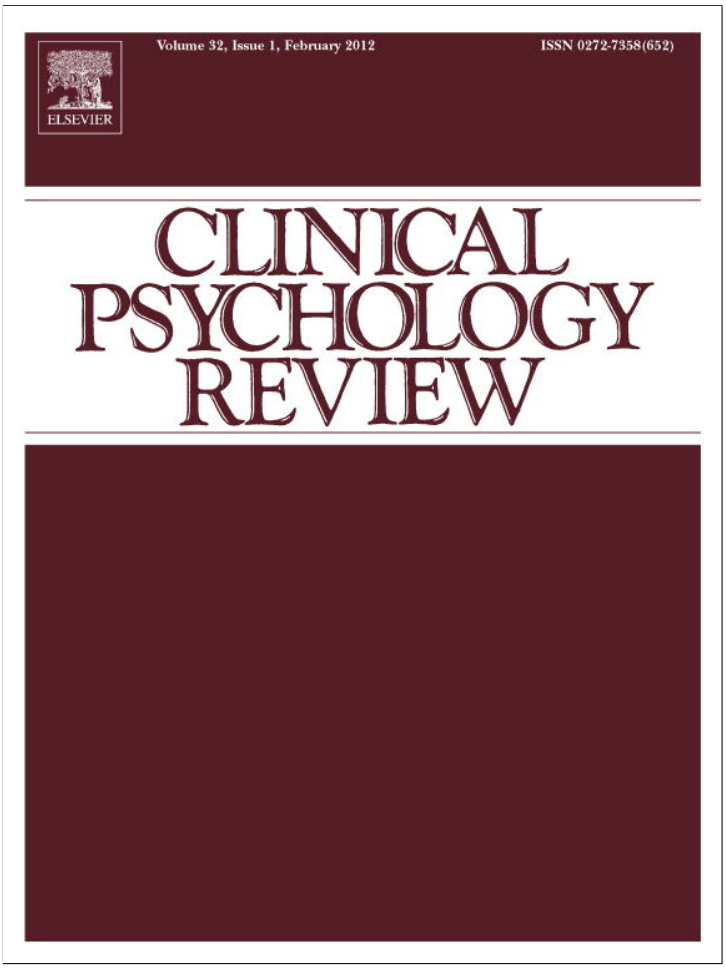

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Factors predicting the outcome of psychotherapy for borderline personality disorder: A systematic review

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ABSTRACT

Background: There is substantial variation between individuals with borderline personality disorder (BPD) in the degree of benefit gained from psychotherapy. Information on factors predicting the outcome of therapy for this group could facilitate identification of those at risk for poor outcome, and could enable helpful therapy processes to be identified.
Method: A systematic search of PsycInfo, EMBASE, CINHAL and Medline identified research on factors predicting symptom change during therapy for patients with a BPD diagnosis. Non-English language papers and dissertations were included.
Results: Two consistent positive predictors of symptom change were identified: pre-treatment symptom severity and patient-rated therapeutic alliance. Contrary to theories predicting increasing immutability with age, there was no evidence that age predicted poorer outcome.
Conclusion: More severely ill patients may have greater potential to achieve change during therapy, and should remain a focus for psychotherapy services. The therapeutic alliance is an important common factor predicting outcome in patients with BPD, even in highly disorder-specific treatments. Outcomes may be improved by further clinical and research focus on forming strong therapeutic alliances. The advancement of the field requires identification and testing of new predictors of outcome, especially those related to specific theories of therapeutic change in BPD.

Contents

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1. Introduction

Borderline personality disorder is defined by DSM-IV as "a pervasive pattern of instability of interpersonal relationships, self-image and emotions, and marked impulsivity" (APA 2000). Patients with BPD can be considered 'stably unstable', experiencing highly reactive rapid fluctuations in mood, intense and inconstant behaviour in interpersonal relationships, extreme anger and impulsive behaviour such as substance abuse and self-harm. They generate high treatment costs through extensive use of emergency and inpatient psychiatric services (Ansell, Sanislow, McGlashan, & Grilo, 2007; NIMH 2001), stemming in part from high rates of self-harm and suicide attempts. Treatment dropout in this group, as in other personality disorders, has sometimes been very high, although recent meta-analyses suggest that dropout rates are less problematic than had previously been thought (Barnicot, Katsakou, Marougka, & Priebe, 2011; McMurran, Huband, & Overton, 2010). Considering the challenge for health services and the level of distress linked with BPD, the development of effective treatments is seen as a priority (NIMHE 2003).

