morey 2010). One study was conducted in New Zealand (Carter 2010). Thus, the applicability of findings to other locations and ethnicities, that is, as found in South America, Asia, Africa and also other parts of Europe and Oceania remains unclear.

In summary, the findings may be mostly applicable to a female, moderately to severely ill BPD patient without any comorbid severe mental condition such as psychotic disorder or substance-related disorder, mental retardation or severe organic condition. However, we tried to exactly specify and describe all studies with regard to their crucial characteristics (see Description of studies, Characteristics of included studies) in order to let the reader decide about applicability of relevant study characteristics to his or her decisive situation.

Interventions

All major psychotherapeutic treatments for BPD (DBT, MBT, SFT, TFP) have been tested in RCTs so far, though the number of RCTs varies with most trials investigating DBT. Treatment periods range broadly. Even if looking at long-term treatments only (defined here as covering a period of more than six months), there is a broad range from six up to 36 months. It may surely depend of the specific national mental health care setting which treatment periods fit into the context of current practice, that is, which "amounts" of psychotherapeutic treatment a patient may be enabled to use.

A new trend of group-based short-time interventions can be observed in recent trials, with all referring studies dating from 2006 or later. Those short-time interventions draw from already-established interventions, especially DBT, and combine them with new elements and/or modify them according to group settings. Thus, a certain eclecticism can be observed, and in some cases it remains unclear which sources have been used. Short-term interventions show encouraging results, however, the long-term stability of effects has to be established. From a clinical point of view, it should also be made clear which "experience of treatment" a patient must already have to profit from those interventions, or if they should only be recommended to those patients who can use them as "booster treatment" on basis of their already-gained treatment experience or as add-on to concurrent individual psychotherapies only.

Most trials allowed concurrent psychotropic treatments. With the exception of the trials of Bellino 2006, Bellino 2007 and Bellino 2010, the participants of which were all given the SSRI antidepressant fluoxetine, most trialists did not prevent participants from taking concomitant medication. Some cited the APA guidelines as a rough orientation for medication regimens (Giesen-Bloo 2006; Gregory 2008; Bateman 2009, McMain 2009 for control group patients). Most DBT trials explicitly encouraged tapering-off of medications as an explicit treatment goal (Linehan 1991; Linehan 1994; Linehan 2006; McMain 2009). Thus, the actual use of medications during the study period differed between DBT and control groups as a consequence of the psychotherapy treatment goal of tapering-off medications ("rely on skills over pills"), but the study groups did not differ at pretreatment. Overall, the wide-spread use of pharmacotherapy in patients with BPD (Ansell 2007; Hörz 2010) is adequately reflected by the included primary studies.

During the time-span that the included trials cover (that is, publication years range from 1991 to 2011), the understanding of the relative efficacy of medications in BPD has changed. For example, SSRIs that were once regarded the first-line treatment for BPD (compare APA guidelines: APA 2001; Rush 2005) for the treatment of various symptom clusters lack corresponding evidence, whereas mood stabilisers and second-generation antipsychotics are supported by some evidence (Stoffers 2010). It is therefore possible that the efficacy of concurrent medications may have changed throughout this long time-span and may have confounded the corresponding findings. Within this review, this could possibly concern the comparison of DBT to TAU as this was the only comparison for which several study findings were pooled, covering a time-span of publication years 1991 to 2010. However, in examining more closely the actual concomitant drug treatment in these studies, it becomes clear that antidepressants were most frequently used in all studies, rendering them studies comparable and limiting the risk of any confounding medication effects.

Comparisons

There was a large heterogeneity of control group treatments. Even "treatment as usual", a very common control condition, varied between studies. Some TAU participants were completely free to use or not to use any kind of care they would have used if not included into the study. Some TAU participants, however, received some minimum standard of care, for example, referrals to other providers (that participants could follow up or not) or a rough, guideline-oriented but non-specific treatment regimen. What is more, TAU will certainly vary internationally, the "usual" standards of mental health care are known to be different depending on national health care systems.

There is a clear trend towards new kinds of control conditions such as CTBE (Linehan 2006; Doering 2010) or guideline-oriented treatments (Bateman 2009; McMain 2009). Reasons may be ethical considerations taking into account that severely ill patient should not be left untreated if established treatments such as DBT are available. In addition, it is interesting for the assessment of a certain therapy if this therapy not only works compared with TAU but also if compared with experienced therapists or therapists using guidelines. However, such comparisons will yield smaller between-group effects if using more rigorous comparison conditions, and this should be taken into account if comparing data from such studies with those studies that use less rigorous control groups. From a reviewer's point of view, it is sometimes difficult to classify these newer comparison treatments. One may argue to group them as controls or as active comparisons, as well. Here, we decided to classify them as controls, since they do not use specific treatment manuals but only rough guidelines, so that there could have been variation in the type of treatment received by participants within the same control group. .

Another problem is the head-to-head testing of treatments before investigating the mere effects of the two treatments against control treatments (for example, CCT, SFT). Thus, it remains unclear what a between-group difference really means. What is more, not only controlled studies but also pilot studies are mostly missing. This is in some ways astonishing taking into account the burden conducting a psychotherapy RCT to both investigators and participants.

Outcomes

Starting from the phenomenological diversity of BPD, there is also a high variety of possible outcomes, and by now there is only a small consensus about really important outcomes. Identifying theory-inherent outcomes related to putative mechanisms of change is a major problem especially in psychotherapy research. The real core symptoms that people with BPD and caregivers may be interested in when looking for a helpful treatment option are sometimes neglected. Trialists should keep in mind that anyone concerned will certainly not be interested in how a change will putatively be achieved but if a change will be achieved at all, to what extent, and in terms of which pathology. The development of new outcome scales such as BPDSI-IV, CGI-BPD or ZAN-BPD allows for distinct assessment of BPD symptoms. These scales, encouragingly, have potential to measure outcomes such as change in chronic feelings of emptiness or in avoidance of abandonment, which are significant traits in many people with BPD.

Attrition data must be interpreted with caution. There is a high risk of bias especially in small sample studies with, for example, also small numbers of therapists. What is more, there is a substantial likelihood of attrition rates depending on the kind of control groups used. For example, waiting list participants seem to be more prone to leaving the study early than TAU participants. In addition, geographical conditions and accessibility of study centres can play an important role (for example, if it is a rural region with high costs and burden for participants to go study assessments, higher drop-out rates can be expected than in urban settings, cf. Blum 2008; Carter 2010).

None of the studies considered adverse or undesired effects. Some argue that psychotherapy, constituing a potent intervention, may both have the potential to cure and harm. A broad range of possible adverse outcomes has been discussed so far, including, e.g., the lack of significant improvement, acceleration of ongoing deterioration or increase of substance use if a certain intervention inducing high emotional arousal (Berk 2009).

Quality of the evidence

Overall, a total of 28 studies involving 1804 participants have been included in this review. Study sample sizes ranged between 16 and 180. However, except for DBT, the review findings are based on single study effects only. There were either single trials available for a certain intervention (for example, CBT, DDP, ERG, MACT), or the intervention had actually been tested in several trials, but in modified forms (for example, MBT and MBT-PH; SFT and SFT-G, STEPPS and STEPPS + IT), and/or it had been compared with different conditions (for example, CT, IPT), so the study effects could not be pooled either. 'Summary of findings' tables (see Summary of findings 1 to Summary of findings 18) are provided for all active to control group comparisons, focusing on primary outcomes. The comparison of DBT with TAU was the only comparison that allowed for pooling of several effect estimates. The overall quality of evidence ranges between moderate and low, depending on overall sample sizes. According to the GRADE system, a rating of 'high quality' requires as a rule of thumb large sample sizes of at least 400 due to statistical precision issues. To date, there are no such sample sizes available for any psychotherapy.

Key methodological limitations were, as usual in psychotherapy research, the lack of caregiver and patient blinding. Another

limitation was potential bias due to allegiance effects, which were present in the majority of trials. However, it seems inevitable that psychotherapists who must undergo a thorough, often time- and cost-intensive training to be able to deliver a certain psychotherapy properly, are allied to a certain psychotherapy they have "invested" in. On the other hand, a certain allegiance may also motivate them to deliver the treatment as properly as possible. However, treatment developers who also act as main investigators of their treatments should be prevented from suspicions that positive results stem from biased study designs or bias study conducting, so there is an urgent need for independent research endeavours to undermine available findings.

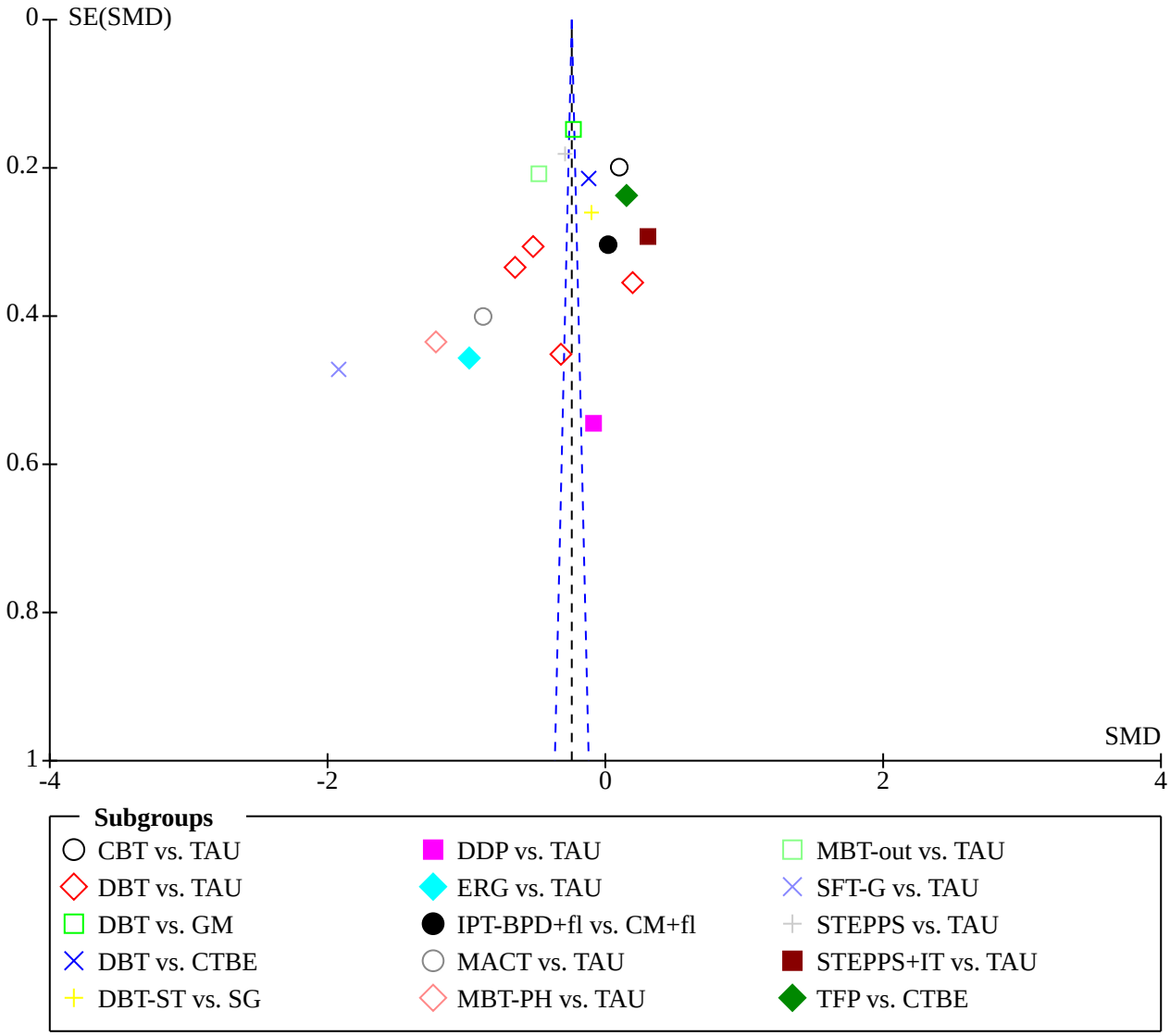
Another major limitation of most studies was attention bias. In the majority of trials, control group participants did not receive comparable amounts of professional attention as obligatory elements of their treatment regimen. Findings of beneficial effects by one treatment may then primarily result from simply being paid attention to or being provided with some kind of intervention rather than from a specific mechanism of action.

Most studies had comparatively small samples (12 out of 28 trials included 39 participants or less). As a consequence, the experimental groups may seem to be imbalanced at baseline, which was, for example, the case in the RCT of Gregory 2008. Dr Gregory, the main investigator of this trial, has raised concerns about the appropriateness of using endpoint data alone for effect size calculation, and referred to "substantially greater baseline psychopathology" in the active group, which may have led to an underestimation of positive treatment effects and a Type II error (Gregory 2017). However, group allocation was randomised (as in any here-included study), so any imbalances at baseline are regarded to be due to chance alone, and the the statistical methods used in this review allow for such chance differences.

Nevertheless, we are aware that the power of studies including smaller samples (such as Gregory 2008) may be too small to detect a real effect as statistically significant if it exists. Therefore, we have not only reported statistically significance throughout the text but also referred to their magnitude ("small, moderate, large").

A funnel plot was drawn for all controlled comparisons and the outcome of parasuicidality (cf. Figure 4). The funnel plot is rather symmetric in shape and indicates no selection bias (for example, publication, delayed-publication or location bias) or spurious inflation of effects in smaller studies due to poor methodological quality.

Figure 4. Funnel plot of comparison of all controlled comparisons for the outcome of parasuicidality



Potential biases in the review process

With regard to our inclusion criteria, we tried to retain a homogeneous pool of primary studies. However, there were some inconsistencies between studies, particularly pertaining to psychiatric comorbidity of study participants. For example, presence of a substance-related disorder was a common exclusion criterion (see Types of participants), whereas one study (Gregory 2008) required participants to have such a disorder, and another study included a mixed sample of participants with and without substance abuse problems (Van den Bosch 2005). In addition, the severity of illness varied between studies, covering a range of severe to mild.

Many studies provide outcome measures that appear to reflect theory-inherent, putative mechanisms of change than consumer-relevant data. We tried to deal with this by first defining all patient-relevant outcome variables that are directly (primary outcomes) or indirectly (secondary outcomes) associated with BPD, that is, all outcome variables that a consumer and his or her therapist are likely to be interested in, and took BPD pathology as defined in the DSM-IV criteria (APA 2000) as a guideline for primary outcomes. We feel that these are most likely to be shared by the majority of patients with BPD, and did not regard cost-related issues.

We decided to focus on RCTs only as they provide the only way to prevent systematic differences and confounders. One major concern against uncontrolled trials of BPD treatment outcome pertains to the characteristically unstable course of BPD, findings of amelioration over time and high affective responsiveness, which render simple pre-post comparisons (within-subject) difficult and prone to bias. Another practical consideration was the availability of reliable methods for identifying studies of another type. The identification of 28 relevant RCTs seems to vindicate this strategy.

A potential bias in the review process may have resulted from the decision not to include RCTs that do not provide any outcome of

interest. Thus, the trials of Linehan 1999 and Linehan 2002 that both concentrate on outcome measures related to substance-related disorders were excluded. In addition, the lack of usable data led to exclusion of Clarkin 2007 (see Characteristics of excluded studies).

We strived to identify all relevant published and unpublished RCT evidence (see Search methods for identification of studies). The search was not restricted to any language. In spite of great efforts to minimise publication bias, we were able to include only one unpublished study, the publication of which is impending (Steil 2010).

Agreements and disagreements with other studies or reviews

This review differs from its preceding version (Binks 2006) insofar as more RCTs are available for inclusion. The previous version included seven studies compared to the 28 in the current version. However, the statement that "the studies are too few and small to inspire full confidence in their results" (Binks 2006) remains relevant. The variety of available treatments has increased, whereas robustness has not, with the exception of DBT and MBT. On the other hand, the earlier conclusion that "some of the problems frequently encountered by people with borderline personality disorder may be amenable to talking/behavioural treatments" (Binks 2006) has been strengthened.

Though this Cochrane Collaboration review is not a guideline, its findings are likely to be checked against guideline recommendations and the following may be relevant.

The current APA guidelines (APA 2001; Oldham 2005) are substantially outdated, with the most recent psychotherapy RCT evidence included dating from 2003. In their 2005 update, the guideline authors conclude: "All in all, the database is growing, and further evidence is accumulating that BPD is a condition that can be effectively treated by a combination of psychotherapy and symptom-targeted pharmacotherapy." (Oldham 2005, p. 4). We can not draw any distinct conclusions about the combination of psychotherapy and pharmacotherapy from this review. However, there were two RCTs in which all participants were given fluoxetine, and a psychotherapeutic approach (Bellino 2006: IPT; Bellino 2010: IPT-BPD) was compared with CM in each case. Both trials consistently indicate that the group receiving combined treatment of psychotherapy and pharmacotherapy had superior results as compared to medication plus CM only. This finding advocates in particular for the conclusion of the APA guidelines that "...psychotherapy represents the primary, or core, treatment for this disorder and that adjunctive, symptom-targeted pharmacotherapy can be helpful." (Oldham 2005, p. 3).

The comparison of pharmacotherapeutic and psychotherapeutic interventions was neither the scope of this review nor can it be answered from the here-included evidence. The effects of pharmacotherapy of BPD is the subject of two other Cochrane Collaboration reviews (Lieb 2010; Stoffers 2010). One may argue that in the light of comparable effect sizes and a by and large comparable robustness of underlying evidence, it is not clear if either drug treatment or psychotherapy should be regarded the first-line treatment and which one the adjunctive one. Again, this question can neither be answered from this review nor can the results of the two reviews be directly compared with each other. However, some observations from the two reviews: the pharmacotherapy review (Stoffers 2010) included three trials testing psychotherapy plus drug against psychotherapy plus placebo (Simpson 2004; Soler 2005; Linehan 2008). The findings were not conclusive in terms of a clear superiority of combined treatments. In contrast, there were indeed favourable results for psychotherapy plus placebo over psychotherapy plus drug, especially with regard to self-harming and dissociative behaviour. As discussed previously, the two trials included here testing drug treatment plus psychotherapy against drug treatment plus clinical management only (Bellino 2006; Bellino 2010), indicated superior results for those participants who received additional psychotherapy. As a consequence, drug treatment plus psychotherapy seems not clearly superior to psychotherapy alone, whereas psychotherapy plus drug treatment had favourable results as compared to drug treatment alone. These findings support the role of psychotherapy as the core treatment, as also suggested by the APA guidelines (APA 2001; Oldham 2005).

However, the effectiveness of therapies in combination still remains unclear on basis of this review and the available RCT evidence.

The UK National Institute for Health and Clinical Excellence (NICE) published their guidelines in 2009 (NICE 2009), covering relevant evidence available up to April 2008. This review now includes 21 more studies. However, the conclusions that "There are few studies; low numbers of patients and therefore low power; multiple outcomes with few in common between studies; and a heterogeneous diagnostic system which makes it hard to target specific treatment on patients with specific sets of symptoms." (NICE 2009, p. 204) remain relevant. This review is also in line with NICE concerning the valuation that especially DBT and MBT are supported by the current evidence. However, TFP and SFT must be added to the class of treatments that showed beneficial effects in at least one methodologically sound, medium-size trial. NICE concluded that "very brief interventions (less than 3 months) do not appear to be effective in the treatment of borderline personality disorder" (NICE 2009, p. 204). From our findings, based also on more recent RCTs, short-time interventions of up to six months duration show at least encouraging results in small studies, though the necessary contexts that patients can profit from these interventions remains unclear as previously discussed (see Overall completeness and applicability of evidence).

AUTHORS' CONCLUSIONS

Implications for practice

In sum, the up-to-date available randomised controlled trial (RCT) evidence for psychotherapeutic treatments is scarce, and replicative studies would be most desirable for each type of treatment. Therefore, conclusions have to be drawn carefully.

Most "robust" conclusions can be drawn from evidence of dialectical behaviour therapy (DBT). It is the only psychotherapy for which, in comparison with treatment as usual (TAU), data could be accumulated from several trials. For all remaining comparisons and psychotherapies, single study effects are available only. Thus, the evidence is not as robust as would be desirable, but the findings indicate the usefulness of both comprehensive psychotherapies and non-comprehensive psychotherapeutic interventions in the treatment of both core borderline personality disorder (BPD) pathology and its associated pathology.

Comorbid conditions have been recognised by RCT research, but the evidence base for BPD treatment in the presence of defined comorbidities (for example, substance-related disorders, post-traumatic stress disorder (PTSD), depressive episodes) is still small and only single studies are available. Studies of DBT-PTSD for patients with BPD with comorbid PTSD and dynamic deconstructive psychotherapy (DDP) for patients with concurrent addictive disorders found encouraging effects on core BPD pathology as well as associated pathology, indicating that psychotherapy may have beneficial effects in severely ill groups of patients. Interpersonal psychotherapy (IPT) which was developed for people with depressive disorders was successful in reducing depressive pathology, but the effects on BPD core pathology remain unclear as no such data were assessed.

Trials of non-comprehensive psychotherapeutic interventions suggest large effects for several approaches and indicate that these rather short-term interventions may (at least as add-ons to long-term treatments) be helpful; further research is required. To date, it is rather unclear if these interventions are equally effective in patients with BPD who have already experienced several individual therapies as in patients who are "psychotherapy naive".

In sum, it can be concluded that disorder-specific treatments should be used. Although nonspecific treatments were scarcely investigated, those that were (cognitive behavioural therapy (CBT), client-centered therapy (CCT), IPT) showed no encouraging effects for the treatment of BPD core pathology. Beneficial findings from group-only interventions are mostly based on studies of participants with another ongoing individual treatment, and it is therefore unclear which treatment exerts the major effect. The optimal length of treatment is unclear from the up-to-date RCT evidence. On the basis of the available findings, a treatment of 12 to 18 months seems to be appropriate.

Implications for research

First, replication studies would be most desirable, especially from independent researchers not involved in treatment development and/or delivery. Future studies should focus on male patients with BPD who have been neglected in BPD treatment studies so far, and treatment efficacy in patients with BPD with defined comorbid conditions should be investigated in more detail. In addition, it remains unclear how psychotherapy and pharmacotherapy interact. There is some evidence that psychotherapy may enhance pharmacotherapy effects (Lieb 2010; Stoffers 2010). There is a need for agreement on a minimum core battery of BPD outcomes. There is currently a huge heterogeneity of outcome variables and assessment instruments. A consensus on a minimum set of therapy outcome variables that are most likely to be of interest for any patient with BPD would be desirable. Outcome assessment should be more specific and sensitive to BPD pathology. Assessment instruments have been developed lately to reflect BPD core pathology as described precisely by the DSM-IV criteria (for example, the BPDSI scale by Arntz 2003, the CGI-BPD scale by Perez 2007, or the ZAN-BPD scale by Zanarini 2003a). Further investigation of the impact of different treatment settings, that is, inpatient, outpatient, and day hospital, during acute and non-acute stages of the course of illness would also be helpful. Some researchers advocate for the development of an integrated psychotherapy on the basis of effective treatments that combines methods which work from all therapies (for example, Livesley 2007; Livesley 2012). However, as discussed previously, there is still an urgent need for additional evidence to answer the question of which treatments are really effective, and which work for whom.

ACKNOWLEDGEMENTS

We are grateful to Jane Dennis, Margaret Anderson, Laura MacDonald, Elaine McKay, Chris Champion and Geraldine MacDonald from the Cochrane Developmental, Psychosocial and Learning Problems Group. In particular, we thank Jane Dennis, Margaret Anderson, Nick Huband, Mike Ferriter, Nadja Smajlaigic and Melanie Powney for their help in identifying relevant studies. We would also like to thank all primary study authors who responded to our requests and provided further information, and Mr H A Glazener who helped translating a Dutch paper.

We would like to thank the previous authors of this review, Claire Binks, Mark Fenton, Lucy McCarthy, Tracy Lee, Clive Adams and Conor Duggan. Additionally, we thank the German Cochrane Centre for supporting this work. We are grateful to Gerd Antes, director of the German Cochrane Centre, who made contact with CDPLPG and helped in gaining grants for financing this work. We are also grateful to Martin Schumacher, director of the Institute of Biostatistics and Medical Informatics at the University Medical Center Freiburg, who gave support in application submission. We are grateful to the German Ministry of Education and Research (BMBF; grant no. 01KG0609), the research committee of the University Medical Center Freiburg and the NHS Cochrane Collaboration Programme Grant Scheme (NIHR), UK for supporting this work. JS would like to thank the Ministry of Science, Research and Arts of the federal state of Baden-Württemberg for supporting this work by a stipend.

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* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Bateman 1999

Study characteristics	
Methods	**design:** randomised controlled trial
Participants	**sex:** 22/38 females (57.9%) **age:** eligible: 31.8 years on average **location:** UK **setting:** partially hospitalised/outpatient **exclusions:** schizophrenia, bipolar disorder, substance misuse, mental impairment, evidence of organic brain disorder **level of functioning/severity of illness:** "individuals with severe borderline personality disorder who frequently harmed themselves and attempted suicide, while exhibiting severe levels of depression, suffering from high levels of symptomatic distress, and demonstrating comorbidity for affective disorders" (Bateman 1999, p. 1568) DIB scores at baseline: group 1 mean score = 7.9, SD = 0.4; group 2 mean score = 7.6, SD = 0.5

Bateman 1999 *(Continued)*

	BPD diagnosis according to: DSM-III-R (both sets of criteria of SCID and DIB had to be met) **means of assessment:** both SCID and DIB-R
Interventions	**group 1 (EG):** mentalisation-based treatment (MBT) oriented partially hospitalisation 5 days a week: once-weekly individual psychotherapy, thrice-weekly group analytic psychotherapy, once-weekly expressive therapy (psychodrama techniques oriented), once-weekly community meeting; monthly meeting with case administrator and medication review by resident psychiatrist **group 2 (CG):** standard treatment in the general psychiatric services: regular psychiatric review with psychiatrist when necessary (twice-monthly on average); inpatient admission as appropriate (90%, average stay 11.6 days) with discharge to non-psychoanalytic partial hospitalisation focusing on problem solving (72%, average stay 6 months) and standard aftercare (100%, outpatient and community follow-up by every-2-week visits by a community psychiatric nurse); no formal psychotherapy **duration**: up to 18 months (average length of stay in EG: 17.4 months **concomitant psychotherapy:** none **concomitant pharmacotherapy:** antidepressant and antipsychotic drugs prescribed as appropriate, polypharmacy was discouraged
Outcomes	**outcomes considered in this review** **self-rated:** interpersonal problems (IIP), depression (BDI), anxiety (STAI), general psychopathology (SCL-90-R-GSI) **observer-rated:** number of patients with self-harming behaviour during last 6-month period, number of patients with suicide attempt during last 6-month period (both assessed via the Suicide and Self-Harm Inventory, a semi-structured interview) **time-points used here:** 18 months (post-treatment)
Notes	**analyses:** per protocol (22 randomised to each group, only 19 per group analysed since treated per protocol)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Use of a minimisation method (Bateman 2010).
Allocation concealment (selection bias)	Low risk	Central allocation at the university (Bateman 2010).
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Outcome assessors were blind (Bateman 2010).
Selective reporting (reporting bias)	Unclear risk	No indication for selective reporting, but Insufficient information to permit judgement of 'Yes' or 'No'.
Treatment adherence?	Low risk	Adherence to therapy was monitored through supervision, verbatim session reports, and completion of a monitoring form about activities and interventions of therapists.
Allegiance effect improbable?	High risk	There is no indication given for an allegiance effect. However, as both authors are the founders of MBT, the treatment actually used in the experimental group, an allegiance effect seems not improbable.

Bateman 1999 *(Continued)*

Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	High risk	More attention paid to EG participants.

Bateman 2009

Study characteristics	
Methods	**design:** randomised controlled trial
Participants	**sex:** 107/134 females (79.9%) **age:** eligible: 18-65 years of age; mean age of participants allocated to outpatient mentalisation-based treatment (MBT-OP): 31.3 years, SD 7.6; mean age of participants allocated to structured clinical management (SCM): 30.9 years, SD 7.9 **location:** UK **setting:** outpatient **exclusions:** psychotic disorder, bipolar I disorder, opiate dependence requiring specialist treatment, mental impairment, evidence of organic brain disorder, being in long-term psychotherapeutic treatment **level of functioning/severity of illness:** only subjects with "suicide attempt or episode of life-threatening self-harm within last 6 months" were eligible (Bateman 2009, p. 1356). mean GAF score at baseline: 41.0, i.e. participants had "serious symptoms OR any serious impairment in social, occupational, or school functioning" **BPD diagnosis according to:** DSM-IV **means of assessment:** SCID-II
Interventions	**group 1 (EG):** MBT-OP; weekly individual and group psychotherapy **group 2 (CG):** SCM according to generic practice for borderline personality disorder offered by non-specialist practitioners within U.K. psychiatric services; regular individual and group sessions with appointments every 3 months for psychiatric review **duration:** 18 months **concomitant psychotherapy:** patients already being in long-term psychotherapeutic treatment were not eligible **concomitant pharmacotherapy:** patients were prescribed medication according to the APA guidelines; all patients were offered medication reviews every 3 months
Outcomes	**outcomes considered in this review** **self-rated:** interpersonal problems (IIP), depression (BDI), general psychopathology (SCL-90-R-GSI) **observer-rated:** suicidal ideation (number of patients with suicide attempt during previous 6-month period), self-harming behaviour (number of patients with self-harming behaviour during previous 6-month period), mental health status (GAF) **time-points used here:** 18 months (post-treatment)
Notes	**analyses:** intention-to-treat analysis based on treatment assignment

Bateman 2009 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"randomization using a stochastic minimization program (MINIM) balancing for age (blocked as 18-25, 26-30, >30 years), gender, and presence of antisocial personality disorder." (Bateman 2009, p. 1357)
Allocation concealment (selection bias)	Low risk	"Treatment allocation was made offsite [...] A study psychiatrist informed patients of their assignment." (Bateman 2009, p. 1357)
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"Assessors were blind to treatment group." (Bateman 2009, p. 1358)
Selective reporting (reporting bias)	Low risk	Study protocol available (ISRCTN27660668). No indication for selective reporting.
Treatment adherence?	Low risk	"All sessions were audiotaped. Adherence to the MBT-OP and SCM-OP manuals was determined by randomly selected audiotapes of individual and group sessions drawn from two distinct 6-months periods of each case using a modified version of the recommended adherence rating scale." (Bateman 2009, online data supplement, p. 1)
Allegiance effect improbable?	High risk	There is no indication given for an allegiance effect. However, as both authors are the founders of MBT, the treatment actually used in the experimental group, an allegiance effect seems not improbable.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	Low risk	Equal amounts of attention paid to both groups.

Bellino 2006

Study characteristics

Methods	**design:** randomised controlled trial
Participants	**sex:** 60% females ("The ratio of men to women was 3 to 5."; Bellino 2006, p. 455 **age:** 26.4 years on average, SD = 3.7 **location:** Italy **setting:** outpatient **exclusions:** lifetime diagnosis of delirium, dementia, amnestic or other cognitive disorders, schizophrenia or other psychotic disorders, patients whose major depressive episode was an expression of bipolar disorder; current diagnosis of substance abuse disorder, treatment with psychotropic drugs or psychotherapy during the 2 months prior to the study, female patients not using an adequate method of birth control **level of functioning/severity of illness:** mean baseline CGI-S = 4.35, i.e. "moderately ill". **BPD diagnosis according to:** DSM-IV-TR, comorbid diagnosis of mild to moderate major depressive episode required for inclusion

Bellino 2006 *(Continued)*

	means of assessment: SCID
Interventions	**group 1 (EG):** Fluoxetine + interpersonal therapy (IPT; 1 weekly session) **group 2 (CG):** Fluoxetine + clinical management (CM; 6 appointments, first two fortnightly, monthly afterwards) **duration**: 24 weeks **concomitant psychotherapy:** patients having received psychotherapy during the 2 months prior to the study were not eligible **concomitant pharmacotherapy:** all study participants received 20 to 40 mg fluoxetine daily; patients with psychotropic treatment during the 2 months prior to the study were not eligible for inclusion
Outcomes	**outcomes considered in this review** **self-rated:** anxiety (HARS) **observer-rated:** depression (Ham-D), mental health status (CGI-S) **time-points used here:** week 24 (post-treatment)
Notes	**analyses:** per protocol (39 randomised, only 32 analysed since treated per protocol, N = 16 per group)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Use of a computer random number generator (Bellino 2010a [pers comm]).
Allocation concealment (selection bias)	Low risk	Central allocation (Bellino 2010a [pers comm]).
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"assessments were performed by an investigator who was blind to the treatment methods" (Bellino 2006, p. 455);
Selective reporting (reporting bias)	Unclear risk	No indication for selective reporting, but Insufficient information to permit judgement of 'Yes' or 'No'.
Treatment adherence?	High risk	"psychotherapist [...] had 5 years of experience practising IPT" (Bellino 2006, p. 455) no specific measures to monitor treatment adherence (Bellino 2010a [pers comm])
Allegiance effect improbable?	Low risk	The authors seem not to be associated with IPT.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	High risk	More attention paid to EG participants.

Bellino 2007

Study characteristics	
Methods	**design:** randomised controlled trial
Participants	**sex:** 63.2% females ("The ratio of men to women was 7 to 19"; Bellino 2007, p. 720) **age:** 30.55 years on average, SD = 5.75 **location:** Italy **setting:** outpatient **exclusions:** lifetime diagnosis of delirium, dementia, amnestic or other cognitive disorders, schizophrenia, other psychotic disorders, patients whose major depressive episode was an expression of bipolar disorder; current diagnosis of substance abuse disorder; treatment with psychotropic drugs or psychotherapy during 2 months prior to study, female patients of child-bearing age not using adequate method of birth control **level of functioning/severity of illness:** Mean baseline CGI-S = 3.4, i.e. "mildly ill". **BPD diagnosis according to:** DSM-IV-TR, comorbid diagnosis of mild to moderate major depressive episode required for inclusion **means of assessment:** SCID
Interventions	**group 1 (EG1):** Fluoxetine + interpersonal therapy (IPT; 1 weekly session) **group 2 (EG2):** Fluoxetine + cognitive therapy of therapy according of depression according to Beck (CT; 1 weekly session) **duration:** 24 weeks **concomitant psychotherapy:** patients having received psychotherapy during the 2 months prior to the study were not eligible **concomitant pharmacotherapy:** all study participants received 20 to 40 mg fluoxetine daily, with 7 appointments, the first 2 fortnightly and the last 5 monthly; patients with additional current psychotropic treatment were not eligible for inclusion
Outcomes	**outcomes considered in this review** **self-rated:** anxiety (HARS) **observer-rated:** depression (Ham-D), mental health status (CGI-S) **time-points used here:** week 24 (post-treatment)
Notes	**analyses:** per protocol (32 randomised, only 26 analysed since treated per protocol, N = 14 in the IPT and N = 12 in the CT group)

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"Patients [...] were randomized using the web program Research Randomizer v3.0 (Urbaniak & Plous, Social Psychology Network, 2007)" (Bellino 2007, p. 720)
Allocation concealment (selection bias)	Low risk	Central allocation (Bellino 2010a [pers comm]).

Bellino 2007 *(Continued)*

Blinding of outcome assessment (detection bias) All outcomes	Low risk	"A psychiatrist provided pharmacotherapy. He was blind to which type of psychotherapy the patients were receiving [...] The assessments were performed by an investigator who was blind to the treatment methods." (Bellino 2007, p. 720)
Selective reporting (reporting bias)	Unclear risk	No indication for selective reporting, but Insufficient information to permit judgement of 'Yes' or 'No'.
Treatment adherence?	Low risk	"Both psychotherapists received supervision during the treatment to assess their adherence to the psychotherapy manuals." (Bellino 2007, p. 720)
Allegiance effect improbable?	Low risk	The authors seem neither to be associated with neither IPT nor CT.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	Low risk	Equal amounts of attention paid to both groups.

Bellino 2010

Study characteristics	
Methods	**design:** parallel-arm, randomised controlled trial
Participants	**sex:** 37/55 females (67.3%) **age:** combined treatment group: mean age 26.23 years, SD 6.4; pharmacotherapy group: mean age 25.86 years, SD 7.2 **location:** Italy **setting:** outpatient **exclusions:** concomitant diagnoses of Axis I or Axis II disorders; esp. schizophrenia or other psychotic disorders, bipolar disorder; lifetime diagnosis of delirium, dementia, amnestic disorder, other cognitive disorders, not using adequate methods of birth control if in childbearing age, receiving psychotropic drugs during last 2 months, psychotherapy in last 6 months **level of functioning/severity of illness:** mean CGI-S at baseline: 5.45, i.e. participants were "markedly ill"; participants had no comorbid axis-I or II comorbidities **BPD diagnosis according to:** DSM-IV-TR **means of assessment:** SCID-II
Interventions	**group 1 (EG):** combined therapy of fluoxetine (20 to 40 mg/d) plus weekly individual sessions of IPT adapted to BPD (IPT-BPD) **group 2 (CG):** single pharmacotherapy treatment with fluoxetine (20 to 40 mg/d), clinical management (medical appointments lasting 15 to 20 minutes every 2 weeks, dealing with clinical issues) **duration:** 32 weeks **concomitant psychotherapy:** eligible patients were not in psychotherapeutic treatment during the last 6 months prior to study entry

Bellino 2010 *(Continued)*

	concomitant pharmacotherapy: eligible patients were not receiving psychotropic drugs during the last two months prior to study entry
Outcomes	**outcomes considered in this review** **self-rated:** anxiety (HARS) **observer-rated:** BPD severity (BPDSI-IV-total), anger (BPDSI-IV-anger), affective instability (BPDSI-IV-affective instability), chronic feelings of emptiness (BPDSI-IV-emptiness), impulsivity (BPDSI-IV-impulsivity), self-harming behaviour (BPDSI-iV-parasuicidal behaviour score), interpersonal problems (BPDSI-IV-interpersonal relationships), avoidance of abandonment (BPDSI-IV-abandonment), identity disturbance (BPDSI-IV-identity disturbance), dissociation/stress-related paranoid ideation (BPDSI-IV-paranoid ideation), depression (Ham-D), mental health status (CGI-S) **time-points used here:** week 32 (post-treatment)
Notes	**analyses:** per protocol (27 randomised to fluoxetine + IPT-BPD, 28 to fluoxetine + CM; only data of the 22 completers in each group were analysed)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Randomization was performed using the web program Research Randomizer version 3.0 (Urbaniak and Plous, [...])." (Bellino 2010, p. 75)
Allocation concealment (selection bias)	Unclear risk	No further details.
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"Assessments were performed by an investigator who was blind to the treatment methods." (Bellino 2010, p. 76)
Selective reporting (reporting bias)	Unclear risk	No indication for selective reporting, but Insufficient information to permit judgement of 'Yes' or 'No'.
Treatment adherence?	High risk	"Patients in the IPT-BPD group were treated by a psychotherapist [...] who had at least 5 years of experience practising IPT" (Bellino 2010, p. 76). No further information, adherence seems not to have been monitored.
Allegiance effect improbable?	Low risk	The working group seems to be experienced in but not to be associated with IPT (cf. Bellino 2006; Bellino 2007).
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	High risk	More attention paid to EG participants.

Blum 2008

Study characteristics

Methods	**design:** randomised controlled trial
Participants	**sex:** 103/124 females, i.e. 83.1% **age:** 31.5 years on average, SD = 9.5

Blum 2008 *(Continued)*

	location: USA **setting:** outpatient **exclusions:** not speaking English, psychotic or primary neurological disorder, cognitively impaired patients, current substance abuse or dependence, participated in STEPPS treatment previously **level of functioning/severity of illness:** baseline CGI-S = 5.1 (SD = 0.8) in EG, baseline CGI-S = 4.9 (SD = 0.9) in CG; i.e. patients were "markedly ill" **BPD diagnosis according to:** DSM-IV **means of assessment:** SIDP-IV
Interventions	**group 1 (EG):** STEPPS: 20 2-hour weekly group therapy sessions + homework assignments + 1 session for family members or significant others; no individual therapy **group 2 (CG):** Treatment as usual (TAU): subjects were encouraged to continue their usual care, including individual psychotherapy, medication, and case management **duration**: 20 weeks **concomitant psychotherapy:** participants were encouraged to continue with ongoing concomitant treatments. 59% of all participants had an additional individual therapy (EG: 63%, CG: 54%; difference not significant) **concomitant pharmacotherapy:** 90% of subjects reported at least one psychotropic medication at baseline; on average, participants received 2.9 psychotropic medications, SD = 2.3 (EG: 3.0, SD = 2.5; CG: 2.7, SD = 2.1; difference not significant)
Outcomes	**outcomes considered in this review** **self-rated:** BPD total severity (BEST), Barratt Impulsiveness Scale (BIS), depression (BDI), general psychopathology (SCL-90-R-GSI) **observer-rated:** affective instability (ZAN-BPD-affective subscale), interpersonal problems (ZAN-BPD-disturbed relationships subscale), cognitive disturbance (ZAN-BPD-cognitive subscale), mental health status (CGI-S) **time-points used here:** week 20 (post treatment)
Notes	**analysis:** ITT of those actually having received allocated intervention, regardless of completion or non-completion. However, 40 participants that had been randomly allocated did not receive the allocated intervention and were not included in analyses. "Subjects with at least one postbaseline assessment were included in the analyses." (Blum 2008, p. 470).

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Subjects were assigned by coin toss" (Blum 2008, p. 469)
Allocation concealment (selection bias)	Low risk	No indication of bias.
Blinding of outcome assessment (detection bias) All outcomes	High risk	"While we intended to conduct blind assessments, we found it nearly impossible to maintain blindness. The convergence of both rater- and patient-administered scales suggests that this may not have been an important deficiency." (Blum 2008, p. 477).

Blum 2008 *(Continued)*

Selective reporting (reporting bias)	Unclear risk	Study protocol is available, but there is no information about primary or secondary outcomes. The authors report a broad range of outcomes, so there is no indication for selective reporting given. However, there is insufficient information to permit judgment of 'Yes' or 'No'.
Treatment adherence?	Low risk	"Adherence to the manual was rated on a 5-point scale [...] A score of 4 (good) or higher was considered acceptable. Two Ph.D.-level psychologists who were not involved with the randomized controlled trial but familiar with STEPPS rated 43 randomly selected video-taped session. The mean adherence score was 4.4 (SD = 0.8)."
Allegiance effect improbable?	High risk	There is no indication given for an allegiance effect. However, as some authors are founders of STEPPS, the treatment actually used in the experimental group, an allegiance effect seems not improbable.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	High risk	More attention paid to EG participants.

Bos 2010

Study characteristics	
Methods	**design:** multi-centre, parallel-arm, randomised controlled trial
Participants	**sex:** 86.1% female **age:** mean age 32.4 years (EG: 32.9, SD = 5.6; CG: 31.8, SD = 9.2) **location:** The Netherlands **setting:** outpatient **exclusions:** insufficient commend of Dutch language, intellectual disability, in coercive treatment, acute endangering self or others **level of functioning/severity of illness:** years of illness history 13.3 years (group 1) and 11.8 years (group 2). No further details. **BPD diagnosis according to:** DSM-IV **means of assessment:** SCID-II, PDQ-4+
Interventions	**group 1 (EG):** STEPPS-group program plus limited individual therapy (STEPPS + LIT; STEPPS: 18 weekly sessions and a single follow-up session 4 to 6 months after conclusion of the program, main topics: psychoeducation about BPD, emotion management skills, behaviour management skills; inclusion of near relatives and friends as "support group"; LIT: one session every other week, developed as adjunct to STEPPS group to help consolidate newly acquired skills in each patient's everyday life) **group 2 (CG):** treatment as usual (TAU, i.e. standard treatment for BPD offered at the participating sites, consisting of individual therapy from a psychotherapist, psychologist, or psychiatric nurse, offered every 1 to 4 weeks) **duration:** 4.5 months **concomitant psychotherapy:** STEPPS-related treatments like DBT or family groups for family members of the patients were not allowed; all participants were allowed to have contacts with social worker or another health care professional

Bos 2010 *(Continued)*

	concomitant pharmacotherapy: all participants were allowed to have (medication) contacts with a psychiatrist
Outcomes	**outcomes considered in this review** **self-rated:** BPD total severity (BPD-40), interpersonal problems (WHOQOL-BREF-social relationships), general psychopathology (SCL-90-R-dutch version) **observer-rated:** impulsivity (number of patients scoring above BPDSI-IV cut-off score), self-harming behaviour (number of patients scoring above BPDSI-IV parasuicide cut-off score) **time-points used here:** post-treatment, i.e. after the final of 18 weekly sessions
Notes	**analyses:** per protocol

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Allocation was determined by drawing of lots (equal numbers for both groups at each study site) some weeks before start of the STEPPS group after inclusion of all participants. (see van Wel 2009, p. 292)
Allocation concealment (selection bias)	Low risk	Randomisation was carried out by a research assistant. (see van Wel 2009, p. 292)
Blinding of outcome assessment (detection bias) All outcomes	High risk	"Interviews were conducted by research assistants who were not blind to treatment group assignment." (Bos 2010, p. 300)" Non-blindness of interviewers may have affected interviewer-assessed outcomes, i.e. BPDSI-IV impulsivity and parasuicide scores. All other outcomes were self-rated by participants.
Selective reporting (reporting bias)	Unclear risk	No indication for selective reporting, but Insufficient information to permit judgement of 'Yes' or 'No'.
Treatment adherence?	Low risk	"STEPPS therapists met twice a year under the supervision of expert trainers to evaluate the procedure and to preserve uniformity. Individual therapists in the STEPPS condition received a 1-day training and monthly phone supervision. After each session, individual therapists in both conditions completed a self-report questionnaire by which the content and frequency of the therapy contacts could be checked." (Bos 2010, p. 300)
Allegiance effect improbable?	Low risk	"[...] this RCT on STEPPS is the first done by others than its developers." (Bos 2010, p. 303)
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	High risk	More attention paid to EG.

Carter 2010

Study characteristics

Methods	**design:** parallel-arm, randomised controlled trial

Carter 2010 *(Continued)*

Participants	**sex:** 73/73 females (100%) **age:** mean age 42.5 years, SD = 6.1; eligible: 18-65 years of age **location:** Australia **setting:** outpatient **exclusions:** schizophrenia, bipolar affective disorder, psychotic depression, florid antisocial behaviour, developmental disability, disabling organic condition; "The psychiatrist assessor had the option of determining if any potential subjects were unsuitable for inclusion in therapy or unmotivated to participate, although there were no specific criteria for this exclusion." (Carter 2010, p. 164) **level of functioning/severity of illness:** all participants had a history of at least three self-reported self-harm episodes in the preceding 12 months **BPD diagnosis according to:** DSM-IV **means of assessment:** clinical interview, IPDE-Q
Interventions	**group 1 (EG):** DBT (weekly individual therapy, weekly group-based skills training, telephone access to an individual therapist, therapist supervision) modified insofar that telephone access was delivered using a group roster of DBT individual therapists in the daytime, but not contact with each participants's individual therapist, and the local psychiatric hospital at night; skills training groups dealt with all usual modules except of mindfulness **group 2 (CG):** TAU + Waiting List: participants were offered DBT treatment after a 6 month waiting period **duration:** 6 months (all participants were offered 12 months of DBT treatment, but the comparison between groups was restricted to the first 6 months of DBT vs. TAU+WL) **concomitant psychotherapy:** participants were asked to discontinue psychological therapy of any sort for at least the 12 month duration of DBT **concomitant pharmacotherapy:** not specified;
Outcomes	**outcomes considered in this review** **self-rated:** interpersonal problems (WHOQOL-BREF-social relationships), mental health status (Brief Disability Questionnaire - days out of role) **observer-rated:** number of patients with self-harming behaviour **time-points used here:** 6 months
Notes	**analyses:** per protocol (DBT group: 20 completers of treatment and self-reports out of 38 allocated to this group; TAU group: 31 completers of waitlist and self-reports out of 35 allocated)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	We used a computerised random number generator to generate allocations - placed into sealed opaque envelopes (in blocks of 8). Envelope drawn after baseline assessments complete. (Carter 2010a [pers comm])
Allocation concealment (selection bias)	Low risk	"Randomization was carried out by the research staff. [...] participants were allocated by selecton of sealed opaque envelopes." (Carter 2010, p. 164)
Blinding of outcome assessment (detection bias)	Low risk	"Outcomes were determined [...] by assessors blinded to allocation. [...] All reasonable attempts were made to maintain blindness to allocation status for

Carter 2010 *(Continued)*

All outcomes		these raters, but this could not achieve perfect blindness." (Carter 2010, pp. 164 et seq.)
Selective reporting (reporting bias)	Unclear risk	No indication for selective reporting, but Insufficient information to permit judgement of 'Yes' or 'No'.
Treatment adherence?	Unclear risk	"The intervention condition was based on the comprehensive DBT model, a team-based approach including [...] therapist supervision groups." (Carter 2010, p. 163 et seq.) "[...] possible inferiority of training of DBT therapists to that of those in other studies or inferior adherence to the DBT methods despite adequate training" (Carter 2010, p. 170) No mention of any objective means of assessment.
Allegiance effect improbable?	Low risk	No indication of an allegiance effect.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	High risk	More attention paid to EG participants.