Evidence suggests that psychotherapy can alleviate the behaviours and psychological distress associated with BPD. In particular, the 1990s and 2000s saw the development of various psychotherapy models specifically designed to treat BPD, such as dialectical behaviour therapy, mentalization based therapy, schema focused therapy and STEPPS (Bateman & Fonagy, 2006; Blum, Bartels, St. John, & Pfohl, 2002; Linehan, 1993; Young, 1994). Some of these have been demonstrated more effective than treatment as usual in randomised controlled trials, in terms of improving symptoms of BPD such as self-harm and general psychiatric symptoms — although outcomes vary between trials (Bateman & Fonagy, 1999; Blum et al., 2008; Doering et al., 2010; Giesen-Bloo et al., 2006; Linehan, Armstrong, Suarez, Allmon, & Heard, 1991; Linehan et al., 2006). Some patients receiving these treatments experience markedly better outcomes than others despite receiving the same treatment, and the reasons for this are unclear. For instance, after 18 months of mentalization based therapy, some patients achieve remission from severe self-harm but others do not (Bateman & Fonagy, 2009). After 12 months of schema focused therapy or transference focused psychotherapy, some patients achieve reliable change in BPD symptoms but others do not (Giesen-Bloo et al., 2006). After 12 months of dialectical behaviour therapy, the average score on the Hamilton Rating Scale for Depression was 14, indicating moderate depression. However, there was substantial variance such that some participants could be classified as not depressed, whilst others could be classified as severely depressed (Linehan et al., 2006). The factors driving these inter-individual differences in outcome are largely unknown.

There is as yet no consensus on what factors influence the outcome of psychotherapy for borderline personality disorder. Such information would be valuable, firstly because determining what patient characteristics influence the outcome of therapy could enable earlier identification of patients who may be at risk of poor outcomes and may therefore require altered treatment strategies. Secondly, understanding how therapy characteristics or processes can influence outcomes could enable helpful factors to be identified. Therapies and even routine psychiatric care for borderline personality disorder could then be modified in order to enhance these helpful factors.

Existing attempts to synthesise research on predictors have included those of Lieb et al. (2004), who briefly summarised the results of four relevant studies, and Robins and Chapman (2004), who summarised the results of five relevant studies, both as part of wider reviews on treatment for BPD. Predictive factors identified in these brief reviews included affective instability, self-harm history, previous hospitalisation length, abuse history, maternal psychopathology, patient age, schizotypal symptoms, hostility and therapist adherence to the treatment model. However, whilst a wide range of potential predictors were identified, these reviews demonstrated few consistent findings across studies. Furthermore, some of the cited papers were conference abstracts and thus not amenable to detailed methodological scrutiny, whilst others referred not to the outcome of a course of psychotherapy, but to the outcome of a medication trial, or of a long-term follow up after a hospital admission. Moreover, it was beyond the scope of these brief review sections to include any information or critique of the methodology employed in the cited studies. Thus, clinicians engaged in psychotherapy with borderline patients have no established, critically appraised findings on which to judge the likely prognosis of a particular client, or the likely importance of a particular therapeutic process or technique.

The aim of this study is therefore to systematically and critically review the evidence on patient characteristics and treatment processes prospectively predicting symptom change during psychotherapy for BPD.

2. Methods

Searches of title and abstract content were performed in January 2012 in the PsycInfo, EMBASE, CINHAL and Medline databases. The search terms used were combinations of either "borderline personality" or "Cluster B" with terms used to designate association: "correlate", "associate", or "predict", and terms used to describe relevant outcomes: "outcome", "symptoms", "recovery", "improvement", "depression", "anxiety", "anger", "self harm", "self injury", "parasuicide" or "suicide", or with terms used to designate psychological treatment "therapy" or "psychotherapy". The references of included studies were then screened to identify any further relevant papers, as were the contents of all known randomised controlled trials of psychotherapy for BPD as identified in two recent reviews (Barnicot et al., 2011; Priebe et al., in preparation).

Studies were included if they evaluated the prospective relationship between any pre-treatment patient characteristic or treatment process and symptom change during psychotherapy for borderline personality disorder, and reported on the statistical significance of the association. Pre-treatment patient characteristics could include sociodemographic factors, past or current mental health symptoms, personality traits or previous treatment history. Associations between outcome and patient biological (e.g. amygdala activity) or neuropsychological (e.g. working memory capacity) characteristics were excluded. Treatment processes were broadly defined to include any aspects of therapist or patient behaviours during treatment, or any change in patients' internal experiences. However, correlations between change in one symptom construct and change in another were excluded as these were thought to be too highly confounded. The outcome of interest, symptom change, could include BPD symptoms, Axis I symptoms, and other Axis II symptoms. Studies in

which not all patients had a diagnosis of BPD were excluded. Conference abstracts were excluded whilst dissertations and non-English language papers were not excluded.

The first author screened all titles. The abstracts of potentially relevant studies were then independently screened by two researchers at a time (KB and either MS, NB or NF), and the full texts of any potentially relevant studies were obtained. The references of any full texts were also screened for potential relevance. Data on study characteristics and findings was independently extracted by the first author and either MS or NB. Any discrepancies between researchers were resolved by discussion.