Cottraux 2009

Study characteristics	
Methods	**design:** randomised controlled trial
Participants	**sex:** 50/65 females, i.e. 76.9% **age:** cognitive therapy (CT) group: mean age 34.3 years, SD 10.2; Rogerian supportive therapy (RST) group: mean age 32.6 years, SD 8.3 **location:** France **setting:** outpatient **exclusions:** age under 18 or over 60 years, psychotic disorders with current delusions, significant drug or alcohol addiction, antisocial behaviours, living too far from the study centres **level of functioning/severity of illness:** mean CGI-S at baseline: 5.21, i.e. "markedly ill" **BPD diagnosis according to:** DSM-IV **means of assessment:** structured interview screening form, DIB-R
Interventions	**group 1 (EG):** cognitive therapy: individual 1-hour sessions, weekly for 6 months (24 sessions), every fortnight for another 6 months (12 sessions) **group 2 (CG):** Rogerian supportive therapy: individual 1-hour sessions, weekly for 6 months (24 sessions), every fortnight for another 6 months (12 sessions) **duration**:1 year **concomitant psychotherapy:** eligible patients were not to be following psychotherapy at the time of the study

Cottraux 2009 *(Continued)*

	concomitant pharmacotherapy: participants could keep their medication as long as they accepted to have it monitored by the principal investigator
Outcomes	**outcomes considered in this review** **self-rated:** impulsivity (Eysenck Impulsivity Venturesomeness Empathy Questionnaire IVE - impulsivity), suicidality (Beck Hopelessness Scale BHS), depression (BDI), anxiety (BAI) **observer-rated:** self-harming behaviour (SHBCL), mental health status (CGI-S) **time-points used here:** week 52 (post-treatment)
Notes	**analyses:** per protocol, i.e. treatment completers (of 33 people randomised to CT and 32 to RST, 20 and 18 completed, resp.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"The randomisation process used blocks of 4 patients for each centre, and was organised by the Lyon University Hospital's Biostatistics Department." (Cottraux 2009, p. 309)
Allocation concealment (selection bias)	Low risk	"The allocation was confidential and delivered via phone call [of the Biostatistics Department] to the secretary of each centre." (Cottraux 2009, p. 309)
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"Psychologists who had not taken part in the treatments performed the asessment. They had no information on either the randomisation or the treatment and did not attend the team meetings about the patients." (Cottraux 2009, p. 310) "[...] evaluators may have received inadvertent or indirect information from the patients about the treatment underway. The evaluators' blindness was not tested." (Cottraux 2009, p. 313)
Selective reporting (reporting bias)	Low risk	Study protocol available (NCT00131781). No indication for selective reporting.
Treatment adherence?	Low risk	"At the end of each session, the therapists were to complete a checklist of the techniques they used, which was revised and discussed with the prinicipal investigator [...] weekly supervision session." (Cottraux 2009, p. 309).
Allegiance effect improbable?	Low risk	There is no indication given for an allegiance effect. None of the authors was, to our knowledge, among the developers of any of the treatments under investigation.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	Low risk	Equal amounts of attention paid to both groups.

Davidson 2006

Study characteristics

Methods	**design:** multi-centre, parallel-arm RCT (randomisation stratified by study centre and by pre-defined high or low episodes of self-harm; randomised permuted blocks of size 4)

Davidson 2006 *(Continued)*

Participants	**sex:** 89/106 females (84.0%) **age:** 31.9 years on average, SD = 9.1 **location:** UK **setting:** outpatient **exclusions:** patients currently receiving in-patient treatment for a mental state disorder, currently receiving a systematic psychological therapy of specialist service, insufficient knowledge of English; evidence of organic illness, mental impairment, alcohol or drug dependence, schizophrenia or bipolar affective disorder; drug or alcohol abusing patients were eligible for inclusion **level of functioning/severity of illness:** mean social functioning (SFQ) score at baseline 14.6 (SD = 3.9), **BPD diagnosis according to:** DSM-IV; patients had to have received either in-patient psychiatric services or an assessment at accident and emergency services or an episode of deliberate self-harm (either suicidal act or self-mutilation) in the previous 12 months **means of assessment:** SCID
Interventions	**group 1 (EG):** Cognitive Behaviour Therapy + treatment as usual (CBT + TAU), up to 30 sessions, 27 sessions (SD = 13) on average **group 2 (CG):** treatment as usual (TAU; inpatient and outpatient hospital services, A&E services, community based services, primary and community care services such as general practitioner, practice of Community Psychiatric Nurse) **duration**: one year **concomitant psychotherapy:** patients currently receiving in-patient treatment for a mental state disorder or a systematic psychological therapy or specialist service were excluded. All other kinds of treatments a patient would have received if the trial had not been in place (e.g., general practitioner care, contact with community mental health teams) were allowed. 90% of participants were in contact with mental health services. **concomitant pharmacotherapy:** may have been comprised in TAU. There are no details how many of the study participants actually received psychotropic medical treatment.
Outcomes	**outcomes considered in this review** **self-rated:** interpersonal problems (IIP-SC), depression (BDI-II), anxiety (STAI-trait), general psychopathology (BSI-GSI) **observer-rated:** suicidality (mean number of patients with suicidal act during previous 12 months), parasuicidality (number of patients with self-harming behaviour during previous 12-month period) **time-points used here:** 12 months (post-treatment)
Notes	**analyses:** ITT

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"The randomization schedules were generated by the study center at [...] Glasgow University, and kept securely and confidentially by the trial coordinator at the Study Coordinating Centre." (Davidson 2006a, p. 437)
Allocation concealment (selection bias)	Low risk	"The randomization schedules were [...] kept securely and confidentially by the trial coordinator [...] The trial coordinator informed the referring agent of

Davidson 2006 *(Continued)*

		the result of randomization immediately and in writing, and then contacted the CBT therapist/s in each area with the patients details so that CBT therapy could be initiated." (Davidson 2006a, p. 437). 106 patients enrolled and randomised
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"The research assistants on each site carry out all assessments and are blind to treatment group allocation. In addition, research assistants request that patients do not mention any details of any psychological treatment they may be receiving. [...] The research assistants responsible for the recording of outcomes were unaware of the treatment allocated or received." (Davidson 2006a, p. 439).
Selective reporting (reporting bias)	Low risk	Study protocol available (ISRCTN86177428). No indication for selective reporting.
Treatment adherence?	Low risk	"All therapists received training in the protocol at the beginning of the trial and regular meetings of all therapists were held to ensure consistency of approach across the sites. In addition, all therapists received weekly supervision from CBT experts at each site." (Davidson 2006, p. 452)
Allegiance effect improbable?	High risk	There is no indication given for an allegiance effect. However, as one of the authors is the founder of the two EG treatment, an allegiance effect seems not improbable.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	High risk	More attention paid to EG participants.

Doering 2010

Study characteristics	
Methods	**design:** randomised controlled trial
Participants	**sex:** 104/104 females (100%) **age:** 27.3 years on average **location:** Germany, Austria **setting:** outpatient **exclusions:** schizophrenia, bipolar I and Ii disorder with a major depressive, manic, or hypomanic episode during the previous six months, substance dependency (including alcohol) during the previous six months, subjects meeting three or more DSM-IV criteria for antisocial personality disorder, organic pathology, mental retardation, insufficient command of the German language **level of functioning/severity of illness:** mean GAF score at baseline was 52.3, i.e. patients had moderate symptoms OR any moderate difficulty in social, occupational, or school functioning. **BPD diagnosis according to:** DSM-IV **means of assessment:** SCID
Interventions	**group 1 (EG):** Transference-Focused Psychotherapy (TFP; i.e. twice weekly individual psychotherapy sessions)

Doering 2010 *(Continued)*

	group 2 (CG): Treatment by Experienced Community Psychotherapist (TBE; i.e. treatment was delivered by therapists known as experienced and particularly interested in BPD patients by the local administrators; therapists were free to choose the frequency of sessions according to their method; therapists' main orientations were: psychoanalytic (19), behavioral (17), client-centered (4), systematic (4), Gestalt (1), dynamic group (1), psychodynamic (1); psychotherapies continued if deemed necessary by the therapist and the patient and if paid by the insurance company **duration:** 12 months **concomitant psychotherapy:** psychotherapy other than the study treatment was not allowed in the EG **concomitant pharmacotherapy:** medication was not restricted but registered continuously
Outcomes	**outcomes considered in this review** **self-rated:** depression (BDI), anxiety (STAI-trait), general psychopathology (BSI-GSI) **observer-rated:** BPD severity (mean number of DSM-IV diagnostic criteria for BPD), suicidality (mean number of patients with suicidal act during previous 12 months), self-harming behaviour (number of patients with self-harming behaviour during previous 12-month period) **time-points used here:** 12 months (post treatment)
Notes	**analyses:** ITT, LOCF

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Use of random numbers, matching after inclusion of 35th patient according to severity of self-harming behaviour during the last year and personality organisation (Doering 2010, personal communication.
Allocation concealment (selection bias)	Low risk	"The results of the first assessments [screening for inclusion criteria] were sent to a researcher outside the two study centers who performed the randomization." (Doering 2010, p. 5) . "After randomization patients were referred to a therapist." (Doering 2010, p. 6)
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"Research assistants who conducted assessments before randomization and after one year of treatment were blinded for the therapy delivered." (Doering 2010, p. 7)
Selective reporting (reporting bias)	Low risk	Study protocol available (NCT00714311). No indications for selective reporting.
Treatment adherence?	Low risk	"Video recordings of all [EG] sessions were performed and used in the group supervision. [...] Every case was supervised at least every four to six weeks. [...] Experienced community psychotherapists [i.e., CG therapists] attended supervisions according to their usual routine." (Doering 2010, p. 10f.) "For the assessment of adherence and competence of the transference-focused psychotherapists a German translation of a specific Rating of Adherence and Competence [...] was used. [...] The rating was performed by the supervisor after every video-guided supervision of a therapy session." (Doering 2010, p. 11)
Allegiance effect improbable?	Unclear risk	Some of the study authors are experienced TFP therapists, but none was personally involved in treatment development.
Attention bias: equal amounts of attention to all	Low risk	Less attention may have been paid to CG patients depending on the CTBE therapist's main orientation; however, every participant was provided the specifically full amount of necessary attention.

Doering 2010 *(Continued)*

groups (obligatory treatment components)?	

Farrell 2009

Study characteristics	
Methods	**design:** randomised controlled trial
Participants	**sex:** 32/32 females (100%) **age:** 35.6 years on average **location:** USA **setting:** outpatient **exclusions:** axis I diagnosis of a psychotic disorder confirmed by an open clinical interview, below average IQ **level of functioning/severity of illness:** mean baseline GAF score was 49.0, i.e. patients had "serious symptoms OR any serious impairment in social, occupational, or school functioning" **BPD diagnosis according to:** diagnostic criteria unclear **means of assessment:** Diagnostic Interview for Personality Disorders Revised, Borderline Syndrome Index
Interventions	**group 1 (EG):** Group Schema Focused Therapy + individual psychotherapy treatment as usual (GSFT + PTAU); thirty sessions of schema therapy group program in addition to weekly individual psychotherapy in the community (i.e. eclectic in orientation, primarily supportive) **group 2 (CG):** individual psychotherapy treatment as usual (PTAU), eclectic in orientation and primarily supportive; GSFT to be received after 14-month waiting period **duration:** eight months **concomitant psychotherapy:** all participants were in individual psychotherapy (eclectic, mainly supportive) throughout the study **concomitant pharmacotherapy:** psychopharmacological treatment was not controlled for; all participants were stable on at least one psychotropic medication at the start of the study, mostly low doses of antipsychotics and/or SSRI
Outcomes	**outcomes considered in this review** **self-rated:** BPD severity (BSI), general psychopathology (SCL-90-R-GSI) **observer-rated:** affective instability (DIB-R-affect subscale), impulsivity (DIB-R-impulsive subscale), interpersonal problems (DIB-R-interpersonal subscale), dissociation/stress-related paranoia (DIB-R-cognitive subscale), mental health status (GAF) **time-points used here:** eight months (post-treatment)
Notes	**analyses:** per protocol (EG: N = 16, CG: N = 12)

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**

Farrell 2009 *(Continued)*

Random sequence generation (selection bias)	Low risk	"Patients were randomly assigned using a random number table" (Farrell 2009, p. 319)
Allocation concealment (selection bias)	Unclear risk	No further details. After screening for eligibility of 40 patients, N = 8 were excluded. Reasons for exclusion are only given for 3 of them (1 declined participation, 2 did not meet inclusion criteria).Thus, N = 16 were allocated to EG, N = 16 to CG.
Blinding of outcome assessment (detection bias) All outcomes	High risk	"The DIB-R structured interviews were conducted by two Ph.D. Clinical Psychologists not involved in treatment delivery. Efforts were made to keep them blind to treatment group membership, but for 10% of the subjects the blind was broken due to patient report." (Farrell 2009, p. 319) "Therapists were given a GAFS [Global Assessment of Function Scale] checklist to use so that the anchors for assigning scores were in front of them when they recorded their ratings. They were chosen as raters since they were removed from the hypotheses of the study, although not blind to their patients's group membership and no inter-rater reliability was possible." (Farrell 2009, p. 319) Overall, observer-rated outcomes were not assessed by blind raters.
Selective reporting (reporting bias)	Unclear risk	No indication for selective reporting, but Insufficient information to permit judgement of 'Yes' or 'No'.
Treatment adherence?	Low risk	"Two of the three groups had the two program developers as therapists and the third had one developer and one clinical psychologist [...] Weekly supervision meetings took place during the course of the study and random videotapes of sessions were reviewed for fidelity by the program developers. The manual developed for the study acted as an additional fidelity check. (Farrell 2009, p. 322)
Allegiance effect improbable?	High risk	"Two of the three groups had the two program developers as therapists and the third had one developer and one clinical psychologist" (Farrell 2009, p. 322)
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	High risk	More attention paid to EG participants.

Giesen-Bloo 2006

Study characteristics	
Methods	**design:** randomised controlled trial
Participants	**sex:** 80/86 females (93.0%) **age:** 30.6 years on average **location:** The Netherlands **setting:** outpatient **exclusions:** BPD not main diagnosis, psychotic disorders (except short, reactive psychotic episodes), bipolar disorder, dissociative identity disorder, antisocial personality disorder, attention-deficit/hyperactivity disorder, addiction of such severity that clinical detoxification was indicated (after which entering treatment was possible), psychiatric disorders secondary to medical conditions, mental retardation, no Dutch literacy

Giesen-Bloo 2006 *(Continued)*

	level of functioning/severity of illness: mean number of SCID II BPD criteria met at baseline: group 1: 6.70, SD = 0.16; group 2: 7.12, SD = 0.19 **BPD diagnosis according to:** DSM-IV **means of assessment:** SCID, BPDSI-IV
Interventions	**group 1 (EG):** Schema-Focused Therapy (SFT), 50-minute sessions twice a week **group 2 (CG):** Transference-Focused Psychotherapy (TFP), 50-minute sessions twice a week **duration:** up to three years, depending on treatment success **concomitant psychotherapy:** no additional psychotherapeutic treatment allowed **concomitant pharmacotherapy:** Prescribing according to good clinical practice, similar to American Psychiatric Association guidelines, by psychiatrists from different orientations (2 SFT therapists, 3 TFP therapists). At baseline, 74.0% of patients used psychotropic medication
Outcomes	**outcomes considered in this review** **self-rated:** none **observer-rated:** Borderline severity (BPDSI-IV-total), general psychopathology (SCL-90-R-dutch version) **time-points used here:** 36 months (post-treatment)
Notes	**analyses:** ITT, LOCF

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Randomization to SFT or TFP was stratified across 4 community mental health centers and was performed [...] after the adaptive biased urn procedure" (Giesen-Bloo 2006, p. 650)
Allocation concealment (selection bias)	Low risk	"Randomization to SFT or TFP [...] was performed by a study independent person [...] We used this procedure (1) to keep allocation at each site unpredictable until the last patient to avoid unintentionally affecting ongoing screening procedures [...]." (Giesen-Bloo 2006, p. 650) 173 patients were screened for eligibility. 85 of them were excluded, reasons are given (40 declined participation, 24 did not meet inclusion criteria, 19 met exclusion criteria, 2 had insufficient availability). 88 randomised, of 45 allocated to SFT, 44 were included in analyses (1 patient excluded owing to unreliable assessments due to increased patient blindness), of 43 allocated to TFP, 42 were included in analyses (1 patient excluded because untraceable after randomisation; never met or spoke to therapist)
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"assessments were made [...] by independent research assistants [...] Study researchers, screeners, research assistant, and SFT/TFP therapists were masked to treatment allocation during the screening procedure and the first assessment" (Giesen-Bloo 2006, p. 650) "most research assistants learned their patients' treatment allocation as the study progressed, as patients talked about their treatment and therapists. However, the results of secondary computer-assessed self-report measures [...] concurred with the observer-rated (interview) findings, making it unlikely that results can be contributed to knowledge of treatment allocation." (Giesen-Bloo 2006, p. 657)

Giesen-Bloo 2006 *(Continued)*

Selective reporting (reporting bias)	Unclear risk	No indication for selective reporting, but Insufficient information to permit judgement of 'Yes' or 'No'.
Treatment adherence?	Low risk	"Weekly local supervision [...], a 1-day central supervision every 4 months, and a 2-day central supervision every 9 months. [...] Treatment integrity was monitored by means of supervision. All the raters were independent of the study and masked to treatment outcome. One psychologist, masked to allocation, listened to 1 randomly selected tape of each patient, then stated the treatment administered [...] Other trained therapists for each orientation assessed the TFP Rating of Adherence and Competence Scale or the SFT Therapy Adherence and Competence Scale for BPD." (Giesen-Bloo 2006, p. 650-651)
Allegiance effect improbable?	Low risk	Experts from both therapies supervised therapists.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	Low risk	Equal amounts of attention spent to both groups.

Gratz 2006

Study characteristics	
Methods	**design:** parallel-arm randomised controlled trial
Participants	**sex:** 25/25 females (100%) **age:** 33.3 years on average (SD = 9.98) **location:** USA **setting:** outpatient **exclusions:** diagnosis of a psychotic disorder, bipolar I disorder, substance dependence, reporting one or more suicide attempts rated as having a "high" risk of death or greater within the past 6 months, reporting greater than "some chance" of attempting suicide within the next year, participation in a DBT skills group within the past 6 months; for inclusion, a history of repeated deliberate self-harm, with at least one episode in the past 6 months was required **level of functioning/severity of illness:** 7.50 BPD criteria were met on average **BPD diagnosis according to:** DSM-IV **means of assessment:** Diagnostic Interview for DSM-IV Personality Disorders (DIPD-IV, Zanarini 1996)
Interventions	**group 1 (EG):** Emotion regulation group intervention + treatment as usual, treatment by individual therapist required (ERG+TAU; 14 weekly 1.5 hour sessions; acceptance-based, behavioural group, combining elements of Acceptance and Commitment Therapy (ACT) and Dialectical Behaviour Therapy (DBT) as well as aspects of emotion-focused psychotherapy and traditional behaviour therapy) **group 2 (CG):** Treatment as usual + Waiting List (TAU+WL; treatment by individual therapist required) **duration**: 14 weeks **concomitant psychotherapy:** Participants were required to have an individual therapist; average number of individual therapy per week was 1.38 hours. 41% of therapists were clinical psychologists, 27% were psychiatrists, 32% were licensed clinical social workers

Gratz 2006 *(Continued)*

	concomitant pharmacotherapy: Participants received 3.64 psychiatric medications on average
Outcomes	**outcomes considered in this review** **self-rated:** BPD severity (BEST), affective instability (DERS-emotion dysregulation), impulsivity (DERS-impulse control), self-harming behaviour (DSHI-frequency score), depression (DASS-depression), anxiety (DASS-anxiety) **observer-rated:** none **time-points used here:** 14 weeks (post-treatment)
Notes	**analyses:** per protocol (EG: N = 16, CG: N = 12)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Participants [...] were matched on level of emotion dysregulation and number of lifetime incidents of self-harm and randomly assigned to either the group treatment plus TAU condition or the TAU waitlist condition." (Gratz 2006, p. 27)
Allocation concealment (selection bias)	Unclear risk	24 were included and randomised. 2 drop-outs, one from each condition, no reasons given. Finally, analyses refer to N = 22 patients, N = 12 in EG, N = 10 in TAU condition.
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"Research team members were not blind to condition; however, all outcome measures were self-report, and there was limited interaction between participants and assessors." (Gratz 2006, p. 30) Outcomes are not likely to be influenced by lack of blinding.
Selective reporting (reporting bias)	Unclear risk	No indication for selective reporting, but Insufficient information to permit judgement of 'Yes' or 'No'.
Treatment adherence?	Unclear risk	Treatment approach was developed by the first author who also was the therapist; no further information.
Allegiance effect improbable?	High risk	First author developed the treatment approach investigated here.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	High risk	More attention paid to EG participants.

Gregory 2008

Study characteristics

Methods	**design:** randomised controlled trial
Participants	**sex:** 24/30 females (80%) **age:** 28.7 years on average (SD = 7.7) **location:** USA

Gregory 2008 *(Continued)*

	setting: outpatient **exclusions:** schizophrenia, schizoaffective disorder, mental retardation, neurological condition that may produce secondary psychiatric symptoms (e.g., stroke, multiple sclerosis, partial complex seizures, or traumatic brain injury) **level of functioning/severity of illness:** "Only 10 participants (33%) were engaged in part-time or full-time employment (Hollingshead categories 1-7)" (Gregory 2008, p. 30) **BPD diagnosis according to:** DSM-IV; in addition, a comorbid diagnosis of active alcohol abuse or dependence (not in full sustained remission) was required for inclusion **means of assessment:** SCID
Interventions	**group 1 (EG):** Dynamic deconstructive psychotherapy (DDP; weekly individual sessions over 12 to 18 months; DDP participants were also encouraged to participate in some form of group therapy, usually with interpersonal focus or 12-step; about one quarter did attend a professionally led group therapy for the first 6 months but none by 12 months) **group 2 (CG):**Treatment as usual (TAU; if not already in treatment, participants were referred to an alcohol rehabilitation centre and were also given names of psychiatric clinics and therapists in the community; they were also allowed to keep their current psychotherapist, if any) **duration:** post assessments were done after 12 months; DDP treatment could continue up to 18 months, however **concomitant psychotherapy:** If not already in treatment, CG patients were referred to an alcohol rehabilitation centre and given names of clinics an therapists in the community. If they had one, TAU participants were allowed to keep their current psychotherapist. EG participants were required to end treatment with their present psychotherapist, unless that person served primarily as a case manager or substance use counsellor; 70.0% of participants received individual psychotherapy or alcohol counselling; 30.0% received an additional professional group therapy, 36.7% participated in self-help groups **concomitant pharmacotherapy:** 63.3% of all participants received separate medication management, the mean number of psychotropic medications was 2.9; medication management was provided by the DDP therapist for the EG group patients according to the American Psychiatric Association guidelines for BPD, medications specifically targeting substance use disorders were not prescribed
Outcomes	**outcomes considered in this review** **self-rated:** BPD severity (BEST), dissociation/stress-related paranoia (DES), depression (DASS-depression), anxiety (DASS-anxiety) **observer-rated:** self-harming behaviour (number of patients with parasuicide during previous 3-month period) **time-points used here:** 12 months (post-treatment)
Notes	**analyses:** per protocol (EG: 10/15 allocated; CG: 9/15 allocated)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"A minimization method was employed for group assignment [...] ensuring comparability of the two groups on key variables or factors [...] The specific factors that we adjusted for included: age, gender, alcohol abuse versus dependence, current alcohol use, antisocial personality disorder, inpatient utilization, and number of parasuicides." (Gregory 2008, p. 31-32)

Gregory 2008 *(Continued)*

Allocation concealment (selection bias)	Low risk	"participants were assigned by the research coordinator to either the investigation treatment or to treatment as usual (TAU) in the community" (Gregory 2008, p. 31)
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"An independent, trained research assistant administered the primary and secondary outcome measures [...] blind to treatment group at the time of interviews, but blindedness was only partial, as she was able to correctly guess group assignment 67% of the time (50% correct guesses were expected by chance alone)." (Gregory 2008, p. 35)
Selective reporting (reporting bias)	Low risk	Study protocol available (NCT00145678). No indications for selective reporting.
Treatment adherence?	Low risk	"Six therapists provided DDP, including the principal investigator [who is one of the two developers of DDP] (PI; N = 6 study participants) and five psychiatry residents (N = 9 participants) who were in their third year of residency training [...] After achieving competency, adherence to technique and treatment integrity for resident therapists was assured through weekly group supervision [...] and individual supervision of videotaped sessions with the PI [principal investigator, developer of DDP] every other week throughout treatment." (Gregory 2008, p. 34)
Allegiance effect improbable?	High risk	Both developers of the experimental treatment are among study authors.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	Low risk	Though participants of the control group did not receive an alternate, obligatory control treatment, but were free to join alternative treatments, they did not receive less professional attention. Indeed, "[...] DDP participants received fewer overall treatment contact hours than did participants receiving community care." (Gregory 2008, p. 39). Also cf. Gregory 2008, Tab. 2, p. 33

Koons 2001

Study characteristics	
Methods	**design:** randomised controlled trial
Participants	**sex:** 28/28 females (100%) **age:** 35.0 years on average **location:** USA **setting:** outpatient **exclusions:** schizophrenia, bipolar disorder, substance dependence, antisocial personality disorder **level of functioning/severity of illness:** At baseline, study participants met 6.8 out of 8 DSM-III-R BPD criteria on average **BPD diagnosis according to:** DSM-III-R **means of assessment:** SCID
Interventions	**group 1 (EG):** Dialectical Behavior Therapy (DBT; weekly individual therapy, weekly group skills training)

Koons 2001 *(Continued)*

	group 2 (CG): treatment as usual (TAU; weekly individual therapy with a clinician, possibility of attending one or more supportive and psychoeducational groups, 4 participants did) **duration:** 6 months **concomitant psychotherapy:** all participants received individual psychotherapy (TAU: 4 of the therapists described themselves as cognitive-behavioural in primary orientation, 2 as psychodynamic, and 2 as eclectic). Group psychotherapy was part of DBT treatment while TAU patients were offered several group therapies at the hospital (4 out of 10 actually attended group therapy). **concomitant pharmacotherapy:** all participants, except one in the DBT condition, received pharmacotherapy(including SSRIs in each case and/or an additional mood stabiliser or low-dose neuroleptic in "some" cases; Koons 2001, p. 376) pharmacotherapy and psychotherapy were provided by separate clinicians in all but one TAU case
Outcomes	**outcomes considered in this review** **self-rated:** anger (STAXI-anger-out), suicidality (BSS), dissociation (DES), depression (BDI) **observer-rated:** BPD severity (mean number of DSM-IV diagnostic criteria for BPD), self-harming behaviour (mean number of parasuicides during 3 months period), anxiety (HARS) **time-points used here:** 6 months (i.e. post-treatment)
Notes	**analyses:** per protocol (EG: N = 10; CG: N = 10)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"28 women were randomized to treatment." (Koons 2001, p. 374). No further information given.
Allocation concealment (selection bias)	Unclear risk	No further details. 28 participants were randomised. 8 were not included in analyses due to not completing treatment (reasons: 2 did not attend the first appointment, 2 in TAU and 3 in DBT dropped out after more than one appointment in the first half of treatment citing distance from the medical centre as reason) Analyses refer to N = 10 patients in the DBT and N = 10 patients in the TAU group.
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"Assesment interviews were conducted by two psychology interns who [...] were unaware of subjects' treatment condition." (Koons 2001, p. 376)
Selective reporting (reporting bias)	Unclear risk	No indication for selective reporting, but Insufficient information to permit judgement of 'Yes' or 'No'.
Treatment adherence?	Low risk	EG therapists: "All [DBT therapists] attended the weekly consultation group, and several received additional individual supervision from each other. Two clinicians received supervision briefly from a senior trainer from Linehan's group. [...] All individual and group sessions were videotaped for later coding for adherence using the DBT Expert Rating Scale [...] At the end of treatment, a sample of eight tapes from each therapist-patient dyad, including the first session and seven others selected randomly, was coded for adherence." (Koons 2001, p. 377) CG therapists: "Five [out of eight TAU] clinicians [...] received weekly supervision on their cases from attending psychiatrists or staff psychologists." (Koons 2001, p. 378)

Koons 2001 *(Continued)*

Allegiance effect improbable?	Low risk	No indication given.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	Low risk	Equal amounts of attention paid to both groups.

Linehan 1991

Study characteristics	
Methods	**design:** randomised controlled trial
Participants	**sex:** 61/61 females (100%) **age:** women between 18 and 45 years were eligible, no further details **location:** USA **setting:** outpatient **exclusions:** schizophrenia, bipolar disorder, substance dependence, mental retardation **level of functioning/severity of illness:** **BPD diagnosis according to:** DSM-III **means of assessment:** DIB
Interventions	**group 1 (EG):** Dialectical Behavior Therapy (DBT; weekly individual therapy, weekly group therapy, telephone contact with the individual therapist between sessions) **group 2 (CG):** Treatment as usual in the community (TAU; all subjects were given alternative therapy referrals, usually by the original referral source; 9 had stable individual therapy for the year **duration:** 12 months **concomitant psychotherapy:** 13 out of 22 TAU participants were in ongoing individual psychotherapy at pretreatment, 9 out of 22 TAU participants had stable individual therapy for the year. **concomitant pharmacotherapy:** "Subjects had to consent to taper off psychotropic medications before entering the study. However, once in the study, failure to terminate or resuming use of medication was not cause for removal from the study." (Linehan 1991, p. 1061)
Outcomes	**outcomes considered in this review** **self-rated:** **observer-rated:** Number of patients with self-harming behaviour during previous 12-month period, **time-points used here:** 12 months (post-treatment)
Notes	**analyses:** per protocol (EG: N = 22; CG: N = 22)

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**

Linehan 1991 *(Continued)*

Random sequence generation (selection bias)	Low risk	"Subjects were matched on the number of lifetime parasuicides and psychiatric hospitalization, age, and good vs poor clinical prognosis (with a subthreshold diagnosis on schizophrenia or substance dependence constituting poor prognosis) and randomly assigned to a treatment condition." (Linehan 1991, p. 1061)
Allocation concealment (selection bias)	Unclear risk	No further details. 10 dropped out during pretreatment assessment (EG: N = 5, CG: N = 5) 7 were dropped following pretreatment assessment for refusal or inability to meet study conditions (EG: N = 3, CG: N = 4) 2 EG participants quit the study with four or fewer DBT sessions and were dropped from all analyses other than treatment maintenance analyses Major analyses were conducted for 44 participants, N = 22 in EG and N = 22 in CG treatment
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"Screening and assessment interviews were administered by a team of 13 research assessors. Every effort was made to keep the assessors blind about treatment condition." (Linehan 1991, p. 1061)
Selective reporting (reporting bias)	Unclear risk	No indication for selective reporting, but Insufficient information to permit judgement of 'Yes' or 'No'.
Treatment adherence?	Low risk	"Dialectical behavior therapy was supervised by the senior author (M.M.L.) who trained all therapists, listened to audiotapes at regular intervals, and conducted weekly individual and group supervision." (Linehan 1991, p. 1061)
Allegiance effect improbable?	High risk	The senior author (M.M.L.) is the founder of DBT. However, there are no indications for a systematic bias given.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	High risk	More attention spent to EG.

Linehan 1994

Study characteristics	
Methods	**design:** randomised controlled trial
Participants	**sex:** 26/26 (100%) **age:** 26.7 years on average (SD=7.8) **location:** USA **setting:** outpatient **exclusions:** subjects currently meeting criteria for schizophrenia, bipolar disorder, primary substance dependence, mental retardation **level of functioning/severity of illness:** mean pretreatmen GAS scores: DBT 37.73 (SD=7.53), TAU 33.77 (SD=9.50), i.e. "some impairment in reality testing or communication OR major impairment in several areas, such as work or school, family relations, judgment, thinking or mood"

Linehan 1994 *(Continued)*

	BPD diagnosis according to: DSM-III-R **means of assessment:** SCID, DIB-R
Interventions	**group 1 (EG):** Dialectical Behavior Therapy (DBT; weekly individual behavioural psychotherapy, weekly psychoeducational skills training groups) **group 2 (CG):** Treatment as usual (TAU; subjects received alternative therapy referrals and were allowed to participate any type of treatment available in the community) **duration:** 12 months **concomitant psychotherapy:** patients assigned to DBT treatment had to terminate other professional mental health care **concomitant pharmacotherapy:** No between-group differences in number of subjects using psychotropic medications at pretreatment (use of: antidepressants, anticonvulsants, lithium, anxiolytics). DBT participants should taper off psychotropic medications as one goal of therapy, and eight out of 13 discontinued medication before start of treatment. The remaining five DBT subjects reported using a mean of 1.80 medications (sedatives, antidepressants, anxiolytics, lithium) over the treatment year, while nine out of 13 TAU subjects reported using a mean of 3.89 different medications (antidepressants, anxiolytics, neuroleptics, sedatives, anticonvulsants).
Outcomes	**outcomes considered in this review** **self-rated:** anger (STAXI-trait) **observer-rated:** mental health status (GAS) **time-points used here:** 12 months (post treatment)
Notes	**analyses:** per protocol (EG: N=13; CG: N=13)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"assignment of subjects to treatment conditions [...] described in detail in the original outcome study [i.e., Linehan 1991]" (Linehan 1994, p. 1772): "Subjects were matched on the number of lifetime parasuicides and psychiatric hospitalization, age, and good vs poor clinical prognosis (with a subthreshold diagnosis on schizophrenia or substance dependence constituting poor prognosis) and randomly assigned to a treatment condition." (Linehan 1991, p. 1061) No further details.
Allocation concealment (selection bias)	Unclear risk	No further details. 26 women were included, data set for 26 subjects (DBT: N = 13, TAU: N = 13) provided
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"Interviews blind to treatment conditions" (Linehan 1994, p. 1772)
Selective reporting (reporting bias)	Unclear risk	No indication for selective reporting, but Insufficient information to permit judgement of 'Yes' or 'No'.
Treatment adherence?	Low risk	No details provided if supervision and/or adherence ratings had been conducted. However, the same study design was used as for Linehan 1991 ("two cohorts", cf. Linehan 1994, p. 1772), where regular supervision was explicitely

Linehan 1994 *(Continued)*

		defined (cf. Characteristics of included studies, Risk of bias table for Linehan 1991).
Allegiance effect improbable?	High risk	"The study was conducted at the institution where the treatment was developed." (Linehan 1994, p. 1775)
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	High risk	More attention spent to EG.

Linehan 2006

Study characteristics	
Methods	**design:** randomised controlled trial
Participants	**sex:** 101/101 females (100%) **age:** 29.3 years on average, SD = 7.5 **location:** USA **setting:** outpatient **exclusions:** lifetime diagnosis of schizophrenia, schizoaffective disorder, bipolar disorder, psychotic disorder not otherwise specified, mental retardation; seizure disorder requiring medication, mandate to treatment, need for primary treatment for another debilitating condition **level of functioning/severity of illness:** **BPD diagnosis according to:** DSM-IV **means of assessment:** SCID, IPDE
Interventions	**group 1 (EG):** Dialectical Behavior Therapy (DBT, i.e. weekly individual psychotherapy, group skills training, telephone consultation) **group 2 (CG):** non-behavioural Community Treatment by Experts (CTBE; eligible therapists were nominated by community mental health leaders as experts in treating difficult clients; therapists were asked to provide the same type and dose of therapy that they believed was most suited to the patient, with a minimum of 1 scheduled individual session per week; the therapists described themselves as "eclectic but nonbehavioral" or "mostly psychodynamic", cognitive behaviour therapists were not eligible; therapists were free to attend a clinical supervision group at the Seattle Psychoanalytic Society and Institute) **duration:** 12 months **concomitant psychotherapy:** no information given regarding further concomitant psychotherapy **concomitant pharmacotherapy:** There were no differences in types or amounts of psychotropic medication use at pretreatment, and the use of psychotropic medications decreases significantly more in the EG than the CG. No further details.
Outcomes	**outcomes considered in this review** **self-rated:** suicidality (SBQ) **observer-rated:** depression (Ham-D-17)

Linehan 2006 *(Continued)*

	time-points used here: 12 months, i.e. post-treatment
Notes	**analyses:** ITT (except of training and pilot cases)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Using a computerized adaptive minimization randomization procedure, eligible subjects were matched to treatment condition on 5 primary prognostic variables: (1 and 2) the number of lifetime suicide attempts or nonsuicidal self-injuries combined and psychiatric hospitalizations; (3) a history of only suicide attempts, only nonsuicidal self-injury, or both; (4) age; and (5) a negative prognostic indicator of a Beck Depression Inventory score higher than 30 or a Global Assessment of Functioning score lower than 45 for a comorbid condition [...] Based on 0.8 power to detect significant differences between conditions (P = .05, 1-sided), this procedure was used to randomize 101 subjects to DBT (n = 52) or to CTBE (n = 49)." (Linehan 2006, p. 758) "The randomization program assigned clients to DBT and CTBE therapists, matching on sex, doctoral vs master's training, and years of clinical experience. Results indicated that therapists' sex and training did not differ in the 2 conditions. The CTBE therapists, however, had more clinical experience, which was expected because they were selected for their expertise." (Linehan 2006, p. 760)
Allocation concealment (selection bias)	Low risk	"The participant coordinator, who was not blinded to treatment condition, executed the randomization program" (Linehan 2006, p. 758) Improbable that computerised assignment could be foreseen and thus bias be introduced. 101 participants were randomised, and N = 60 allocated to the EG and N = 51 to the CG arms. 8 DBT "training cases" and 2 CBT "pilot cases" were excluded from analyses, but the remaining N = 52 EG and 49 CG subjects were analysed regardless of discontinuation or getting lost to follow-up.
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"Assessments were conducted by blinded independent clinical assessors" (Linehan 2006, p. 758)
Selective reporting (reporting bias)	Unclear risk	No indication for selective reporting, but Insufficient information to permit judgement of 'Yes' or 'No'.
Treatment adherence?	Low risk	"Psychotherapists recommended by colleagues as potentially good DBT therapists were recruited for the study; 8 had no previous DBT exposure and 8 had experience that ranged from workshop attendance to applied practice. [...] Training consisted of a 45-hour DBT seminar followed by supervised practice. [...] Individual therapists were hired once 6 of 8 consecutive training case sessions were rated as adherent to DBT. During the study, adherence was assessed by coding a random selection of sessions on the DBT Global Rating Scale [...] which codes DBT adherence." (Linehan 2006, p. 759)
Allegiance effect improbable?	High risk	The primary author (M.L.L.) is developer of DBT.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	Low risk	Equal amounts of attention spent to both groups.

McMain 2009

Study characteristics	
Methods	**design:** parallel-arm randomised controlled trial
Participants	**sex:** 165/190 female (86.8%) **age:** mean 30.4 years, SD = 9.9 **location:** Canada **setting:** outpatient **exclusions:** psychotic disorder, bipolar I disorder, delirium, dementia, mental retardation, diagnosis of substance dependence in preceding 30 days, having a medical condition that precluded psychiatric medications, living outside a 40-mile radius of Toronto, serious medical condition likely to require hospitalisation within the next year, having plans to leave the province **level of functioning/severity of illness:** mean GAF score at baseline: 52.4 (SD = 9.7), i.e. participants had moderate symptoms OR any moderate difficulty in social, occupational, or school functioning. All participants had two episodes of suicidal or non-suicidal self-injurious behaviour in the past 5 years, at least one of which was in the 3 months preceding enrolment **BPD diagnosis according to:** DSM-IV **means of assessment:** IPDE
Interventions	**group 1 (EG):** DBT (individual sessions 1 hour weekly, skills group 2 hours weekly, phone coaching 2 hours weekly, consultation team for therapists 2 hours weekly), focus on self-harm and suicidal behaviour; bias toward managing crises on an outpatient basis, phone coaching to assist; patients encouraged to rely on skills over pills where appropriate, tapering from medications was a treatment goal **group 2 (CG):** general psychiatric management according to APA guideline recommendations (individual sessions 1 hour weekly, including management based on structured drug algorithm, therapist supervision meeting 90 minutes weekly), focus expanded from self-harm and suicidal behaviour; hospitalisation if indicated; patients encouraged to use medications concurrently according to medication algorithms relating to either mood lability or impulsive-aggressiveness **duration:** 12 months **concomitant psychotherapy:** non-study treatments such as individual, group, case management, day treatment or inpatient were recorded but participants were not prevented from using **concomitant pharmacotherapy:** no restrictions on ancillary pharmacotherapy
Outcomes	**outcomes considered in this review** **self-rated:** anger (STAXI-anger out), interpersonal problems (IIP-C), depression (BDI), general psychopathology (SCL-90-R-GSI) **observer-rated:** BPD severity (ZAN-BPD-total), parasuicidality (mean number of suicidal and self-injurious episodes), **time-points used here:** 12 months (i.e. post-treatment)
Notes	**analyses:** ITT, LOCF

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**

McMain 2009 *(Continued)*

Random sequence generation (selection bias)	Low risk	"eligible participants were randomly assigned to treatment arms using a pre-generated block randomization scheme developed and held by the statistician." (McMain 2009, p. 1366)
Allocation concealment (selection bias)	Low risk	"[...] statistician, who prepared 45 sealed envelopes, each containing the group allocations in random order for four participants." (McMain 2009, p. 1366)
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"[...] assessors who were well trained on study instruments and blind to treatment assignment. [...] Assessors were polled after the treatment phase to ascertain whether they could correctly guess participants' treatment assignment; they did not know treatment assignment for 86% of the cases, suggesting that blinding was largely maintained." (McMain 2009, p. 1366)
Selective reporting (reporting bias)	Low risk	Study protocol available (NCT00154154). No indication for selective reporting.
Treatment adherence?	Low risk	"Modality-specific adherence scales were used to evaluate treatment fidelity [...]" (McMain 2009, pp. 1368, 1370)
Allegiance effect improbable?	Unclear risk	The principal investigator (SMM) is affiliated to DBT and head of a DBT clinic. However, there is no decided indication of an allegiance effect.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	High risk	More attention spent to EG.

Morey 2010

Study characteristics	
Methods	**design:** parallel-arm, randomised controlled trial
Participants	**sex:** 13/16 females (81.3%) **age:** mean age 31.1 years **location:** USA **setting:** outpatient **exclusions:** active psychosis, history of schizophrenia, substance intoxication or withdrawal **level of functioning/severity of illness:** no further information **BPD diagnosis according to:** DSM-IV **means of assessment:** DIPD-IV, PAI-BOR
Interventions	**group 1:** MACT (6 weekly sessions centred on chapters of a patient workbook) **group 2:** MACT+TA (6 weekly sessions centred on chapters of a patient workbook; initial session also included an individualised collaborative assessment with development of questions the client would like to "ask the test data" about themselves and the articulation of specific, individualised treatment goals; during second session, therapist and client discussed assessment results and motivational feedback was given; apart from these augmentations of the first two sessions, identical treatment as other group

Morey 2010 *(Continued)*

	duration: 1,5 months **concomitant psychotherapy:** no other psychosocial interventions allowed **concomitant pharmacotherapy:** psychotropic medication allowed 56% were taking at baseline
Outcomes	**outcomes considered in this review** **self-rated:** **observer-rated:** BPD severity (PAI-BOR-total), affective instability (PAI-BOR-A), suicidality (PAI-BOR-SI), parasuicidality (PAI-BOR-S), interpersonal problems (PAI-BOR-N), identity disturbance (PAI-BOR-I) **time-points used here:** 1,5 months (i.e. post-treatment)
Notes	**analyses:** ITT (completers case analysis also available but not used here)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	"[...] assessments [...] were conducted by an independent evaluator" (Morey 2010, p. 533)
Selective reporting (reporting bias)	Unclear risk	No indication for selective reporting, but Insufficient information to permit judgement of 'Yes' or 'No'.
Treatment adherence?	Low risk	"Consenting clients in both conditions were assigned to a project therapist, who worked under the supervision of the primary investigator." (Morey 2010, p. 532)
Allegiance effect improbable?	Low risk	No indication given.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	Low risk	Beyond TA (which was the point of question of the trial), both groups received comparable amounts of attention.

Nadort 2009

Study characteristics

Methods	**design:** parallel-arm, randomised controlled trial
Participants	**sex:** 60/62 females (96.8%) **age:** mean age 32.0 years **location:** The Netherlands

Nadort 2009 *(Continued)*

	setting: outpatient **exclusions:** BPD not main diagnosis, psychotic disorders (except short, reactive psychotic episodes), bipolar disorder, dissociative identity disorder, antisocial personality disorder, attention-deficit/hyperactivity disorder, addiction of such severity that clinical detoxification was indicated (after which entering treatment was possible), psychiatric disorders secondary to medical conditions, mental retardation, no Dutch literacy **level of functioning/severity of illness:** mean number of SCID-II BPD criteria met at baseline: 6.8 **BPD diagnosis according to:** DSM-IV **means of assessment:** SCID-II BPD section, BPDSI-IV score >20
Interventions	**group 1:** SFT; 45 minute individual sessions twice a week for 12 months, one weekly session in the second year; no extra crisis support outside office hours **group 2:** Schema-focused therapy plus therapist telephone availability outside office hours in case of crisis (SFT+TTA); 45 minute individual sessions twice a week for 12 months, one weekly session in the second year; no extra crisis support outside office hours **duration:** 18 months (i.e. final evaluation after 18 months post randomisation; mean number of therapy sessions: SFT N = 67, SD = 30.85, range 1-130; SFT+TTA: N = 71, SD 34.57, range 2-142 **concomitant psychotherapy:** no information **concomitant pharmacotherapy:** medication use allowed, 58% of patients used psychotropic medication at baseline
Outcomes	**outcomes considered in this review** **self-rated:** - **observer-rated:** Borderline severity (BPDSI-IV-total), general psychopathology (SCL-90-R-dutch version) **time-points used here:** 18 months
Notes	**analyses:** ITT

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No information.
Allocation concealment (selection bias)	Low risk	"we used a stratified randomization procedure. The stratification procedure was performed by a study-independent person and concealed for participating therapists, patients and researchers." (Nadort 2009, p. 962)
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	"Study researchers, screeners, research assistants and therapists were masked to treatment allocation during the screening period and the first assessment." (Nadort 2009, p. 963) "A limitation of the present study is that the assessments will be performed by research assistants who cannot remain blinded to the treatment condition of the included patients, as is always the case in trials studying the effects of psychotherapy. Nor are the patients blind to treatment condition. In this study, however, added to the main interview-based outcome measures, self-report questionnaires will be administered, that will not be influenced by the research assistants. (Nadort 2009b)

Nadort 2009 *(Continued)*

Selective reporting (reporting bias)	Low risk	Study protocol available (Nadort 2009b), no indication for selective reporting.
Treatment adherence?	Unclear risk	"Treatment adherence was monitored by means of supervision. [...] All the raters were independent of the study and masked to treatment condition and outcome. The raters were psychologists trained in ST. We used the ST Therapy Adherence and Competence Scale for BPD (Young, Arntz, & Giesen-Bloo, 2006)." (Nadort 2009, p. 965)
Allegiance effect improbable?	Low risk	Both interventions are SFT based.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	Low risk	Beyond TTA (which was the point of question of the trial), both groups received comparable amounts of attention.