Quality criteria for evaluating the predictor analyses used in included papers were constructed, by reference to existing quality criteria such as those of Gerber et al. (2011) and through wider reading on appropriate conduct of predictor–outcome analyses. The criteria developed were as follows:

1. The sample size for the predictors analysis ($N<30=0$; $30\leq N>100=1$; $N\geq 100=2$).
2. The use of a reliable structured interview to diagnose BPD (not used = 0; used = 1).
3. The use of validated and reliable predictor and outcome measures (not validated and reliable = 0; validated and reliable = 1).
4. For randomised controlled trials only, blinding of the outcome assessor to treatment arm (not blinded = 0; blinded = 1; no control condition = n.a.).
5. Predictor analysis used intent-to-treat data (not used = 0; used = 1).
6. Evidence was obtained that omission of missing data did not bias the results, either by showing that participants with missing outcome data did not differ from those with complete data on any of the predictor variables, or showing that predictor–outcome relationships remained the same after adjusting for data missingness, or showing that a sensitivity analysis using multiple imputation demonstrated the same results (evidence not obtained = 0; evidence obtained = 1; data available for entire sample of interest = n.a.).
7. Maximum likelihood or multiple imputation used in the main (not sensitivity) analysis to minimise bias from missing data (not used or no information on missing data = 0; used = 1; no missing data = n.a.).
8. Outcome distribution checks were performed and appropriate analyses used (distribution not checked or inappropriate model used = 0; distribution checked and appropriate model used = 1).
9. Analysis used continuous rather than dichotomised predictors when appropriate. This method increases statistical power to detect relationships between variables (Brauer, 2002) and does not involve arbitrary division of predictor variables into “high” and “low” categories. (Continuous predictor variable was dichotomised in the predictor analysis = 0; continuous predictor was entered as continuous variable in predictor analysis = 1; predictor was categorical originally = n.a.).
10. Paper published in a peer reviewed journal (not published = 0; published = 1).

Each included study was scored against each criterion and the scores for each study were then averaged to give a quality score for that study between 0 and 1, with higher scores reflecting higher quality. This averaging approach was taken because not all quality criteria were applied to each study. The quality score reflects the quality of the study's analysis of predictor–outcome relationships, rather than the quality of the study as a whole. Where information pertaining to the criteria was ambiguous in the included studies, study authors were contacted for clarification. Where this information could not be obtained, ambiguous information was scored as not meeting the quality criterion. Analysis quality was assessed independently by KB and NB. Inter-rater reliability was “substantial” according to Landis and Koch's criteria (kappa = 0.72, S.E. = 0.06; Landis and Koch (1977)). The final quality analysis results were decided by discussion between the two authors.

Ideally, synthesis of research findings should be done using effect size procedures such as meta-analysis (Hunter & Schmidt, 2004). However, many of the studies included in this review presented no information from which a standardised effect size could be calculated. Meta-analysis would have required exclusion of these studies — a potential source of bias since studies with non-significant findings were less likely to present effect size data. Furthermore, the number of studies examining the same predictor in relation to the same outcome was often too small for meta-analysis. Therefore, research synthesis was descriptive only. Findings on predictors examined in three or more studies will be presented in detail, since this was deemed a sufficient number of studies to permit cross-study synthesis. Predictors evaluated in fewer studies will be more briefly described.

3. Results

Thirty three papers met review inclusion criteria. See Fig. 1 for a QUOROM diagram detailing the paper retrieval process. The characteristics of these papers are summarised in Table 1. Some of the included papers had overlapping samples. The sample assessed in Linehan et al. (1999) constitutes a sub-sample of the patients assessed by Chapman, Derbridge, Cooney, Hong, and Linehan (2009) and Neacsiua, Rizvi, and Linehan (2010), whilst the patients included in Bohus et al. (2004) constitute a sub-sample of those assessed in Kleindienst et al. (2011), and the patients included in Meehan (2008) constitute a sub-sample of those assessed in Clarkin, Levy, Lenzenweger, and Kernberg (2007). In addition, the analyses of Spinhoven, Giesen-Bloo, van Dyck, Kooiman, and Arntz (2007) and Spinhoven, Giesen-Bloo, van Dyck, and Arntz (2008) use a sub-sample of the patients assessed in Giesen-Bloo et al. (2006), whilst the samples of Brown, Linehan, Comtois, Murray, and Chapman (2009) and Harned, Jackson, Comtois, and Linehan (2010) are both drawn from a larger study (Linehan et al., 2006).