Soler 2009

Study characteristics	
Methods	**design:** parallel-arm, randomised controlled trial
Participants	**sex:** 48/59 females (81.3%) **age:** mean age 29.2 years **location:** Spain **setting:** outpatient **exclusions:** schizophrenia, drug-induced psychosis, organic brain syndrome, alcohol or other psychoactive substance dependence, bipolar disorder, mental retardation, major depressive episode in course, CGI-S score ≤ 4 (i.e. not at all, borderline, or mildly ill) **level of functioning/severity of illness:** mean CGI-BPD (global) scores of both groups: group 1: 4.71; range 4-7; group 2: 4.9, range 4-7; i.e. mean severity was moderately to markedly ill **BPD diagnosis according to:** DSM-IV **means of assessment:** SCID-II, DIB-R
Interventions	**group 1 (EG):** DBT skills training (DBT-ST), including DBT original skills for interpersonal effectiveness, emotional regulation, mindfulness and distress tolerance; 13 psychotherapy sessions of 120 min each, conducted by 2 therapists (a male and a female) for each group, in groups of 9-11 participants. **group 2 (CG):** Standard Group Therapy (SGT); therapeutic techniques: interpretation, highlighting, exploration, clarification, confrontation; therapists targeted specially nihilistic or destructive interactions, characteristic BPD interactions and those that could interfere with group functioning; 13 psychotherapy sessions of 120 min each, conducted by 2 therapists (a male and a female) for each group, in groups of 9-11 participants. **duration**: 3 months (i.e. 13 weekly sessions in each condition) **concomitant psychotherapy:** participants did not receive any other individual or group psychotherapy **concomitant pharmacotherapy:** pharmacological therapy was continued if initiated prior to inclusion, but type and doses could not be modified during the study period

Soler 2009 *(Continued)*

Outcomes	**outcomes considered in this review** **self-rated:** mental health status (CGI-I-self rating) **observer-rated:** BPD severity (CBI-BPD-global), anger (CBI-BPD-anger), affective instability (CGI-BPD-affective instability), chronic feelings of emptiness ((CGI-BPD-emptiness), impulsivity (CGI-BPD-impulsivity), suicidality (CGI-BPD-suicidality), interpersonal problems (CGI-BPD-unstable relations), dissociative/psychotic pathology (BPRS), depression (Ham-D-17), anxiety (HARS), general psychopathology (SCL-90-R-GSI) **time-points used here:** 3 months, i.e. post-treatment
Notes	**analyses:** ITT

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Blocks of four generated using the SPSS software program served for the randomisation to DBT-ST or SGT." (Soler 2009, p. 354)
Allocation concealment (selection bias)	Unclear risk	No further details. Comprehensible flow diagram of patient progress through phases of study provided.
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"... participants were evaluated every two weeks by experienced psychiatrists. Subjects were instructed not to disclose any information about the group (topics, group members or therapists) to maintain blind conditions." (Soler 2009, p. 354) "Assessment and drug control were carried out by two psychiatrists who were masked to the experimental conditions." (Soler 2009, p. 355) "We are unable to affirm that all participants refrained from disclosing information about the therapy or the therapists with the psychiatric raters during assessment visits. [...] Indeed, the observer-rater scales obtained during the interview visits and the results from self-reported measures filled in by patients during the study showed a good concordance. " (Soler 2009, p.357)
Selective reporting (reporting bias)	Unclear risk	No indication for selective reporting, but Insufficient information to permit judgement of 'Yes' or 'No'.
Treatment adherence?	Unclear risk	"DBT-ST intervention was led by two cognitive behavioural psychotherapists with prior experience in BPD group therapy (Soler et al., 2001, 2005) and trained in DBT in courses organised by the 'Behavioural Technology Transfer Group'." (Soler 2009, p. 355).
Allegiance effect improbable?	Low risk	No indications for allegiance effect given.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	Low risk	Equal amounts of attention spent to both groups.

Steil 2010

Study characteristics	
Methods	**design:** randomised controlled trial Originally, female participants with a diagnosis of PTSD and at least 4 criteria of DSM-IV-BPD were eligible. We refer to the subsample data of those participants fulfilling 5 or more criteria.
Participants	**sex:** 31/31 females (100%) **age:** mean age 32.9 years; range 19-52 years **location:** Germany **setting:** inpatient **exclusions:** lifetime diagnosis of schizophrenic disorder, severe other mental disorder requiring immediate treatment in a different setting (e.g., eating disorder or acute delirium after withdrawal), suicide attempt with clear suicidal intention during last 4 months, severe self-injuring behaviour during last 4 months **level of functioning/severity of illness:** mean number of BPD criteria 5.85 all participants suffered from concurrent PTSD according to DSM-IV after childhood sexual abuse **BPD diagnosis according to:** DSM-IV **means of assessment:** IPDE
Interventions	**group 1 (EG):** DBT for patients with PTSD after childhood sexual abuse (DBT-PTSD); including: modified DBT skills training group (1 session of 90 minutes duration per week, modules: mindfulness, interpersonal skills, emotion regulation, stress tolerance; but less attention on interpersonal and detention skills as in standard DBT skills group); individual cognitive trauma therapy, exposure and discrimination training (2 sessions of 45 minutes duration per week); psychoeducation group concerning PTSD aetiology and treatment; additional group training in mindfulness- and acceptance-based techniques (three sessions of 20 minutes duration per week); participation in music, arts and exercise therapy DBT skills training (DBT-ST), including DBT original skills for interpersonal effectiveness, emotional regulation, mindfulness and distress tolerance; 13 psychotherapy sessions of 120 min each, conducted by 2 therapists (a male and a female) for each group, in groups of 9-11 participants. **group 2 (CG):** waiting list (WL): continuation of already ongoing treatments for 6 months, inpatient DBT-PTSD treatment afterwards; points of measurement: baseline, 3 months, 4.5 months and 6 months after study inclusion **duration:** 3 months of inpatient treatment (i.e. 13 weekly sessions in each condition) + one booster session 6 weeks after dismissal **concomitant psychotherapy:** participants of the experimental group did not receive any other individual or group psychotherapy, participants of the waiting list condition continued their usual treatments if any **concomitant pharmacotherapy:** depressive episodes were treated with SSRI antidepressive agents (100-150 mg/d of sertraline, e.g.); difficulties of sleeping were treated with sleep-inducing antidepressants (50-100mg/d of trimipramine, e.g.); no benzodiazepines, no neuroleptics
Outcomes	**outcomes considered in this review** **self-rated:** BPD severity (BSL), dissociation (DES), depression (BDI-II), anxiety (STAI-state), general psychopathology (SCL-90-R-GSI **observer-rated:** - **time-points used here:** 4.5 months, i.e. post residential treatment and one 6-week follow-up session

Steil 2010 *(Continued)*

Notes	**analyses:** ITT

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"randomisation was carried out using the procedure proposed by Efron" (Steil 2010).
Allocation concealment (selection bias)	Low risk	"Care was taken that the randomization was concealed to both the patient and to all persons involved in the study until the written informed consent has been given by the patient." (Steil 2010).
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"Interviewers were blinded. [...] the diagnostician who was assessing the patient at follow-up was masked to the assignment." (Steil 2010).
Selective reporting (reporting bias)	Low risk	Study protocol available (DBT working group at CIMH), no indication for selective reporting.
Treatment adherence?	Low risk	Therapists were supervised weekly by the treatment developer.
Allegiance effect improbable?	High risk	First author developed the treatment approach investigated here.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	High risk	More attention paid to EG.

Turner 2000

Study characteristics

Methods	**design:** randomised controlled trial
Participants	**sex:** 19/24 females (79.2%) **age:** 22 years on average **location:** USA **setting:** outpatient **exclusions:** schizophrenia, schizoaffective disorder, bipolar disorder, organic mental disorders, mental retardation **level of functioning/severity of illness:** **BPD diagnosis according to:** DSM-III-R **means of assessment:** DIB, PDE
Interventions	**group 1 (EG1):** Dialectical Behavior Therapy-oriented treatment (i.e. individual DBT-oriented psychotherapy plus six group sessions with focus on significant persons in patients' natural environments; DBT modifications were the following: First: psychodynamic techniques were incorporated to conceptualise patients' behavioural, emotional, and cognitive relationship schema; second, there was no DBT skills group, but skills were provided during individual therapy)

Turner 2000 *(Continued)*

	group 2 (EG2): Client-centered Therapy (CCT; i.e. two weekly individual sessions when possible; six group sessions with focus on significant persons in patients' natural environments (same as EG patients received) **duration:** 12 months **concomitant psychotherapy:** no details **concomitant pharmacotherapy:** pharmacotherapy was not included in the study treatment regimens; at baseline, 19 patients were out of 24 reported taking prescribed psychotropic medications
Outcomes	**outcomes considered in this review** **self-rated:** anger (TBR-anger), impulsivity (TBR-impulsiveness), suicidal ideation (BSS), parasuicidality (TBR-frequency of parasuicide), depression (BDI), anxiety (BAI) **observer-rated:** dissociative/psychotic symptoms (BPRS) **time-points used here:** 12 months, i.e. post-treatment
Notes	**analyses:** ITT

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Following the initial assessments, patients were randomly assigned to either DBT or CCT. " (Turner 2000, p. 415) No further details.
Allocation concealment (selection bias)	Unclear risk	"Next, patients were sequentially assigned to a mental health clinician." (Turner 2000, p.415). No further details. 24 participants were randomly assigned to either DBT (N = 12) or CCT (N = 12). In spite of drop-outs from treatment (DBT: N = 4, CCT: N = 6), assessments were available for all 24 participants at all times of assessment
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"The outcome evaluation consisted of independent assessor ratings and patient self-report. The independent assessor was unaware of the patients' treatment condition but was aware of the purpose of the study." (Turner 2000, p. 415)
Selective reporting (reporting bias)	Unclear risk	No indication for selective reporting, but Insufficient information to permit judgement of 'Yes' or 'No'.
Treatment adherence?	Low risk	"The investigator and the senior clinic therapist monitored adherence to the treatment protocols. Both supervisors met with the therapists weekly in two separate group supervision meetings. Therapists presented audiotapes of their previous sessions with patients during supervision." (Turner 2000, p. 415)
Allegiance effect improbable?	Low risk	No indications for allegiance effect given.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	High risk	More attention paid to EG2 (CCT) participants.

Van den Bosch 2005

Study characteristics	
Methods	**design:** randomised controlled trial
Participants	**sex:** 64/64 females (100%) **age:** 34.9 years on average, SD = 7.7 **location:** The Netherlands **setting:** outpatient **exclusions:** bipolar disorder, (chronic) psychotic disorder, severe cognitive impairments, insufficient command of the Dutch language **level of functioning/severity of illness:** mean number of BPD criteria: 7.3 (SD = 1.3); participants were also required to have co-morbid substance abuse problems **BPD diagnosis according to:** DSM-IV **means of assessment:** SCID-II, Personality Diagnostic Questionnaire for DSM-IV (positive endorsement of BPD criteria was required on both instruments)
Interventions	**group 1 (EG):** Dialectical Behavior Therapy (DBT; i.e. weekly individual cognitive-behavioural psychotherapy sessions, weekly skills-training groups, phone crisis consultation as needed) **group 2 (CG):** Treatment as usual (TAU; i.e. clinical management from the original referral source; two thirds: psychiatric services, one third addiction treatment centres; TAU patients attended generally no more than two sessions per month with a psychologist, a psychiatrist or a social worker) **duration:** 12 months **concomitant psychotherapy:** **concomitant pharmacotherapy:** About 75% of participants reported the use of medication from one or more of the following categories during the study: benzodiazepines, selective serotonin reuptake inhibitors, tricyclic antidepressants, mood stabilisers and neuroleptics. No significant differences between the two groups with regard to medication use.
Outcomes	**outcomes considered in this review** **self-rated:** - **observer-rated:** impulsivity (BPDSI-IV-impulsivity), parasuicidal behaviour (LPC-self-mutilative acts during previous 3-month period), **time-points used here:** week 52 (i.e. post-treatment)
Notes	**analyses:** per protocol (data based on the number of subjects with valid data at a given measurement time)

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"...patients were randomly assigned to treatment conditions. A minimisation method was used to ensure comparability of the two treatment conditions on age, alcohol problems, drug problems and social problems (as measured by the European version of the Addiction Severity Index [...]" (Verheul 2003, p. 135)

Van den Bosch 2005 *(Continued)*

Allocation concealment (selection bias)	Unclear risk	No further details. Of 64 eligible patients, N = 31 were assigned to EG and N = 33 to CG. "Two patients assigned to the treatment-as-usual condition were dropped from the intention-to-treat analyses because they did not accept the randomisation outcome and therefore refused to cooperate further with the study protocol, and four patients assigned to dialectical behaviour therapy were dropped because they refused to start treatment." (Verheul 2003, p. 136) Thus, analyses refer to N = 27 EG and N = 31 CG subjects that actually started treatment as allocated to.
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"although the research assessors were not informed about the treatment condition of their interviewees, it is unlikely that they remained 'masked' throughout the project. Patients might have given them this information, or it could easily have been derived from some of the interviews." (Verheul 2003, p. 139)
Selective reporting (reporting bias)	Unclear risk	No indication for selective reporting, but Insufficient information to permit judgement of 'Yes' or 'No'.
Treatment adherence?	Low risk	"Training, regular monitoring (using videotapes) and weekly individual and group supervision were performed by the second author (L.M.C.B.), who received intensive training from Professor Linehan in Seattle and is a member of the international dialectical behaviour therapy training group." (Verheul 2003, p. 136) "The median adherence score on a 5-point Likert scale was 3.8 (range 2.5–4.5), indicating 'almost good DBT' in terms of conformity to the treatment manual." (Van den Bosch 2005, p. 1233)
Allegiance effect improbable?	Unclear risk	"[...] second author (L.M.C.B.), who received intensive treatment from Professor Linehan in Seattle and is a member of the international dialectical behaviour therapy training group. (Verheul 2003, p. 136)
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	High risk	More attention spent to EG participants.

Weinberg 2006

Study characteristics	
Methods	**design:** randomised controlled trial
Participants	**sex:** 30/30 females (100%) **age:** 28.2 years on average **location:** USA **setting:** outpatient **exclusions:** comorbid psychotic disorders, bipolar I disorder, substance dependence, elevated suicide risk **level of functioning/severity of illness:** baseline frequency of self-harming behaviour: group 1: 9.33, SD = 14.78; group 2: 8.20, SD = 10.46

Weinberg 2006 *(Continued)*

	BPD diagnosis according to: DSM-IV **means of assessment:** SCID, DIB-R (both sets of criteria had to be met for inclusion)
Interventions	**group 1 (EG):** Manual-assisted cognitive treatment (MACT; i.e. adjunctive intervention to ongoing treatments of the participants; six session therapy incorporating elements of DBT, cognitive behavioural treatment, and bibliotherapy) **group 2 (CG):** Treatment as usual (TAU); all subjects took part in additional treatments not further specified **duration:** 6 weekly sessions **concomitant psychotherapy:** both EG and CG participants received treatment as usual; all participants took part in additional treatments not further specified **concomitant pharmacotherapy:** both EG and CG participants received treatment as usual; no further details on amounts or types of medications used
Outcomes	**outcomes considered in this review** **self-rated:** - **observer-rated:** suicidality (SBQ), parasuicidality (Parasuicide History Interview (PHI) - deliberate self-harm frequency), **time-points used here:** 2 months (i.e. post-treatment)
Notes	**analyses:** ITT

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"randomly assigned" (Weinberg 2006, p. 485) No further details.
Allocation concealment (selection bias)	Unclear risk	No further details. After screening of 60 referrals by phone, 37 were invited for further assessments. Reasons for exclusion of N = 7 are given. N = 30 were included in the final sample. N = 15 were assigned to the EG and N = 15 to the CG.
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"The baseline assessment and administration of the MACT [i.e. the treatment under test] were performed by the primary investigator." (Weinberg 2006, p.486) "Interviewers were randomly assigned for following assessments. The interviewers were blind to baseline ratings and to participants' group allocation" (Weinberg 2006, p. 487)
Selective reporting (reporting bias)	Low risk	No indications for selective reporting.
Treatment adherence?	High risk	"This study did not monitor adherence and competence." (Weinberg 2006, p. 489)
Allegiance effect improbable?	Low risk	No indication for allegiance effect.
Attention bias: equal amounts of attention to all	High risk	More attention spent to EG participants.

Weinberg 2006 *(Continued)*

groups (obligatory treatment components)?	

Zanarini 2008

Study characteristics	
Methods	**design:** randomised controlled trial
Participants	**sex:** 50/50 females (100%) **age:** 19.3 years on average (SD = 1.4) **location:** USA **setting:** outpatient **exclusions:** current of lifetime schizophrenia, schizoaffective disorder, bipolar I disorder; current substance dependence (except for nicotine dependence); any type of current psychiatric treatment **level of functioning/severity of illness:** mean GAF score at baseline: 53.3, SD = 1.9; i.e. "moderate symptoms (e.g., flat affect and circumstantial speech, occasional panic attacks) OR moderate difficulty in social, occupational, or school functioning (e.g., few friends, conflicts with peers or co-workers)." mean Sheehan Disability Scale-social impairment score about 4.8; mean vocational impairment subscale score was about 4.3. Scores of 5 or higher are regarded elevated and found to be associated with an increased risk of mental disorder and significant functional impairment (Rush 2005). **BPD diagnosis according to:** DSM-IV; all participants were newly diagnosed with BPD **means of assessment:** DIB-R, DIPD-IV (both sets of criteria had to be met for inclusion)
Interventions	**group 1 (EG):** Psychoeducation workshop (PEW; i.e. latest information on BPD aetiology, phenomenology, co-occurring disorders, treatment options, longitudinal course; the workshop took place within a week of diagnostic disclosure) **group 2 (CG):** Waiting List (WL; i.e. subjects were to attend the PEW at the end of the 12-week study) **duration:** 12 weeks **concomitant psychotherapy:** subjects that were in any type of current psychiatric treatment were not eligible for study participation **concomitant pharmacotherapy:** subjects that were in any type of current psychiatric treatment were not eligible for study participation
Outcomes	**outcomes considered in this review** **self-rated: -** **observer-rated:** Zanarini rating scale for borderline personality disorder (ZAN-BPD) - impulsivity, Zanarini rating scale for borderline personality disorder (ZAN-BPD) - disturbed relationships score **time-points used here:** week 12 (i.e. post-treatment)
Notes	**analyses:** intention-to-treat analysis based on treatment assignment

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**

Zanarini 2008 *(Continued)*

Random sequence generation (selection bias)	Unclear risk	"Using a 3:2 ratio, subjects were either randomized to a workshop that took place within a week of diagnostic disclosure or a waitlist." (Zanarini 2008, p. 286). No further details.
Allocation concealment (selection bias)	Unclear risk	No further details. "Fifty subjects were found to meet study criteria for BPD and five who were interviewed did not. These 50 subjects were either randomized to immediate (N = 30) or delayed (N = 20) psychoeducation." (Zanarini 2008, p. 286) No information given about drop-outs during the study course.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	No information given if assessors were blind to treatment allocation.
Selective reporting (reporting bias)	Unclear risk	No indication for selective reporting, but Insufficient information to permit judgement of 'Yes' or 'No'.
Treatment adherence?	Unclear risk	No information.
Allegiance effect improbable?	High risk	"This workshop was led jointly by two research assistants, who used a 63-slide PowerPoint presentation designed specifically for this study."(Zanarini 2008, p. 285f.) The intervention seems to have been developed by the study authors for purpose of this study.
Attention bias: equal amounts of attention to all groups (obligatory treatment components)?	High risk	More attention spent to EG participants.

APA: American Psychiatric Association
BDI: Beck depression inventory
CBT: cognitive behavioural therapy
CCT: client-centered therapy
CT: cognitive therapy
CTBE: community treatment by experts
DBT: dialectical behaviour therapy
BPD: borderline personality disorder
GAF: Global Assessment of Functioning Scale
GSFT: group schema-focused Therapy
HARS: Hamilton anxiety rating scale
IIP: inventory of interpersonal problems
IPDE: International Personality Disorder ExaminationITT: intention-to-treat
LOCF: last observation carried forward
MACT: manual-assisted cognitive treatment
MBT: mentalisation-based treatment
MBT_OP: outpatient mentalisation-based treatment
PTAU: psychotherapy treatment as usual
PTSD: post-traumatic stress disorder
SD: standard deviation
SFT: schema-focused therapy
SSRIs: selective serotonin reuptake inhibitors
STEPPS: systems training for emotional predictability and problem solving for borderline personality disorder
TAU: treatment as usual
TFP: transference-focused psychotherapy
TTA: therapist telephone availability
WL: waiting list

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Abbass 2008	Participants: less than 70% of participants had a diagnosis of BPD.
Arnevik 2009	Participants: less than 70% of participants had a diagnosis of BPD.
Ball 2007	Participants: less than 70% of participants had a diagnosis of BPD.
Beecham 2006	Allocation: not randomised.
Bellino 2005	Allocation: not randomised.
Berget 2008	Participants: less than 70% of participants had a diagnosis of BPD.
Blum 2002	Allocation: not randomised.
Bohus 2000	Allocation: not randomised.
Bohus 2004	Allocation: not randomised.
Brassington 2006	Allocation: not randomised.
Brown 2004	Allocation: not randomised.
Carter 2007	Participants: presence of BPD diagnosis not assessed.
Chanen 2008	Participants: adolescents aged 15 to 18 years.
Chiesa 2000	Allocation: not randomised.
Clarkin 2007	Outcomes: unable to use data.
Colom 2004	Participants: less than 70% of participants had a diagnosis of BPD.
Dolan 1997	Allocation: not randomised.
Evans 1999a	Participants: ratio of participants with BPD unclear.
Evans 1999b	Participants: ratio of participants with BPD unclear.
Gabbard 2000	Allocation: not randomised.
Guthrie 2001	Participants: ratio of participants with BPD unclear.
Hagen 2005	Participants: less than 70% of participants had a diagnosis of BPD.
Huband 2007	Participants: less than 70% of participants had a diagnosis of BPD.
Kool 2003	Participants: less than 70% of participants had a diagnosis of BPD.
Korner 2006	Allocation: not randomised.
Kröger 2006	Allocation: not randomised.

Study	Reason for exclusion
Linehan 1999	Outcomes: no pathology related outcomes of interest.
Linehan 2002	Outcomes: no pathology related outcomes of interest.
Lynch 2007	Participants: less than 70% of participants had a diagnosis of BPD.
López 2004	Allocation: not randomised.
McQuillan 2005	Allocation: not randomised.
Meares 1999	Allocation: not randomised.
Mueser 2004	Participants: less than 70% of participants had a diagnosis of BPD.
Munroe-Blum 1995	Outcomes: no usable data.
Muran 2009	Participants: mixed sample of cluster C PDs.
Petersen 2008	Allocation: not randomised.
Ranger 2009	Participants: mixed sample of patients with severe mental illness, less than 70% of participants had a diagnosis of BPD.
Rathus 2002	Participants: adolescents.
Sachsse 2006	Allocation: not randomised.
Schuppert 2009	Participants: adolescents 14-19 years, mean age 16.14 years (SD = 1.23).
Slee 2008	Participants: unclear how many participants had a diagnosis of BPD, presence of personality disorders was not assessed.
Springer 1996	Outcomes: no usable data for the BPD subsample available.
Stanley 2007	Allocation: not randomised.
Stevenson 1992	Allociation: not randomised.
Stiles 2006	Allocation: not randomised.
Trupin 2002	Allocation: not randomised.
Tyrer 2003	Participants: less than 70% of participants had a diagnosis of BPD.
Tyrer 2009	Participants: unclear how many of participants actually had a diagnosis of BPD.
Vinnars 2009	Participants: mixed sample of PDs, ratio of participants with BPD unclear.
Waltz 2009	Outcomes: no outcomes of interest for inclusion in this review.
Weertman 2007	Participants: people with BPD were not included.
Wildgoose 2001	Allocation: not randomised.
Yen 2009	Allocation: not randomised.

Study	Reason for exclusion
Zorn 2007	Participants: less than 70% of participants had a diagnosis of BPD.

BPD: borderline personality disorder
PD: personality disorder
SD: standard deviation

Characteristics of ongoing studies *[ordered by study ID]*

ACTRN12605000594628

Study name	A pilot study to evaluate the feasibility, safety and efficacy of psychotherapeutic intervention for comorbid BPD and first-episode psychosis
Methods	RCT
Participants	Males and females aged 15 to 24 years with co-occurring first episode psychosis and full or sub-threshold BPD
Interventions	1. 16 sessions of Cognitive Analytic Therapy (CAT) 2. TAU
Outcomes	Psychopathology, psychosocial functioning, and quality of life
Starting date	26 August 2005
Contact information	Prof. John Gleeson, Orygen Youth Health, Locked Bag 10, Parkville VIC 3052, Australia; jgleeson@unimelb.edu.au Dr. Andrew Chanen, Orygen Youth Health, Locked Bag 10, Parkville VIC 3052, Australia; achanen@unimelb.edu.au
Notes	

ACTRN12606000206527

Study name	Process and outcome of acceptance-based outpatient skills training groups for people with four or more criteria of borderline personality disorder
Methods	RCT
Participants	Males and females with four or more criteria of BPD
Interventions	Phase 1 is a 12 week two hours per week acceptance-based crisis skills training group. Clients have the option of continuing to Phase 2 which consists of an additional 30 weeks of skills training groups covering interpersonal skills, emotion regulation skills and mindfulness skills. The groups are a combination of Acceptance and Commitment Therapy and Dialectical Behaviour Therapy interventions in the context of Acceptance and Commitment Therapy principles of treatment. Random allocation to immediate start of treatment of 3 months delay
Outcomes	Utilisation of crisis emergency and inpatient services
Starting date	16 March 2006

ACTRN12606000206527 *(Continued)*

Contact information	Elise Guymer, Spectrum PO Box 135 Ringwood East VIC 3135, Australia; eliseguymer@netscape.net
Notes	

ACTRN12610000100099

Study name	Monitoring Outcomes of Borderline personality disorder in Youth (MOBY): A randomised controlled trial (RCT) of specialised early intervention, with and without psychotherapy, versus a standard youth mental health intervention, for youth presenting with first presentation borderline personality disorder
Methods	RCT
Participants	Males and females aged 15 to 25 years with a diagnosis of DSM-IV BPD
Interventions	1. HYPE: specialised early intervention service for BPD 2. YMH: Youth mental health care 3. BEF: Befriending
Outcomes	Primary: Interpersonal problems measured by the Inventory of Interpersonal Problems Circumplex Version (IIP-C); Social Adjustment measured by the Social Adjustment Scale Self Report (SAS-SR) Secondary: Client satisfaction measured by the Client Satisfaction Questionnaire (CSQ-8); Suicidal Ideation as measured by the self-report Beck Suicidal Ideation Scale (BSS) and Mobiletype, a mobile phone program that asks open and closed questions about affect, suicidal ideation and parasuicidal behaviour; Parasuicidal Acts as measured by the Suicide Attempt and Self-Injury Interview (SASII) and Mobiletype, a mobile phone program that asks open and closed questions about affect, suicide ideation and parasuicidal behaviour; Affective Instability as measured by the 10-item self-report Short PANAS (Positive and Negative Affect Schedule), administered with Mobiletype; Borderline Personality Disorder Symptoms as measured by the Borderline Personality Disorder Severity Index (BPDSI-IV); Depression as measured by the self-report Center for Epidemiologic Studies Depression Scale - Revised (CESD-R) and the semi-structured interview and rating scale of the Montgomery-Asberg Depression Rating Scale (SIGMA); Substance Use as measured by the self-report Alcohol Use Disorders Identification Test (AUDIT) and the interview measure, the Opiate Treatment Index (OTI - Section II); Therapeutic Alliance as measured by the Working Alliance Inventory (WAI); Quality of Life as measured by the Assessment of Quality of Life (AQoL-8D); Social and Occupational Functioning as measured by the Social and Occupational Assessment of Functioning Scale (SOFAS); Emotion Regulation as measured by the Difficulties in Emotion Regulation Scale (DERS).
Starting date	10 March 2011
Contact information	Dr Andrew Chanen, Locked Bag 10, Parkville VIC 3052, Australia; achanen@unimelb.edu.au
Notes	

DRKS00000068

Study name	Psychoanalytical interactional psychotherapy in cluster B personality disorders
Methods	RCT

DRKS00000068 *(Continued)*

Participants	Emotionally unstable personality disorder (ICD 10: F60.31), histrionic personality disorder (ICD 10: F60.4), dissocial personality disorder (ICD 10: 60.2), other specific personality disorders (ICD 10: F60.8)
Interventions	Inpatient 1. Psychoanalytic-interactional psychotherapy 2. Psychodynamic therapy as usual
Outcomes	Borderline Personality Inventory (BPI), SCL-90-R, BAI, BDI, IIP
Starting date	01 October 2008
Contact information	Prof Dr Falk Leichsenring, Falk.Leichsenring@psycho.med.uni-giessen.de
Notes	

ISRCTN12440268

Study name	JOSHUA: a pilot randomised controlled trial of joint crisis plans for people who self harm
Methods	RCT
Participants	1. Service users (both males and females) aged 18 years or older 2. Current contact with a local Community Mental Health Team (CMHT) (will include assessment and brief treatment, continuing care, home treatment and out-patient clinics attached to these teams) 3. A primary clinical diagnosis of emotionally unstable personality disorder (International Statistical Classification of Diseases and Related Health Problems, 10th Revision [ICD-10] code F60.3) 4. An episode of self-harm in the previous year
Interventions	6 months of 1. joint crisis plan 2. TAU
Outcomes	Primary: Self-harm history, assessed by a questionnaire at baseline and 6 months (trial end). Secondary: 1. Client's experience of the treatment that he or she received at a particular service, assessed by the Treatment Experience Scale assessed at baseline and 6 months 2. Service Engagement Scale at baseline, 6 months (trial end) and trial drop-out 3. The Work and Social Adjustment Scale (WSAS) at baseline and 6 months (trial end) 4. Euroqol EQ-5D at baseline and 6 months (trial end) 5. Client Satisfaction Questionnaire at baseline and 6 months (trial end) 6. Working Alliance Inventory - short version (WAI-S) (client version) at baseline and 6 months (trial end). This is a measure of how well a client and a clinician work together. 7. WAI-S (staff version) at baseline, 6 months (trial end) and trial drop-out 8. Adult Service Use Schedule (ADSUS) to assess which services clients have accessed in the preceding 6 months, for health economics purposes, carried out at baseline and 6 months (trial end) 9. Alcohol Use Disorders Identification Test (AUDIT) at baseline 10. Hospital Anxiety and Depression scale (HADS) at baseline
Starting date	01 October 2009
Contact information	Dr Paul Moran, Sir David Goldberg Building, Institute of Psychiatry, De Crespigny Park, London SE5 8AF, UK, paul.moran@iop.kcl.ac.uk
Notes	

ISRCTN51304415

Study name	Nice OUtcomes for Referrals with Impulsivity, Self Harm and Eating Disorders: The NOURISHED Study A randomised controlled trial of mentalisation based therapy against specialist supportive clinical management in patients with both eating disorders and symptoms of borderline personality disorder
Methods	RCT
Participants	1. Aged over 18 years, either sex 2. Eating disorder diagnosis 3. Borderline personality disorder (BPD) symptoms. The criteria for "BPD symptoms" are that the patient fulfils both behavioural criteria of the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV), namely: 3.1. Impulsivity in at least two areas that are potentially self-damaging (e.g., spending, sexual behaviour, substance abuse, reckless driving, binge eating) 3.2. Recurrent suicidal behaviour, or self-mutilating behaviour 4. Able and willing to provide written informed consent
Interventions	One year of 1. MCT (outpatient) 2. specialist supportive clinical management
Outcomes	Primary: Eating disorder symptoms Secondary: 1. Borderline Personality Disorder symptoms will be measured 6-monthly using the total score of the ZAN-BPD (Time points 0, 6, 12, 18 months); 2. The economic evaluation will examine the costs-effectiveness of Mentalization Based Therapy and Specialist Supportive Clinical Management including an analysis of incremental cost per QALY; 3. Participant rated general psychiatric symptoms of Borderline Personality Disorder will be measured 6-monthly using the DASS-21 (Time points 0, 6, 12, 18 months); 4. Possible mediators of change in Borderline Personality Disorder symptoms include reflective function and object relations, measured by the Reflective Function Questionnaire, The Reading the Mind in the Eyes test and the Object Relations Inventory and personality factors (e.g. resilience, dysregulation, restriction) thought to be important in Eating Disorders (Time points 0, 6, 12, 18 months)
Starting date	01 April 2011
Contact information	Dr Paul Robinson, Research Department, St. Ann's Hospital, London; drpaulrobinson@gmail.com
Notes	

ISRCTN54233644

Study name	Dialectical behaviour therapy in patients with borderline personality disorder who self-harm: a pragmatic exploratory trial DIALECT
Methods	RCT
Participants	1. Frequent self-harm (more than 5 days with self-harm over 12 months) 2. Aged 16 years and older, either sex

ISRCTN54233644 *(Continued)*

	3. Sufficient command of English 4. At least one personality disorder Exclusion: learning disabilities
Interventions	DBT and care co-ordination versus waiting list control group with standard NHS care, over 12 months. DBT consists of 3 hours of therapy a week: this comprises 1 hour of individual therapy and 2 hours of group skills classes.
Outcomes	Days with self-harm during the 12 month period. 1. Pre-post changes in self-harming during the 12 month period 2. Number of accident and emergency (A&E) attendances during the 12 month period 3. Inpatient admissions during the 12 month period 4. Use of other services in primary and secondary care during the 12 month period 5. Service costs during the 12 month period 6. Use of medication during the 12 month period 7. Pre-post changes in self-rated and observer-rated symptom level and quality of life at the end of the 12 month period 8. Quality of the therapeutic relationship at the end of the 12 month period 9. Treatment satisfaction at the end of the 12 month period
Starting date	01 February 2008
Contact information	Prof S Priebe, Unit for Community and Social Psychiatry, Newham Centre for Mental Health, Plaistow, London s.priebe@qmul.ac.uk
Notes	

ISRCTN72677277

Study name	Psychological treatments for severe and complex mental health problems/personality disorder. A phase II randomised controlled trial
Methods	RCT
Participants	Adult out-patients (18-65) of community mental health teams (CMHTs); Minimum one year history of severe, complex mental health problems, diagnosis of at least one Cluster B personality disorder
Interventions	1. CMHT management alone 2. CMHT management plus cognitively-based psychotherapy
Outcomes	
Starting date	01 May 2005
Contact information	Prof G Parry, University of Sheffield, G.D.Parry@sheffield.ac.uk
Notes	

ISRCTN79187618

Study name	Psychoanalytically oriented brief group treatment for borderline personality disorder: A randomised controlled trial
Methods	RCT
Participants	Clinical diagnosis of Borderline Personality Disorder meeting DSM-IV criteria and clinical judgment of capacity of psychological mindedness.
Interventions	1. Psychoanalytic brief group treatment, 20 weeks 2. Waiting list
Outcomes	Self harm, suicidal ideation, reduction in symptoms, functioning, cost implications
Starting date	09 January 2006
Contact information	Dr Ravi Lingam, Regional Department of Psychotherapy, Newcastle upon Tyne, Ravi.Lingam@nmht.nhs.uk
Notes	

ISRCTN98982683

Study name	MBTDD: Mentalisation-Based Treatment for Dual Diagnoses - a randomised controlled trial
Methods	RCT
Participants	Meet Diagnostic and Statistical Manual of Mental Disorders, Fourth edition (DSM-IV) criteria for borderline personality disorder, meet DSM-IV criteria for opiate dependence (present or in remission), ongoing pharmacological treatment with buprenorphine or methadone for at least 3 months, aged 18 to 65 years, either sex
Interventions	18 months of 1. MBT + medication assisted treatment (MAT) 2. MAT alone
Outcomes	Primary: BPDSI-IV Secondary: 1. Timeline Follow Back and specimens of urine for use of opiates, alcohol and other drugs, 2. Beck's Suicidal Intent Scale (SIS), 3. Deliberate Self-Harm Inventory (DSHI-9), 4. Global Assessment of Functioning (GAF), 5. Symptom Check List 90 (SCL-90), 6. Inventory of Interpersonal Problems (IIP), short version, 7. Social Adjustment Scale - Self Report (SAS-SR), 8. Retention in treatment, 9. Reflective Functioning Interview (for mediator analysis) Long-term follow up from register data: 10. Health economy (health care utilisation and work/income), 11. Criminality, 12. Survival
Starting date	01 April 2009
Contact information	Dr. Björn Philips, Stockholm County Council, Center for Dependency Disorders, Stockhol, Sweden; bjorn.philips@ki.se
Notes	

Jørgensen 2009

Study name	Risskov-I study
Methods	RCT
Participants	Males and females with diagnosis of BPD according to SCID-II
Interventions	2 years of 1. combined MBT (outpatient; weekly individual psychotherapy, weekly group psychotherapy, group-based psychoeducation once a month, medical treatment acc. to APA guidelines) 2. supportive psychotherapy (outpatient; two hours of supportive group therapy every two weeks, group-based psychoeducation once a month, medical treatment acc. to APA guidelines)
Outcomes	SCL-90-R, BDI-II, STAI, BAI, SAS-SR, GAF, suicide attempts and self-destructive behaviour (SUSS), NEO-PI-R, DSQ-40
Starting date	No information
Contact information	Prof Carsten René Jørgensen PhD, Department of Psychology, University of Aarhus; carsten@p-sy.au.dk
Notes	

NCT00117741

Study name	Evaluation of DBT compared to drug counselling for opiate addicts
Methods	RCT
Participants	Fulfil SCID-I criteria for opiate dependence, meet IPDE and SCID criteria for BPD (DSM-IV), over 18 years old
Interventions	1. DBT 2. Individual and group drug counselling
Outcomes	Primary: urinalysis (drug screening) Secondary: suicidal behaviour, depression, anxiety, Axis I diagnostic remission
Starting date	June 2004
Contact information	Marsha Linehan PhD, University of Washington
Notes	

NCT00183651

Study name	Treatment of suicidal women with borderline personality disorder
Methods	RCT

NCT00183651 *(Continued)*

Participants	Females with diagnosis of BPD, at least one suicide attempt in the year prior to the study entry and at least one intentional self-injury within the 8 weeks prior to study entry, aged 18 to 60 years
Interventions	1. Standard DBT 2. Individual DBT without DBT group sessions 3. Group skills DBT without DBT individual sessions
Outcomes	Primary: suicidal thoughts or attempts Secondary: coping skills
Starting date	April 2004
Contact information	Marsha M Linehan PhD, University of Washington
Notes	

NCT00218595

Study name	DBT Compared to I/GDC for the Treatment of Opiate Addiction in Emotionally Dysregulated Patients.
Methods	RCT
Participants	Meet SCID-I criteria for opiate dependence, meet IPDE and SCID criteria for BPD (DSM-IV), over 18 years old
Interventions	1. DBT + opiate replacement medication 2. Individual and group drug counselling + opiate replacement medication
Outcomes	1. Drug use: The primary outcome measure here is proportions of urinalysis (UA) coded positive for opiates; 2. Suicidal behaviours: The primary outcome measure here is number of suicides + suicide attempts. The domain of suicidal behaviours also includes (a) the number, medical risk, risk/rescue score and suicide intent of all parasuicide, (b) the number of suicide threats and suicide crises, and (c) the level of suicidal ideation and suicide intent; 3. Therapy-interfering behaviours: The primary outcome measure here is maintenance in therapy; 4. Quality of life interfering behaviours: The primary outcome measure here is combined number of days on a psychiatric inpatient unit + days in jail (THI, SHI); 5. Behavioral skills: The primary outcome measure here is the DBT Skills scale score from the Revised Ways of Coping Checklist (RWCCL); 6. Risky sexual behaviour: the primary outcome measure here is the number of risky sexual behaviours in the time period [Casual Partners questionnaire revised [CPQ-R] and diary card].
Starting date	August 2004
Contact information	M Zachary Rosenthal PhD, Duke University Medical Center; National Institute on Drug Abuse (NIDA)
Notes	

NCT00247234

Study name	Effectiveness of Group Based Schema Therapy in the Treatment of Personality Disorders
Methods	RCT
Participants	BPD or avoidant personality disorder
Interventions	1. Schema therapy 2. Standard psychiatric outpatient care
Outcomes	Primary: Self-report measures of quality of life, depression, anxiety, suicidal ideation interpersonal function Secondary: Number of diagnostic criteria (reSCID), Drop-out rate,Social adjustment Use of psychotropic medication
Starting date	September 2004
Contact information	Gunilla K Fosse, gunilla.fosse@ntnu.no
Notes	

NCT00378248

Study name	Ullevål personality project
Methods	RCT
Participants	Patients with personality disorders admitted to Department for personality psychiatry, Psychiatric division, Ullevål University Hospital
Interventions	1. 18 weeks day hospital treatment followed by long-term outpatient combined group- and individual psychotherapy 2. Outpatient individual psychotherapy
Outcomes	Primary: psychosocial functioning, symptom distress, self-esteem, interpersonal problems, self-destructive behaviour, personality pathology, quality of life, health care utilisation Secondary: affect consciousness, reflective functioning
Starting date	May 2004
Contact information	Theresa Wilberg MD PhD, Ullevål University Hospital Oslo, Norway
Notes	

NCT00533117

Study name	Treating Suicidal Behavior and Self-Mutilation in People With Borderline Personality Disorder
Methods	RCT

NCT00533117 *(Continued)*

Participants	Meet criteria for DSM-IV diagnosis of borderline personality disorder, History of at least one suicide attempt or self-mutilation episode 12 months prior to study entry, continued urges to self-mutilate or attempt suicide
Interventions	12 months of 1. DBT + fluoxetine 2. DBT + placebo 3. Supportive psychotherapy + fluoxetine 4. Supportive psychotherapy + placebo
Outcomes	Suicidal ideation, suicide attempts, self-mutilation
Starting date	March 2001
Contact information	Barbara Stanley PhD, bhs2@columbia.edu
Notes	

NCT00603421

Study name	Effectiveness of a 24 Hour Phone Line on the Rate of Suicide Attempts in Borderline Patients
Methods	RCT
Participants	Borderline patients (male or female) aged 18 to 40 years
Interventions	One year of 1. TAU + access to a 24 hour crisis phone line 2. TAU
Outcomes	Primary: rate of suicide attempts Secondary: rate of self-injurious behaviours
Starting date	February 2009
Contact information	Alexandra Pham-Scottez, a.pham@ch-sainte-anne.fr; Daniel Guelfi, jd.guelfi@ch-sainte-anne.fr; Hôpital St. Anne, Paris, France
Notes	

NCT00834834

Study name	Comparing Treatments for Self-Injury and Suicidal Behavior in People With Borderline Personality Disorder
Methods	RCT

NCT00834834 *(Continued)*

Participants	Meet DSM-IV criteria for borderline personality disorder (BPD) - attempted suicide in the past 2 months - at least one additional suicide attempt, suicide-related behaviour, or self-injury episode in the past year - current suicidal ideation - Able to be managed as an outpatient
Interventions	6 months of 1. SSRI antidepressive medication (fluoxetine or citalopram) + clinical management 2. DBT
Outcomes	Suicidal and self-injurious behaviour
Starting date	March 2009
Contact information	Barbara H Stanley PhD, New York State Psychiatric Institute, bhs2@columbia.edu
Notes	

NCT00980824

Study name	ENGAGE - Meeting Mental Health Needs of Complex Comorbid Patients Attending A&E Following a Suicide Attempt. A Pilot Study.
Methods	RCT
Participants	Patients with a recent episode of suicide, personality disorder and drug or alcohol abuse
Interventions	1. Six sessions of ENGAGE CBT (based on manualised-cognitive therapy, MACT) 2. TAU
Outcomes	
Starting date	November 2009
Contact information	
Notes	

NCT01033708

Study name	NET: A Randomized Control Trial of Narrative Exposure Therapy Versus Treatment as Usual in the Therapy of Borderline Personality Disorder
Methods	RCT
Participants	DSM-IV -TR Diagnosis axis II: borderline personality disorder; axis I: posttraumatic stress disorder - stable medication - age 18-45 years, gender female
Interventions	1. Narrative exposure therapy (NET), trauma-focused treatment for survivors of prolonged and repeated exposure to traumatic stress and childhood adversity 2. TAU

NCT01033708 *(Continued)*

Outcomes	Primary: Clinician-Administered PTSD Scale (CAPS) Secondary: Borderline symptom checklist 23 (BSL)
Starting date	October 2009
Contact information	A. Pabst, Zentrum Integrative Psychiatrie, Kiel, Germany; a.pabst@zip-kiel.de
Notes	

NCT01081314

Study name	Treating PTSD in Patients With Borderline Personality Disorder
Methods	RCT
Participants	Females aged 18 to 60 years with BPD and post-traumatic stress disorder
Interventions	1. Standard DBT + PTSD protocol (modified version of prolonged exposure therapy for PTSD) 2. Standard DBT
Outcomes	Primary: PTSD Symptom Scale - Interview, Suicide Attempt Self-Injury Interview Secondary: Dissociative Experiences Scale, Hamilton Rating Scale for Depression, Suicidal Behaviors Questionnaire, Treatment History Interview
Starting date	August 2009
Contact information	Melanie S Harned PhD; University of Washington, USA; mharned@u.washington.edu
Notes	

NCT01132976

Study name	The personal concerns inventory study (PCI). The Addition of a Goal-based Motivational Interview to Standardised Treatment as Usual to Reduce Dropouts From a Service for Patients With Personality Disorder: A Feasibility Study
Methods	RCT
Participants	Referred to the Nottinghamshire Personality Disorder and Development Network, aged 18 or older, male or female
Interventions	1. TAU + goal-based motivational interview 2. TAU
Outcomes	Primary: recruitment (indicating feasibility), acceptability to patients, acceptability of staff Secondary: Treatment engagement (TER), Client Service Receipt Inventory, treatment attendance
Starting date	December 2009

NCT01132976 *(Continued)*

Contact information	Lucy E Hedges, lucy.hedges@nottshc.nhs.uk, Mary McMurran, Mary.McMurran@nottingham.ac.uk; Nottinghamshire Personality Disorder & Development Network, Nottingham, UK
Notes	

NCT01193205

Study name	20 weeks DBT group skills training study
Methods	RCT
Participants	DSM-IV BPD, 18-60 years of age, two suicidal or non-suicidal self-injurious behaviours in the past five years with one occurring the past ten weeks prior to study entry
Interventions	1. DBT skills training group 2. Wait list
Outcomes	Primary: deliberate self-harm (DSHI) Secondary: emergency and psychiatric hospitalizations (THI-2), impulsive behaviour (BIS-11), anger expressions (STAXI), severity of BPD symptoms (BEST), overall psychopathology (SCL-90-R)
Starting date	July 2010
Contact information	Shelley McMain PhD, Centre for Addiction and Mental Health, Toronto/Canada; shelley_mcmain@camh.net
Notes	

NTR1186

Study name	Efficacy of Schema-Focused Therapy versus Usual Treatment in Forensic Patients with Personality Disorders: A Three-Year Randomized Clinical Trial.
Methods	RCT
Participants	Forensic patients with Antisocial, Borderline, Narcissistic, or Paranoid Personality Disorder
Interventions	Forensic setting, three years of 1. individual SFT 2. individual TAU
Outcomes	Primary: severity of personality disorder symptoms, risk of recidivism and violence secondary: therapy process variables (e.g., therapeutic engagement, quality of the therapeutic alliance), and changes in the psychological processes (i.e. Early Maladaptive Schemas, Schema Modes) that are hypothesized to mediate changes in personality disorders in the Schema Focused Therapy model.
Starting date	01 October 2007
Contact information	Prof David Bernstein, University of Maastricht, Departement of Clinical Psychological Science, P.O. Box 616, 6200 M, Maastricht, NL; D.Bernstein@dmkep.unimaas.nl

NTR1186 *(Continued)*

Notes	

NTR2175

Study name	Mentalisation-Based Treatment versus care-as-usual in the treatment of severe borderline personality disorders
Methods	RCT
Participants	A severe BPD on the basis of standardised criteria for borderline personality disorder and assessed with the Dutch version of the Structured Clinical Interview for DSM-III-R (SCID-II) (13), and the Borderline Personality Disorder Severity Index (BPDSI) (14). Patients must meet the criteria for borderline personality disorder as determined with the SCID-II and have a total score on the BPDSI of at least 24, indicating a severe BPD. Patients with co-morbid personality disorders will not be excluded.
Interventions	36 months of 1. MBT 2. TAU
Outcomes	Primary: frequency and severity of manifestations of BPD as measured with the BPDSI Secondary: 1. Number of suicide acts; 2. Self-mutilation; 3. Depression; 4. Subjective experiences of symptoms; 5. Social and interpersonal functioning; 6. Personality functioning; 7. Quality of life; 8. Treatment adherence
Starting date	01 March 2010
Contact information	Prof Dr J Dekker, Viersprong Institute for Studies on Personality Disorders (BISPD), Department of Rehabilitation Medicine, VUmc PO Box 7057, 1007 MB, Amsterdam, NL; j.dekker@vumc.nl
Notes	

NTR2292

Study name	Intensive Outpatient Mentalisation-Based Treatment versus Day Hospital Mentalisation-Based Treatment: A randomised controlled trial.
Methods	RCT
Participants	1. Referral to the MBT-program as implemented by De Viersprong, i.e. 18-month psychotherapy designed specifically for treatment refractory patients with complex personality disorders, often complicated by multi-morbidity, who have typically had a history of unsuccessful treatments; 2. At least one PD as diagnosed according to DSM-IV criteria.
Interventions	1. MBT-program consists of a maximum of 18 months MBT and continued by a maximum of 18 months of maintenance mentalising (group) therapy. 2. MBT-DH: The day hospital program includes daily group psychotherapy, weekly individual psychotherapy, individual crisis planning from a mentalising perspective, art therapy twice a week, mentalising cognitive therapy and writing therapy. 3. MBT-IOP: The outpatient MBT program consists of group psychotherapy twice a week, weekly individual psychotherapy, and individual crisis planning from a mentalising perspective.

NTR2292 *(Continued)*

Outcomes	Primary: 1. Frequency and severity of manifestations of (borderline) personality disorder (SCID-II, PAI-BOR); 2. Number of suicide acts (SSHI); 3. Number of self-mutilation acts (SSHI); 4. Subjective experience of symptoms (BSI); 5. Quality of life (EQ-5D); 6. Care consumption (TiC-P)secondary: 1. Axis I diagnosis (SCID-I); 2. Depression (BDI); 3. Interpersonal functioning (IIP); 4. Personality functioning (DAPP-SF); 5. Mentalisation (ECR, RFQ); 6. Treatment adherence
Starting date	08 February 2010
Contact information	PhD Helene Adrea, Viersprong Institute for Studies on Personality Disorders (VISPD), The Netherlands
Notes	

NTR2392

Study name	Group Schema Therapy for Borderline Personality Disorder
Methods	RCT
Participants	Age 18-65 year; primary DSM-IV diagnosis of BPD (assessed with the SCID-II interview); BPD severity above 20 on the BPDSI interview
Interventions	1. 118 group Schema Therapy sessions over 2 years with max. 17 individual sessions. 2. 64 group Schema Therapy over 2 years with max. 61 individual sessions 3. TAU - the standard treatment given for that patient at the treatment centre.
Outcomes	Primary: Borderline Personality Disorder Severity Index, mean score Secondary: BPD-checklist, BSI, GAF, Work; Social Adjustment Scale, Social Occupational Functioning Assessment Scale, Social Adjustment Scale-Self Report; WHOQOL, EuroQol, Happiness Rating; Schema questionnaire, Schema Mode Inventory, Group Climate Questionnaire (GCQ-S).
Starting date	01 February 2010
Contact information	Prof. Arnoud Arntz, University Maastricht (UM), DMKEP, P.O. Box 616, 6200 MD Maastricht, NL; Arnoud.Arntz@MP.Unimaas.nl
Notes	

CAT: cognitive analytic therapy
CTBE: Community treatment by experts
DBT: dialectical behaviour therapy
BPD: borderline personality disorder
MAT: medication assisted treatment
PD: personality disorder
PTSD: post-traumatic stress disorder
RCT: randomised controlled trial
TAU: treatment as usual

DATA AND ANALYSES

Comparison 1. Comprehensive psychotherapies: active vs. control conditions

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.1 BPD total severity	6		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.1.1 DBT vs. TAU	1	20	Std. Mean Difference (IV, Random, 95% CI)	-0.29 [-1.17, 0.59]
1.1.2 DBT vs. general management	1	180	Std. Mean Difference (IV, Random, 95% CI)	-0.04 [-0.33, 0.25]
1.1.3 DBT-PTSD vs. WL	1	31	Std. Mean Difference (IV, Random, 95% CI)	-0.74 [-1.47, -0.01]
1.1.4 TFP vs. CTBE	1	104	Std. Mean Difference (IV, Random, 95% CI)	-0.55 [-0.95, -0.16]
1.1.5 DDP vs. TAU	1	30	Std. Mean Difference (IV, Random, 95% CI)	-0.44 [-1.16, 0.29]
1.1.6 IPT-BPD+fluoxetine vs. CM+fluoxetine	1	44	Std. Mean Difference (IV, Random, 95% CI)	-0.03 [-0.62, 0.56]
1.2 Inappropriate anger	4		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.2.1 DBT vs. TAU	2	46	Std. Mean Difference (IV, Random, 95% CI)	-0.83 [-1.43, -0.22]
1.2.2 DBT vs. general management	1	180	Std. Mean Difference (IV, Random, 95% CI)	-0.03 [-0.32, 0.26]
1.2.3 IPT-BPD+fluoxetine vs. CM+fluoxetine	1	44	Std. Mean Difference (IV, Random, 95% CI)	0.01 [-0.58, 0.60]
1.3 Affective instability	1		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.3.1 IPT-BPD+fluoxetine vs. CM+fluoxetine	1	44	Std. Mean Difference (IV, Random, 95% CI)	-0.92 [-1.54, -0.30]
1.4 chronic feelings of emptiness	1		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.4.1 IPT-BPD+fluoxetine vs. CM+fluoxetine	1	44	Std. Mean Difference (IV, Random, 95% CI)	0.09 [-0.50, 0.68]
1.5 Impulsivity	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.5.1 DBT vs. TAU	1	48	Std. Mean Difference (IV, Random, 95% CI)	-0.17 [-0.74, 0.39]
1.5.2 IPT-BPD+fluoxetine vs. CM+fluoxetine	1	44	Std. Mean Difference (IV, Random, 95% CI)	-0.91 [-1.53, -0.28]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.6 Suicidality	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.6.1 DBT vs. TAU	1	20	Std. Mean Difference (IV, Random, 95% CI)	-1.26 [-2.24, -0.29]
1.6.2 DBT vs. CTBE	1	89	Std. Mean Difference (IV, Random, 95% CI)	-0.12 [-0.54, 0.30]
1.7 Suicidality	4		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.7.1 MBT-PH vs. TAU	1	38	Risk Ratio (M-H, Random, 95% CI)	0.08 [0.01, 0.58]
1.7.2 MBT-outpatient vs. TAU	1	134	Risk Ratio (M-H, Random, 95% CI)	0.11 [0.03, 0.46]
1.7.3 TFP vs. CTBE	1	104	Risk Ratio (M-H, Random, 95% CI)	0.64 [0.27, 1.51]
1.7.4 CBT vs. TAU	1	101	Risk Ratio (M-H, Random, 95% CI)	0.78 [0.47, 1.27]
1.8 Parasuicidality	5		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.8.1 DBT vs. TAU	3	110	Std. Mean Difference (IV, Random, 95% CI)	-0.54 [-0.92, -0.16]
1.8.2 DBT vs. general management	1	180	Std. Mean Difference (IV, Random, 95% CI)	-0.23 [-0.52, 0.06]
1.8.3 IPT-BPD+fluoxetine vs. CM+fluoxetine	1	44	Std. Mean Difference (IV, Random, 95% CI)	0.02 [-0.58, 0.61]
1.9 Parasuicidality	6		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.9.1 DBT vs. TAU	1	51	Risk Ratio (M-H, Random, 95% CI)	1.11 [0.78, 1.57]
1.9.2 MBT-PH vs. TAU	1	38	Risk Ratio (M-H, Random, 95% CI)	0.44 [0.24, 0.81]
1.9.3 MBT-outpatient vs. TAU	1	134	Risk Ratio (M-H, Random, 95% CI)	0.56 [0.34, 0.92]
1.9.4 TFP vs. CTBE	1	104	Risk Ratio (M-H, Random, 95% CI)	1.09 [0.84, 1.40]
1.9.5 CBT vs. TAU	1	99	Risk Ratio (M-H, Random, 95% CI)	1.17 [0.86, 1.60]
1.9.6 DDP vs. TAU	1	30	Risk Ratio (M-H, Random, 95% CI)	0.89 [0.47, 1.67]
1.10 Interpersonal problems	6		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.10.1 DBT vs. TAU	1	48	Std. Mean Difference (IV, Random, 95% CI)	0.04 [-0.54, 0.61]
1.10.2 DBT vs. general management	1	180	Std. Mean Difference (IV, Random, 95% CI)	-0.03 [-0.32, 0.26]

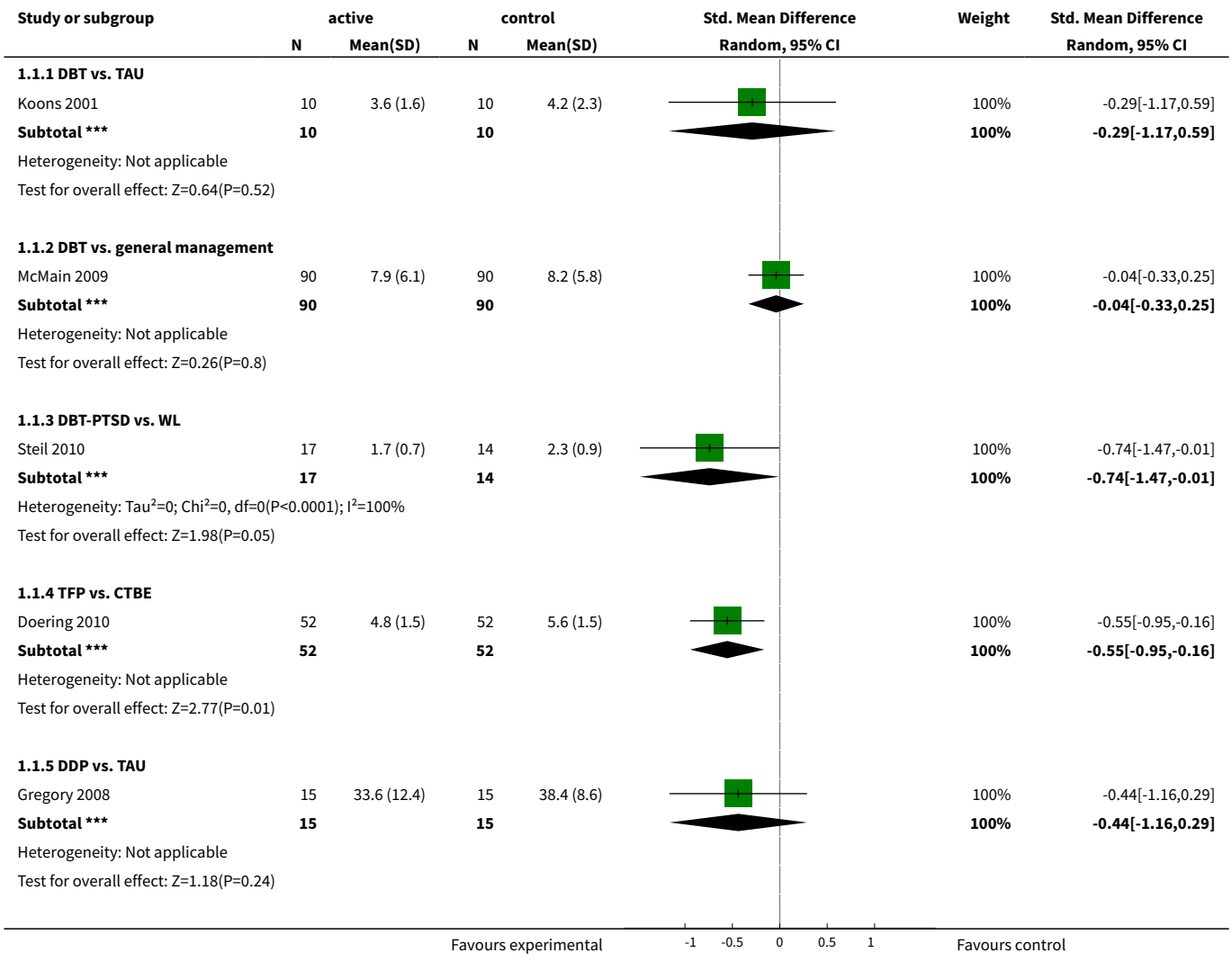
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.10.3 MBT-PH vs. TAU	1	38	Std. Mean Difference (IV, Random, 95% CI)	-2.22 [-3.04, -1.39]
1.10.4 MBT-outpatient vs. TAU	1	134	Std. Mean Difference (IV, Random, 95% CI)	-0.95 [-1.30, -0.59]
1.10.5 CBT vs. TAU	1	99	Std. Mean Difference (IV, Random, 95% CI)	0.23 [-0.16, 0.63]
1.10.6 IPT-BPD+fluoxetine vs. CM+fluoxetine	1	44	Std. Mean Difference (IV, Random, 95% CI)	-0.82 [-1.44, -0.20]
1.11 Avoidance of abandonment	1		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.11.1 IPT-BPD+fluoxetine vs. CM+fluoxetine	1	44	Std. Mean Difference (IV, Random, 95% CI)	0.01 [-0.58, 0.60]
1.12 Identity disturbance	1		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.12.1 IPT-BPD+fluoxetine vs. CM+fluoxetine	1	44	Std. Mean Difference (IV, Random, 95% CI)	-0.03 [-0.62, 0.56]
1.13 Dissociation/psychoticism	4		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.13.1 DBT vs. TAU	1	20	Std. Mean Difference (IV, Random, 95% CI)	-0.90 [-1.83, 0.03]
1.13.2 DBT-PTSD vs. WL	1	30	Std. Mean Difference (IV, Random, 95% CI)	-0.34 [-1.06, 0.38]
1.13.3 DDP vs. TAU	1	30	Std. Mean Difference (IV, Random, 95% CI)	0.25 [-0.47, 0.97]
1.13.4 IPT-BPD+fluoxetine vs. CM+fluoxetine	1	44	Std. Mean Difference (IV, Random, 95% CI)	0.10 [-0.49, 0.70]
1.14 Depression	11		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.14.1 DBT vs. TAU	1	20	Std. Mean Difference (IV, Random, 95% CI)	-1.12 [-2.08, -0.16]
1.14.2 DBT vs. general management	1	180	Std. Mean Difference (IV, Random, 95% CI)	-0.17 [-0.46, 0.12]
1.14.3 DBT vs. CTBE	1	89	Std. Mean Difference (IV, Random, 95% CI)	-0.39 [-0.81, 0.04]
1.14.4 DBT-PTSD vs. WL	1	30	Std. Mean Difference (IV, Random, 95% CI)	-1.06 [-1.84, -0.29]

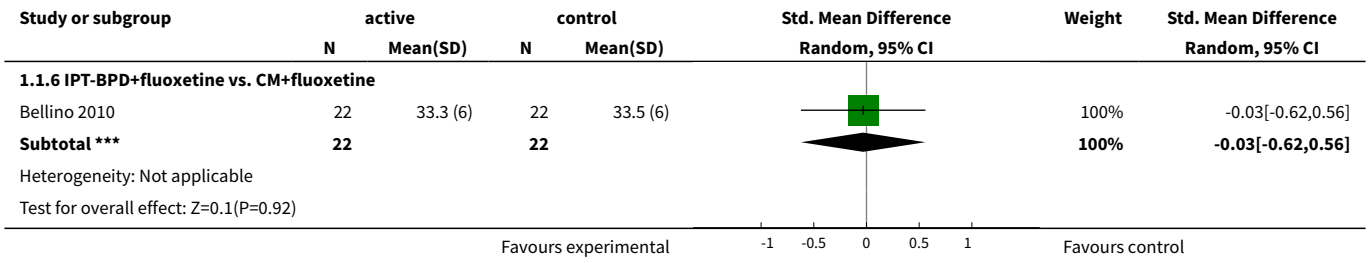
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.14.5 MBT-PH vs. TAU	1	38	Std. Mean Difference (IV, Random, 95% CI)	-1.98 [-2.78, -1.19]
1.14.6 MBT-outpatient vs. TAU	1	134	Std. Mean Difference (IV, Random, 95% CI)	-0.45 [-0.79, -0.10]
1.14.7 TFP vs. CTBE	1	104	Std. Mean Difference (IV, Random, 95% CI)	0.12 [-0.26, 0.51]
1.14.8 CBT vs. TAU	1	99	Std. Mean Difference (IV, Random, 95% CI)	-0.11 [-0.50, 0.29]
1.14.9 DDP vs. TAU	1	30	Std. Mean Difference (IV, Random, 95% CI)	-0.52 [-1.24, 0.21]
1.14.10 IPT vs. CM	1	32	Std. Mean Difference (IV, Random, 95% CI)	-0.90 [-1.63, -0.16]
1.14.11 IPT-BPD+fluoxetine vs. CM+fluoxetine	1	44	Std. Mean Difference (IV, Random, 95% CI)	-0.05 [-0.64, 0.55]
1.15 Anxiety	7		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.15.1 DBT vs. TAU	1	20	Std. Mean Difference (IV, Random, 95% CI)	-1.22 [-2.20, -0.25]
1.15.2 DBT-PTSD vs. WL	1	30	Std. Mean Difference (IV, Random, 95% CI)	-0.96 [-1.72, -0.20]
1.15.3 MBT-PH vs. TAU	1	38	Std. Mean Difference (IV, Random, 95% CI)	-0.49 [-1.14, 0.16]
1.15.4 TFP vs. CTBE	1	104	Std. Mean Difference (IV, Random, 95% CI)	0.04 [-0.35, 0.42]
1.15.5 CBT vs. TAU	1	99	Std. Mean Difference (IV, Random, 95% CI)	-0.03 [-0.42, 0.37]
1.15.6 IPT vs. CM	1	32	Std. Mean Difference (IV, Random, 95% CI)	0.20 [-0.49, 0.90]
1.15.7 IPT-BPD+fluoxetine vs. CM+fluoxetine	1	44	Std. Mean Difference (IV, Random, 95% CI)	-0.52 [-1.12, 0.08]
1.16 General psychopathology	6		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.16.1 DBT vs. general management	1	180	Std. Mean Difference (IV, Random, 95% CI)	-0.01 [-0.30, 0.28]
1.16.2 DBT-PTSD vs. WL	1	30	Std. Mean Difference (IV, Random, 95% CI)	-0.70 [-1.45, 0.04]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.16.3 MBT-PH vs. TAU	1	38	Std. Mean Difference (IV, Random, 95% CI)	-0.39 [-1.03, 0.26]
1.16.4 MBT-outpatient vs. TAU	1	134	Std. Mean Difference (IV, Random, 95% CI)	-0.67 [-1.02, -0.33]
1.16.5 TFP vs. CTBE	1	104	Std. Mean Difference (IV, Random, 95% CI)	0.08 [-0.31, 0.46]
1.16.6 CBT vs. TAU	1	99	Std. Mean Difference (IV, Random, 95% CI)	-0.03 [-0.43, 0.36]
1.17 Mental health status/functioning	7		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.17.1 DBT vs. TAU	2	74	Std. Mean Difference (IV, Random, 95% CI)	0.65 [0.07, 1.24]
1.17.2 MBT-outpatient vs. TAU	1	134	Std. Mean Difference (IV, Random, 95% CI)	0.55 [0.20, 0.89]
1.17.3 TFP vs. CTBE	1	104	Std. Mean Difference (IV, Random, 95% CI)	0.34 [-0.05, 0.73]
1.17.4 CBT vs. TAU	1	99	Std. Mean Difference (IV, Random, 95% CI)	0.00 [-0.39, 0.39]
1.17.5 IPT vs. CM	1	32	Std. Mean Difference (IV, Random, 95% CI)	0.12 [-0.57, 0.81]
1.17.6 IPT-BPD+fluoxetine vs. CM+fluoxetine	1	44	Std. Mean Difference (IV, Random, 95% CI)	-0.04 [-0.63, 0.55]
1.18 Leaving the study early	15		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.18.1 DBT vs. TAU	5	252	Risk Ratio (M-H, Random, 95% CI)	1.25 [0.54, 2.92]
1.18.2 DBT vs. general management	1	180	Risk Ratio (M-H, Random, 95% CI)	1.03 [0.71, 1.49]
1.18.3 DBT vs. CTBE	1	101	Risk Ratio (M-H, Random, 95% CI)	0.43 [0.28, 0.67]
1.18.4 DBT-PTSD vs. WL	1	32	Risk Ratio (M-H, Random, 95% CI)	1.94 [0.44, 8.57]
1.18.5 MBT-PH vs. TAU	1	44	Risk Ratio (M-H, Random, 95% CI)	1.00 [0.23, 4.42]
1.18.6 MBT-out vs. TAU	1	134	Risk Ratio (M-H, Random, 95% CI)	1.05 [0.59, 1.87]
1.18.7 TFP vs. CTBE	1	104	Risk Ratio (M-H, Random, 95% CI)	0.57 [0.39, 0.85]
1.18.8 CBT vs. TAU	1	106	Risk Ratio (M-H, Random, 95% CI)	0.48 [0.09, 2.52]
1.18.9 DDP vs. TAU	1	30	Risk Ratio (M-H, Random, 95% CI)	0.83 [0.32, 2.15]

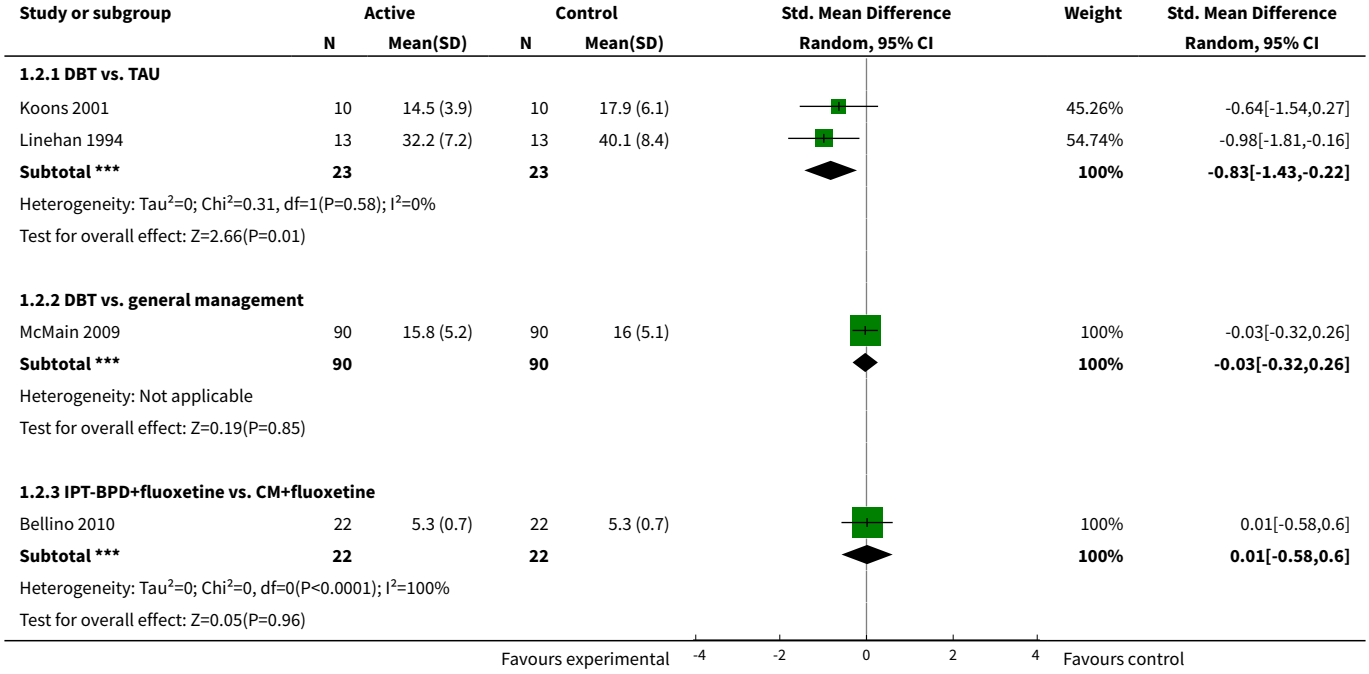
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.18.10 IPT vs. CM	1	39	Risk Ratio (M-H, Random, 95% CI)	0.79 [0.20, 3.07]
1.18.11 IPT-BPD+fluoxetine vs. CM+fluoxetine	1	55	Risk Ratio (M-H, Random, 95% CI)	0.35 [0.08, 1.57]
1.19 Leaving the study early: sensitivity analysis (non-rural areas only)	5		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.19.1 DBT vs. TAU	5	252	Risk Ratio (M-H, Random, 95% CI)	1.25 [0.54, 2.92]
1.19.2 DBT vs. TAU: non-rural areas only	4	179	Risk Ratio (M-H, Random, 95% CI)	0.80 [0.47, 1.36]

Analysis 1.1. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 1: BPD total severity

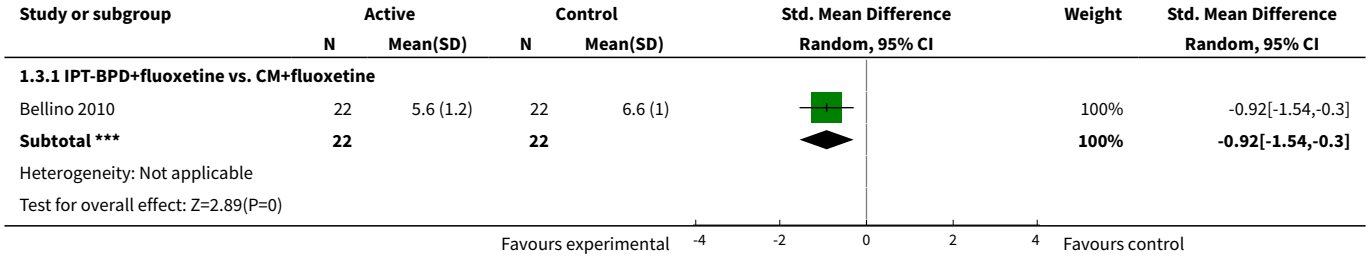




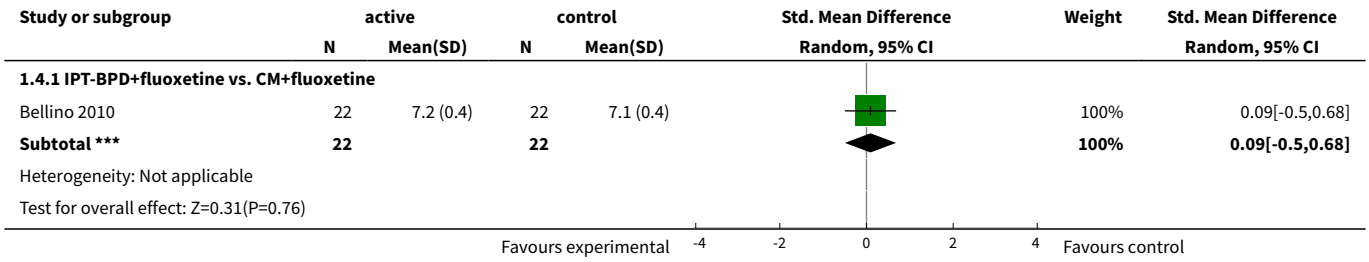
Analysis 1.2. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 2: Inappropriate anger



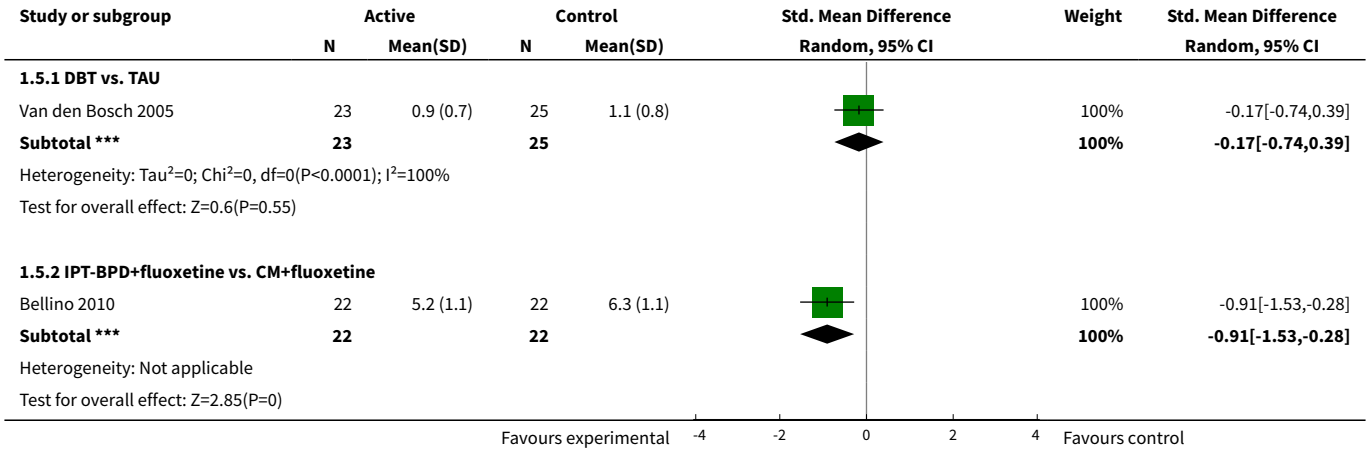
Analysis 1.3. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 3: Affective instability



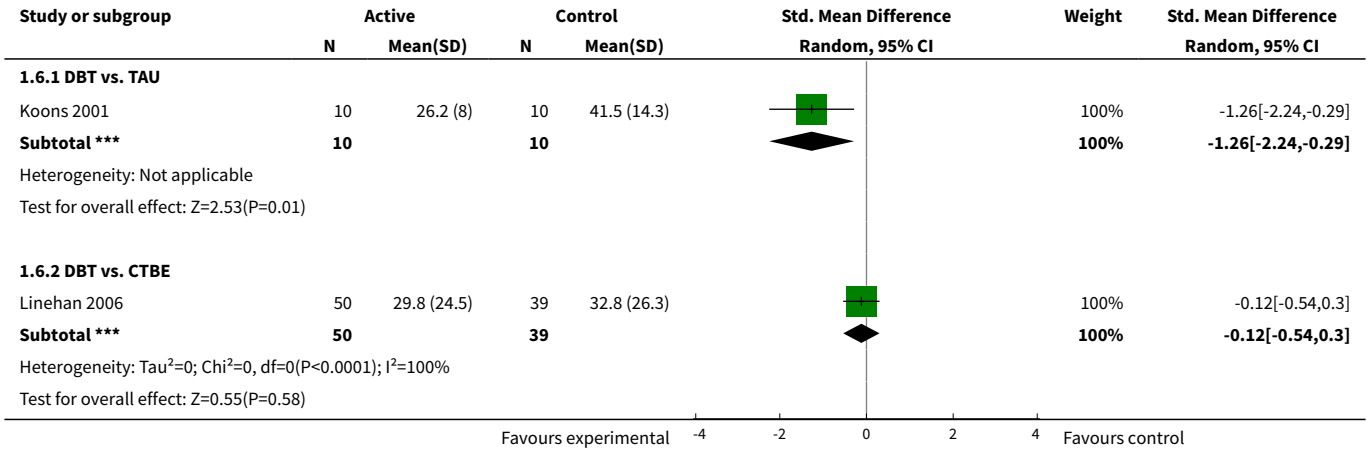
Analysis 1.4. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 4: chronic feelings of emptiness



Analysis 1.5. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 5: Impulsivity

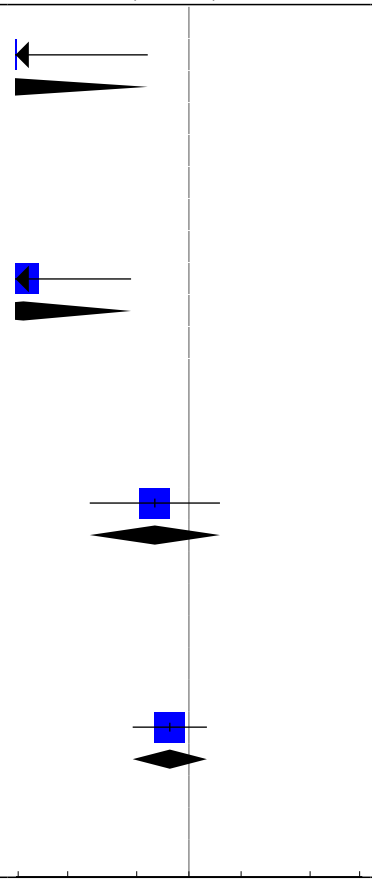


Analysis 1.6. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 6: Suicidality



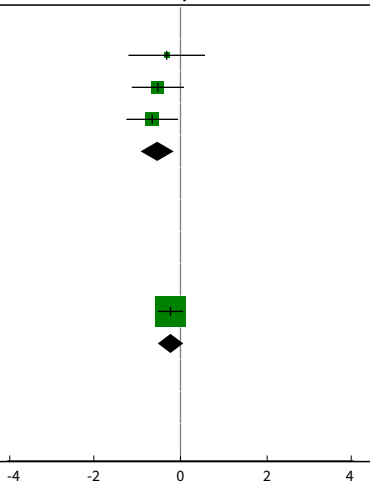
Analysis 1.7. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 7: Suicidality

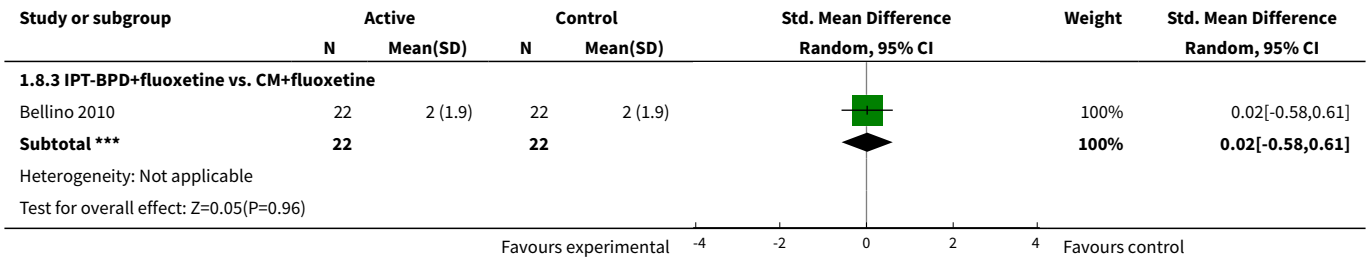
Study or subgroup	Active n/N	Control n/N	Risk Ratio M-H, Random, 95% CI	Weight	Risk Ratio M-H, Random, 95% CI
1.7.1 MBT-PH vs. TAU					
Bateman 1999	1/19	12/19		100%	0.08[0.01,0.58]
Subtotal (95% CI)	**19**	**19**		**100%**	**0.08[0.01,0.58]**
Total events: 1 (Active), 12 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=2.51(P=0.01)					
1.7.2 MBT-outpatient vs. TAU					
Bateman 2009	2/71	16/63		100%	0.11[0.03,0.46]
Subtotal (95% CI)	**71**	**63**		**100%**	**0.11[0.03,0.46]**
Total events: 2 (Active), 16 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=3.01(P=0)					
1.7.3 TFP vs. CTBE					
Doering 2010	7/52	11/52		100%	0.64[0.27,1.51]
Subtotal (95% CI)	**52**	**52**		**100%**	**0.64[0.27,1.51]**
Total events: 7 (Active), 11 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.02(P=0.31)					
1.7.4 CBT vs. TAU					
Davidson 2006	18/53	21/48		100%	0.78[0.47,1.27]
Subtotal (95% CI)	**53**	**48**		**100%**	**0.78[0.47,1.27]**
Total events: 18 (Active), 21 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0, df=0(P<0.0001); I^2=100%					
Test for overall effect: Z=1.01(P=0.31)					



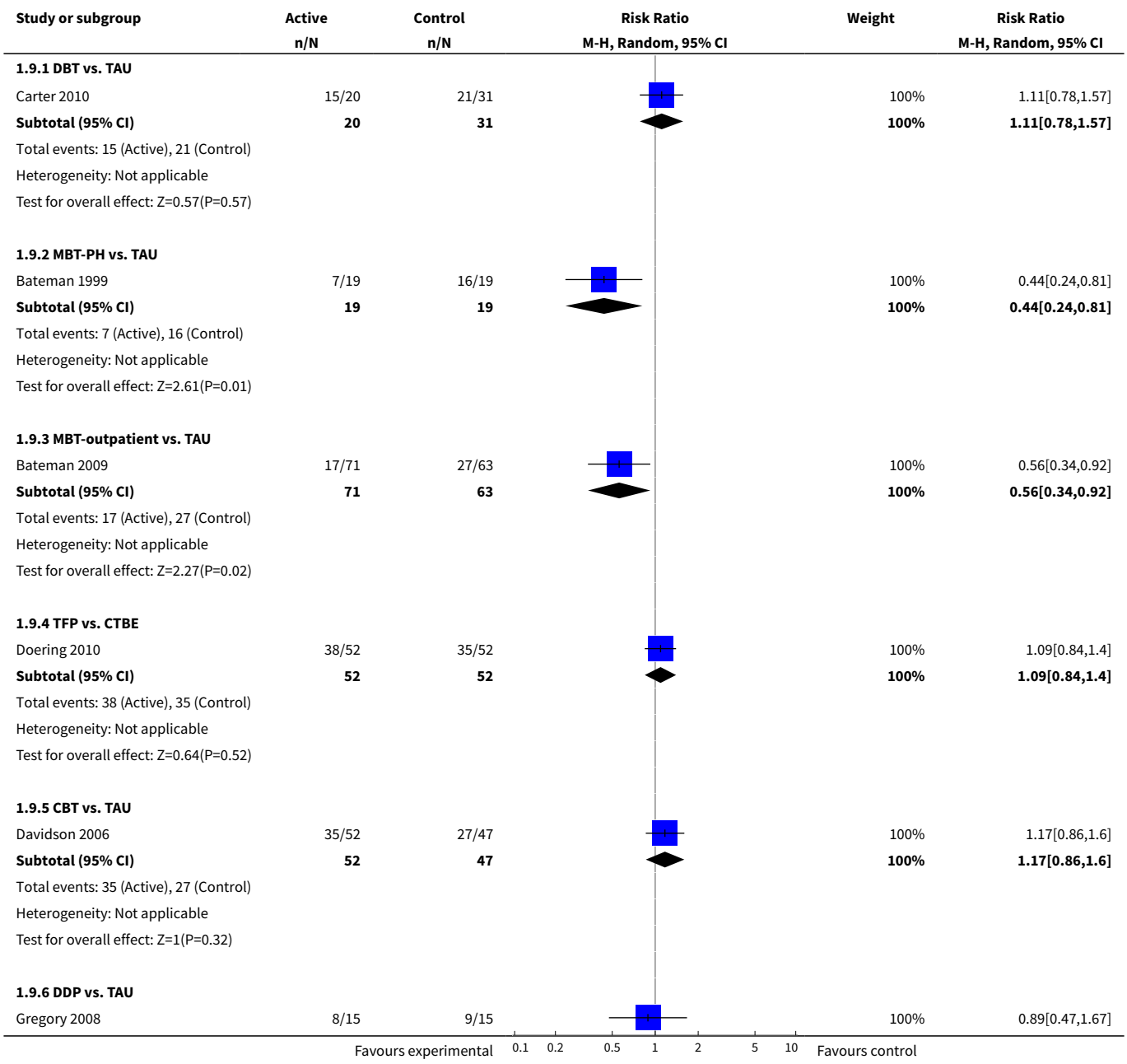
Analysis 1.8. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 8: Parasuicidality

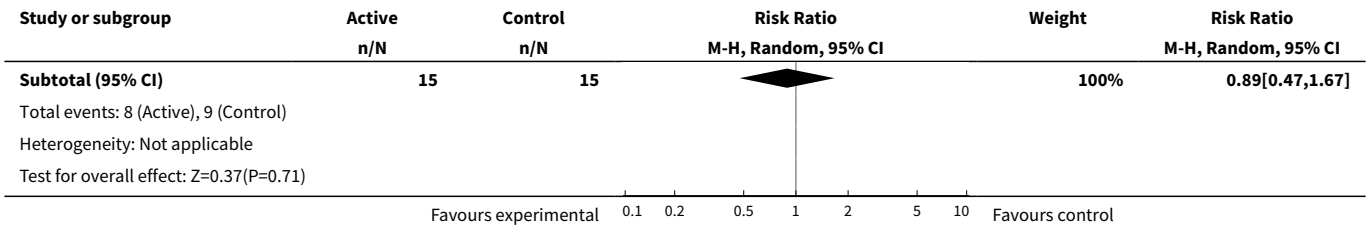
Study or subgroup	Active N	Active Mean(SD)	Control N	Control Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
1.8.1 DBT vs. TAU							
Koons 2001	10	0.4 (1.3)	10	1 (2.2)		18.66%	-0.32[-1.2,0.57]
Linehan 1991	22	6.8 (12.4)	22	33.5 (70)		40.2%	-0.52[-1.12,0.08]
Van den Bosch 2005	22	3.3 (13.2)	24	41.6 (78.8)		41.13%	-0.65[-1.25,-0.06]
Subtotal ***	**54**		**56**			**100%**	**-0.54[-0.92,-0.16]**
Heterogeneity: Tau^2=0; Chi^2=0.38, df=2(P=0.83); I^2=0%							
Test for overall effect: Z=2.76(P=0.01)							
1.8.2 DBT vs. general management							
McMain 2009	90	4.3 (9.3)	90	12.9 (51.5)		100%	-0.23[-0.52,0.06]
Subtotal ***	**90**		**90**			**100%**	**-0.23[-0.52,0.06]**
Heterogeneity: Not applicable							
Test for overall effect: Z=1.54(P=0.12)							



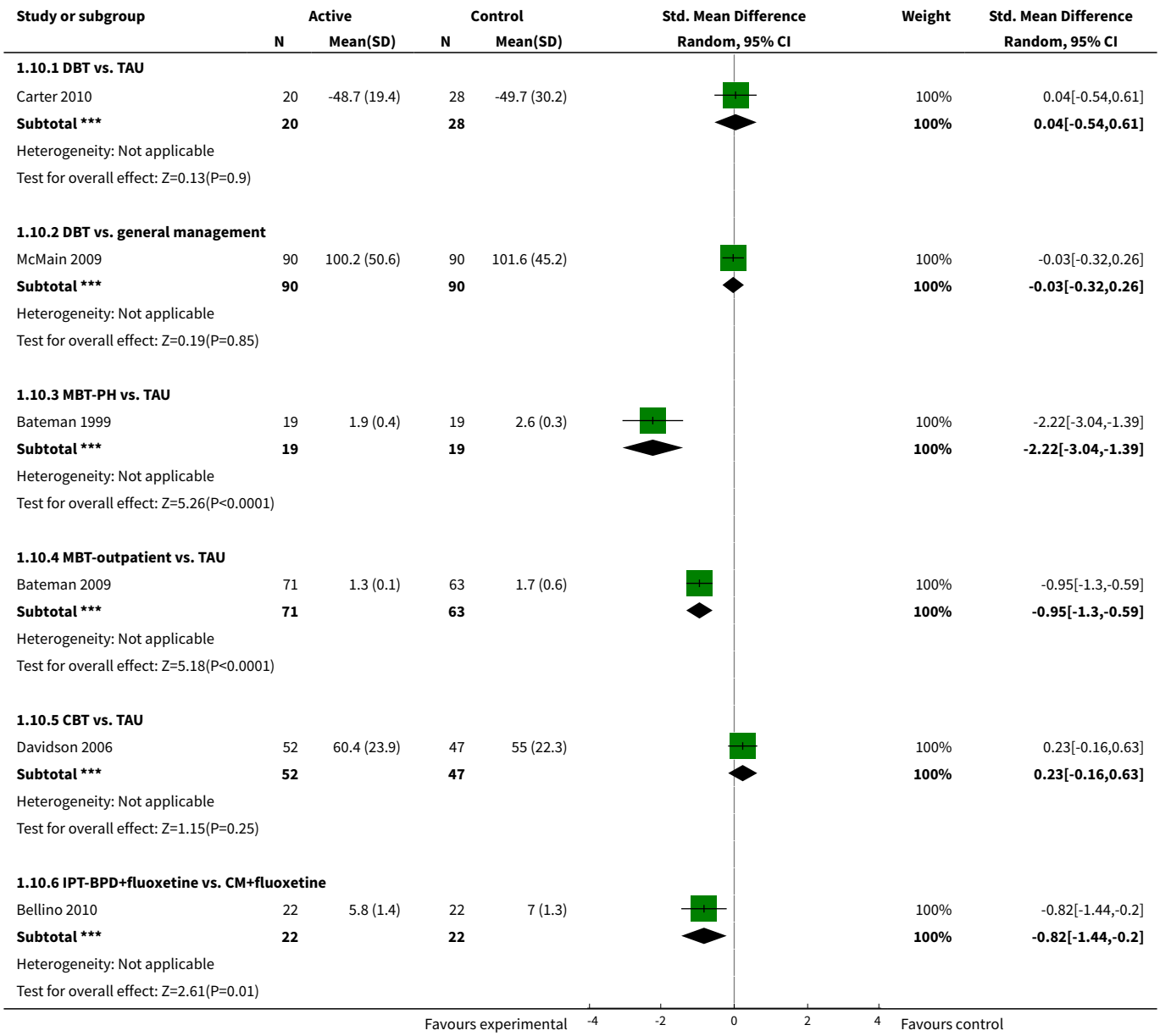


Analysis 1.9. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 9: Parasuicidality

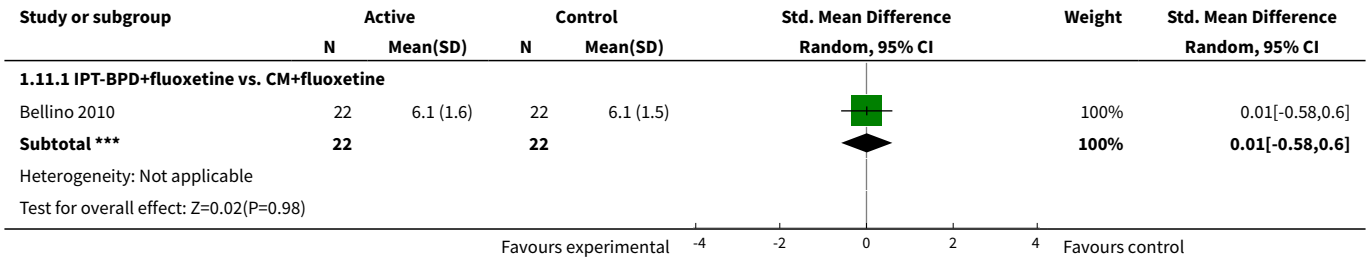




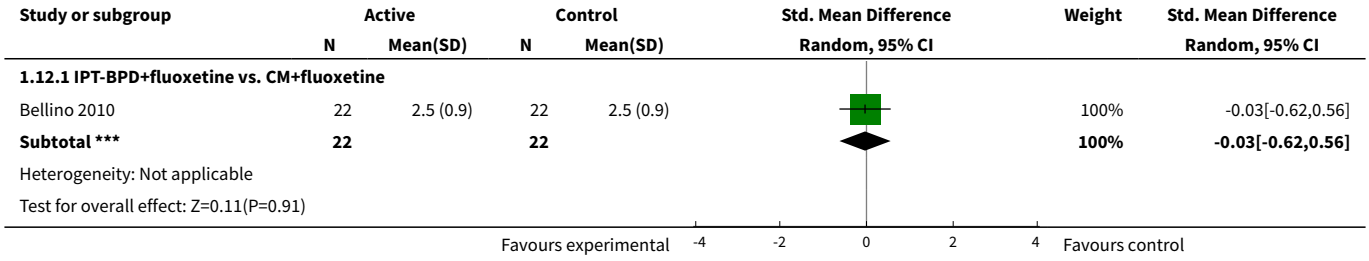
Analysis 1.10. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 10: Interpersonal problems