Despite differences in therapy model, measurement instruments, and measurement timepoints, some consistent findings across studies could be identified. The main method for classifying study findings was a consideration of the statistical significance of any relevant associations tested. However, wherever available, the effect size for significant associations was also reported, as standardised r coefficients where possible. Effect sizes converted by the review authors to r coefficients are signified by the superscript [a]. Furthermore, nine authors of included papers that did not give information from which an r coefficient could be calculated were contacted, and the necessary data was received from two. Effect sizes received through correspondence with study authors are signified by the superscript [b]. The size of r coefficients was classified as small ($r<0.30$), medium ($30<r<0.50$) or large ($r\geq 0.50$), according to Cohen's classifications (Cohen, 1988). Risk ratios were classified according to the Cochrane Collaboration categorisation of risk ratio effect size (Schünemann et al., 2008).

4. Quality evaluation

Predictor–outcome analyses in eight studies were given low quality scores (≤ 0.5), fifteen moderate scores (>0.5 and <0.70), nine high scores (≥ 0.70 and <1.0) and one the maximum score of 1, as shown in Table 1. Importantly, these scores pertain specifically to the quality of the analyses of predictor–outcome associations, and not to the quality of the study as a whole. Subsequent references in this review to “analysis quality” are references to these quality ratings, and not to the quality of the studies as a whole. A table explaining the calculation of the quality score for each study is available as online supplementary material. Twenty-five authors were contacted in order to clarify information relating to the quality criteria, of which twelve replied with relevant information. Information gained through contacting

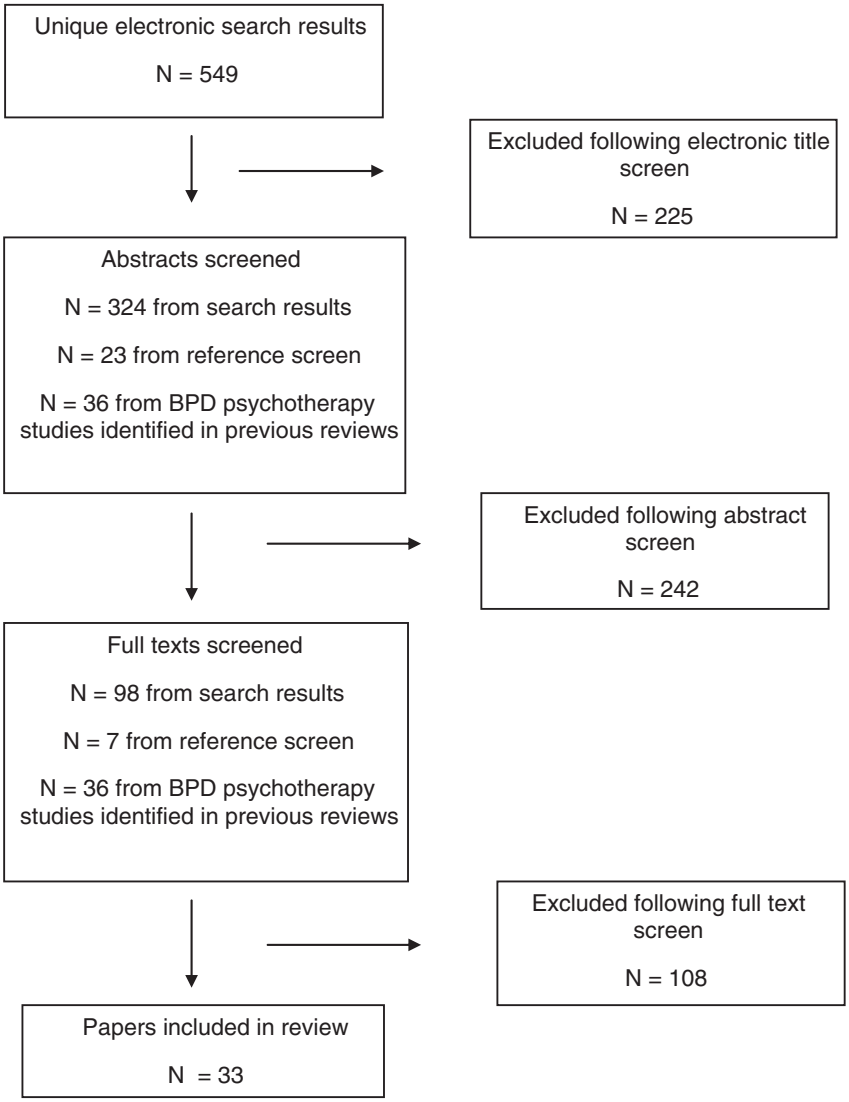

Fig. 1. QUOROM diagram showing paper retrieval process.

study authors is denoted by the superscript [c] in the supplementary table.