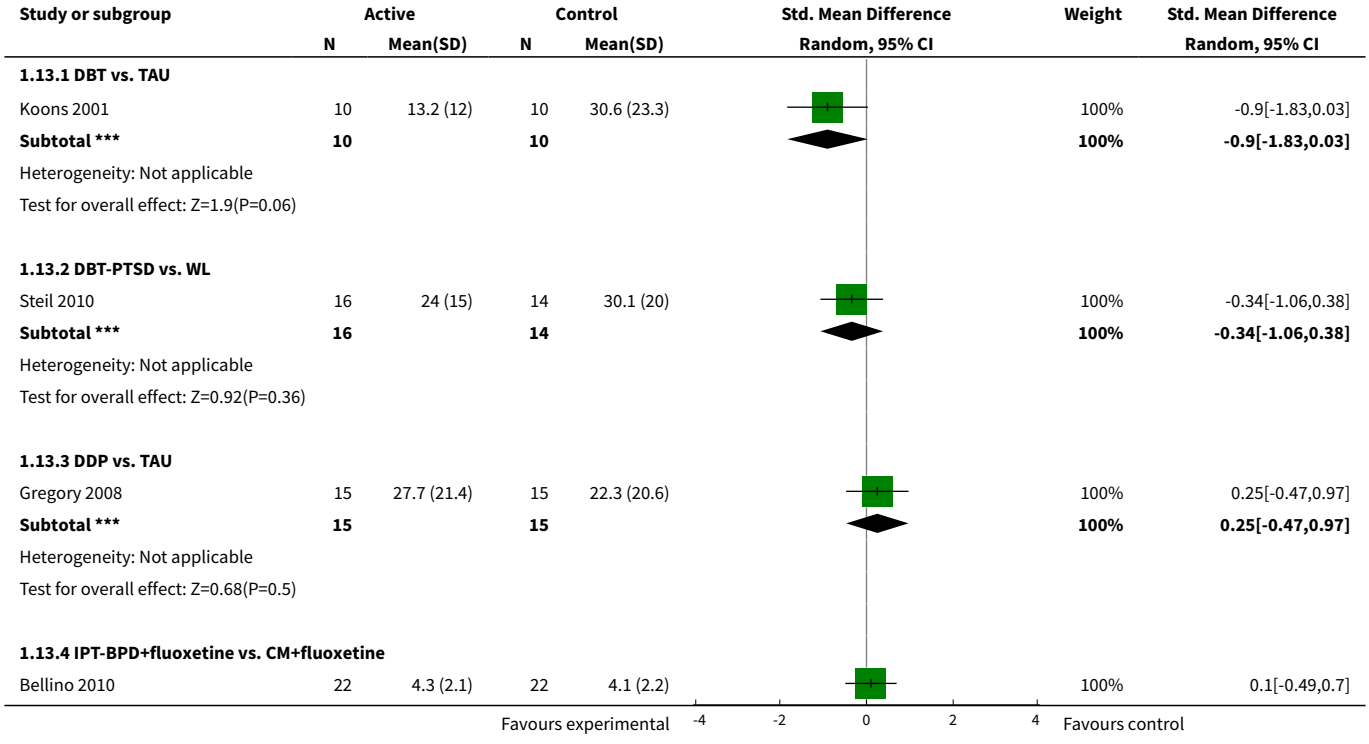
Analysis 1.11. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 11: Avoidance of abandonment

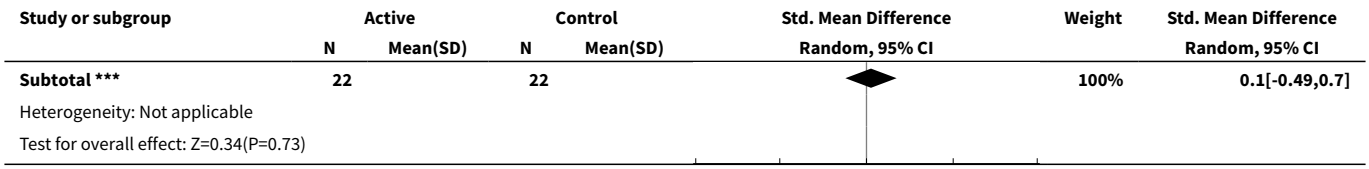


Analysis 1.12. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 12: Identity disturbance

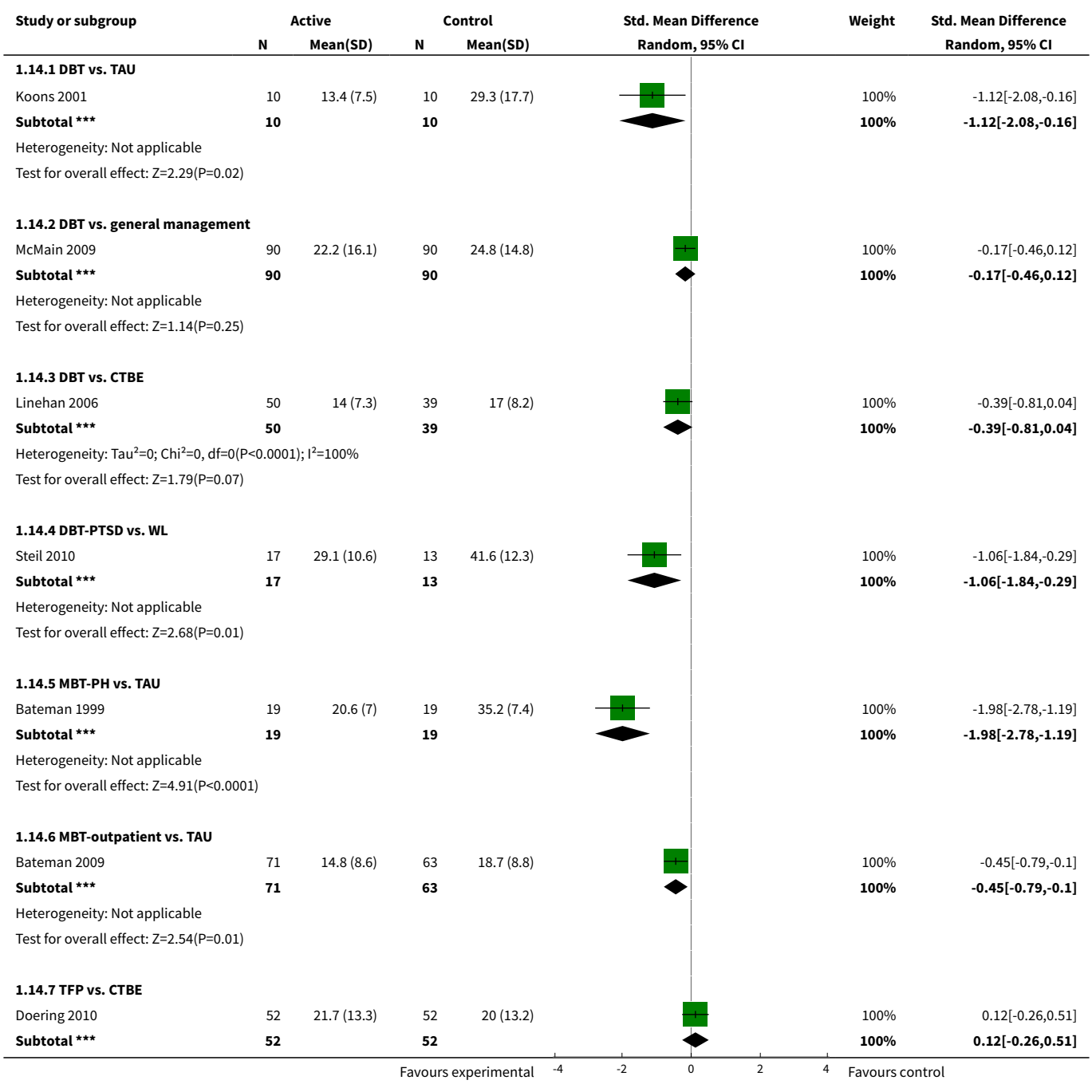


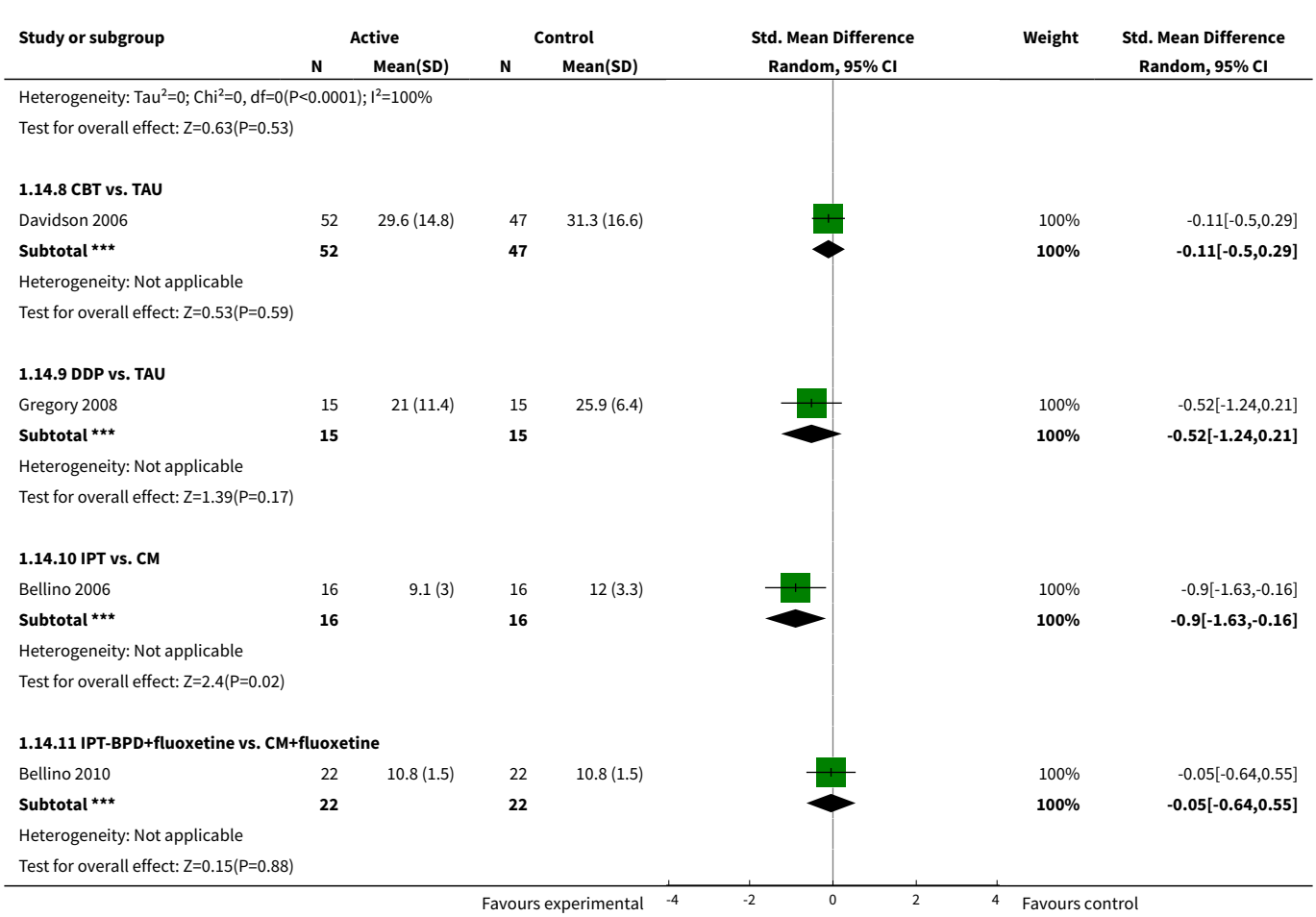
Analysis 1.13. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 13: Dissociation/psychoticism



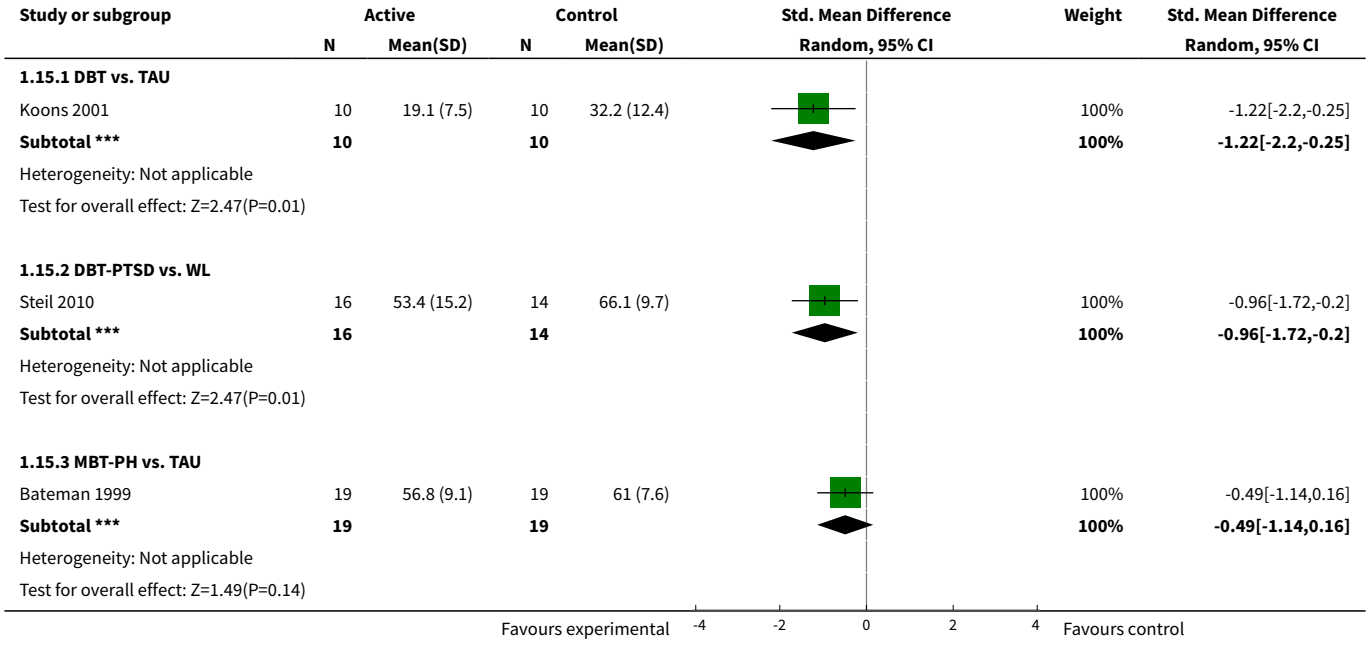


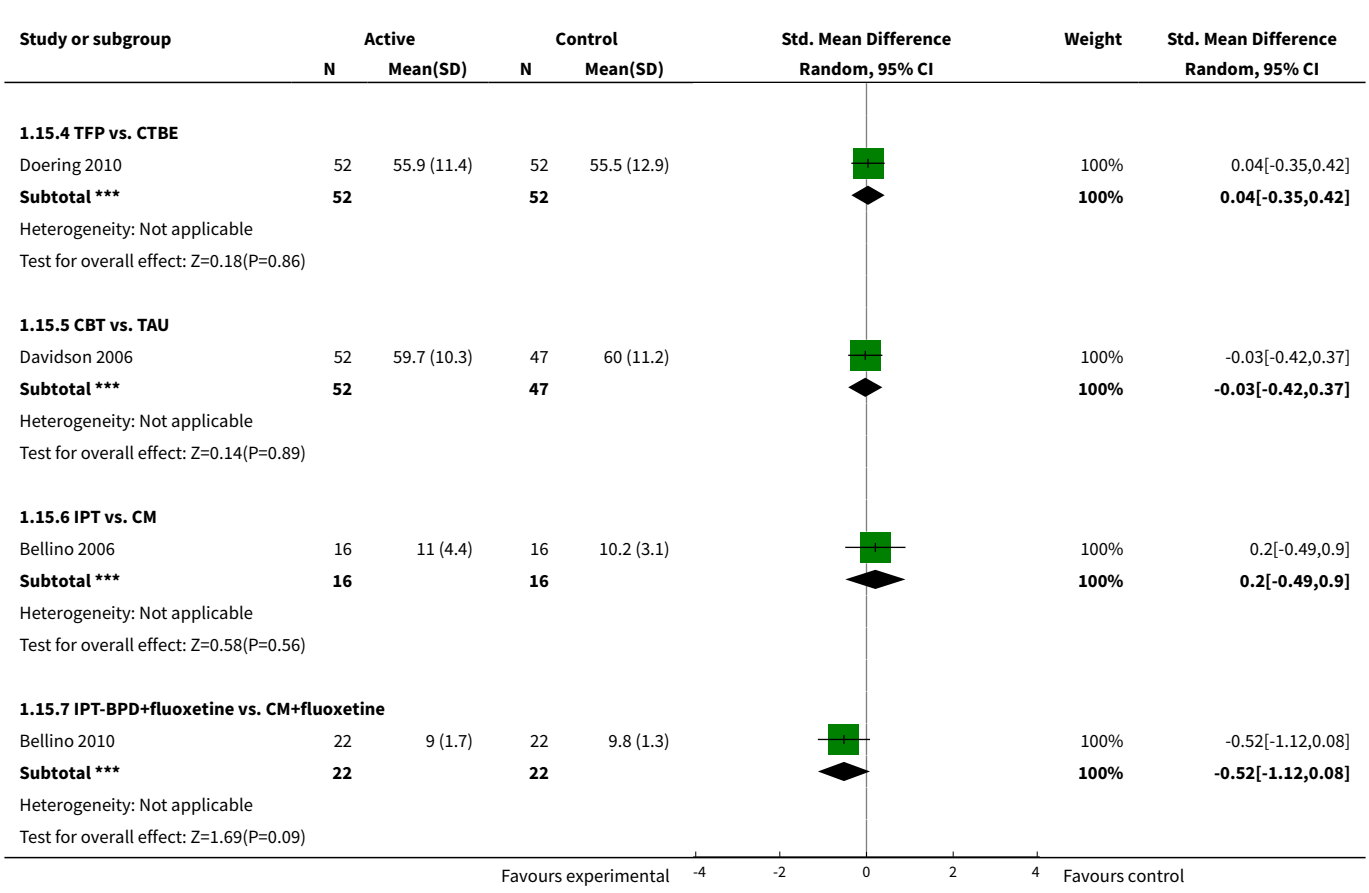
Analysis 1.14. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 14: Depression



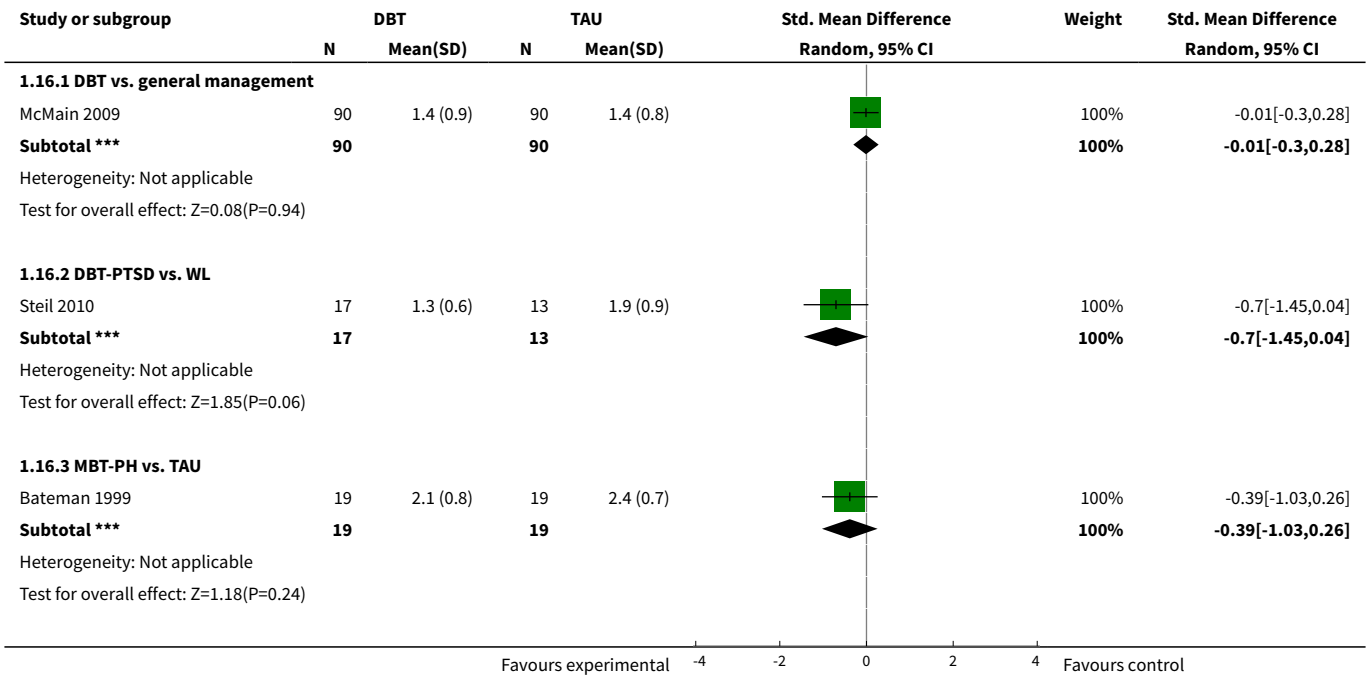


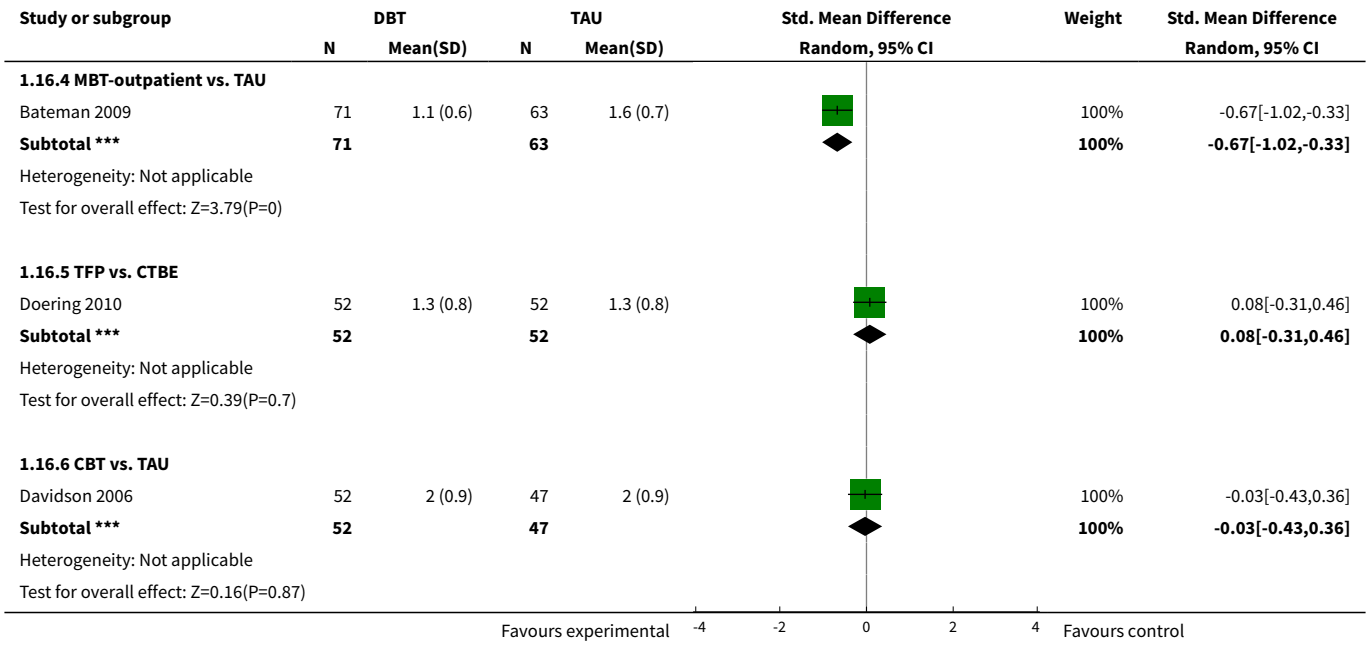
Analysis 1.15. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 15: Anxiety





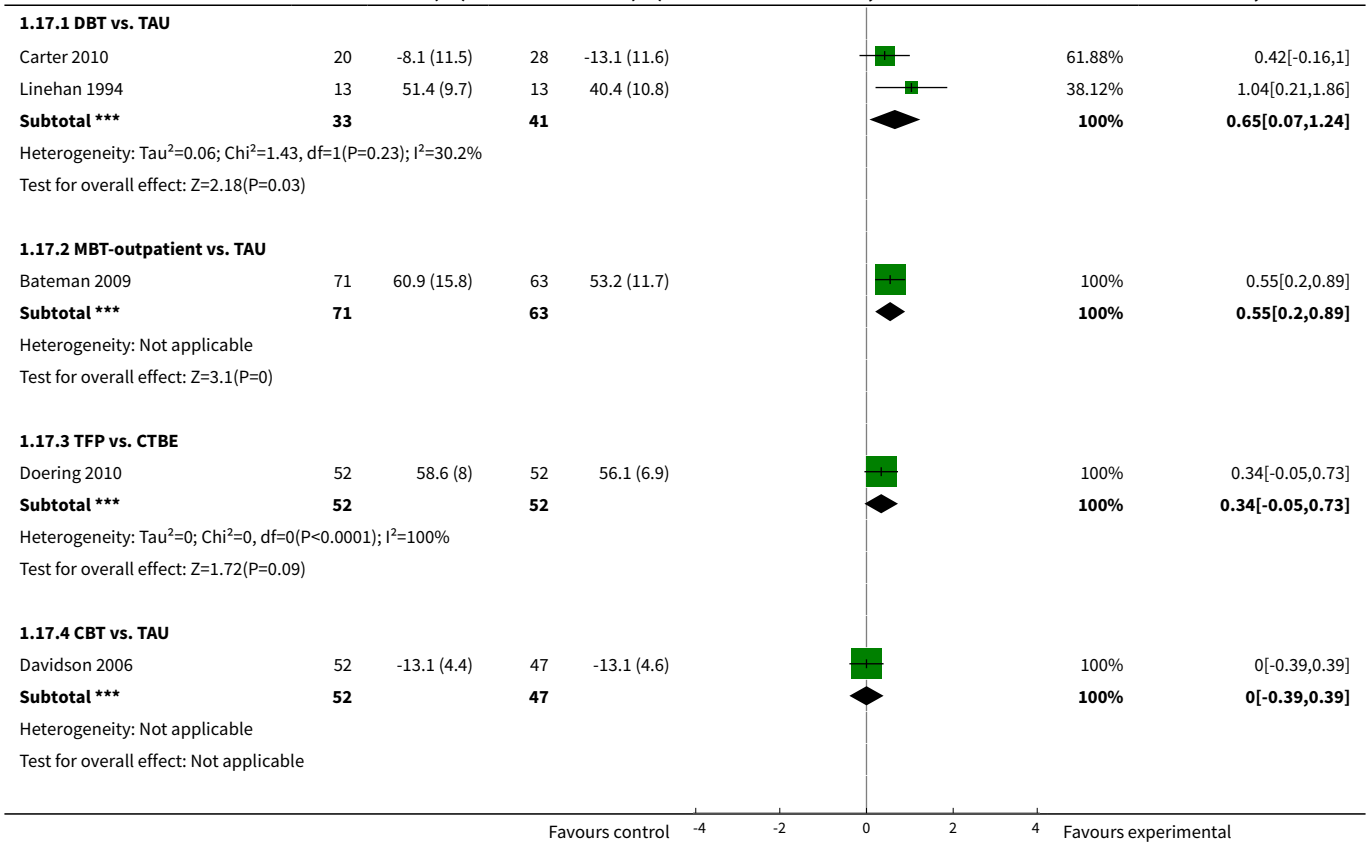
Analysis 1.16. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 16: General psychopathology



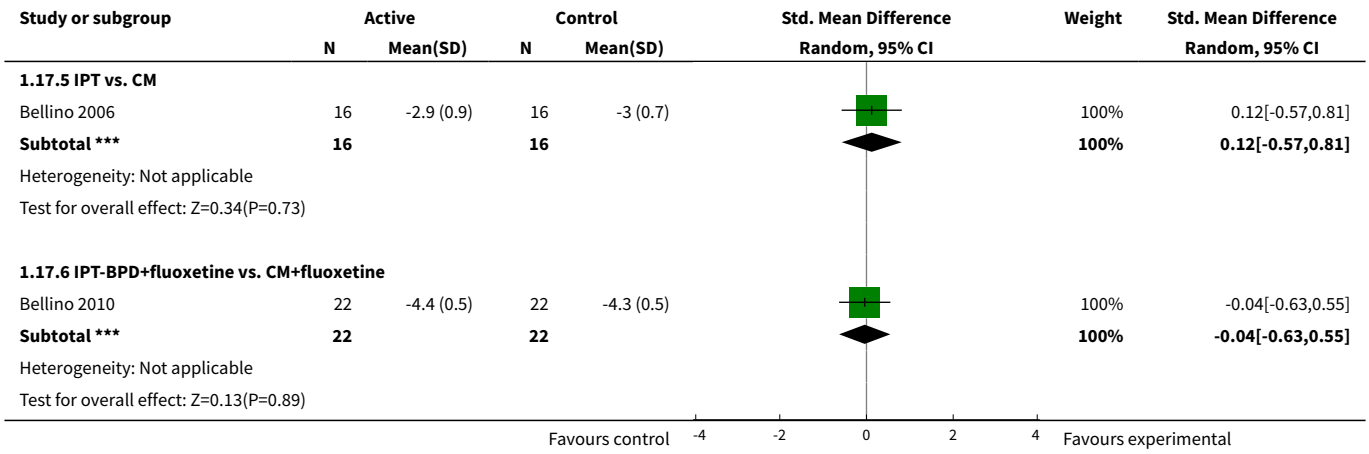


Study or subgroup	DBT N	DBT Mean(SD)	TAU N	TAU Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
1.16.4 MBT-outpatient vs. TAU							
Bateman 2009	71	1.1 (0.6)	63	1.6 (0.7)		100%	-0.67[-1.02,-0.33]
Subtotal ***	**71**		**63**			**100%**	**-0.67[-1.02,-0.33]**
Heterogeneity: Not applicable							
Test for overall effect: Z=3.79(P=0)							
1.16.5 TFP vs. CTBE							
Doering 2010	52	1.3 (0.8)	52	1.3 (0.8)		100%	0.08[-0.31,0.46]
Subtotal ***	**52**		**52**			**100%**	**0.08[-0.31,0.46]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.39(P=0.7)							
1.16.6 CBT vs. TAU							
Davidson 2006	52	2 (0.9)	47	2 (0.9)		100%	-0.03[-0.43,0.36]
Subtotal ***	**52**		**47**			**100%**	**-0.03[-0.43,0.36]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.16(P=0.87)							

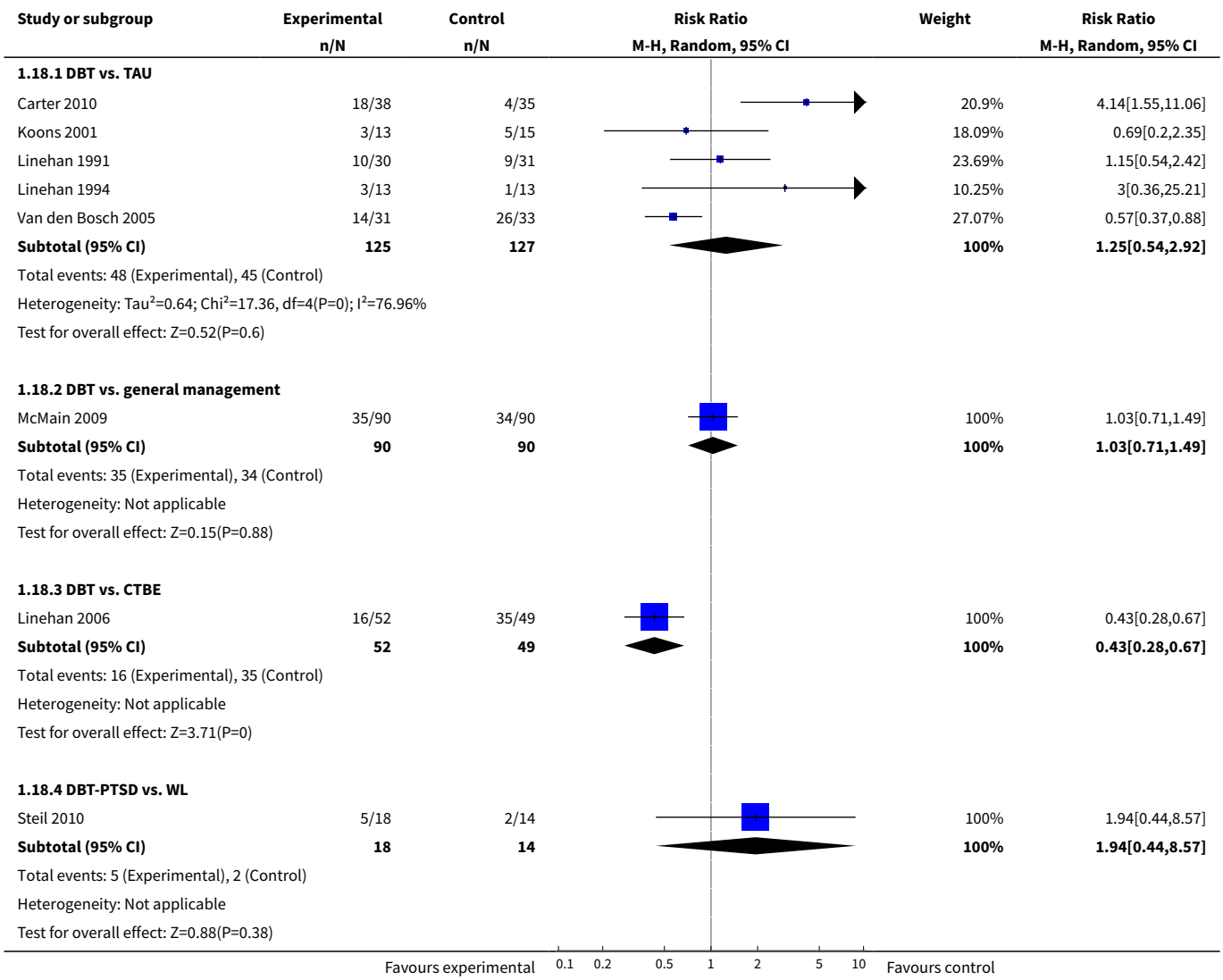
Analysis 1.17. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 17: Mental health status/functioning

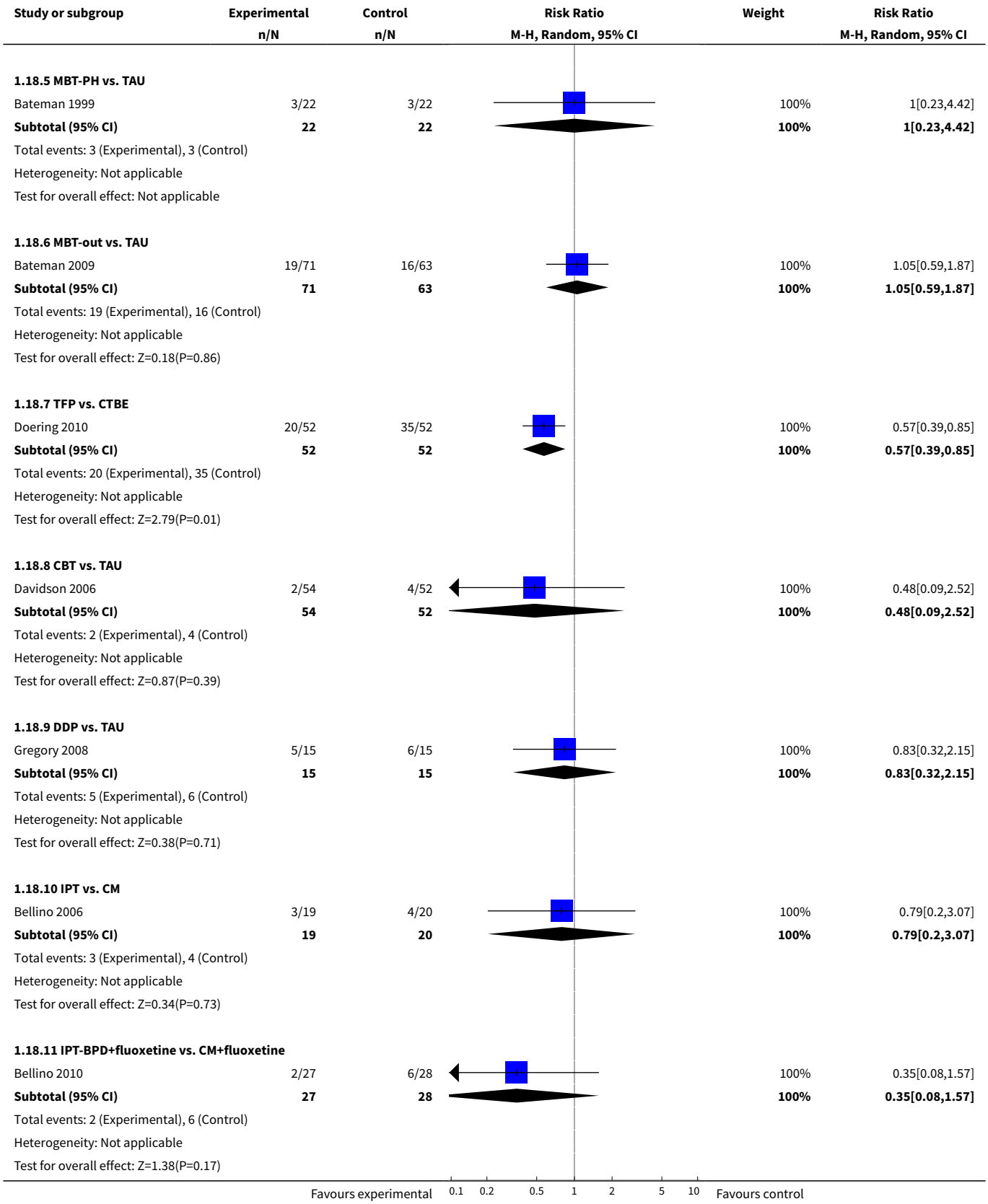


Study or subgroup	Active N	Active Mean(SD)	Control N	Control Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
1.17.1 DBT vs. TAU							
Carter 2010	20	-8.1 (11.5)	28	-13.1 (11.6)		61.88%	0.42[-0.16,1]
Linehan 1994	13	51.4 (9.7)	13	40.4 (10.8)		38.12%	1.04[0.21,1.86]
Subtotal ***	**33**		**41**			**100%**	**0.65[0.07,1.24]**
Heterogeneity: Tau^2=0.06; Chi^2=1.43, df=1(P=0.23); I^2=30.2%							
Test for overall effect: Z=2.18(P=0.03)							
1.17.2 MBT-outpatient vs. TAU							
Bateman 2009	71	60.9 (15.8)	63	53.2 (11.7)		100%	0.55[0.2,0.89]
Subtotal ***	**71**		**63**			**100%**	**0.55[0.2,0.89]**
Heterogeneity: Not applicable							
Test for overall effect: Z=3.1(P=0)							
1.17.3 TFP vs. CTBE							
Doering 2010	52	58.6 (8)	52	56.1 (6.9)		100%	0.34[-0.05,0.73]
Subtotal ***	**52**		**52**			**100%**	**0.34[-0.05,0.73]**
Heterogeneity: Tau^2=0; Chi^2=0, df=0(P<0.0001); I^2=100%							
Test for overall effect: Z=1.72(P=0.09)							
1.17.4 CBT vs. TAU							
Davidson 2006	52	-13.1 (4.4)	47	-13.1 (4.6)		100%	0[-0.39,0.39]
Subtotal ***	**52**		**47**			**100%**	**0[-0.39,0.39]**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							

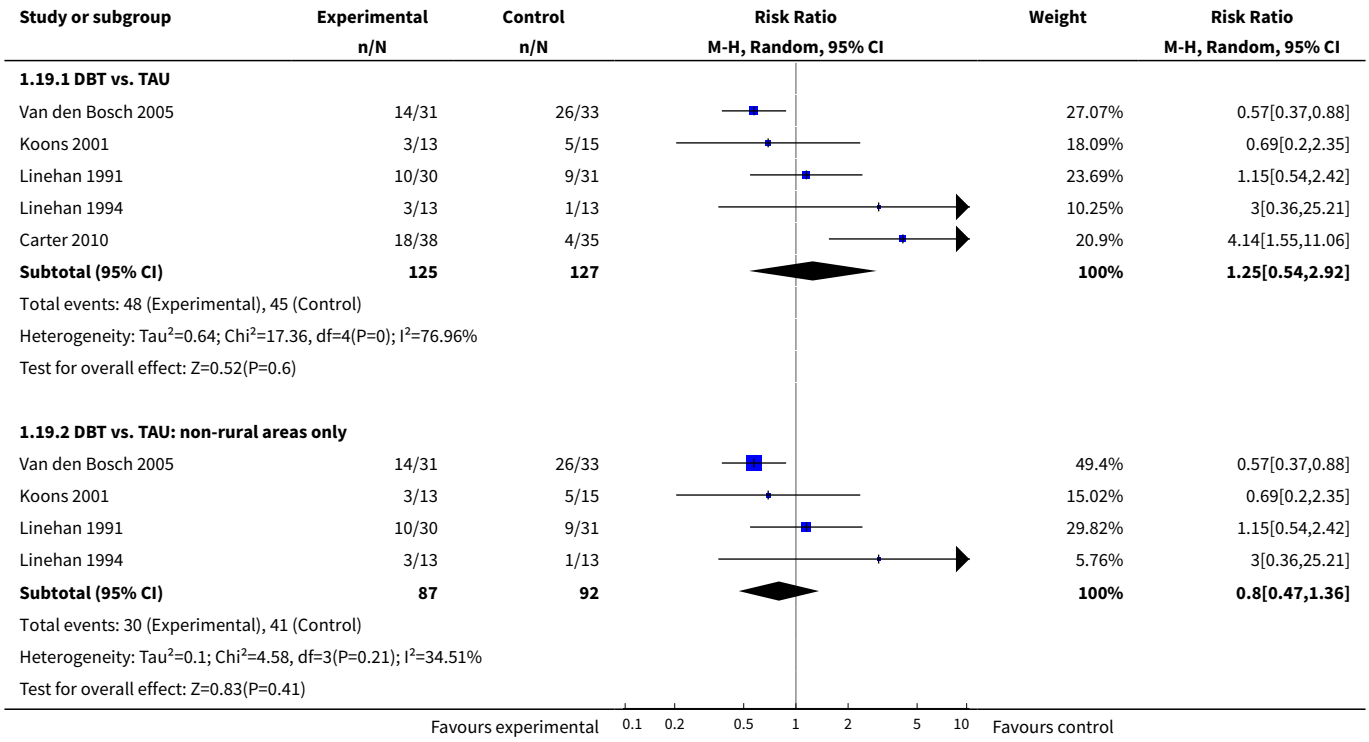


Analysis 1.18. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 18: Leaving the study early





Analysis 1.19. Comparison 1: Comprehensive psychotherapies: active vs. control conditions, Outcome 19: Leaving the study early: sensitivity analysis (non-rural areas only)



Comparison 2. Non-comprehensive psychotherapeutic interventions: active vs. control conditions

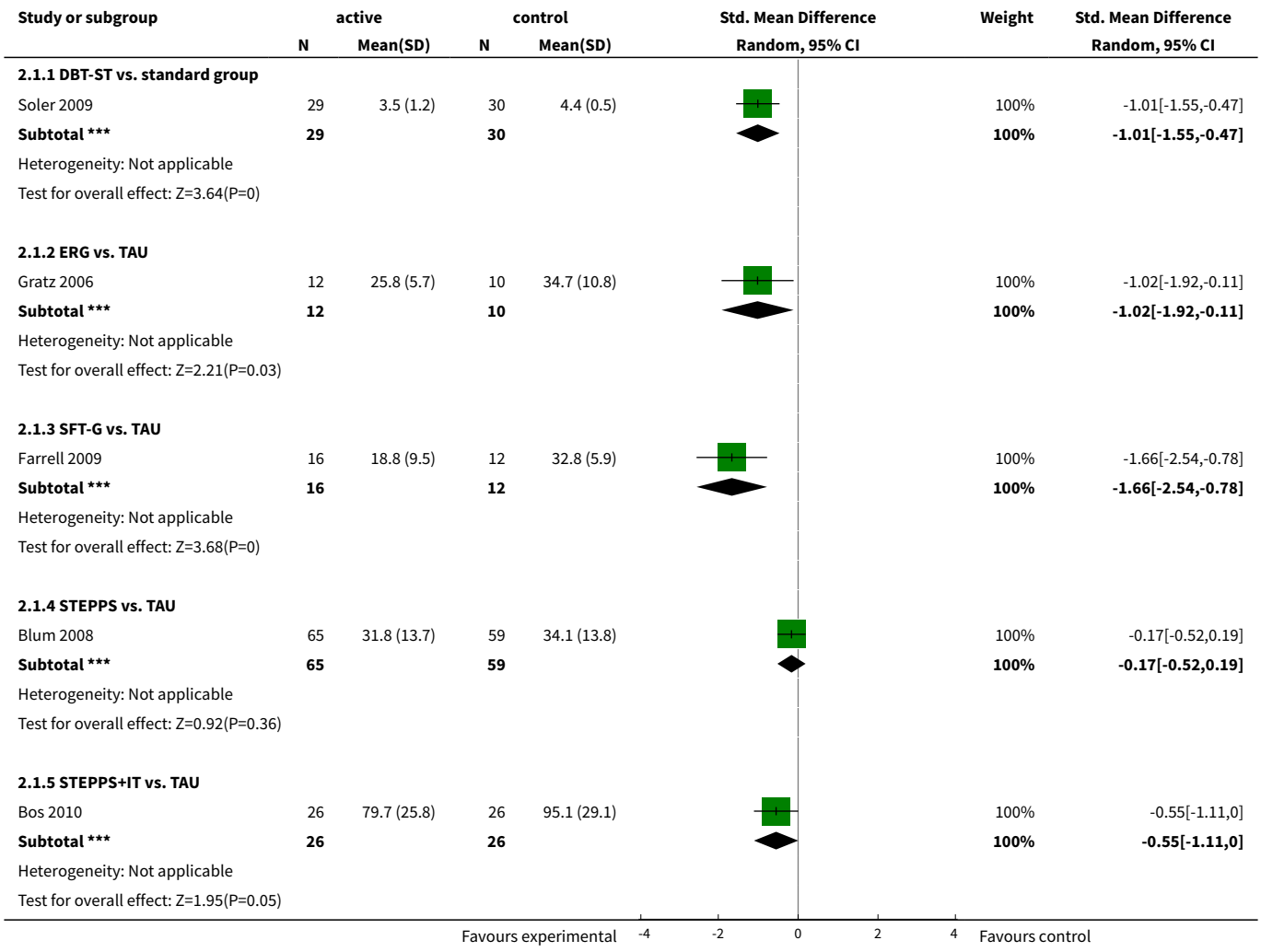
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.1 BPD total severity	5		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2.1.1 DBT-ST vs. standard group	1	59	Std. Mean Difference (IV, Random, 95% CI)	-1.01 [-1.55, -0.47]
2.1.2 ERG vs. TAU	1	22	Std. Mean Difference (IV, Random, 95% CI)	-1.02 [-1.92, -0.11]
2.1.3 SFT-G vs. TAU	1	28	Std. Mean Difference (IV, Random, 95% CI)	-1.66 [-2.54, -0.78]
2.1.4 STEPPS vs. TAU	1	124	Std. Mean Difference (IV, Random, 95% CI)	-0.17 [-0.52, 0.19]
2.1.5 STEPPS+IT vs. TAU	1	52	Std. Mean Difference (IV, Random, 95% CI)	-0.55 [-1.11, 0.00]
2.2 Inappropriate anger	1		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.2.1 DBT-ST vs. standard group	1	59	Std. Mean Difference (IV, Random, 95% CI)	-0.84 [-1.37, -0.30]
2.3 Affective instability	4		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2.3.1 DBT-ST vs. standard group	1	59	Std. Mean Difference (IV, Random, 95% CI)	-1.07 [-1.61, -0.52]
2.3.2 ERG vs. TAU	1	22	Std. Mean Difference (IV, Random, 95% CI)	-1.65 [-2.65, -0.65]
2.3.3 SFT-G vs. TAU	1	28	Std. Mean Difference (IV, Random, 95% CI)	-1.41 [-2.26, -0.57]
2.3.4 STEPPS vs. TAU	1	124	Std. Mean Difference (IV, Random, 95% CI)	-0.32 [-0.67, 0.04]
2.4 Chronic feelings of emptiness	1		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2.4.1 DBT-ST vs. standard group	1	59	Std. Mean Difference (IV, Random, 95% CI)	-0.43 [-0.95, 0.09]
2.5 Impulsivity	5		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2.5.1 DBT-ST vs. standard group	1	59	Std. Mean Difference (IV, Random, 95% CI)	-0.61 [-1.14, -0.09]
2.5.2 ERG vs. TAU	1	22	Std. Mean Difference (IV, Random, 95% CI)	-1.30 [-2.24, -0.36]
2.5.3 SFT-G vs. TAU	1	28	Std. Mean Difference (IV, Random, 95% CI)	-1.92 [-2.85, -1.00]
2.5.4 STEPPS vs. TAU	1	124	Std. Mean Difference (IV, Random, 95% CI)	-0.29 [-0.64, 0.07]
2.5.5 PE vs. WL	1	50	Std. Mean Difference (IV, Random, 95% CI)	-0.47 [-1.04, 0.10]
2.6 Impulsivity	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
2.6.1 STEPPS+IT vs. TAU	1	58	Risk Ratio (M-H, Random, 95% CI)	0.93 [0.66, 1.29]
2.7 Suicidality	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2.7.1 DBT-ST vs. standard group	1	59	Std. Mean Difference (IV, Random, 95% CI)	-0.10 [-0.61, 0.41]
2.7.2 MACT vs. TAU	1	28	Std. Mean Difference (IV, Random, 95% CI)	-0.86 [-1.64, -0.07]