5. Patient characteristics at pre-treatment

5.1. Sociodemographics

Almost all studies to examine the influence of patient sociodemographics found no significant association with outcome, including studies examining age (Bateman & Fonagy, 1999; Black et al., 2009; Bohus et al., 2004; Davidson, Tyrer, Norrie, Palmer, & Tyrer, 2010; Laddis, 2010; Ryle & Golynkina, 2000), gender (Bateman & Fonagy, 1999; Laddis, 2010; Ryle & Golynkina, 2000), employment (Bohus et al., 2004; Davidson et al., 2010; Spinhoven et al., 2008), educational level (Bateman & Fonagy, 1999; Black et al., 2009, Davidson et al., 2010; Laddis, 2010; Ryle & Golynkina, 2000; Spinhoven et al., 2008), and marital status (Bateman & Fonagy, 1999; Davidson et al., 2010; Laddis, 2010; Ryle & Golynkina, 2000). Most of these non-significant findings resulted from predictor analyses of moderate or high quality. Exceptions were a significant association between age and change in suicidality (Clarkin et al., 2007, direction and effect size not stated, moderate predictor analysis quality), a positive association between male gender and improvement in general psychiatric symptoms (Black et al., 2009, $r = 0.18$ small effect size, moderate predictor analysis quality) and a positive association between employment and remission from BPD (Ryle & Golynkina, 2000, $r = 0.60$[a] large effect size, moderate predictor analysis quality).

5.2. BPD symptom severity

The effect of pre-treatment BPD severity was examined in seven studies, all of moderate or high predictor analytic quality with one exception. Their findings are summarised in Table 2. When broken down by outcome, four of five studies examining the association with change in *BPD* symptoms found evidence of a relationship (Black et al., 2009; Giesen-Bloo et al., 2006; Meares, Stevenson, & Comerford, 1999; Ryle & Golynkina, 2000). The two studies evaluating the effect of initial BPD severity on *Axis 1* symptom change found no significant relationships (Black et al., 2009; Bohus et al., 2004), whilst another found no significant association between BPD severity and remission from self-harm (Bateman & Fonagy, 1999).

Three studies found that those with higher pre-treatment BPD severity achieved greater improvement in BPD symptoms during treatment. Effect sizes in these three studies ranged from small ($r = 0.29$[a], Meares et al., 1999) to large ($r = 0.58$, Black et al., 2009). Conversely, Ryle and Golynkina (2000) found that higher pre-treatment BPD

Table 1
Papers included in the review.

Paper	Treatment(s) included in predictor analysis	Sample size for predictor analyses	Study design	Quality score	Predictor variables	Outcome variables
Axelrod et al. (2011)	DBT	24	Obs	0.70	Improvement in emotion regulation ability during tx	Substance use frequency
Bateman and Fonagy (1999)	MBT	19	RCT	0.50	Pre-tx age, anxiety severity, Axis I comorbidities, BPD severity, childhood abuse, depression severity, educational level, gender, general psychiatric symptom severity, living status, marital status, psychiatric medication, self-harm history, social adjustment, treatment history	Self-harm
Berking et al. (2009)	DBT, TBCE	81	RCT	0.82	Pre-tx experiential avoidance, change in experiential avoidance during tx.	Depression
Black et al. (2009)	STEPPS, TAU	164	RCT	0.91	Pre-tx age, Axis I comorbidities, Axis II comorbidities, BPD severity, depression severity, educational level, gender, general psychiatric symptom severity, social adjustment, self-harm history	BPD severity, depression severity, general psychiatric symptom severity
Bohus et al. (2004)	DBT	50	CT	0.64	Pre-tx age, BPD severity, depression severity, anxiety severity, anger severity, dissociation severity, employment, general psychiatric symptom severity, psychosocial functioning, self-harm history	Depression severity, anxiety severity, anger severity, dissociation severity, general psychiatric symptom severity
Braakman et al. (2007)	DBT	30	Obs	0.50	Pre-tx dissociation severity	Depression severity, anxiety severity, dissociation severity, general psychiatric symptom severity
Brown et al. (2009)	DBT, TBCE	73	RCT	0.55	Shame during tx	Self-harm
Chapman et al. (2009)	DBT, CVT, TBCE	55	RCT	0.64	Pre-tx Cloninger's temperament dimensions	Self-harm
Clarkin et al. (2007)	TFP, DBT, ST	62	RCT	0.64	Pre-tx age	Depression severity, anxiety severity, suicidality, impulsivity, aggression
Davidson et al. (2010)	CBT, TAU	76	RCT	0.91	Pre-tx age, age at first self-harm, educational level, forensic history, gender, employment, living status, marital status, self-harm frequency, special educational needs, suicide attempt frequency	Suicide attempt(s)
Doering et al. (2010)	TFP, TBCE	72	RCT	0.73	Pre-tx psychiatric medication usage	BPD severity, general psychiatric symptom severity, self-harm, suicide attempts
Giesen-Bloo et al. (2006)	SFT, TFP	86	RCT	0.73	Pre-tx BPD severity, self-harm history, psychiatric medication	BPD severity
Goldman and Gregory (2010)	DDP	10	Obs	0.63	DDP techniques (association, attribution, ideal other) used during tx, therapeutic alliance during tx.	Alcohol abuse, BPD severity, depression, dissociation, self-harm,
Gunderson et al. (1997)	Mixed	15	Obs	0.60	Therapeutic alliance during tx — patient and therapist-rated	BPD severity, general psychiatric symptoms
Harned et al. (2010)	DBT	51 (22)	Obs	0.60 (0.50)	Pre-tx dissociation severity, drug and alcohol abstinent days, number of Axis 1 diagnoses, PTSD comorbidity, PTSD symptom severity, self harm frequency, social functioning, suicide attempt frequency, timing of index trauma	Dissociative disorder, imminent suicide risk, self harm, substance dependence.
Kleindienst et al. (2011)	DBT	54	Obs	0.70	Pre-tx dissociation severity, general psychiatric symptom severity and interpersonal problem severity	General psychiatric symptom severity
Koons et al. (2001)	DBT, TAU	20	RCT	0.45	Pre-tx anxiety severity	BPD severity, depression severity, anger severity, dissociation severity, self-harm, suicidality
Laddis (2010)	CCM, TAU	58	CT	0.55	Pre-tx age, gender, educational level, general psychiatric symptom severity, marital status.	General psychiatric symptom severity
Leerer (1997)	DBT	12	Obs	0.50	Therapeutic alliance during tx — patient-rated	Anger severity, self-harm
Linehan et al. (1999)	DBT, TAU	7	RCT	0.36	Therapist adherence to DBT protocol during tx	Substance abuse
Marziali et al. (1999)	IGP, IDP	18	RCT	0.36	Therapeutic alliance during tx — patient-rated	Depression severity, general psychiatric symptom severity
Meares et al. (1999)	IPP, TAU	60	CT	0.56	Pre-tx BPD severity	BPD symptom severity
Meehan (2008)	DBT, ST, TFP	37	RCT	0.64	Pre-tx state anger. Affective communication during tx.	Aggression, state anger, suicidality
Neacsiua et al. (2010)	DBT, TAU, CVT, TBCE	108	RCT	1.00	Use of skills taught in DBT during tx	Depression severity, anger severity, suicide attempts
Pasieczny and Connor (2011)	DBT	44	CT	0.40	Therapist level of training	Anxiety severity, depression severity, general psychiatric symptom severity, sucidality, suicide attempt frequency
Ryle and Golynkina (2000)	CAT	27	Obs	0.63	Pre-tx alcohol abuse history, age, BPD severity, childhood abuse severity, depression severity, eating disorder history, educational level, employment, gender, general psychiatric symptom severity, impulsivity severity, interpersonal problem severity, recent major life events, marital status, psychiatric medication, self harm history, sexual orientation, social functioning, substance abuse history, treatment history, violence history	Recovery from BPD
Shearin and Linehan (1992)	DBT	4	Obs	0.50	Balance between therapist use of acceptance versus change-oriented techniques during tx	Self-harm
	SFT, TFP	78	RCT	0.55		BPD severity

Table 1 (*continued*)

Paper	Treatment(s) included in predictor analysis	Sample size for predictor analyses	Study design	Quality score	Predictor variables	Outcome variables
Spinhoven et al. (2007)					Pre-tx therapist–patient schema dissimilarity, therapeutic alliance during tx — patient and therapist-rated	
Spinhoven et al. (2008)	SFT, TFP	71	RCT	0.73	BPD severity, educational level, employment, number of Axis 1 disorders, number of Axis 2 disorders. Therapist prediction of outcome during tx.	Recovery from BPD, reliable change in BPD symptoms
Strauss et al. (2011)	PT	21	Obs	0.57	Change in attachment status during tx	General psychiatric symptom severity
Turner (2000)	DBT, CCT	24	RCT	0.68	Therapeutic alliance during tx — patient-rated	Depression severity, anxiety severity, general psychiatric symptom severity, anger severity, impulsivity severity, self-harm, suicide attempts, suicidality
Wenzel et al. (2008)	CBT	28	Obs	0.60	Pre-tx attitude towards talking to a therapist, expectations for improvement	Depression severity, suicidality, BPD severity
Yen et al. (2009)	DBT	47	Obs	0.70	Pre-tx BPD criteria fulfilled, depression severity, anger severity, dissociation severity, general psychiatric symptom severity.	Depression severity, anger severity, dissociation severity, general psychiatric symptom severity, self-harm