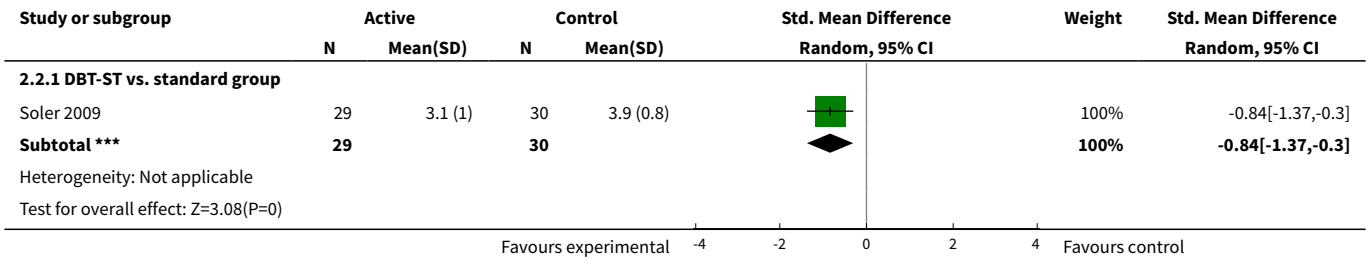
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.8 Parasuicidality	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2.8.1 ERG vs. TAU	1	22	Std. Mean Difference (IV, Random, 95% CI)	-0.98 [-1.88, -0.09]
2.8.2 MACT vs. TAU	1	28	Std. Mean Difference (IV, Random, 95% CI)	-0.88 [-1.67, -0.10]
2.9 Parasuicidality	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
2.9.1 STEPPS+IT vs. TAU	1	58	Risk Ratio (M-H, Random, 95% CI)	1.32 [0.78, 2.22]
2.10 Interpersonal problems	5		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2.10.1 DBT-ST vs. standard group	1	59	Std. Mean Difference (IV, Random, 95% CI)	-0.29 [-0.80, 0.23]
2.10.2 SFT-G vs. TAU	1	28	Std. Mean Difference (IV, Random, 95% CI)	-1.94 [-2.87, -1.02]
2.10.3 STEPPS vs. TAU	1	124	Std. Mean Difference (IV, Random, 95% CI)	-0.42 [-0.78, -0.06]
2.10.4 STEPPS+IT vs. TAU	1	53	Std. Mean Difference (IV, Random, 95% CI)	-0.27 [-0.81, 0.27]
2.10.5 PE vs. WL	1	50	Std. Mean Difference (IV, Random, 95% CI)	-0.75 [-1.33, -0.16]
2.11 Dissociation/psychoticism	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2.11.1 DBT-ST vs. standard group	1	59	Std. Mean Difference (IV, Random, 95% CI)	-0.66 [-1.18, -0.13]
2.11.2 SFT-G vs. TAU	1	28	Std. Mean Difference (IV, Random, 95% CI)	-1.37 [-2.21, -0.53]
2.11.3 STEPPS vs. TAU	1	124	Std. Mean Difference (IV, Random, 95% CI)	-0.42 [-0.78, -0.06]
2.12 Depression	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2.12.1 DBT-ST vs. standard group	1	59	Std. Mean Difference (IV, Random, 95% CI)	-0.97 [-1.51, -0.43]
2.12.2 ERG vs. TAU	1	22	Std. Mean Difference (IV, Random, 95% CI)	-1.20 [-2.13, -0.28]
2.12.3 STEPPS vs. TAU	1	124	Std. Mean Difference (IV, Random, 95% CI)	-0.24 [-0.59, 0.11]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.13 Anxiety	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2.13.1 DBT-ST vs. standard group	1	59	Std. Mean Difference (IV, Random, 95% CI)	-0.67 [-1.20, -0.15]
2.13.2 ERG vs. TAU	1	22	Std. Mean Difference (IV, Random, 95% CI)	-0.89 [-1.78, -0.01]
2.14 General psychopathology	4		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2.14.1 DBT-ST vs. standard group	1	59	Std. Mean Difference (IV, Random, 95% CI)	-0.42 [-0.93, 0.10]
2.14.2 SFT-G vs. TAU	1	28	Std. Mean Difference (IV, Random, 95% CI)	-1.06 [-1.87, -0.25]
2.14.3 STEPPS vs. TAU	1	124	Std. Mean Difference (IV, Random, 95% CI)	-0.29 [-0.64, 0.07]
2.14.4 STEPPS+IT vs. TAU	1	51	Std. Mean Difference (IV, Random, 95% CI)	-0.60 [-1.16, -0.04]
2.15 Mental health status/functioning	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2.15.1 DBT-ST vs. standard group	1	59	Std. Mean Difference (IV, Random, 95% CI)	0.29 [-0.22, 0.80]
2.15.2 SFT-G vs. TAU	1	28	Std. Mean Difference (IV, Random, 95% CI)	1.20 [0.38, 2.03]
2.15.3 STEPPS vs. TAU	1	124	Std. Mean Difference (IV, Random, 95% CI)	0.38 [0.02, 0.73]
2.16 Leaving the study early	7		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
2.16.1 DBT-ST vs. standard group	1	60	Risk Ratio (M-H, Random, 95% CI)	0.58 [0.34, 1.00]
2.16.2 ERG vs. TAU	1	24	Risk Ratio (M-H, Random, 95% CI)	0.85 [0.06, 12.01]
2.16.3 SFT-G vs. TAU	1	32	Risk Ratio (M-H, Random, 95% CI)	0.11 [0.01, 1.91]
2.16.4 MACT vs. TAU	1	30	Risk Ratio (M-H, Random, 95% CI)	0.20 [0.01, 3.85]
2.16.5 STEPPS vs. TAU	1	124	Risk Ratio (M-H, Random, 95% CI)	2.27 [1.08, 4.76]
2.16.6 STEPPS+IT vs. TAU	1	79	Risk Ratio (M-H, Random, 95% CI)	1.47 [0.59, 3.65]
2.16.7 PE vs. WL	1	50	Risk Ratio (M-H, Random, 95% CI)	Not estimable

Analysis 2.1. Comparison 2: Non-comprehensive psychotherapeutic interventions: active vs. control conditions, Outcome 1: BPD total severity

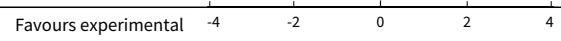


Analysis 2.2. Comparison 2: Non-comprehensive psychotherapeutic interventions: active vs. control conditions, Outcome 2: Inappropriate anger



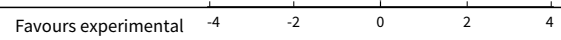
Analysis 2.3. Comparison 2: Non-comprehensive psychotherapeutic interventions: active vs. control conditions, Outcome 3: Affective instability

Study or subgroup	Active N	Active Mean(SD)	Control N	Control Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
2.3.1 DBT-ST vs. standard group							
Soler 2009	29	3.6 (1.2)	30	4.7 (0.7)		100%	-1.07[-1.61,-0.52]
Subtotal ***	**29**		**30**			**100%**	**-1.07[-1.61,-0.52]**
Heterogeneity: Not applicable							
Test for overall effect: Z=3.81(P=0)							
2.3.2 ERG vs. TAU							
Gratz 2006	12	79.8 (24)	10	115.8 (16.7)		100%	-1.65[-2.65,-0.65]
Subtotal ***	**12**		**10**			**100%**	**-1.65[-2.65,-0.65]**
Heterogeneity: Tau^2=0; Chi^2=0, df=0(P<0.0001); I^2=100%							
Test for overall effect: Z=3.24(P=0)							
2.3.3 SFT-G vs. TAU							
Farrell 2009	16	5.9 (3.4)	12	9.8 (1.1)		100%	-1.41[-2.26,-0.57]
Subtotal ***	**16**		**12**			**100%**	**-1.41[-2.26,-0.57]**
Heterogeneity: Not applicable							
Test for overall effect: Z=3.27(P=0)							
2.3.4 STEPPS vs. TAU							
Blum 2008	65	3.9 (3.2)	59	4.9 (3.1)		100%	-0.32[-0.67,0.04]
Subtotal ***	**65**		**59**			**100%**	**-0.32[-0.67,0.04]**
Heterogeneity: Tau^2=0; Chi^2=0, df=0(P<0.0001); I^2=100%							
Test for overall effect: Z=1.74(P=0.08)							



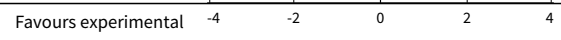
Analysis 2.4. Comparison 2: Non-comprehensive psychotherapeutic interventions: active vs. control conditions, Outcome 4: Chronic feelings of emptiness

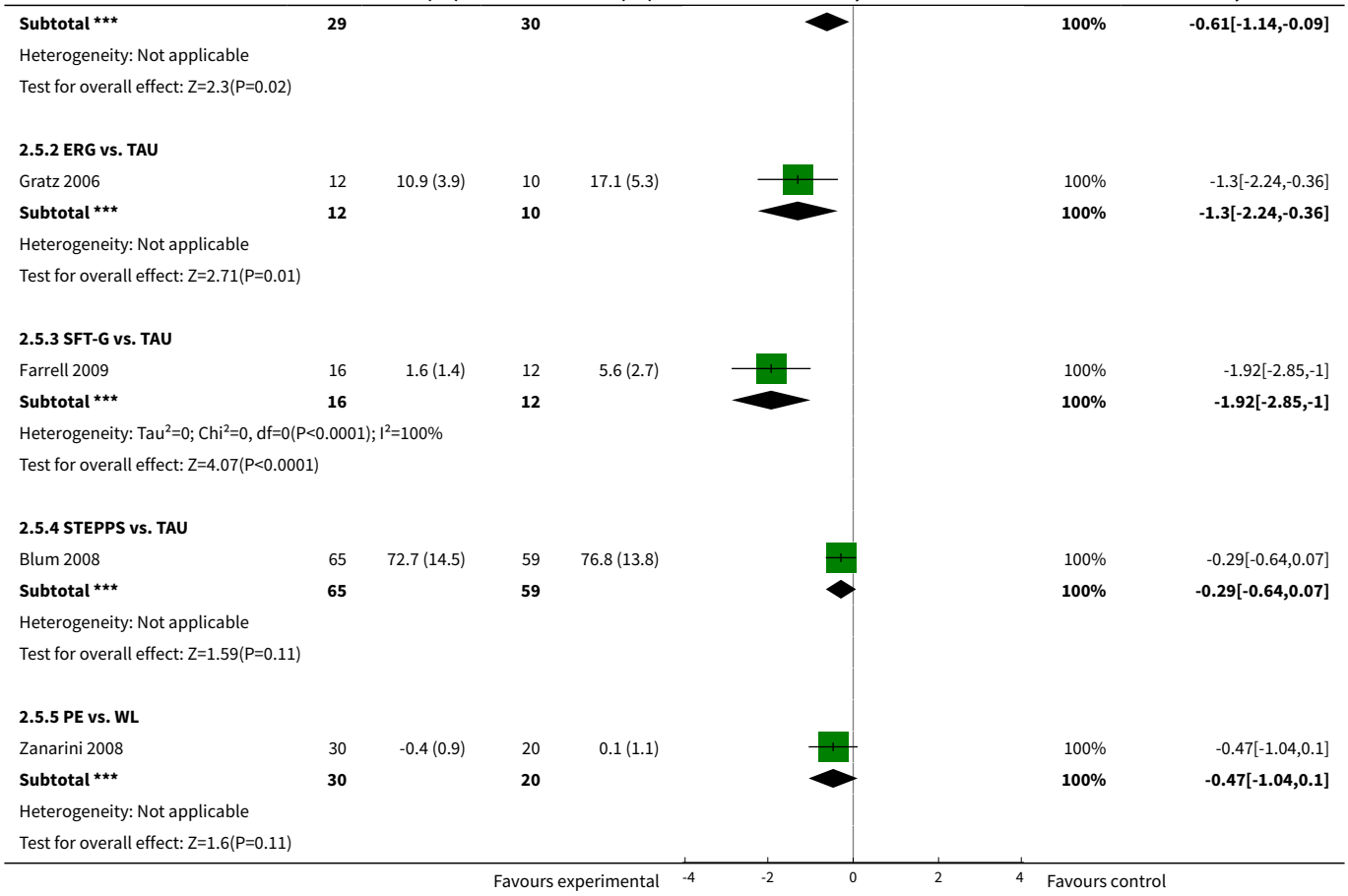
Study or subgroup	Active N	Active Mean(SD)	Control N	Control Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
2.4.1 DBT-ST vs. standard group							
Soler 2009	29	4.3 (1.6)	30	5 (1.5)		100%	-0.43[-0.95,0.09]
Subtotal ***	**29**		**30**			**100%**	**-0.43[-0.95,0.09]**
Heterogeneity: Not applicable							
Test for overall effect: Z=1.63(P=0.1)							



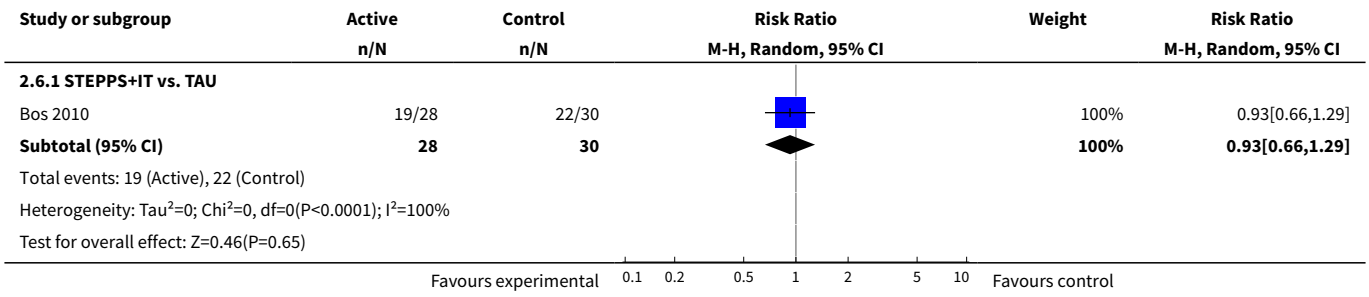
Analysis 2.5. Comparison 2: Non-comprehensive psychotherapeutic interventions: active vs. control conditions, Outcome 5: Impulsivity

Study or subgroup	Active N	Active Mean(SD)	Control N	Control Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
2.5.1 DBT-ST vs. standard group							
Soler 2009	29	3.6 (1)	30	4.1 (0.6)		100%	-0.61[-1.14,-0.09]

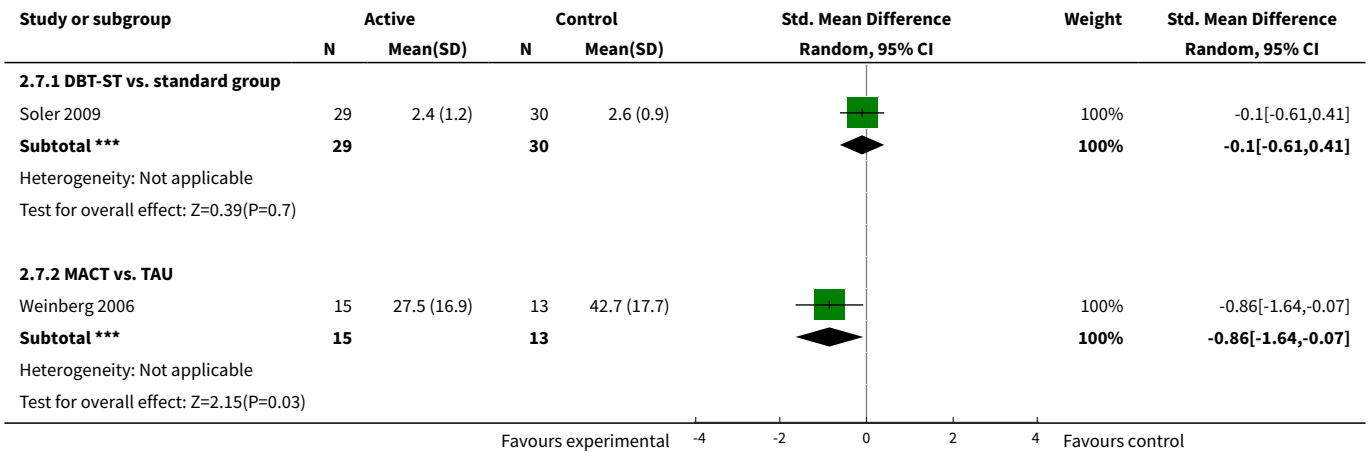




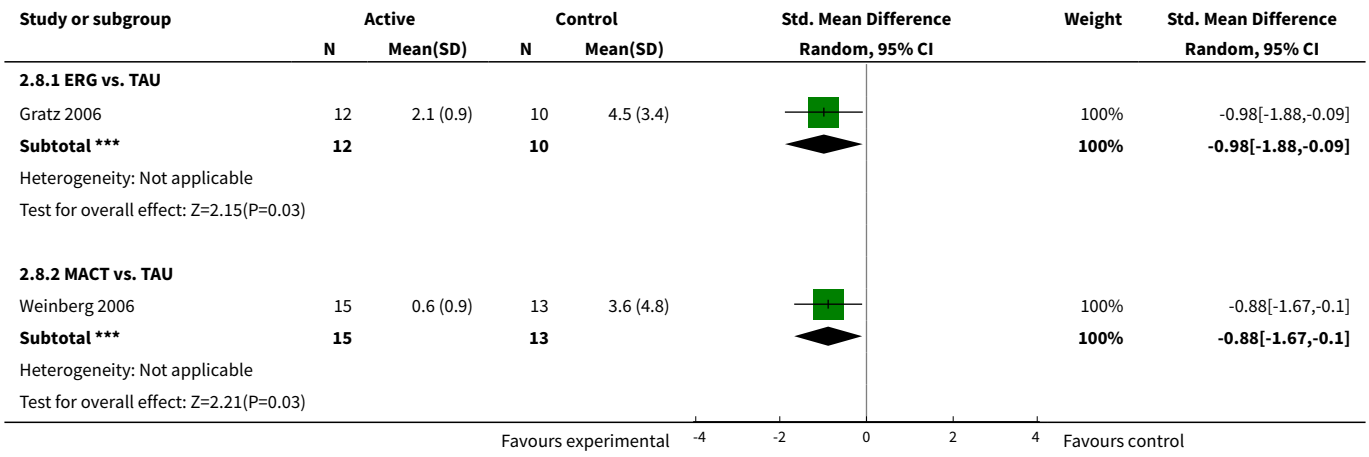
Analysis 2.6. Comparison 2: Non-comprehensive psychotherapeutic interventions: active vs. control conditions, Outcome 6: Impulsivity



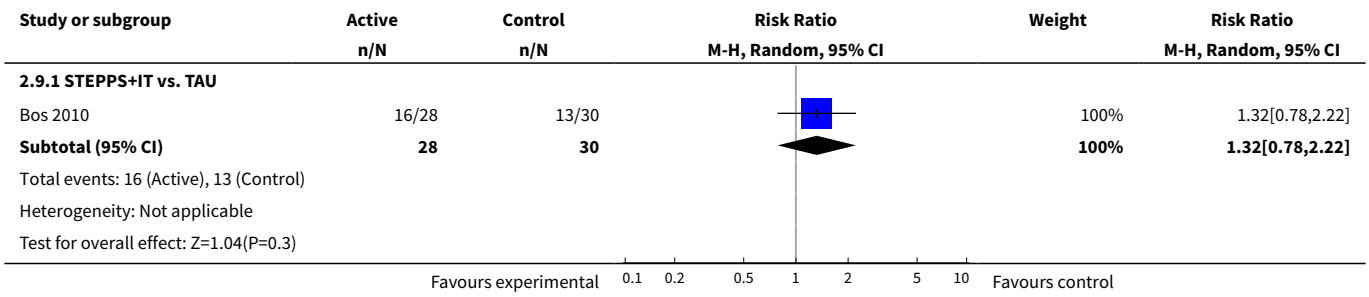
Analysis 2.7. Comparison 2: Non-comprehensive psychotherapeutic interventions: active vs. control conditions, Outcome 7: Suicidality



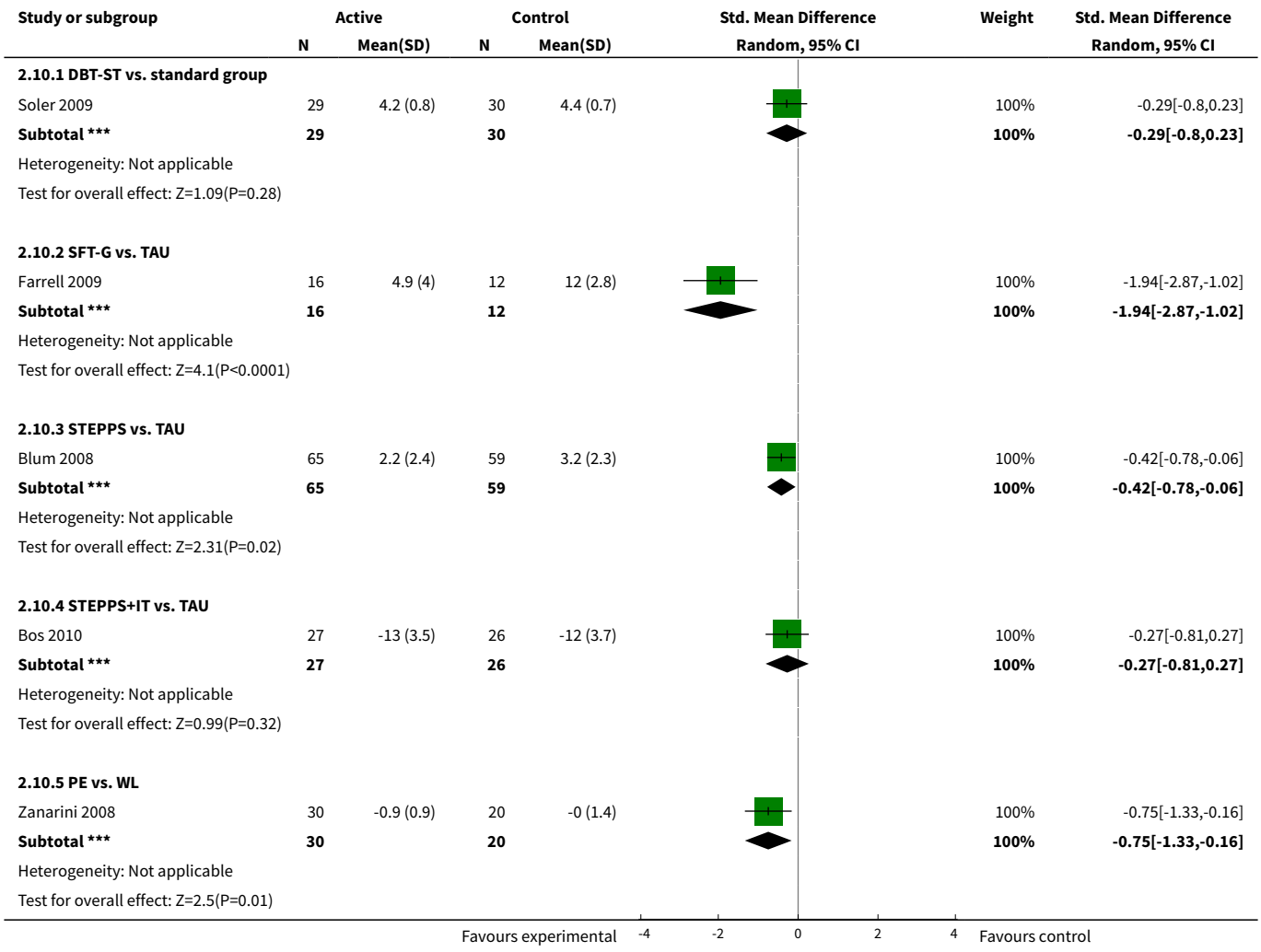
Analysis 2.8. Comparison 2: Non-comprehensive psychotherapeutic interventions: active vs. control conditions, Outcome 8: Parasuicidality



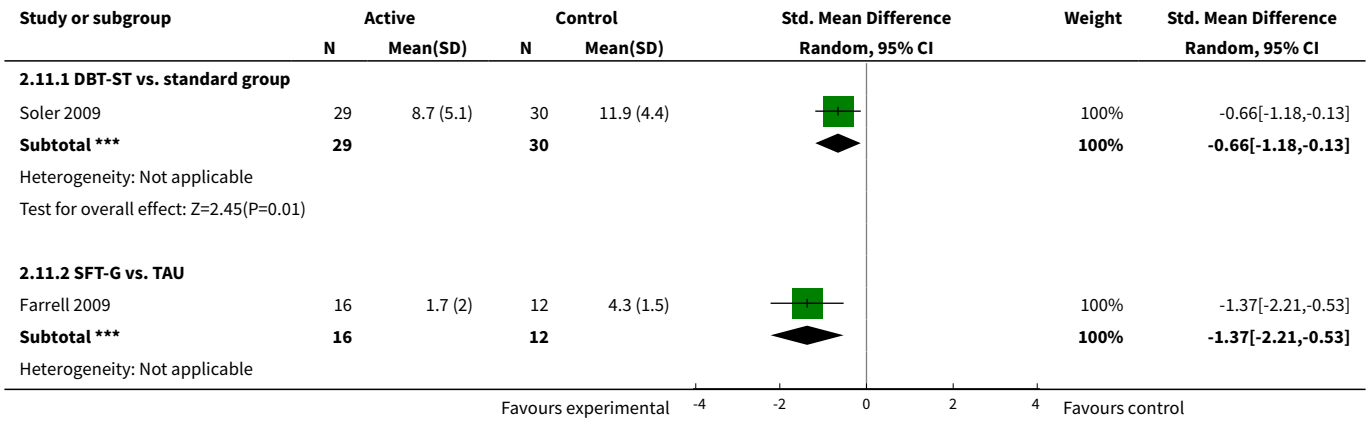
Analysis 2.9. Comparison 2: Non-comprehensive psychotherapeutic interventions: active vs. control conditions, Outcome 9: Parasuicidality

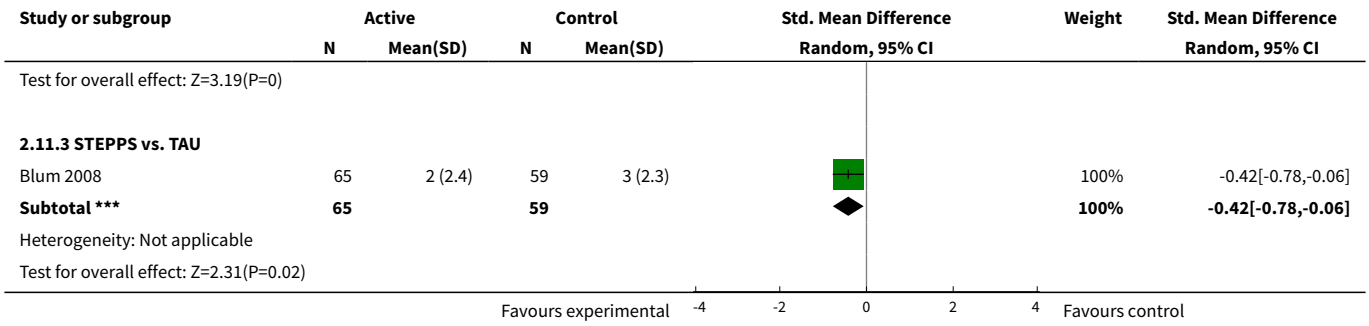


Analysis 2.10. Comparison 2: Non-comprehensive psychotherapeutic interventions: active vs. control conditions, Outcome 10: Interpersonal problems

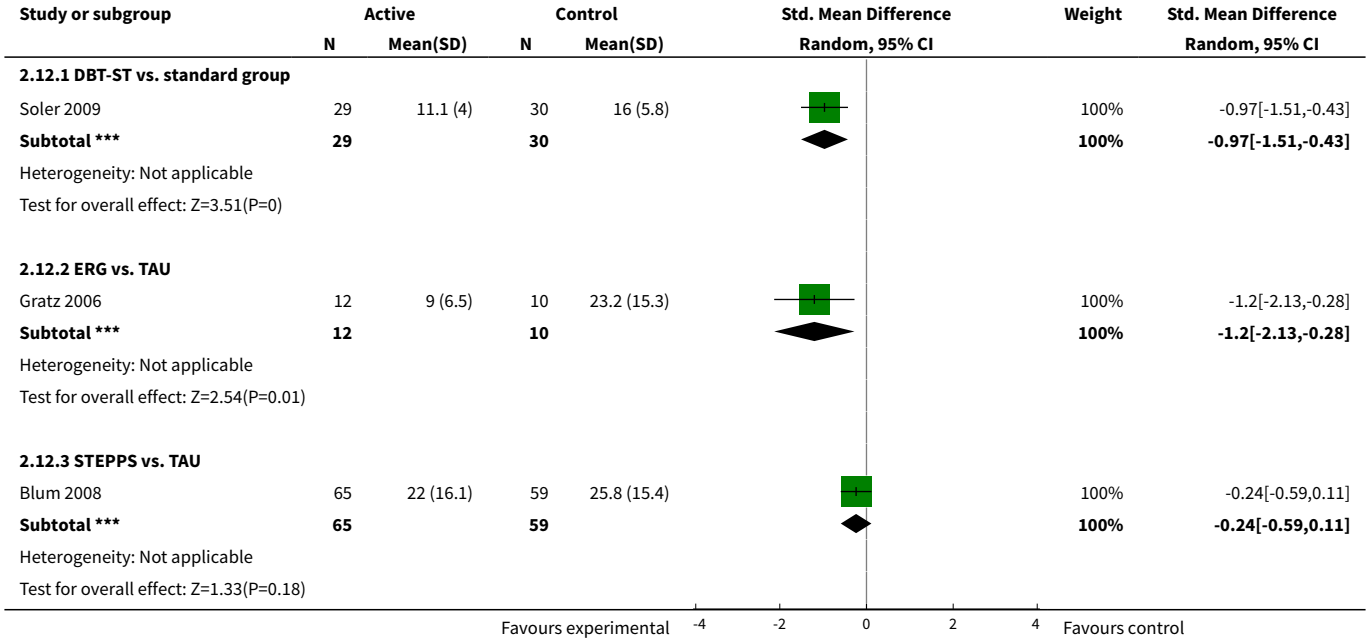


Analysis 2.11. Comparison 2: Non-comprehensive psychotherapeutic interventions: active vs. control conditions, Outcome 11: Dissociation/psychoticism

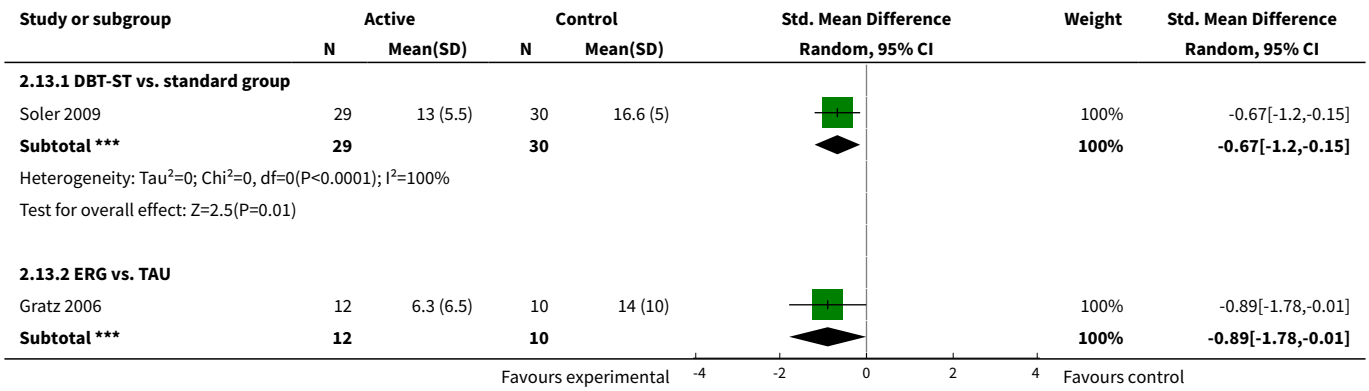


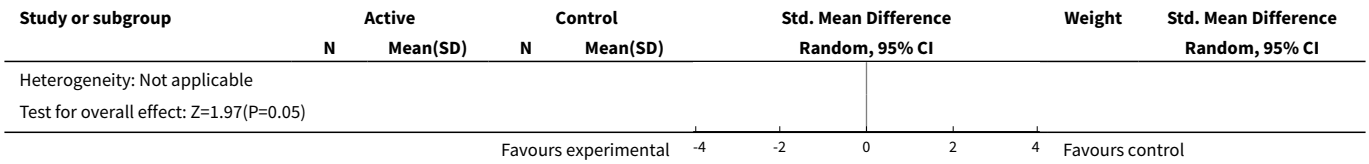


Analysis 2.12. Comparison 2: Non-comprehensive psychotherapeutic interventions: active vs. control conditions, Outcome 12: Depression

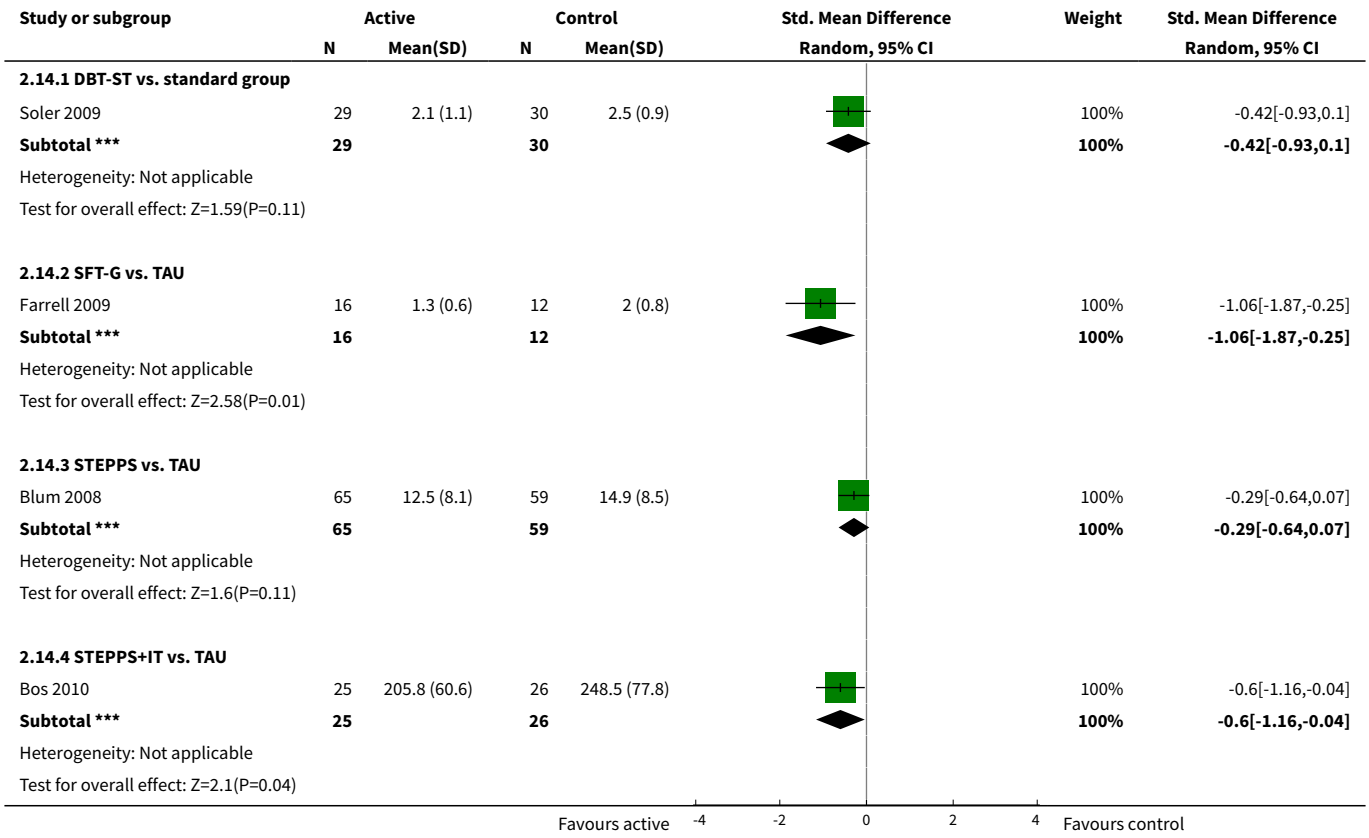


Analysis 2.13. Comparison 2: Non-comprehensive psychotherapeutic interventions: active vs. control conditions, Outcome 13: Anxiety

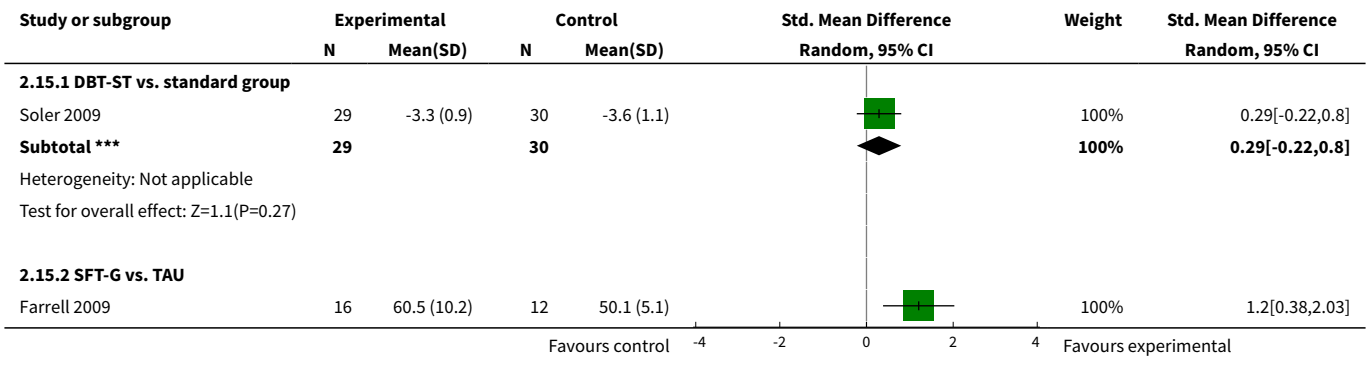


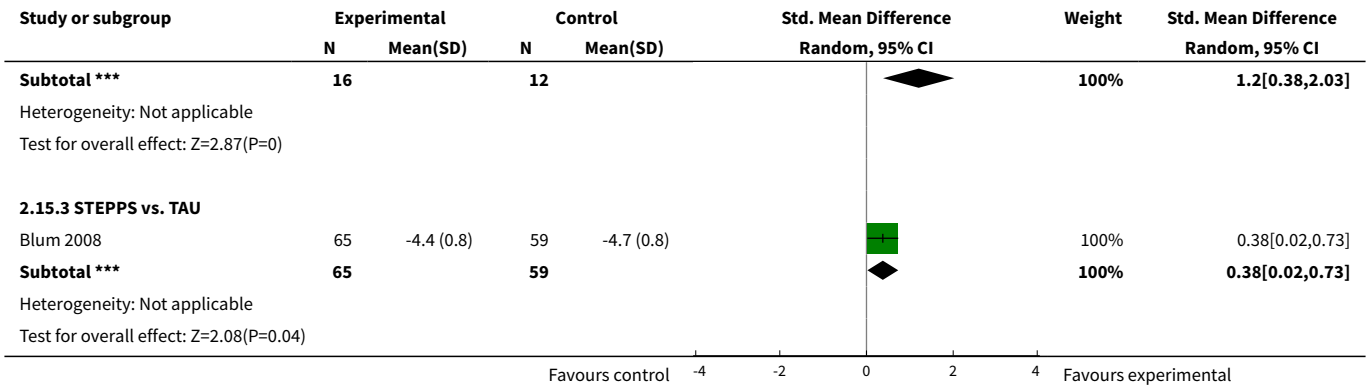


Analysis 2.14. Comparison 2: Non-comprehensive psychotherapeutic interventions: active vs. control conditions, Outcome 14: General psychopathology

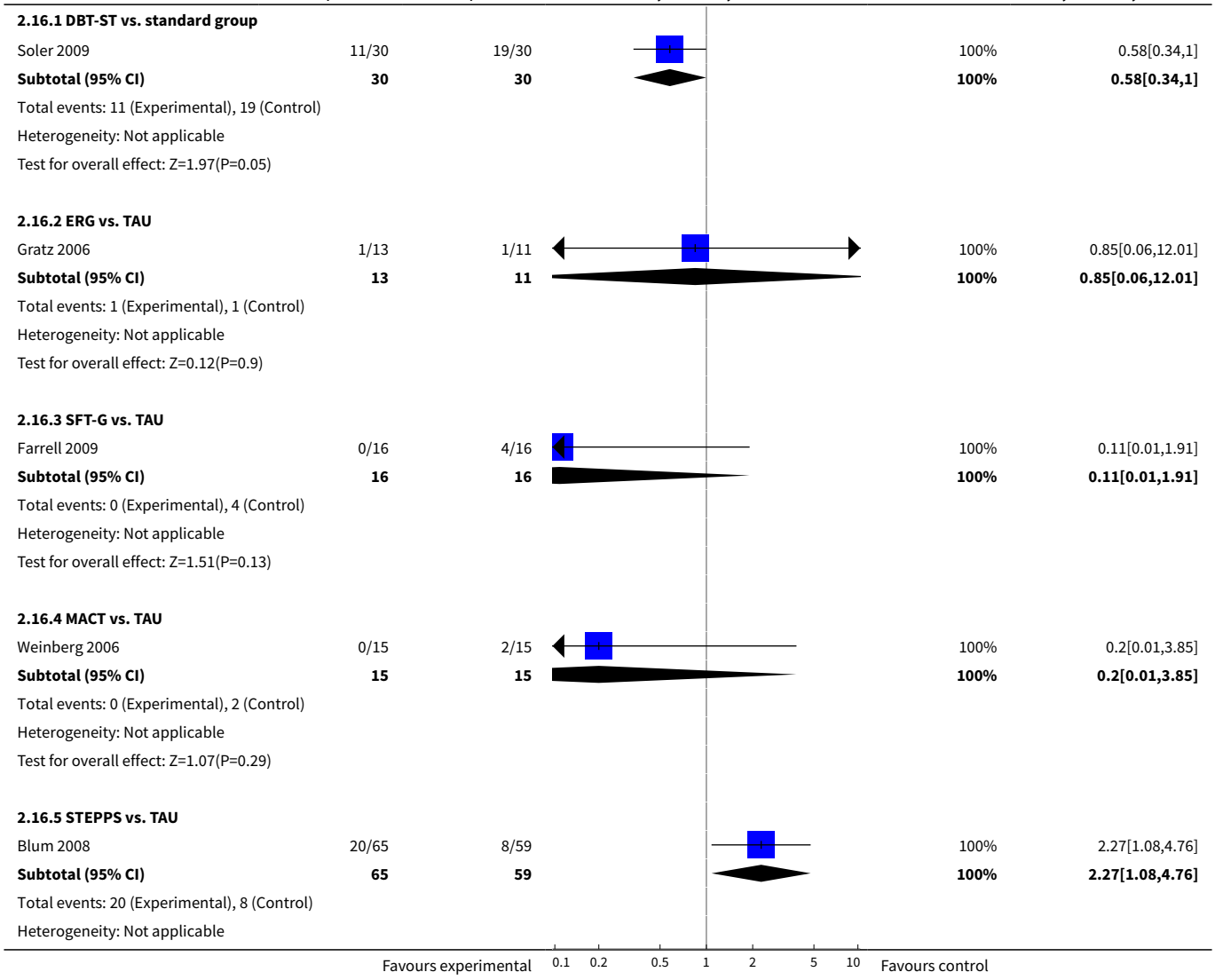


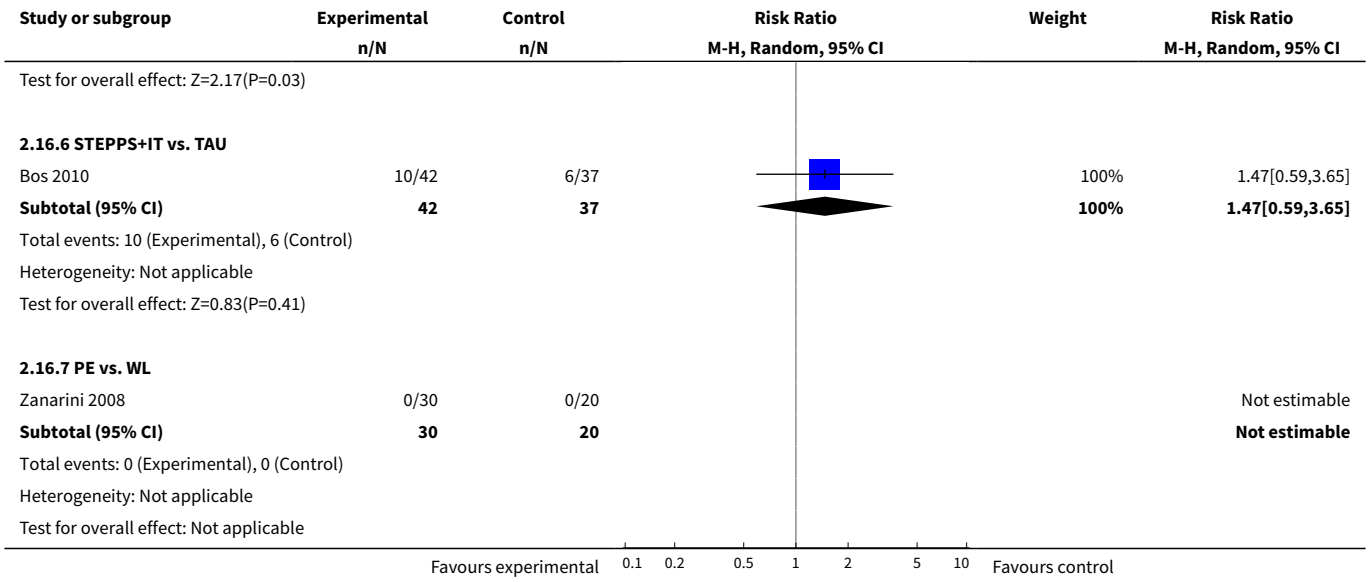
Analysis 2.15. Comparison 2: Non-comprehensive psychotherapeutic interventions: active vs. control conditions, Outcome 15: Mental health status/functioning