( ) indicates where sample size or quality score differs for some analyses; CAT, cognitive analytic therapy; CBT, cognitive behavioural therapy; CCM, Cape Cod model; CCT, client centred therapy; CT, controlled trial; CVT, comprehensive validation therapy; DBT, dialectical behaviour therapy; IDP, individual dynamic therapy; IGP, interpersonal group therapy; IPP, interpersonal psychodynamic psychotherapy; MBT, mentalization based therapy; Obs, observational study; PT, psychodynamic therapy; RCT, randomised controlled trial; SFT, schema focused therapy; STEPPS, systems training for emotional predictability and problem solving; ST, supportive therapy; TAU, treatment as usual; TBCE, treatment by community experts; TFP, transference focused psychotherapy; tx, treatment.

severity was associated with a lower chance of achieving recovery from BPD (i.e. no longer meeting diagnostic criteria), with an effect size classified as large ($r = -0.46$ [a]). A fifth study reported a significant association between initial BPD severity and improvement, but did not report the direction of the effect (Spinhoven et al., 2008). A partial explanation of the discrepant result in Ryle and Golynkina's study may be their use of recovery as an outcome criterion, whereas the studies with significant positive results used degree of symptom change as a continuous variable. Thus, it is possible that patients with higher symptom severity achieve greater change overall but that this change is less likely to take them below meeting full criteria for BPD. In order to further explore the discrepant result obtained by Ryle and Golynkina, the review authors generated approximately standardised BPD severity scores for these five studies. BPD severity in Ryle and Golynkina's study was not notably higher or lower than in the four other studies, suggesting that the discrepancy in the direction of association between BPD severity and symptom change could not be explained by differences in severity between studies. One possible explanation for the positive association between symptom severity and symptom change is that, whilst all patients will show regression to the mean over time, such effects may be stronger in patients with higher initial symptoms due to their greater distance from the mean (Bland & Altman, 1994). If this were so, one might expect to find larger positive associations between severity and change in study samples with higher initial severity. No such pattern was evident in the data, although the number of studies was small and the standardisation of severity approximate.

5.3. Dissociation severity

Findings on the effect of dissociation are shown in Table 2. Using predictor analyses of varying quality, three studies found evidence that more severe pre-treatment dissociation was linked to greater improvement in dissociation during treatment (Bohus et al., 2004, $r = 0.43$[a], medium effect; Braakman et al., 2007, $F(2, 27^{a}) = 36.1$; Yen, Johnson, Costello, & Simpson, 2009, $r = 0.57$[a] with endorsement of BPD emptiness as covariate, large effect). When comparing studies, there was no evidence that studies with higher pre-treatment dissociation severity found a larger positive effect on symptom change, and thus no evidence that the effect was due to regression to the mean.

Conflicting results have been found on the effect of dissociation on improvement in general psychiatric symptoms. One study, with low quality predictive analysis, found a significant positive association (Braakman et al., 2007 — $F(2, 27^{b}) = 6.38$) whilst another with high quality predictive analysis found a significant negative association (Kleindienst et al., 2011, $\beta = -0.02 \pm 0.006$). Although measured on different scales, when calculated as a percentage of the total scale range, mean dissociation severity was approximately 10% higher in Braakman's study. Additionally, Braakman's study assessed dissociation over the past seven days, whereas Kleindienst's study assessed "present" dissociation over an unspecified time frame. It is possible that these differences could be linked to the discrepant results between these two studies.

A fifth study found that pre-treatment dissociation severity did not significantly affect which patients achieved remission from self-harm (Harned et al., 2010, poor predictor analysis quality).

5.4. Anger severity

In predictor analyses of moderate and low quality respectively, both Bohus et al. (2004) and Meehan (2008) found that higher pre-treatment anger predicted greater change in anger (respectively, $r = 0.59$[b] and $r = 0.49$[a], medium–large effect sizes). Conversely, Yen et al. (2009), in a predictor analysis of high quality, found no significant association.

5.5. History of self-harm

The duration over which self-harm history was measured ranged from the 10 weeks prior to baseline, to the patient's entire lifetime. All of the predictor analyses in studies assessing this were of moderate or high quality with the exception of one. Four studies found no evidence that patients' self-harm history was associated with treatment outcome (Bateman & Fonagy, 1999; Davidson et al., 2010; Giesen-Bloo et al., 2006; Yen et al., 2009). Harned et al. (2010) found that a higher number of suicide attempts in the four months prior to treatment predicted a lower chance of achieving remission from self-harming behaviour during treatment, whilst Ryle and

Table 2
Association between pre-treatment symptom severity and symptom change.