Analysis 2.16. Comparison 2: Non-comprehensive psychotherapeutic interventions: active vs. control conditions, Outcome 16: Leaving the study early





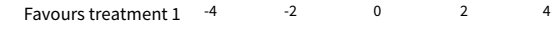
Comparison 3. Comprehensive psychotherapies: active vs. active conditions

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3.1 BPD total severity	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
3.1.1 SFT vs. TFP	1	86	Std. Mean Difference (IV, Random, 95% CI)	-0.45 [-0.88, -0.02]
3.1.2 SFT vs. SFT+TTA	1	61	Std. Mean Difference (IV, Random, 95% CI)	-0.03 [-0.53, 0.47]
3.2 Inappropriate anger	1		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
3.2.1 DBT vs. CCT	1	24	Std. Mean Difference (IV, Random, 95% CI)	-0.79 [-1.62, 0.05]
3.3 Impulsivity	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
3.3.1 DBT vs. CCT	1	24	Std. Mean Difference (IV, Random, 95% CI)	-1.05 [-1.92, -0.19]
3.3.2 CT vs. CCT	1	38	Std. Mean Difference (IV, Random, 95% CI)	-0.22 [-0.86, 0.41]
3.4 Suicidality	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
3.4.1 DBT vs. CCT	1	24	Std. Mean Difference (IV, Random, 95% CI)	-0.87 [-1.71, -0.02]
3.4.2 CT vs. CCT	1	38	Std. Mean Difference (IV, Random, 95% CI)	0.13 [-0.51, 0.77]
3.5 Parasuicidality	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
3.5.1 DBT vs. CCT	1	24	Std. Mean Difference (IV, Random, 95% CI)	-1.28 [-2.17, -0.38]
3.5.2 CT vs. CCT	1	38	Std. Mean Difference (IV, Random, 95% CI)	0.59 [-0.06, 1.24]
3.6 Psychoticism	1		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3.6.1 DBT vs. CCT	1	24	Std. Mean Difference (IV, Random, 95% CI)	-1.11 [-1.98, -0.24]
3.7 Depression	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
3.7.1 DBT vs. CCT	1	24	Std. Mean Difference (IV, Random, 95% CI)	-1.26 [-2.15, -0.37]
3.7.2 CT vs. CCT	1	38	Std. Mean Difference (IV, Random, 95% CI)	0.10 [-0.54, 0.73]
3.7.3 CBT vs. IPT	1	26	Std. Mean Difference (IV, Random, 95% CI)	-0.07 [-0.84, 0.70]
3.8 Anxiety	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
3.8.1 DBT vs. CCT	1	24	Std. Mean Difference (IV, Random, 95% CI)	-0.70 [-1.53, 0.13]
3.8.2 CT vs. CCT	1	38	Std. Mean Difference (IV, Random, 95% CI)	-0.51 [-1.16, 0.13]
3.8.3 CBT vs. IPT	1	26	Std. Mean Difference (IV, Random, 95% CI)	-0.53 [-1.32, 0.26]
3.9 General psychopathology	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
3.9.1 SFT vs. TFP	1	86	Std. Mean Difference (IV, Random, 95% CI)	-0.09 [-0.52, 0.33]
3.9.2 SFT vs. SFT+TTA	1	61	Std. Mean Difference (IV, Random, 95% CI)	0.14 [-0.37, 0.64]
3.10 Mental health status/functioning	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
3.10.1 CBT vs. CCT	1	38	Std. Mean Difference (IV, Random, 95% CI)	0.30 [-0.34, 0.94]
3.10.2 CT vs. IPT	1	26	Std. Mean Difference (IV, Random, 95% CI)	0.19 [-0.58, 0.97]
3.11 Leaving the study early	5		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
3.11.1 DBT vs. CCT	1	24	Risk Ratio (M-H, Random, 95% CI)	0.50 [0.16, 1.55]
3.11.2 SFT vs. TFP	1	88	Risk Ratio (M-H, Random, 95% CI)	0.52 [0.30, 0.92]
3.11.3 SFT vs. SFT+TTA	1	62	Risk Ratio (M-H, Random, 95% CI)	0.91 [0.35, 2.41]
3.11.4 CT vs. CCT	1	65	Risk Ratio (M-H, Random, 95% CI)	0.90 [0.51, 1.60]
3.11.5 CBT vs. IPT	1	32	Risk Ratio (M-H, Random, 95% CI)	2.00 [0.42, 9.42]

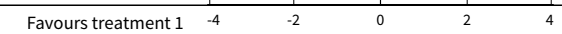
Analysis 3.1. Comparison 3: Comprehensive psychotherapies: active vs. active conditions, Outcome 1: BPD total severity

Study or subgroup	treatment 1 N	treatment 1 Mean(SD)	treatment 2 N	treatment 2 Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
3.1.1 SFT vs. TFP							
Giesen-Bloo 2006	44	17.8 (11.3)	42	22.7 (10.6)		100%	-0.45[-0.88,-0.02]
Subtotal ***	**44**		**42**			**100%**	**-0.45[-0.88,-0.02]**
Heterogeneity: Not applicable							
Test for overall effect: Z=2.04(P=0.04)							
3.1.2 SFT vs. SFT+TTA							
Nadort 2009	30	16.8 (9.9)	31	17.1 (10.9)		100%	-0.03[-0.53,0.47]
Subtotal ***	**30**		**31**			**100%**	**-0.03[-0.53,0.47]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.11(P=0.91)							



Analysis 3.2. Comparison 3: Comprehensive psychotherapies: active vs. active conditions, Outcome 2: Inappropriate anger

Study or subgroup	Treatment 1 N	Treatment 1 Mean(SD)	Treatment 2 N	Treatment 2 Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
3.2.1 DBT vs. CCT							
Turner 2000	12	4.7 (1.3)	12	5.7 (1.2)		100%	-0.79[-1.62,0.05]
Subtotal ***	**12**		**12**			**100%**	**-0.79[-1.62,0.05]**
Heterogeneity: Tau^2=0; Chi^2=0, df=0(P<0.0001); I^2=100%							
Test for overall effect: Z=1.84(P=0.07)							

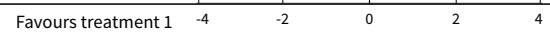


Analysis 3.3. Comparison 3: Comprehensive psychotherapies: active vs. active conditions, Outcome 3: Impulsivity

Study or subgroup	Treatment 1 N	Treatment 1 Mean(SD)	Treatment 2 N	Treatment 2 Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
3.3.1 DBT vs. CCT							
Turner 2000	12	4.6 (1.6)	12	6.1 (1.1)		100%	-1.05[-1.92,-0.19]
Subtotal ***	**12**		**12**			**100%**	**-1.05[-1.92,-0.19]**
Heterogeneity: Not applicable							
Test for overall effect: Z=2.39(P=0.02)							
3.3.2 CT vs. CCT							
Cottraux 2009	20	7.6 (3.8)	18	8.6 (5)		100%	-0.22[-0.86,0.41]
Subtotal ***	**20**		**18**			**100%**	**-0.22[-0.86,0.41]**
Heterogeneity: Tau^2=0; Chi^2=0, df=0(P<0.0001); I^2=100%							
Test for overall effect: Z=0.69(P=0.49)							

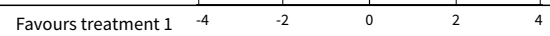
Analysis 3.4. Comparison 3: Comprehensive psychotherapies: active vs. active conditions, Outcome 4: Suicidality

Study or subgroup	Treatment 1 N	Treatment 1 Mean(SD)	Treatment 2 N	Treatment 2 Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
3.4.1 DBT vs. CCT							
Turner 2000	12	3.8 (8)	12	11.6 (9.2)		100%	-0.87[-1.71,-0.02]
Subtotal ***	**12**		**12**			**100%**	**-0.87[-1.71,-0.02]**
Heterogeneity: Not applicable							
Test for overall effect: Z=2.01(P=0.04)							
3.4.2 CT vs. CCT							
Cottraux 2009	20	7.3 (5.4)	18	6.6 (5)		100%	0.13[-0.51,0.77]
Subtotal ***	**20**		**18**			**100%**	**0.13[-0.51,0.77]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.4(P=0.69)							



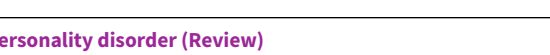
Analysis 3.5. Comparison 3: Comprehensive psychotherapies: active vs. active conditions, Outcome 5: Parasuicidality

Study or subgroup	Treatment 1 N	Treatment 1 Mean(SD)	Treatment 2 N	Treatment 2 Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
3.5.1 DBT vs. CCT							
Turner 2000	12	1.5 (2)	12	4.3 (2.2)		100%	-1.28[-2.17,-0.38]
Subtotal ***	**12**		**12**			**100%**	**-1.28[-2.17,-0.38]**
Heterogeneity: Not applicable							
Test for overall effect: Z=2.8(P=0.01)							
3.5.2 CT vs. CCT							
Cottraux 2009	20	1.8 (1.4)	18	1.1 (1.1)		100%	0.59[-0.06,1.24]
Subtotal ***	**20**		**18**			**100%**	**0.59[-0.06,1.24]**
Heterogeneity: Not applicable							
Test for overall effect: Z=1.77(P=0.08)							



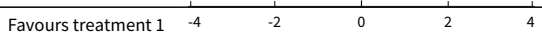
Analysis 3.6. Comparison 3: Comprehensive psychotherapies: active vs. active conditions, Outcome 6: Psychoticism

Study or subgroup	Treatment 1 N	Treatment 1 Mean(SD)	Treatment 2 N	Treatment 2 Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
3.6.1 DBT vs. CCT							
Turner 2000	12	18.2 (7.9)	12	25.3 (3.9)		100%	-1.11[-1.98,-0.24]
Subtotal ***	**12**		**12**			**100%**	**-1.11[-1.98,-0.24]**
Heterogeneity: Not applicable							
Test for overall effect: Z=2.49(P=0.01)							



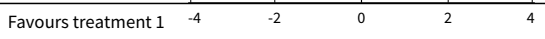
Analysis 3.7. Comparison 3: Comprehensive psychotherapies: active vs. active conditions, Outcome 7: Depression

Study or subgroup	Treatment 1 N	Treatment 1 Mean(SD)	Treatment 2 N	Treatment 2 Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
3.7.1 DBT vs. CCT							
Turner 2000	12	14.9 (8.3)	12	24.1 (5.6)		100%	-1.26[-2.15,-0.37]
Subtotal ***	**12**		**12**			**100%**	**-1.26[-2.15,-0.37]**
Heterogeneity: Not applicable							
Test for overall effect: Z=2.77(P=0.01)							
3.7.2 CT vs. CCT							
Cottraux 2009	20	13.6 (11.3)	18	12.6 (9.6)		100%	0.1[-0.54,0.73]
Subtotal ***	**20**		**18**			**100%**	**0.1[-0.54,0.73]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.3(P=0.77)							
3.7.3 CBT vs. IPT							
Bellino 2007	12	13.7 (5.7)	14	14.1 (5.5)		100%	-0.07[-0.84,0.7]
Subtotal ***	**12**		**14**			**100%**	**-0.07[-0.84,0.7]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.18(P=0.86)							

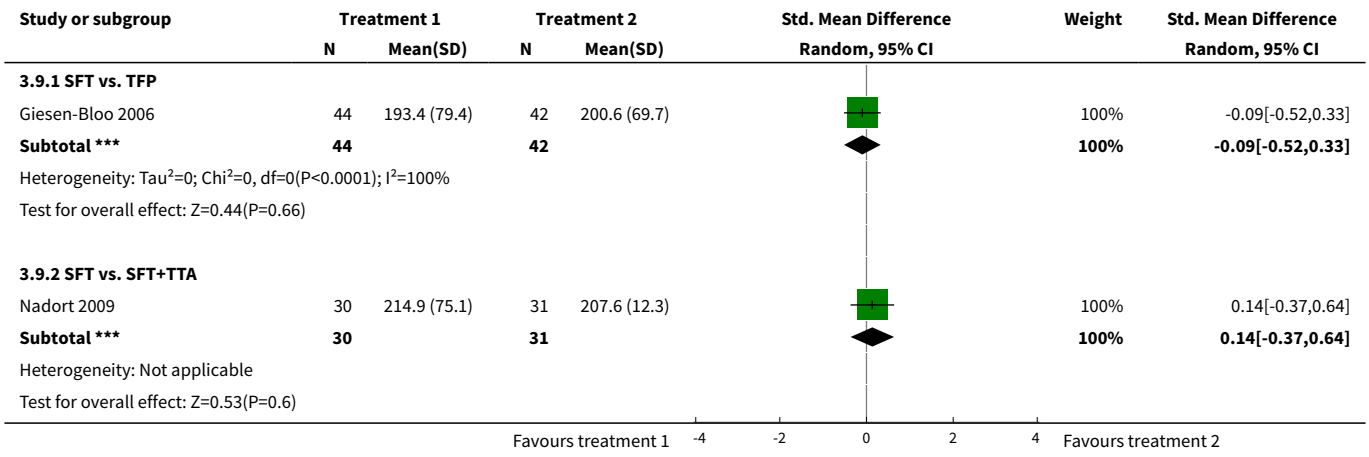


Analysis 3.8. Comparison 3: Comprehensive psychotherapies: active vs. active conditions, Outcome 8: Anxiety

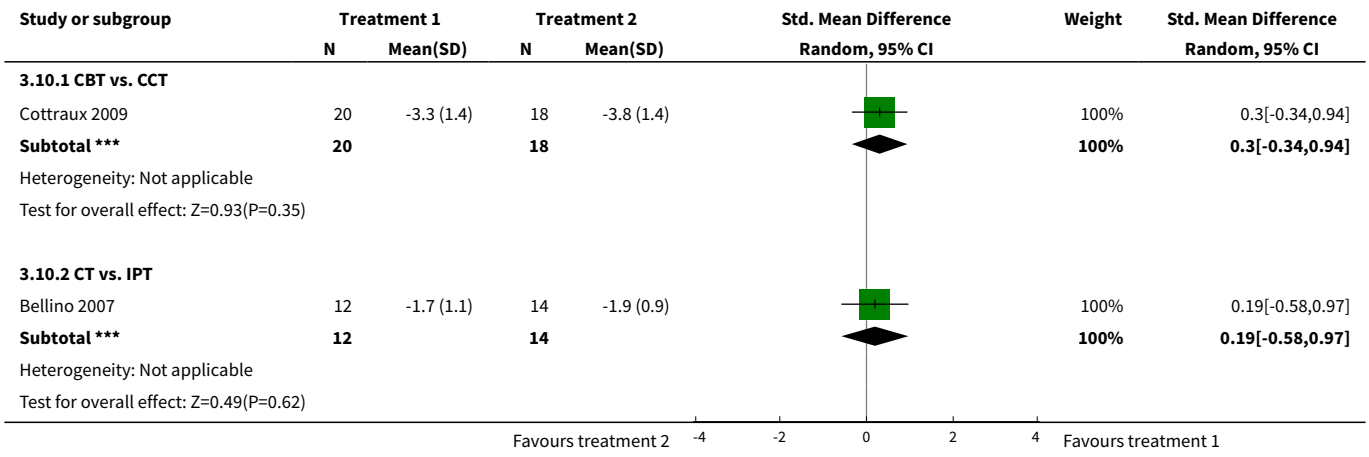
Study or subgroup	Treatment 1 N	Treatment 1 Mean(SD)	Treatment 2 N	Treatment 2 Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
3.8.1 DBT vs. CCT							
Turner 2000	12	10.2 (6.5)	12	14.8 (6.3)		100%	-0.7[-1.53,0.13]
Subtotal ***	**12**		**12**			**100%**	**-0.7[-1.53,0.13]**
Heterogeneity: Not applicable							
Test for overall effect: Z=1.65(P=0.1)							
3.8.2 CT vs. CCT							
Cottraux 2009	20	12.5 (7.8)	18	18.4 (14.3)		100%	-0.51[-1.16,0.13]
Subtotal ***	**20**		**18**			**100%**	**-0.51[-1.16,0.13]**
Heterogeneity: Not applicable							
Test for overall effect: Z=1.55(P=0.12)							
3.8.3 CBT vs. IPT							
Bellino 2007	12	12.5 (1.1)	14	13.7 (2.8)		100%	-0.53[-1.32,0.26]
Subtotal ***	**12**		**14**			**100%**	**-0.53[-1.32,0.26]**
Heterogeneity: Not applicable							
Test for overall effect: Z=1.32(P=0.19)							



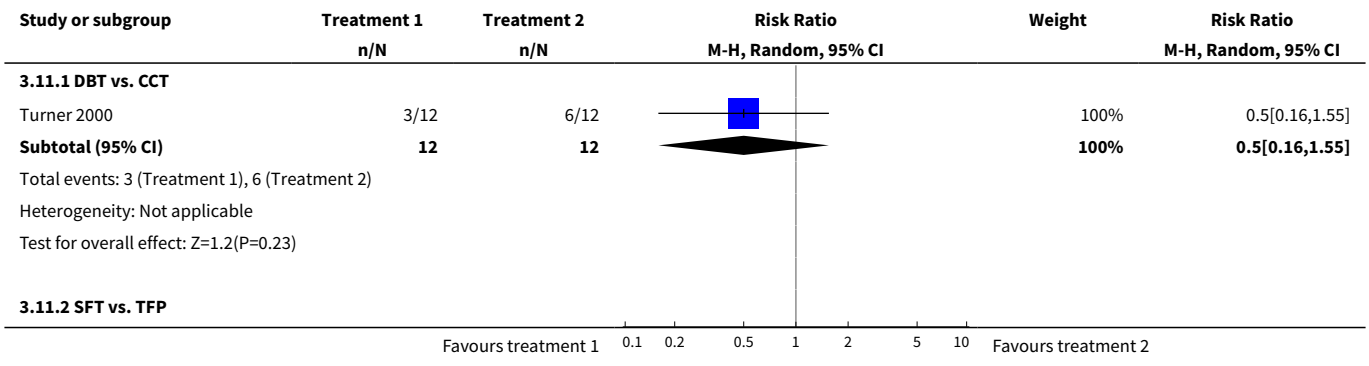
Analysis 3.9. Comparison 3: Comprehensive psychotherapies: active vs. active conditions, Outcome 9: General psychopathology

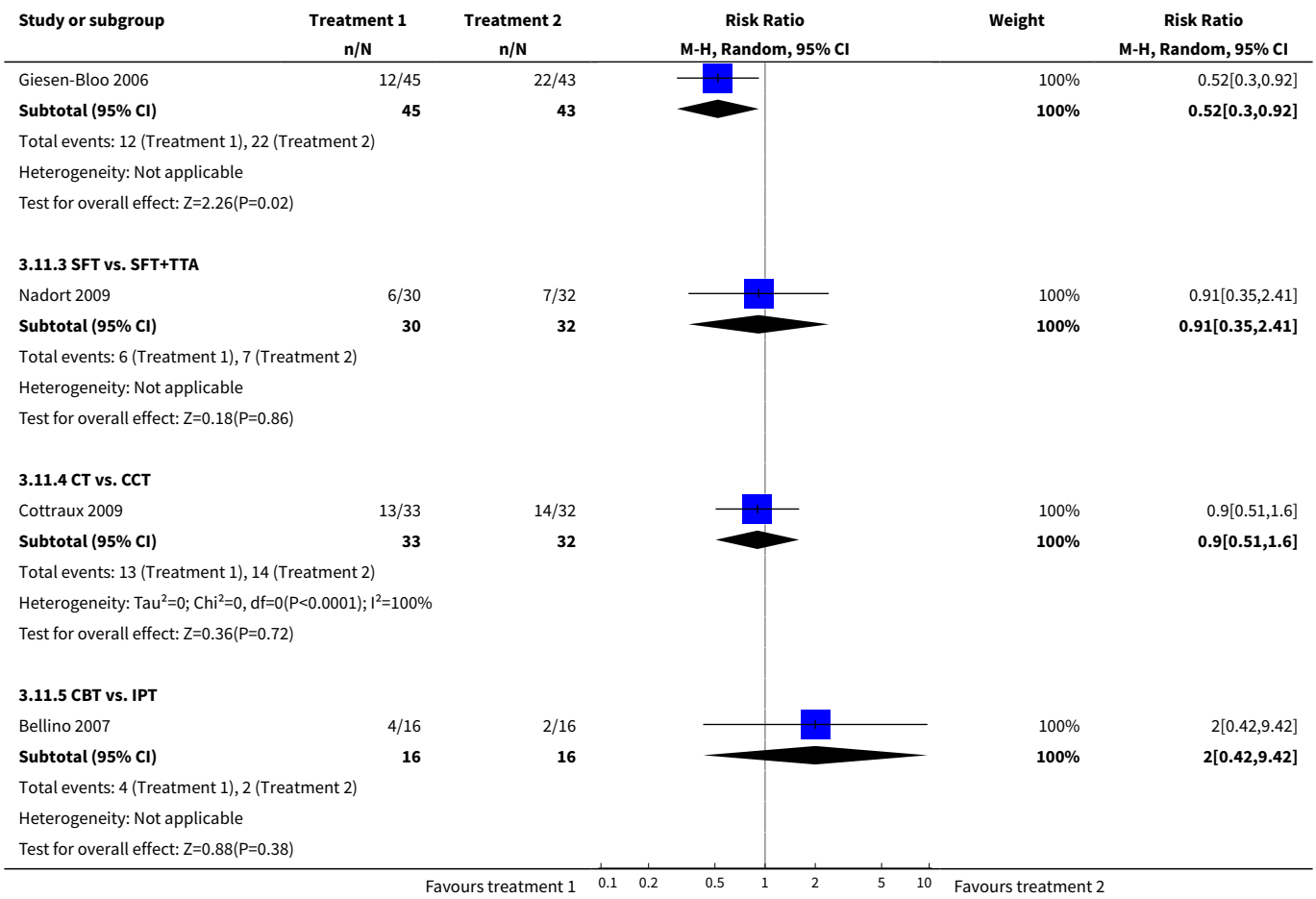


Analysis 3.10. Comparison 3: Comprehensive psychotherapies: active vs. active conditions, Outcome 10: Mental health status/functioning



Analysis 3.11. Comparison 3: Comprehensive psychotherapies: active vs. active conditions, Outcome 11: Leaving the study early





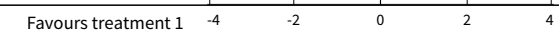
Comparison 4. Non-comprehensive psychotherapeutic interventions: active vs. active conditions

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
4.1 BPD total severity	1		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
4.1.1 MACT vs. MACT+TA	1	16	Std. Mean Difference (IV, Random, 95% CI)	-0.33 [-1.32, 0.66]
4.2 Affective instability	1		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
4.2.1 MACT vs. MACT+TA	1	16	Std. Mean Difference (IV, Random, 95% CI)	-0.71 [-1.73, 0.31]
4.3 Suicidality	1		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
4.3.1 MACT vs. MACT+TA	1	16	Std. Mean Difference (IV, Random, 95% CI)	-0.03 [-1.01, 0.95]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
4.4 Parasuicidality	1		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
4.4.1 MACT vs. MACT+TA	1	16	Std. Mean Difference (IV, Random, 95% CI)	0.08 [-0.90, 1.06]
4.5 Interpersonal problems	1		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
4.5.1 MACT vs. MACT+TA	1	16	Std. Mean Difference (IV, Random, 95% CI)	-0.04 [-1.02, 0.94]
4.6 Identity disturbance	1		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
4.6.1 MACT vs. MACT+TA	1	16	Std. Mean Difference (IV, Random, 95% CI)	-0.45 [-1.44, 0.55]
4.7 Leaving the study early	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
4.7.1 MACT vs. MACT+TA	1	16	Risk Ratio (M-H, Random, 95% CI)	0.80 [0.33, 1.92]

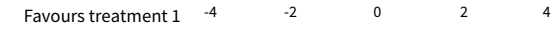
Analysis 4.1. Comparison 4: Non-comprehensive psychotherapeutic interventions: active vs. active conditions, Outcome 1: BPD total severity

Study or subgroup	treatment 1 N	treatment 1 Mean(SD)	treatment 2 N	treatment 2 Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
4.1.1 MACT vs. MACT+TA							
Morey 2010	8	79 (9)	8	82.8 (12.1)		100%	-0.33[-1.32,0.66]
Subtotal ***	**8**		**8**			**100%**	**-0.33[-1.32,0.66]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.66(P=0.51)							

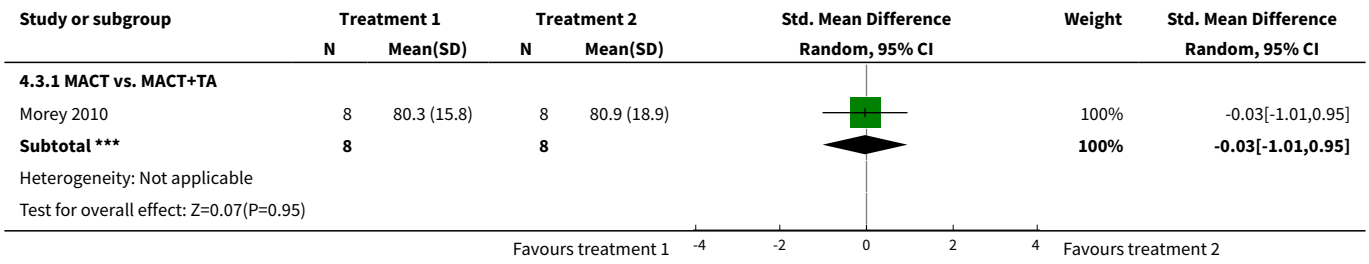


Analysis 4.2. Comparison 4: Non-comprehensive psychotherapeutic interventions: active vs. active conditions, Outcome 2: Affective instability

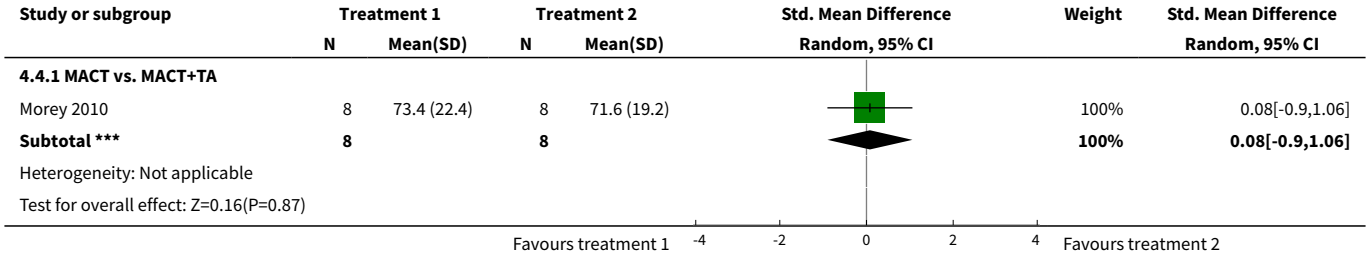
Study or subgroup	Treatment 1 N	Treatment 1 Mean(SD)	Treatment 2 N	Treatment 2 Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
4.2.1 MACT vs. MACT+TA							
Morey 2010	8	74.6 (5.7)	8	79.9 (8.1)		100%	-0.71[-1.73,0.31]
Subtotal ***	**8**		**8**			**100%**	**-0.71[-1.73,0.31]**
Heterogeneity: Not applicable							
Test for overall effect: Z=1.36(P=0.17)							



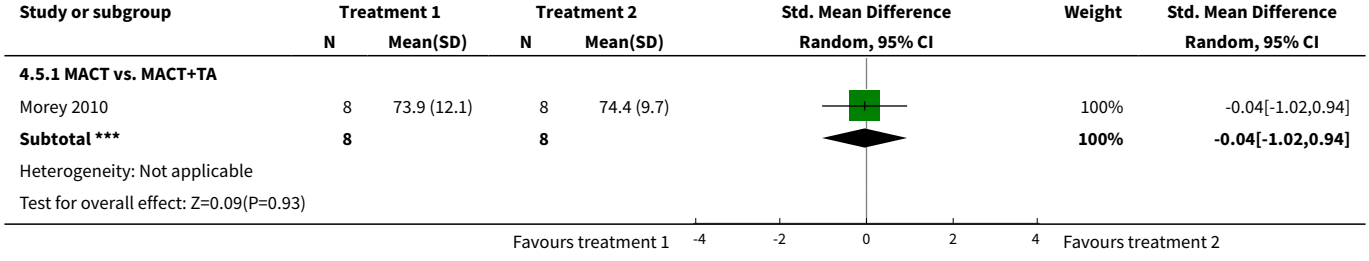
Analysis 4.3. Comparison 4: Non-comprehensive psychotherapeutic interventions: active vs. active conditions, Outcome 3: Suicidality



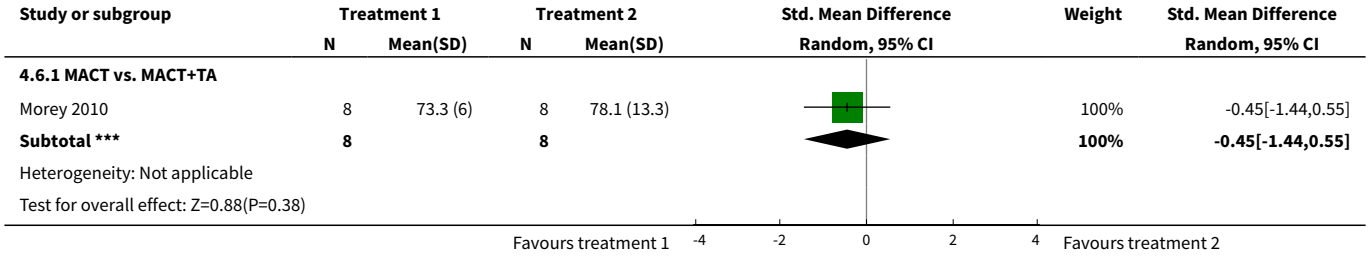
Analysis 4.4. Comparison 4: Non-comprehensive psychotherapeutic interventions: active vs. active conditions, Outcome 4: Parasuicidality



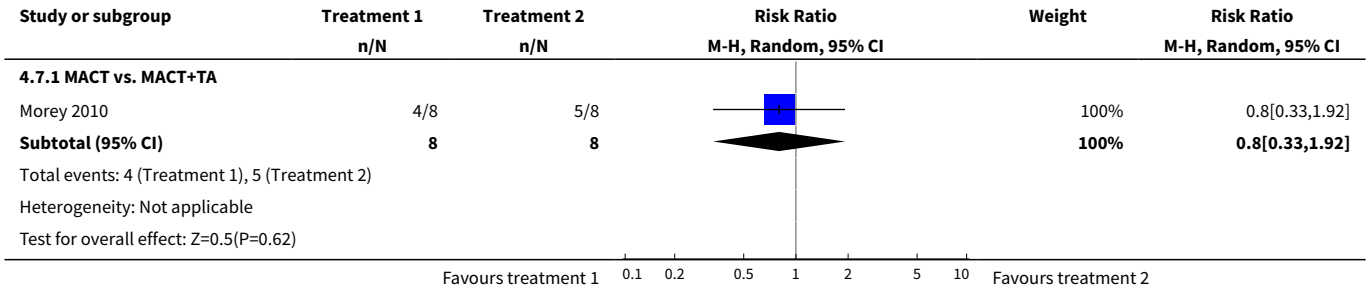
Analysis 4.5. Comparison 4: Non-comprehensive psychotherapeutic interventions: active vs. active conditions, Outcome 5: Interpersonal problems



Analysis 4.6. Comparison 4: Non-comprehensive psychotherapeutic interventions: active vs. active conditions, Outcome 6: Identity disturbance



Analysis 4.7. Comparison 4: Non-comprehensive psychotherapeutic interventions: active vs. active conditions, Outcome 7: Leaving the study early



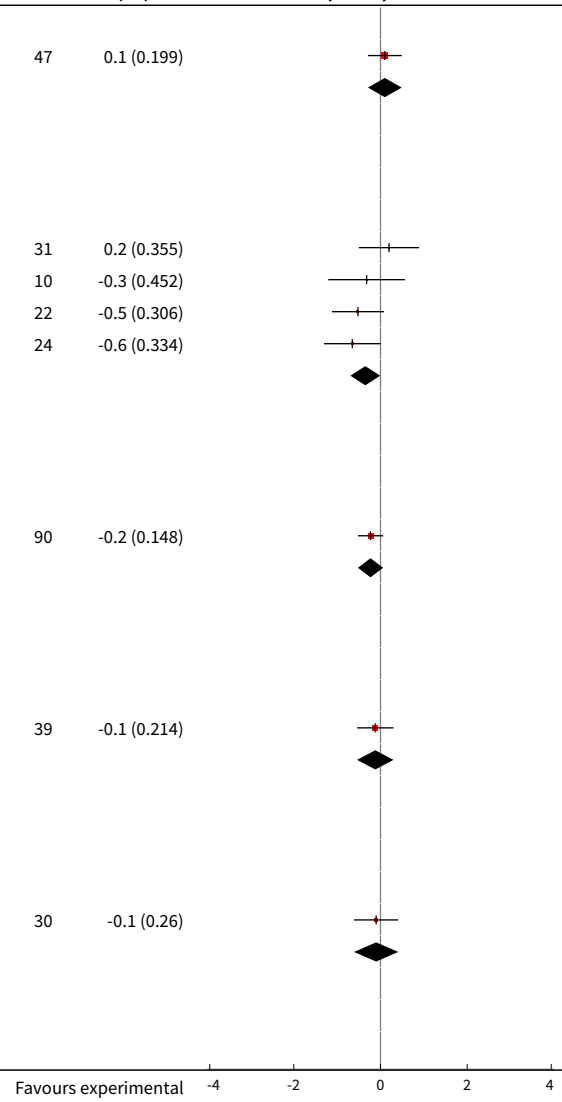
Comparison 5. Funnel plot

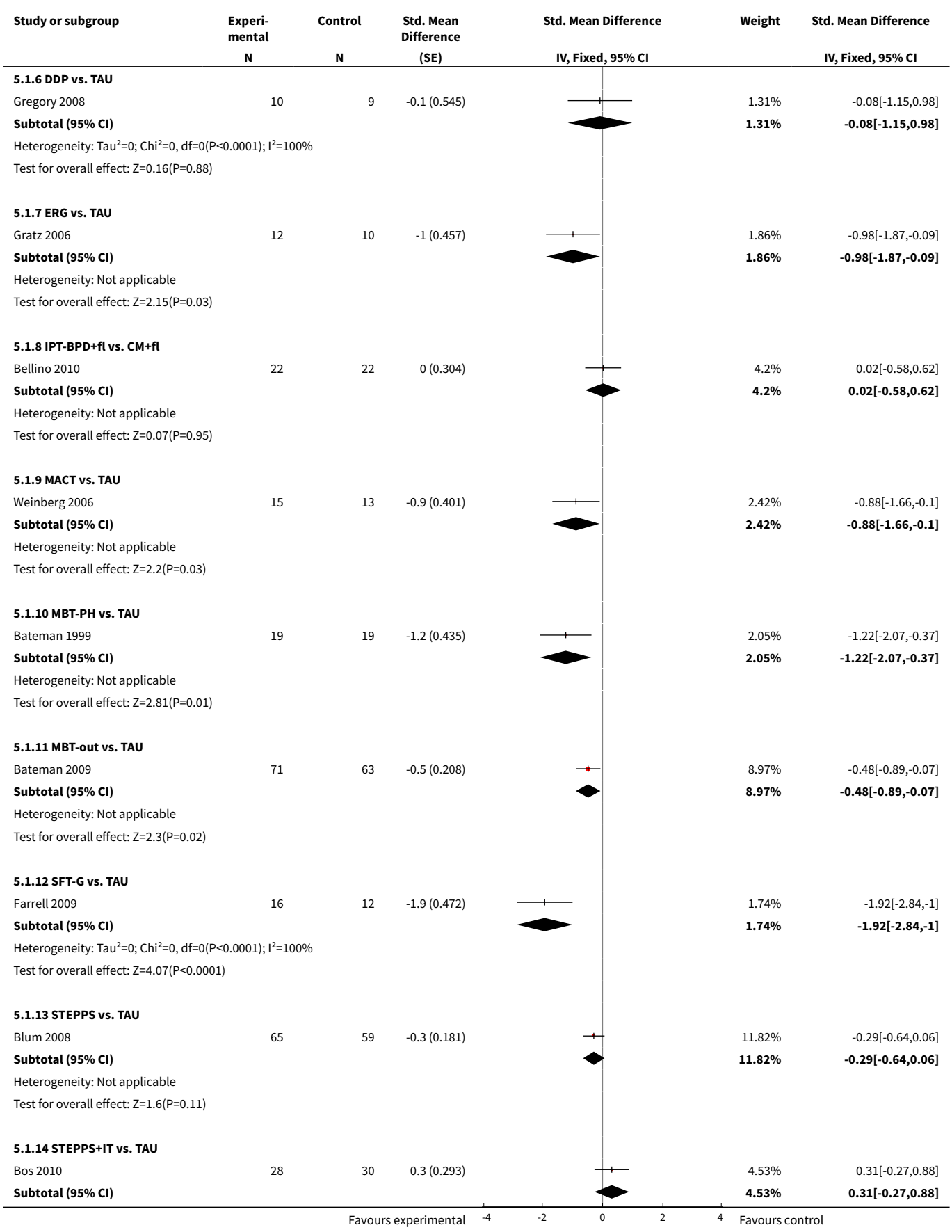
Outcome or sub-group title	No. of studies	No. of partici-pants	Statistical method	Effect size
5.1 Parasuicidality	18		Std. Mean Difference (IV, Fixed, 95% CI)	-0.24 [-0.36, -0.12]
5.1.1 CBT vs. TAU	1		Std. Mean Difference (IV, Fixed, 95% CI)	0.10 [-0.29, 0.49]
5.1.2 DBT vs. TAU	4		Std. Mean Difference (IV, Fixed, 95% CI)	-0.35 [-0.69, -0.01]
5.1.3 DBT vs. GM	1		Std. Mean Difference (IV, Fixed, 95% CI)	-0.23 [-0.52, 0.06]
5.1.4 DBT vs. CTBE	1		Std. Mean Difference (IV, Fixed, 95% CI)	-0.12 [-0.54, 0.30]
5.1.5 DBT-ST vs. SG	1		Std. Mean Difference (IV, Fixed, 95% CI)	-0.10 [-0.61, 0.41]
5.1.6 DDP vs. TAU	1		Std. Mean Difference (IV, Fixed, 95% CI)	-0.08 [-1.15, 0.98]
5.1.7 ERG vs. TAU	1		Std. Mean Difference (IV, Fixed, 95% CI)	-0.98 [-1.87, -0.09]
5.1.8 IPT-BPD+fl vs. CM +fl	1		Std. Mean Difference (IV, Fixed, 95% CI)	0.02 [-0.58, 0.62]
5.1.9 MACT vs. TAU	1		Std. Mean Difference (IV, Fixed, 95% CI)	-0.88 [-1.66, -0.10]
5.1.10 MBT-PH vs. TAU	1		Std. Mean Difference (IV, Fixed, 95% CI)	-1.22 [-2.07, -0.37]
5.1.11 MBT-out vs. TAU	1		Std. Mean Difference (IV, Fixed, 95% CI)	-0.48 [-0.89, -0.07]
5.1.12 SFT-G vs. TAU	1		Std. Mean Difference (IV, Fixed, 95% CI)	-1.92 [-2.84, -1.00]
5.1.13 STEPPS vs. TAU	1		Std. Mean Difference (IV, Fixed, 95% CI)	-0.29 [-0.64, 0.06]
5.1.14 STEPPS+IT vs. TAU	1		Std. Mean Difference (IV, Fixed, 95% CI)	0.31 [-0.27, 0.88]
5.1.15 TFP vs. CTBE	1		Std. Mean Difference (IV, Fixed, 95% CI)	0.15 [-0.31, 0.62]

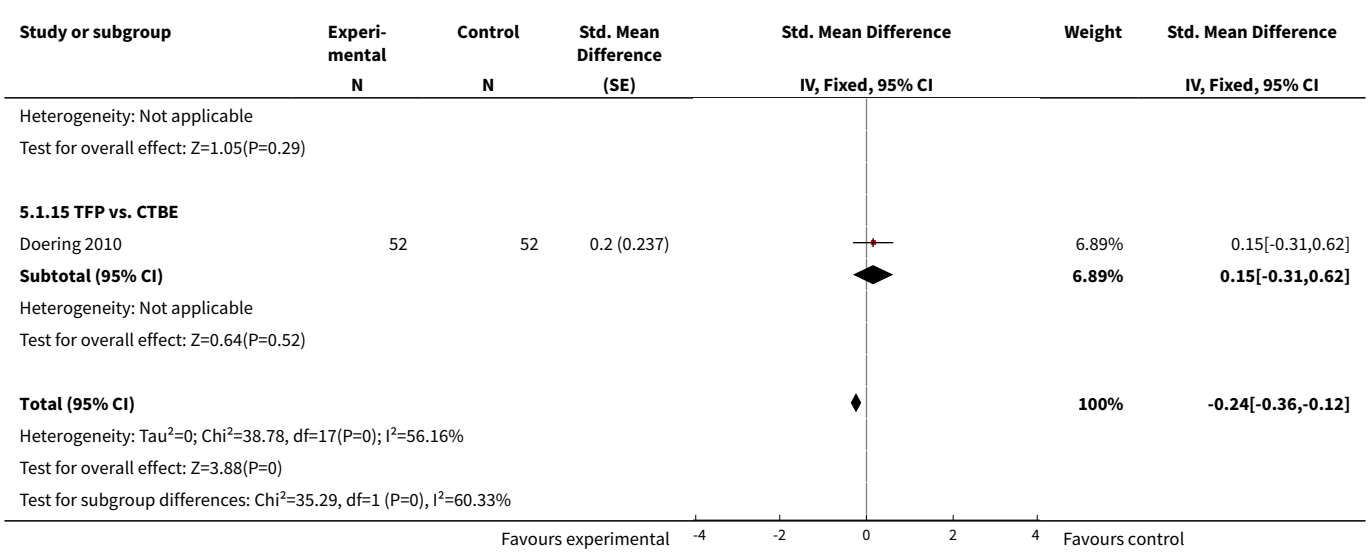
Outcome or sub-group title	No. of studies	No. of partici-pants	Statistical method	Effect size
5.2 By sample size - parasuicidality	18		Std. Mean Difference (IV, Fixed, 95% CI)	-0.24 [-0.36, -0.12]
5.2.1 0-20	2		Std. Mean Difference (IV, Fixed, 95% CI)	-0.16 [-0.84, 0.53]
5.2.2 21-50	7		Std. Mean Difference (IV, Fixed, 95% CI)	-0.71 [-0.98, -0.44]
5.2.3 51-100	6		Std. Mean Difference (IV, Fixed, 95% CI)	0.06 [-0.13, 0.26]
5.2.4 101-	3		Std. Mean Difference (IV, Fixed, 95% CI)	-0.31 [-0.50, -0.11]

Analysis 5.1. Comparison 5: Funnel plot, Outcome 1: Parasuicidality

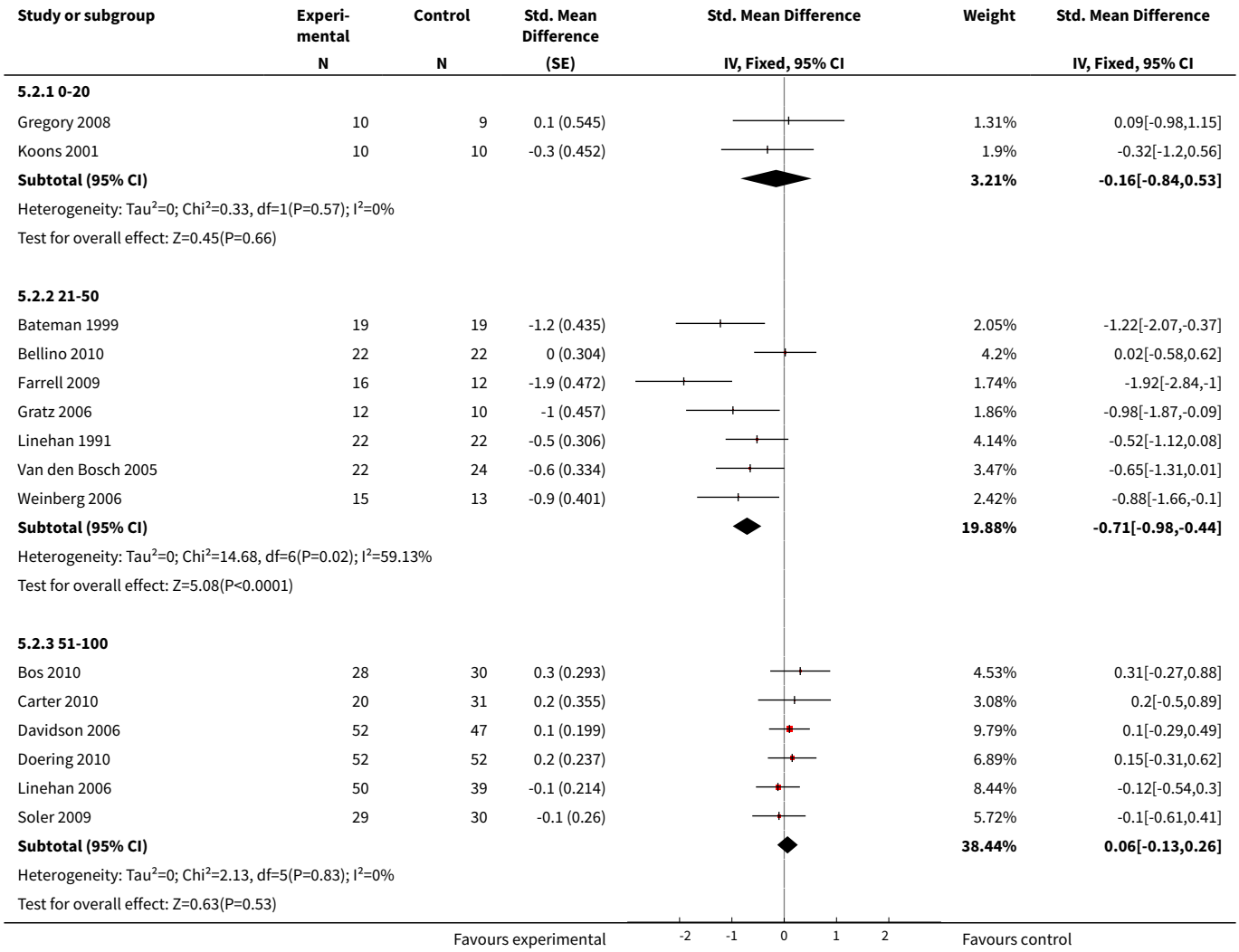
Study or subgroup	Experi-mental N	Control N	Std. Mean Difference (SE)	Std. Mean Difference IV, Fixed, 95% CI	Weight	Std. Mean Difference IV, Fixed, 95% CI
5.1.1 CBT vs. TAU						
Davidson 2006	52	47	0.1 (0.199)		9.79%	0.1[-0.29,0.49]
Subtotal (95% CI)					**9.79%**	**0.1[-0.29,0.49]**
Heterogeneity: Not applicable						
Test for overall effect: Z=0.5(P=0.62)						
5.1.2 DBT vs. TAU						
Carter 2010	20	31	0.2 (0.355)		3.08%	0.2[-0.5,0.89]
Koons 2001	10	10	-0.3 (0.452)		1.9%	-0.32[-1.2,0.56]
Linehan 1991	22	22	-0.5 (0.306)		4.14%	-0.52[-1.12,0.08]
Van den Bosch 2005	22	24	-0.6 (0.334)		3.47%	-0.65[-1.31,0.01]
Subtotal (95% CI)					**12.59%**	**-0.35[-0.69,-0.01]**
Heterogeneity: Tau^2=0; Chi^2=3.49, df=3(P=0.32); I^2=14.09%						
Test for overall effect: Z=2(P=0.05)						
5.1.3 DBT vs. GM						
McMain 2009	90	90	-0.2 (0.148)		17.69%	-0.23[-0.52,0.06]
Subtotal (95% CI)					**17.69%**	**-0.23[-0.52,0.06]**
Heterogeneity: Tau^2=0; Chi^2=0, df=0(P<0.0001); I^2=100%						
Test for overall effect: Z=1.55(P=0.12)						
5.1.4 DBT vs. CTBE						
Linehan 2006	50	39	-0.1 (0.214)		8.44%	-0.12[-0.54,0.3]
Subtotal (95% CI)					**8.44%**	**-0.12[-0.54,0.3]**
Heterogeneity: Not applicable						
Test for overall effect: Z=0.56(P=0.58)						
5.1.5 DBT-ST vs. SG						
Soler 2009	29	30	-0.1 (0.26)		5.72%	-0.1[-0.61,0.41]
Subtotal (95% CI)					**5.72%**	**-0.1[-0.61,0.41]**
Heterogeneity: Not applicable						
Test for overall effect: Z=0.38(P=0.7)						

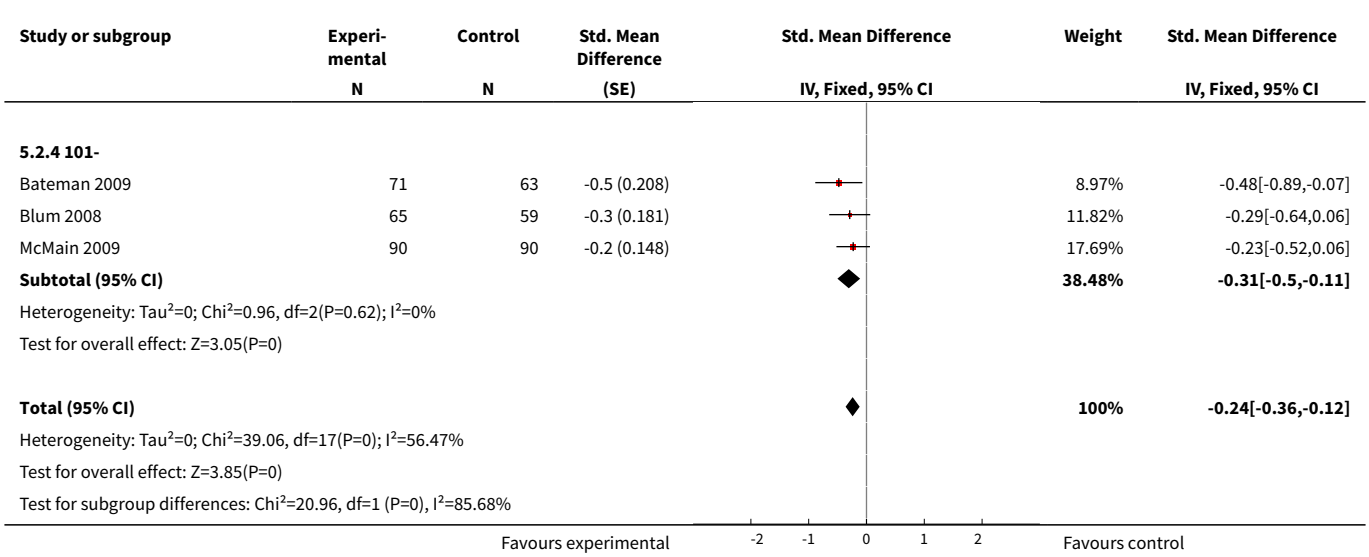






Analysis 5.2. Comparison 5: Funnel plot, Outcome 2: By sample size - parasuicidality





ADDITIONAL TABLES

Table 1. Spreadsheet of primary outcome effect estimates: Dialectical behaviour therapy (DBT) versus control groups (comprehensive therapies only)

Outcome/Subgroup	Studies	Participants	Statistical Method	Effect Estimate/95% CI
BPD total severity				
DBT[1] vs. TAU[2]	1	20	SMD	-0.29 [-1.17, 0.59]
DBT vs. GM[3]	1	180	SMD	-0.04 [-0.33, 0.25]
DBT-PTSD[4] vs. WL[2]	1	31	***SMD***	***-0.74 [-1.47, -0.01]***
Inappropriate anger				
DBT vs. TAU	2	46	***SMD***	***-0.83 [-1.43, -0.22]***
DBT vs. GM	1	180	SMD	-0.03 [-0.32, 0.26]
Affective instability				
-[6]				
Chronic feelings of emptiness				
-				
Impulsivity				
DBT vs. TAU	1	48	SMD	-0.17 [-0.74, 0.39]
Suicidality				

Table 1. Spreadsheet of primary outcome effect estimates: Dialectical behaviour therapy (DBT) versus control groups (comprehensive therapies only) *(Continued)*

DBT vs. TAU	1	20	***SMD***	***-1.26 [-2.24, -0.29]***
DBT vs. CTBE[7]	1	89	SMD	-0.12 [-0.54, 0.30]
Parasuicidality				
DBT vs. TAU	3	110	***SMD***	***-0.54 [-0.92, -0.16]***
DBT vs. TAU	1	51	RR	1.11 [0.78, 1.57]
DBT vs. GM	1	180	SMD	-0.23 [-0.52, 0.06]
Interpersonal problems				
DBT vs. TAU	1	48	SMD	0.04 [-0.54, 0.61]
DBT vs. GM	1	180	SMD	-0.03 [-0.32, 0.26]
Avoidance of abandonment				
-				
Identity disturbance				
-				
Dissociation/psychoticism				
DBT vs. TAU	1	20	SMD	-0.90 [-1.83, 0.03]
DBT-PTSD vs. WL	1	30	SMD	-0.34 [-1.06, 0.38]

[1]Dialectical Behaviour Therapy
[2]treatment as usual
[3]general management
[4]Dialectical Behaviour Therapy for BPD with post-traumatic stress disorder

[5]waiting list
[6]No data available for this outcome
[7]community treatment by experts

Table 2. Spreadsheet of primary outcome effect estimates: Mentalisation-based treatment (MBT) versus control groups

Outcome/Subgroup	Studies	Participants	Statistical Method	Effect Estimate/95% CI
BPD total severity				
_[1]				
Inappropriate anger				

Table 2. Spreadsheet of primary outcome effect estimates: Mentalisation-based treatment (MBT) versus control groups *(Continued)*

-				
Affective instability				
-				
Chronic feelings of emptiness				
-				
Impulsivity				
-				
Suicidality				
MBT-PH[2] vs. TAU	1	38	***RR***	***0.08 [0.01, 0.58]***
MBT-out[3] vs. TAU	1	134	***RR***	***0.11 [0.03, 0.46]***
Parasuicidality				
MBT-PH vs. TAU	1	38	***RR***	***0.44 [0.24 to 0.81]***
MBT-out vs. TAU	1	134	***RR***	***0.56 [0.34 to 0.92]***
Interpersonal problems				
MBT-PH vs. TAU	1	38	***SMD***	***-2.22 [-3.04, -1.39]***
MBT-out vs. TAU	1	134	***SMD***	***-0.95 [-1.30, -0.59]***
Avoidance of abandonment				
-				
Identity disturbance				
-				
Dissociation/psychoticism				
-				

[1]No data available for this outcome.

[2]Mentalisation-based Treatment, partial hospitalisation
[3]TAU: treatment as usual
[4]Mentalisation-based Treatment, outpatient

Table 3. Spreadsheet of primary outcome effect estimates: Transference-focused psychotherapy (TFP) versus control groups

Outcome/Subgroup	Studies	Participants	Statistical Method	Effect Estimate/95% CI
BPD total severity				
TFP[1] vs. CTBE[2]	1	104	***SMD***	***-0.55 [-0.95, -0.16]***
Inappropriate anger				
-[3]				
Affective instability				
-				
Chronic feelings of emptiness				
-				
Impulsivity				
-				
Suicidality				
TFP vs. CTBE	1	104	RR	0.64 [0.27, 1.51]
Parasuicidality				
TFP vs. CTBE	1	104	RR	1.09 [0.84, 1.40]
Interpersonal problems				
-				
Avoidance of abandonment				
-				
Identity disturbance				
-				
Dissociation/psychoticism				
-				

[1]Transference-Focused Psychotherapy
[2]community treatment by experts
[3] No data available for this outcome.

Table 4. Spreadsheet of primary outcome effect estimates: Cognitive behavioural therapy (CBT) versus control groups

Outcome/Subgroup	Studies	Participants	Statistical Method	Effect Estimate/95% CI
BPD total severity				
_[1]				
Inappropriate anger				
-				
Affective instability				
-				
Chronic feelings of emptiness				
-				
Impulsivity				
-				
Suicidality				
CBT[2] vs. TAU[3]	1	101	RR	0.78 [0.47, 1.27
Parasuicidality				
CBT vs. TAU	1	99	RR	1.17 [0.87, 1.60]
Interpersonal problems				
CBT vs. TAU	1	99	SMD	0.23 [-0.16, 0.63]
Avoidance of abandonment				
-				
Identity disturbance				
-				
Dissociation/psychoticism				
-				

[1]No data available for this outcome.[2]Cognitive Behavioural Therapy
[3]treatment as usual

Table 5. Spreadsheet of primary outcome effect estimates: Dynamic Deconstructive psychotherapy (DDP) versus control groups

Outcome/Subgroup	Studies	Participants	Statistical Method	Effect Estimate/95% CI
BPD total severity				
DDP[1] vs. TAU[2]	1	30	SMD	-0.44 [-1.16, 0.29]
Inappropriate anger				
-[3]				
Affective instability				
-				
Chronic feelings of emptiness				
-				
Impulsivity				
-				
Suicidality				
-				
Parasuicidality				
DDP vs. TAU	1	30	RR	0.89 [0.47, 1.67]
Interpersonal problems				
-				
Avoidance of abandonment				
-				
Identity disturbance				
-				
Dissociation/psychoticism				
DDP vs. TAU	1	30	SMD	0.25 [-0.47, 0.97]

[1]Dynamic Deconstructive Psychotherapy
[2]treatment as usual
[3]No data available for this outcome.

Table 6. Spreadsheet of primary outcome effect estimates: interpersonal therapy (IPT) versus. control groups

Outcome/Subgroup	Studies	Participants	Statistical Method	Effect Estimate/95% CI
BPD total severity				
IPT-BPD[1] vs. CM[2]	1	44	SMD	-0.03 [-0.62, 0.56]
Inappropriate anger				
IPT-BPD vs. CM	1	44	SMD	0.01 [-0.58, 0.60]
Affective instability				
IPT-BPD vs. CM	1	44	***SMD***	***-0.92 [-1.54, -0.30]***
Chronic feelings of emptiness				
IPT-BPD vs. CM	1	44	SMD	0.09 [-0.50, 0.68]
Impulsivity				
IPT-BPD vs. CM	1	44	***SMD***	***-0.91 [-1.53, -0.28]***
Suicidality				
_[3]				
Parasuicidality				
IPT-BPD vs. CM	1	44	SMD	0.02 [-0.58, 0.61]
Interpersonal problems				
IPT-BPD vs. CM	1	44	***SMD***	***-0.82 [-1.44, -0.20]***
Avoidance of abandonment				
IPT-BPD vs. CM	1	44	SMD	0.01 [-0.58, 0.60]
Identity disturbance				
IPT-BPD vs. CM	1	44	SMD	-0.03 [-0.62, 0.56]
Dissociation/psychoticism				
IPT-BPD vs. CM	1	44	SMD	0.10 [-0.49, 0.70]

There are no data available for any primary outcome for the comparison of IPT + fluoxetine to CM + fluoxetine.
Both groups of the IPT-BPD vs. CM comparison received additional fluoxetine medication.
[1]Interpersonal Psychotherapy adapted for BPD
[2]Clinical management
[3]No data available for this outcome

Table 7. Spreadsheet of primary outcome effect estimates: Dialectical behaviour therapy skills training(DBT-ST) versus control

Outcome/Subgroup	Studies	Participants	Statistical Method	Effect Estimate/95% CI
BPD total severity				
DBT-ST[1] vs. SG[2]	1	59	***SMD***	***-1.01 [-1.56, -0.47]***
Inappropriate anger				
DBT-ST vs. SG	1	59	***SMD***	***-0.84 [-1.37, -0.30]***
Affective instability				
DBT-ST vs. SG	1	59	***SMD***	***-1.07 [-1.61, -0.52]***
Chronic feelings of emptiness				
DBT-ST vs. SG	1	59	SMD	-0.43 [-0.95, 0.09]
Impulsivity				
DBT-ST vs. SG	1	59	***SMD***	***-0.61 [-1.14, -0.09]***
Suicidality				
DBT-ST vs. SG	1	59	SMD	-0.10 [-0.61, 0.41]
Parasuicidality				
_[3]				
Interpersonal problems				
DBT-ST vs. SG	1	59	SMD	-0.29 [-0.80, 0.23]
Avoidance of abandonment				
-				
Identity disturbance				
-				
Dissociation/psychoticism				
DBT-ST vs. SG	1	59	***SMD***	***-0.66 [-1.18, -0.13]***

[1]Dialectical Behaviour Therapy-skills training
[2]standard group
[3]No data available.

Table 8. Spreadsheet of primary outcome effect estimates: Emotion regulation group therapy (ERG) versus control condition

Outcome/Subgroup	Studies	Participants	Statistical Method	Effect Estimate/95% CI
BPD total severity				
ERG[1] vs. TAU[2]	1	22	***SMD***	***-1.02 [-1.92, -0.11]***
Inappropriate anger				
-[3]				
Affective instability				
ERG vs. TAU	1	22	***SMD***	***-1.65 [-1.61, -0.52]***
Chronic feelings of emptiness				
-				
Impulsivity				
ERG vs. TAU	1	22	***SMD***	***-1.30 [-2.24, -0.36]***
Suicidality				
Parasuicidality				
ERG vs. TAU	1	22	***SMD***	***-0.98 [-1.88, -0.09]***
Interpersonal problems				
-				
Avoidance of abandonment				
-				
Identity disturbance				
-				
Dissociation/psychoticism				
-				

[1]Emotion Regulation Group Training
[2]treatment as usual
[3]No data available.

Table 9. Spreadsheet of primary outcome effect estimates: Schema-focused group therapy (SFT-G) versus control condition

Outcome/Subgroup	Studies	Participants	Statistical Method	Effect Estimate/95% CI
BPD total severity				
SFT-G[1] vs. TAU[2]	1	28	***SMD***	***-1.66 [-2.54, -0.78]***
Inappropriate anger				
-3				
Affective instability				
SFT-G vs. TAU	1	28	***SMD***	***-1.41 [-2.26, -0.57]***
Chronic feelings of emptiness				
Impulsivity				
SFT-G vs. TAU	1	28	***SMD***	***-1.92 [-2.85, -1.00]***
Suicidality				
Parasuicidality				
Interpersonal problems				
SFT-G vs. TAU	1	28	***SMD***	***-1.94 [-2.87, -1.02]***
Avoidance of abandonment				
Identity disturbance				
Dissociation/psychoticism				
SFT-G vs. TAU	1	28	***SMD***	***-1.37 [-2.21, -0.53]***

[1]Schema-Focused Therapy-group treatment
[2]treatment as usual
[3]No data available.

Table 10. Spreadsheet of primary outcome effect estimates: manual-assisted cognitive treatment (MACT) versus controls

Outcome/Subgroup	Studies	Participants	Statistical Method	Effect Estimate/95% CI
BPD total severity				
_[1]				
Inappropriate anger				
-				
Affective instability				
-				
Chronic feelings of emptiness				
-				
Impulsivity				
-				
Suicidality				
MACT[2] vs. TAU[3]	1	28	***SMD***	***-0.86 [-1.64, -0.07]***
Parasuicidality				
MACT vs. TAU	1	28	***SMD***	***-0.88 [-1.67, -0.10]***
Interpersonal problems				
-				
Avoidance of abandonment				
-				
Identity disturbance				
-				
Dissociation/psychoticism				
-				

[1]No data available
[2]Manual-assisted Cognitive Treatment
[3]treatment as usual

Table 11. Spreadsheet of primary outcome effect estimates: systems training for emotional predictability and problem solving for borderline personality disorder (STEPPS) versus controls

Outcome/Subgroup	Studies	Participants	Statistical Method	Effect Estimate/95% CI
BPD total severity				
STEPPS[1] vs. TAU[2]	1	124	SMD	-0.17 [-0.52, 0.19]
STEPPS+IT[3] vs. TAU	1	52	SMD	-0.55 [-1.11, 0.00]
Inappropriate anger				
-[4]				
Affective instability				
STEPPS vs. TAU	1	124	SMD	-0.32 [-0.67, 0.04]
Chronic feelings of emptiness				
-				
Impulsivity				
STEPPS vs. TAU	1	124	SMD	-0.29 [-0.64, 0.07]
STEPPS+IT vs. TAU	1	58	RR	0.93 [0.66, 1.29]
Suicidality				
-				
Parasuicidality				
STEPPS+IT vs. TAU	1	58	RR	1.32 [0.78, 2.22]
Interpersonal problems				
STEPPS vs. TAU	1	124	***SMD***	***-0.42 [-0.78, -0.06]***
STEPPS+IT vs. TAU	1	53	SMD	-0.27 [-0.81, 0.27]
Avoidance of abandonment				
-				
Identity disturbance				
-				
Dissociation/psychoticism				
STEPPS vs. TAU	1	124	***SMD***	***-0.42 [-0.78, -0.06]***

[1]Systems Training for Emotional Predictability and Problem Solving for borderline personality disorder

[2]Systems Training for Emotional Predictability and Problem Solving for borderline personality disorder plus individual therapy
[3]treatment as usual

Table 12. Spreadsheet of primary outcome effect estimates: Psychoeducation (PE) versus control

Outcome/Subgroup	Studies	Participants	Statistical Method	Effect Estimate/95% CI
BPD total severity				
_[1]				
Inappropriate anger				
-				
Affective instability				
-				
Chronic feelings of emptiness				
-				
Impulsivity				
PE[2] vs. WL[3]	1	50	SMD	-0.47 [-1.04, 0.10]
Suicidality				
-				
Parasuicidality				
-				
Interpersonal problems				
PE vs. WL	1	50	***SMD***	***-0.75 [-1.33, -0.16]***
Avoidance of abandonment				
-				
Identity disturbance				
-				
Dissociation/psychoticism				
-				

[1]No data available.

[2]psychoeducation
[3]waiting list

APPENDICES

Appendix 1. Search strategies

Cochrane Central Register of Controlled Trials (CENTRAL)

#1 MeSH descriptor Personality Disorders explode all trees
#2 (moral near/2 insanity)
#3 (DSM and (axis and II))
#4 (ICD and (F60 or F61 or F62))
#5 ((Odd* or eccentric* or dramatic* or emotional* or anxious* or fearful*) near/5 cluster*)
#6 ("Cluster A" or "Cluster B" or "Cluster C")
#7 ((aggressiv* or anxious* or borderline* or dependent* or emotional* or passiv* or unstable) near/5 personalit*)
#8 anankastic* or asocial* or avoidant*or antisocial* or anti-social* or compulsiv* or dissocial* or histrionic* or narciss* or obsessiv* or paranoi* or psychopath* or sadist* or schizoid* or schizotyp* or sociopath*
#9 personalit* near/5 disorder*
#10 character disorder*
#11 anal* next (personalit* or character* or retentiv*)
#12 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11

MEDLINE

1 randomized controlled trial.pt.
2 controlled clinical trial.pt.
3 randomi#ed.ab.
4 placebo.ab.
5 drug therapy.fs.
6 randomly.ab.
7 trial.ab.
8 groups.ab.
9 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
10 exp animals/ not humans.sh.
11 exp Personality Disorders/
12 (moral adj2 insanity).tw.
13 (DSM and (axis and II)).tw.
14 (ICD and (F60 or F61 or F62)).tw.
15 ((odd$ or eccentric$ or dramatic$ or emotional$ or anxious$ or fearful$) adj5 cluster$).tw.
16 ("Cluster A" or "Cluster B" or "Cluster C").tw.
17 ((aggressiv$ or anxious$ or borderline$ or dependent$ or emotional$ or passiv$ or unstable) adj5 personalit$).tw.
18 (personalit$ adj5 disorder$).tw.
19 character disorder$.tw.
20 (anal$ adj (personalit$ or character$ or retentiv$)).tw.
21 9 not 10
22 (anankastic$ or asocial$ or avoidant$ or antisocial$ or anti-social$ or compulsiv$ or dissocial$ or histrionic$ or narciss$ or obsessiv$ or paranoi$ or psychopath or psychopaths or psychopathic or sadist$ or schizoid$ or schizotyp$ or sociopath$).tw.
23 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 22
24 21 and 23

EMBASE

1 (moral adj2 insanity).tw.
2 (DSM and (axis and II)).tw.
3 (ICD and (F60 or F61 or F62)).tw.
4 ((odd$ or eccentric$ or dramatic$ or emotional$ or anxious$ or fearful$) adj5 cluster$).tw.
5 ("Cluster A" or "Cluster B" or "Cluster C").tw.
6 ((aggressiv$ or anxious$ or borderline$ or dependent$ or emotional$ or passiv$ or unstable) adj5 personalit$).tw.
7 (anankastic$ or asocial$ or avoidant$ or antisocial$ or anti-social$ or compulsiv$ or dissocial$ or histrionic$ or narciss$ or obsessiv$ or paranoi$ or psychopath$ or sadist$ or schizoid$ or schizotyp$ or sociopath$).tw.
8 (personalit$ adj5 disorder$).tw.
9 character disorder$.tw.

10 (anal$ adj (personalit$ or character$ or retentiv$)).tw.
11 exp personality disorder/
12 or/1-11
13 random$.tw.
14 factorial$.tw.
15 crossover$.tw.
16 cross over$.tw.
17 cross-over$.tw.
18 placebo$.tw. (1
19 (doubl$ adj blind$).tw.
20 (singl$ adj blind$).tw.
21 assign$.tw.
22 allocat$.tw.
23 volunteer$.tw.
24 Crossover Procedure/
25 double-blind procedure.tw.
26 Randomized Controlled Trial/
27 Single Blind Procedure/
28 or/13-27
29 12 and 28

ASSIA

((DE=("personality disorders" or "antisocial personality disorder" or "avoidant personality disorders" or "borderline personality disorder" or "dependent personality" or "depressive personality disorders" or "gender identity disorder" or "histrionic personality disorder" or "identity crisis" or "kleptomania" or "multi impulsive personality disorder" or "multiple personality disorder" or "narcissistic personality disorder" or "passive aggressive personality disorder" or "sadistic personality disorder" or "schizotypal personality disorders" or "selfdefeating personality disorder")) or((moral within 2 insanity) or(DSM and (axis and II)) or(icd and (F60 or F61 or F62)) or((odd* or eccentric* or dramatic* or emotional* or anxious* or fearful*) within 5 cluster*) or("Cluster A" or "Cluster B" or "Cluster C") or((aggressiv* or anxious* or borderline* or dependent* or emotional* or passiv* or unstable) within 5 personalit*) or(anankastic* or asocial* or avoidant* or antisocial* or anti-social* or compulsiv* or dissocial* or histrionic* or narciss* or obsessiv* or paranoi* or psychopath* or sadist* or schizoid* or schizotyp* or sociopath*) or(personalit* within 5 disorder*) or(character disorder*) or(anal* within 1 (personalit* or character* or retentiv*)))) and((DE=("randomized controlled trials" or "clinical randomized controlled trials" or "cluster randomized controlled trials" or "double blind randomized controlled trials" or "randomized consent design" or "single blind randomized controlled trials" or "urn randomization" or "random testing" or "randomization" or "unequal randomization")) or(TI=randomi* or AB=randomi*) or((TI=(single or double) near blind*)or (AB=(single or double) near blind*)))

BIOSIS

15 #14 AND #12
14 #13 OR #9 OR #8 OR #7 OR #6 OR #5 OR #4 OR #3 OR #2 OR #1
13 TS=(anankastic* or asocial* or avoidant* or antisocial* or anti-social* or compulsiv* or dissocial* or histrionic* or narciss* or obsessiv* or paranoi* or psychopath or psychopaths or psychopathic or sadist* or schizoid* or schizotyp* or sociopath*)
12 #11 OR #10
11 TS=(singl* or doubl* or tripl*or trebl*) OR TS=(mask* or blind*)
10 TS=(random* or crossover)
9 TS=((anal or anally) SAME (personalit* or character* or retentiv*))
8 TS=("Cluster B" or "Cluster C")
7 TS=("character disorder*")
6 TS=(personalit* SAME disorder*)
5 TS=((agressiv* or anxious* or borderline* or dependent* or emotional* or passiv* or unstable) SAME (personalit*))
4 TS=((odd* or eccentric* or dramatic* or emotional* or anxious* or fearful*) SAME cluster*)
3 TS=(ICD AND (F60 or F61 or F62))
2 TS=(DSM SAME (axis SAME II))
1 TS=(moral SAME insanity)

CINAHL

S30 S13 and S29
S29 S14 or S15 or S16 or S17 or S18 or S19 or S20 or S21 or S22 or S23 or S24 or S25 or S26 or S27 or S28

S28 allocat* random*
S27 (MH "Quantitative Studies")
S26 (MH "Placebos")
S25 placebo*
S24 random* allocat*
S23 (MH "Random Assignment")
S22 (Randomi?ed control* trial*)
S21 (singl* mask*)
S20 (doubl* mask*)
S19 (tripl* mask*)
S18 (trebl* mask*)
S17 (trebl* blind*)
S16 (tripl* blind*)
S15 (doubl* blind*)
S14 (singl* blind*)
S13 S1 or S2 or S3 or S4 or S5 or S6 or S7 or S8 or S9 or S10 or S11 or S12
S12 (anal* N1 personalit* or anal* N1 character* or anal N1 retentiv*) and (S1 or S2 or S3 or S4 or S5 or S6 or S7 or S8 or S9 or S10 or S11)
S11 anal* N1 personalit* or anal* N1 character* or anal N1 retentiv*
S10 character N1 disorder*
S9 personalit* N5 disorder*
S8 anankastic* or asocial* or avoidant* or antisocial* or anti-social* or compulsiv* or dissocial* or histrionic* or narciss* or obsessiv* or paranoi* or psychopath* or sadist* or schizoid* or schizotyp* or sociopath*
S7 aggressiv* N5 personalit* or anxious* N5 personalit* or borderline* N5 personalit* or dependent* N5 personalit* or emotional* N5 personalit* or passiv* N5 personalit* or unstable N5 personalit*
S6 ("Cluster A" or "Cluster B" or "Cluster C")
S5 odd* N5 cluster* or eccentric* N5 cluster* or dramatic* N5 cluster* or emotional* N5 cluster* or anxious* N5 cluster* or fearful* N5 cluster*
S4 (ICD and (F60 or F61 or F62))
S3 (DSM and (axis and II))
S2 moral N2 insanity
S1 (MH "Personality Disorders+")

Dissertation Abstracts

Searched using the Proquest keyword " personality disorders"

ICTRP

condition = borderline personality disorder AND recruitment status = all

metaRegister of Controlled Trials

Searched using the search strings:
antisocial personality
borderline personality
compulsive personality
dependent personality
histrionic personality
hysteria
paranoid personality
passive-aggressive personality
schizoid personality
schizotypal personality
personality disorder

National Criminal Justice Reference Service Abstracts (NCJRS)

Searched using the search strings:

random* AND compulsive personality
random* AND antisocial personality
random* AND borderline personality
random* AND dependent personality
random* AND histrionic personality
random* AND hysteria
random* AND paranoid personality
random* AND passive aggressive personality
random AND schizoid personality
random* AND schizotypal personality
random* AND personality disorder*

PsycINFO

1 (moral adj2 insanity).tw.
2 (DSM and (axis and II)).tw.
3 (ICD and (F60 or F61 or F62)).tw.
4 ((odd$ or eccentric$ or dramatic$ or emotional$ or anxious$ or fearful$) adj5 cluster$).tw.
5 ("Cluster A" or "Cluster B" or "Cluster C").tw.
6 ((aggressiv$ or anxious$ or borderline$ or dependent$ or emotional$ or passiv$ or unstable) adj5 personalit$).tw.
7 (anankastic$ or asocial$ or avoidant$ or antisocial$ or anti-social$ or compulsiv$ or dissocial$ or histrionic$ or narciss$ or obsessiv$ or paranoi$ or psychopath$ or sadist$ or schizoid$ or schizotyp$ or sociopath$).tw.
8 (personalit$ adj5 disorder$).tw.
9 character disorder$.tw.
10 (anal$ adj (personalit$ or character$ or retentiv$)).tw.
11 exp personality disorders/
12 or/1-11
13 randomi$.tw.
14 singl$.tw.
15 doubl$.tw.
16 trebl$.tw.
17 tripl$.tw.
18 blind$.tw.
19 mask$.tw.
20 (or/14-17) adj3 (or/18-19)
21 clin$.tw.
22 trial$.tw.
23 (clin$ adj3 trial$).tw.
24 placebo$.tw.
25 exp PLACEBO/
26 crossover.tw.
27 exp Treatment Effectiveness Evaluation/
28 exp Mental Health Program Evaluation/
29 random$.tw.
30 assign$.tw.
31 allocate$.tw. (
32 (random$ adj3 (assign$ or allocate$)).tw.
33 32 or 28 or 27 or 26 or 25 or 24 or 23 or 20 or 13
34 12 and 33

Science Citation Index

15 #14 AND #12
14 #13 OR #9 OR #8 OR #7 OR #6 OR #5 OR #4 OR #3 OR #2 OR #1
13 TS=(anankastic* or asocial* or avoidant* or antisocial* or anti-social* or compulsiv* or dissocial* or histrionic* or narciss* or obsessiv* or paranoi* or psychopath or psychopaths or psychopathic or sadist* or schizoid* or schizotyp* or sociopath*)
12 #11 OR #10
11 TS=(singl* or doubl* or tripl*or trebl*) OR TS=(mask* or blind*)
10 TS=(random* or crossover)
9 TS=((anal or anally) SAME (personalit* or character* or retentiv*))
8 TS=("Cluster B" or "Cluster C")

7 TS=("character disorder*")
6 TS=(personalit* SAME disorder*)
5 TS=((agressiv* or anxious* or borderline* or dependent* or emotional* or passiv* or unstable) SAME (personalit*))
4 TS=((odd* or eccentric* or dramatic* or emotional* or anxious* or fearful*) SAME cluster*)
3 TS=(ICD AND (F60 or F61 or F62))
2 TS=(DSM SAME (axis SAME II))
1 TS=(moral SAME insanity)

Social Science Citation Index

15 #14 AND #12
14 #13 OR #9 OR #8 OR #7 OR #6 OR #5 OR #4 OR #3 OR #2 OR #1
13 TS=(anankastic* or asocial* or avoidant* or antisocial* or anti-social* or compulsiv* or dissocial* or histrionic* or narciss* or obsessiv* or paranoi* or psychopath or psychopaths or psychopathic or sadist* or schizoid* or schizotyp* or sociopath*)
12 #11 OR #10
11 TS=(singl* or doubl* or tripl*or trebl*) OR TS=(mask* or blind*)
10 TS=(random* or crossover)
9 TS=((anal or anally) SAME (personalit* or character* or retentiv*))
8 TS=("Cluster B" or "Cluster C")
7 TS=("character disorder*")
6 TS=(personalit* SAME disorder*)
5 TS=((agressiv* or anxious* or borderline* or dependent* or emotional* or passiv* or unstable) SAME (personalit*))
4 TS=((odd* or eccentric* or dramatic* or emotional* or anxious* or fearful*) SAME cluster*)
3 TS=(ICD AND (F60 or F61 or F62))
2 TS=(DSM SAME (axis SAME II))
1 TS=(moral SAME insanity)

Sociological Abstracts (CSA)
((DE="personality disorders") or(moral within 2 insanity) or(DSM and (axis and II)) or(icd and (F60 or F61 or F62)) or((odd* or eccentric* or dramatic* or emotional* or anxious* or fearful*) within 5 cluster*) or("Cluster A" or "Cluster B" or "Cluster C") or((aggressiv* or anxious* or borderline* or dependent* or emotional* or passiv* or unstable) within 5 personalit*) or(anankastic* or asocial* or avoidant* or antisocial* or anti-social* or compulsiv* or dissocial* or histrionic* or narciss* or obsessiv* or paranoi* or psychopath* or sadist* or schizoid* or schizotyp* or sociopath*) or(personalit* within 5 disorder*) or(character disorder*) or(anal* within 1 (personalit* or character* or retentiv*))) and((TI=randomi* or DE=(randomi?ed controlled trial*) or AB=randomi*) or(TI=(double* blind*) or AB=(double* blind*) or DE=(double blind studies)) or(single near blind*))
ZETOC (Conference search)
23 conference: hysteria trial*
22 conference: histrionic personality trial*
21 conference: dependent personality trial*
20 conference: borderline personality trial*
19 conference: antisocial personality trial*
18 conference: compulsive personality trial*
17 conference: compulsive personality random*
16 conference: schizotypal trial*
15 conference: schizotypal random*
14 conference: schizoid trial*
13 conference: schizoid random*
12 conference: passive aggressive trial*
11 conference: passive aggressive random*
10 conference: personality disorder* trial*
9 conference: paranoid personality trial*
8 conference: paranoid personality random*
7 conference: paranoid personality
6 conference: hysteria random*
5 conference: histrionic personality random*
4 conference: dependent personality random*
3 conference: borderline personality random*
2 conference: antisocial personality random*
1 conference: personality disorder* random*

Appendix 2. Trial register searches

We searched the WHO International Clinical Trails Registry Platform on 9 August 2011 (http://apps.who.int/trialsearch/), a meta-register that includes the following trial registration databases:

- Australian New Zealand Clinical Trials Registry, last data file imported on 9 August 2011
- ClinicalTrials.gov, last data file imported on 9 August 2011
- ISRCTN, last data file imported on 9 August 2011
- Brazilian Clinical Trials Registry (ReBec), last data file imported on 26 July 2011
- Chinese Clinical Trial Registry, last data file imported on 26 July 2011
- Clinical Trials Registry - India, last data file imported on 26 July 2011
- Clinical Research Information Service - Republic of Korea, last data file imported on 26 July 2011
- Cuban Public Registry of Clinical Trials, last data file imported on 26 July 2011
- German Clinical Trials Register, last data file imported on 26 July 2011
- Iranian Registry of Clinical Trials, last data file imported on 2 August 2011
- Japan Primary Registries Network, last data file imported on 26 July 2011
- Pan African Clinical Trial Registry, last data file imported on 26 July 2011
- Sri Lanka Clinical Trials Registry, last data file imported on 26 July 2011
- The Netherlands National Trial Register, last data file imported on 26 July 2011

The following phrase was searched:

condition = borderline personality disorder AND recruitment status = all

Appendix 3. Additional methods for future updates

Issue	Method
Unit of analysis issues/cross-over trials	Data from randomised cross-over studies up to the point of first cross-over were eligible for inclusion. We excluded data from subsequent phases. Due to the characteristically unstable course of BPD, it did not seem appropriate to us that participants served as their own controls (within-subject comparisons). However, we would have used first phase data up to the point of first cross-over for those studies and applied the inverse variance methods as recommended by Elbourne 2002.
Search methods for identification of studies	Contact psychotherapeutic associations directly in order to identify any published and upcoming research.

FEEDBACK

Comments on the Gregory et al 2008 study, February 2017

Summary

On 14 February 2017, Dr Robert Gregory submitted the following comments, having identified himself as an author of an included study within the present review.

I have a number of concerns regarding the 2012 review of "Psychological Therapies for People with Borderline Personality Disorder", specifically in regards to your review of Dynamic Deconstructive Psychotherapy (DDP). I realize that several years have passed since the Cochrane review. However, since the time of its publication, both clinical and academic colleagues have repeatedly brought the review to my attention, citing it as evidence that DDP is ineffective. So I felt I needed to respond.

I have a great respect for Cochrane reviews and the time and effort needed by the Cochrane authors to make a fair and accurate assessment. And in such a large review (over 200 pages), it is possible for oversights to occur. Nevertheless, since busy clinicians are making decisions that affect vulnerable patients based on the review, it's important to get it right. I have listed my concerns below:

***1.** My largest concern is how the data from my 2008 study were analyzed and reported. The 2008 study by Gregory and colleagues was a small randomized controlled trial (n = 30) comparing DDP to TAU for participants suffering from co-occurring borderline personality disorder (BPD) and alcohol dependence. In their Discussion section, Summary of Main Results, the authors conclude that "There were no statistically*

significant results, but DDP was indicated to be superior to the control group in terms of BPD severity and parasuicidality, with small to moderate effects" (p 74). The authors draw the same conclusion on pages 2 and 31.

This would be a reasonable conclusion based on the Cochrane authors' method of analysis, which calculated standardized mean differences "on the basis of post-treatment results" (p 15). The difficulty of that method of analysis for the 2008 study was that there were substantial differences in baseline scores between the two groups, which were not accounted for in the analysis. Participants assigned to DDP through randomization had substantially greater baseline psychopathology than control participants (see Gregory 2008 , Table 4, p 37). In fact, on the continuous outcome variables, participants receiving DDP had baseline scores averaging more than half a standard deviation higher than the control group! By not taking into account baseline differences in either the analysis, summary of results, or discussion, the Cochrane authors markedly understate positive treatment effects and leave clinicians with the wrong impression that DDP was shown to be an ineffective treatment in this RCT, a potential Type II error.

***2.** There was also a simple error in the same section of the report summarizing results in the wrong direction. The Cochrane authors state: "For depression, a non-statistically significant effect favouring the control group was found" (p 74). This conclusion contradicts the authors' own analysis of treatment effects for depression as outlined on p 164 and p 184 of the report, and is clearly a misstatement and an honest mistake in a very lengthy report. Nevertheless, it's important to get it corrected.*

***3.** The Cochrane authors mention concern regarding attentional bias in the 2008 RCT (see p 14, p 26, and p 120). A strength of the RCT (Gregory 2008) is that the control participants were assigned to the best alternative treatment available in the community. In regards to total treatment contact hours, there were no statistically significant differences between the groups; three of the time points indicated contact hours favoring the control group (3, 6, and 12 months) and one time point (9 months) favored the DDP group (see Table 2, p 33).*

Admittedly, I am focusing on concerns and am omitting all the aspects that the authors did extremely well in this complex and large review. For that I am very appreciative. Nevertheless, Cochrane has an enormous responsibility given its well-deserved reputation among clinicians for accurate and unbiased reporting of treatment reviews. The patient population with BPD is high risk, with substantial morbidity and mortality. Clinicians need to get the most accurate information possible and I hope you will consider amending your report to take these concerns into account.

Sincerely,

Robert J. Gregory, MD

Do you have any affiliation with or involvement in any organisation with a financial interest in the subject matter of your comment?:
I do not have any affiliation with or involvement in any organisation with a financial interest in the subject matter of my comment.

Reply

On 20 February the Feedback Editor of the Cochrane Developmental, Psychosocial and Learning Problems Group (CDPLPG) sent the above comments to Professor Julian Higgins, Statistical Editor of the CDPLPG, for advice / comment, which was duly supplied on 27 February. This was then circulated to other members of CDPLPG's editorial team, approved and sent on to the author team.

On 27 March 2017, Dr Jutta Stoffers-Winterling submitted the following comments on behalf of the author team as a whole:

First, we would like to thank Dr Gregory for his most respectful and appreciative feedback. We understand his concerns, and take them seriously.

Though an update of this review is currently being finalised by our working group, we would like to address Dr Gregory's comments and concerns. In the following, we will try to reply to each of the points raised by Dr Gregory.

Ad 1: *We agree that obviously greater pathology scores were observed in the experimental group (DDP) at baseline for most measures (cf. Gregory 2008 , Table 4, p 37). We have sought statistical advice and were reassured that this is a situation that often occurs in samples of smaller size. However, as this is a randomised trial (using a minimization procedure), the trialists have gone to some lengths to try and ensure balance. That means, if baseline imbalance occurs, it is due to chance. The statistical methods used in our review to compare the groups allow for such chance differences, and we were advised not to change them (Higgins 2017 [pers comm]).*

We understand your concerns regarding the possibility of Type II errors, and have, therefore, inserted the following amendment (see 'Discussion > Quality of the evidence'):

"Most studies had comparatively small samples (12 out of 28 trials included 39 participants or less). As a consequence, the experimental groups may seem to be imbalanced at baseline, which was, for example, the case in the RCT of Gregory 2008. Dr Gregory, the main investigator of this trial, has raised concerns about the appropriateness of using endpoint data alone for effect size calculation, and referred to "substantially greater baseline psychopathology" in the active group, which may have led to an underestimation of positive treatment effects and a Type II error (Gregory 2017). However, group allocation was randomised (as in any here-included study), so any imbalances

at baseline are regarded to be due to chance alone, and the the statistical methods used in this review allow for such chance differences." See Quality of the evidence.

Nevertheless, we are aware that the power of studies that include smaller samples (such as Gregory 2008) may be too small to detect a real effect as statistically significant if it exists. Therefore, we have not only reported statistical significance throughout the text but also referred to their magnitude ("small, moderate, large").

Ad 2: *We apologise for this mistake! Actually, this finding was reported correctly elsewhere in the text but erroneously in the 'Discussion > Summary of main results' section. We have corrected this, so that it now reads:*

“Dynamic Deconstructive Psychotherapy (DDP) was also investigated in a single trial only (Gregory 2008). There were no statistically significant results, but DDP was indicated to be superior to the control group in terms of BPD severity, parasuicidality and depression with small to moderate effects.” See Summary of main results.

Ad 3: *Thank you for bringing this to our attention. We agree that there is actually a low risk of bias due to a higher amount of attention spent to the participants of the treatment of investigation (DDP).*

We have now changed the judgement of attention bias from 'high risk' to 'low risk'. The 'Risk of bias' table now reads:

Low risk	Though participants of the control group did not receive an alternate, obligatory control treatment, but were free to join alternative treatments, they did not receive less professional attention. Indeed, "[...] DDP participants received fewer overall treatment contact hours than did participants receiving community care." (Gregory 2008, p 39). Also, cf. Gregory 2008, Table 2, p 33.

Figures 2 (“Risk of bias graph”) and 3 (“Risk of bias summary) were updated accordingly.

We also changed the text in the 'Results > Risk of Bias in included studies > Other potential sources of bias > Attention bias' section:

"Only 10 studies (Koons 2001; Giesen-Bloo 2006; Linehan 2006; Bellino 2007; Bateman 2009; Cottraux 2009; Nadort 2009; Soler 2009; Doering 2010; Morey 2010) were rated as providing similar amounts of attention as obligatory components of the study protocol to all trial groups. The participants allocated to the control group of Gregory 2008 did not get an obligatory control treatment, but were referred to alternative treatments in the community and had not less but markedly more professional contact hours during most of the study period. The risk of attention bias was therefore also judged low for this trial. All remaining trials provided more attention (that is, in terms of frequency of appointments, involvement in additional group treatments etc.) to one group, usually the experimental group (EG)." See Other potential sources of bias.

We hope we have addressed your concerns adequately. An update of this review is currently under way, and publication is intended for the end of this year/early 2018. Of course, any changes incorporated now will also be included in the updated version.

We are aware that without the most valuable, time-consuming and hard work of the primary study authors, no meta-analysis or systematic review would exist. What is more, the study sample in Dr Gregory’s study included persons with BPD plus substance-related disorder (alcohol abuse or dependence), who are usually considered as most difficult to treat (or to be kept in treatment at all), and we can understand how much work and effort this study must have meant.

Sincerely,

Jutta Stoffers-Winterling, University Medical Center, Mainz, Germany

Contributors

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(on behalf of the review author team — Jutta Stoffers-Winterling, Birgit A Völlm, Gerta Rücker, Antje Timmer, Nick Huband, Klaus Lieb)

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WHAT'S NEW

Date	Event	Description
4 September 2020	Review declared as stable	This review is no longer being updated. It was superseded by a new review (with the same title) in the *CDSR* in 2020, see: www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD012955.pub2/full. See also Published notes.
4 September 2020	Amended	Abstract, Plain language summary and Notes amended to explain that this review was superseded by a review published in the *Cochrane Database of Systematic Reviews* (*CDSR*) in 2020.

HISTORY

Review first published: Issue 1, 2006

Date	Event	Description
14 March 2017	Feedback has been incorporated	Feedback by Dr Gregory (via Cochrane Feedback mechanism, supplied to CDPLPG by Wiley 14 February 2017) incorporated. Changes included: - correction of wording within Summary of main results; - new paragraph inserted within Quality of the evidence; - 'Risk of bias' rating changed for Gregory 2008 ('**Risk of Bias table > Attention bias**'); and - wording changed accordingly in Other potential sources of bias. Conclusions of review unchanged.
31 January 2013	Amended	Correction of data extraction error in relation to Davidson 2006 (analyses 1.7.4 and 1.9.5). Conclusions unchanged.
1 November 2012	Amended	Minor edit in the description of the exclusion criteria in two studies.
6 June 2012	New citation required and conclusions have changed	Change in conclusions New authorship Accumulation of changes: change in methods section; rewriting of background section; changing of conclusions due to new identified evidence
10 October 2010	New search has been performed	New search

CONTRIBUTIONS OF AUTHORS

Jutta Stoffers: wrote final report, selected studies, obtained papers, extracted data, appraised quality of trials, entered data.
Birgit Völlm: helped write final report, selected studies, obtained papers, extracted data, appraised quality of trials, entered data.
Gerta Rücker: helped write final report, gave statistical support and helped extract data.
Antje Timmer: helped design review, corrected final report.
Nick Huband: helped write final report, selected studies
Klaus Lieb: sought funds, wrote to authors of papers for additional information, revised final report.

DECLARATIONS OF INTEREST

Jutta M Stoffers is a board-certified psychologist (cognitive behaviour therapy), who has worked on a Dialectical Behaviour Therapy (DBT) ward, and attended courses on DBT and Schema-focused therapy (SFT).
Birgit A Völlm — none known.
Gerta Rücker — none known.
Antje Timmer — none known.
Nick Huband was employed as a Clinical Research Fellow with the Institute of Mental Health, Nottingham and Nottinghamshire Healthcare NHS Trust during the production of this review.
Klaus Lieb is an Editor with Cochrane Developmental, Psychosocial and Learning Problems. He is a board-certified cognitive behaviour therapist with a special interest in schema therapy. KL has been involved in trials investigating inpatient DBT (Bohus 2004) and inpatient schema-focused therapy (Reiss 2014).

SOURCES OF SUPPORT

Internal sources

- Research Committee of the University Hospital Freiburg, Germany, Germany
- Nottinghamshire Healthcare NHS Trust, UK

External sources

- German Federal Ministry of Education and Research, grant no. 01KG0609, Germany
- NHS Cochrane Collaboration Programme Grant Scheme (NIHR), UK
- Ministry of Science, Research and Arts, federal state of Baden-Württemberg, Germany

  Stipend to JS

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

The outcomes are different from the previous version of this review and we have used the new Cochrane Collaboration tool to update the risk of bias assessment of the studies. We changed the planned sensitivity analyses.

NOTES

This is an update of a published review (Binks 2006), but it is no longer being updated because it was superseded by a new review in 2020 (Storebø 2020).

INDEX TERMS

Medical Subject Headings (MeSH)

Behavior Therapy; Borderline Personality Disorder [psychology] [*therapy]; Psychoanalysis; Psychotherapy [*methods]; Psychotherapy, Group; Randomized Controlled Trials as Topic

MeSH check words

Humans