Predictor	Paper	Sample size for analyses	Outcome	Association	Effect size	Instruments
Total BPD symptom severity at pre-treatment	Bateman and Fonagy (1999)	44	Presence of self-harm	0	/	DIB, SSI
	Black et al. (2009)	164	Improvement in BPD symptoms	+	r = 0.24	BEST, BEST
				0	r = 0.10	BEST, ZAN-BPD
				0	r = 0.11	ZAN-BPD, BEST
				+	r = 0.58	ZAN-BPD, ZAN-BPD
			Improvement in depression	0	r = 0.06	ZAN-BPD, BDI
			Improvement in general psychiatric symptoms	0	r = 0.14 [a]	ZAN-BPD, CGI
	Bohus et al. (2004)	31	Improvement in general psychiatric symptoms	0	/	DIB-R, SCL-90-R
				0	r = 0.14[b]	SCID-II, SCL-90-R
			Improvement in depression	0	r = 0.02[b]	SCID-II, BDI
				0	r = 0.13[b]	SCID-II, HAMD
			Improvement in anxiety	0	r = 0.33[b]	SCID-II, HAMA
				0	r = −0.02	SCID-II, STAI
			Improvement in anger	0	r = 0.03	SCID-II, STAXI
			Improvement in dissociation	0	r = −0.03	SCID-II, DES
	Giesen-Bloo et al. (2006)	88	Improvement in BPD	+	RR = 1.07	BPDSI-IV, BPDSI-IV
			Recovery from BPD	0	/	BPDSI-IV, BPDSI-IV
	Meares et al. (1999)	60	Improvement in BPD	+	r = 0.29[a]	DSM-III, DSM-III
	Ryle and Golynkina (2000)	27	Recovery from BPD	−	r = 0.46 [a]	DSM-IV, DSM-IV
	Spinhoven et al. (2008)	71	Improvement in BPD	+/−	/	BPDSI-IV, BPDSI-IV
			Recovery from BPD	0	/	BPDSI-IV, BPDSI-IV
Dissociation severity at pre-treatment	Bohus et al. (2004)	31	Improvement in dissociation	+	/	DES, DES
	Braakman et al. (2007)	30	Improvement in general psychiatric symptoms	+	F = 6.38	DSS, SCL-90-R
			Improvement in depression	0	F = 0.35	DSS, BDI
			Improvement in anxiety	+	F = 7.25	DSS, BAI
			Improvement in dissociation	+	F = 36.1	DSS, DSS
	Harned et al. (2010)	22	Remission from self-harm	0	r = 0.03[a]	DES, SBQ, SASII
	Kleindienst et al. (2011)	52	Improvement in dissociation	+	r = 0.43[b]	DES, DES
			Improvement in general psychiatric symptoms	−	β = −0.02	DES, SCL-90-R
	Yen et al. (2009)	50	Improvement in dissociation	+	β = 0.28	DES, DES
Depression severity at pre-treatment	Bateman and Fonagy (1999)	44	Remission from self-harm	0	/	BDI, SSI
	Black et al. (2009)	164	Improvement in BPD	0	r = −0.04	BDI, ZAN-BPD
				0	r = 0.06	BDI, BEST
			Improvement in depression	0	r = −0.06	BDI, BDI
			Improvement in general psychiatric symptoms	0	r = 0.03[a]	BDI, CGI
	Bohus et al. (2004)	31	Improvement in depression	+	r = 0.50[b]	HAMD, HAMD
	Ryle and Golynkina (2000)	27	Recovery from BPD	0	r = 0.15[a]	BDI, DSM-IV
	Yen et al. (2009)	50	Improvement in depression	0	/	BDI, BDI
General psychiatric symptom severity at pre-treatment	Bateman and Fonagy (1999)	44	Remission from self-harm	0	/	SCL-90-R, SSI
	Black et al. (2009)	164	Improvement in BPD	+	r = 0.30	CGI, ZAN-BPD
				0	r = 0.06	CGI, BEST
			Improvement in depression	0	r = 0.10	CGI, BDI
			Improvement in general psychiatric symptoms	0	r = 0.06[a]	CGI, CGI
	Bohus et al. (2004)	30	Improvement in general psychiatric symptoms	+	r = 0.32[b]	SCL-90-R, SCL-90-R
	Kleindienst et al. (2011)	54	Improvement in general psychiatric symptoms	+	r = 0.31[b]	SCL-90-R, SCL-90-Rc
	Laddis (2010)	58	Improvement in general psychiatric symptoms	0	r = 0.28[a]	BPRS, BPRS
	Ryle and Golynkina (2000)	27	Recovery from BPD	0	r = 0.14[a]	SCL-90-R, DSM-IV
	Yen et al. (2009)	50	Improvement in general psychiatric symptoms	0	/	BSI, BSI

+, positive association ($p \leq 0.05$); 0, no association; −, negative association ($p \leq 0.05$); +/−, significant association, direction not reported; /, no effect size given; a, effect size converted to r by review authors; b, effect size provided through correspondence with study author; β, regression coefficient; BAI, Beck Anxiety Inventory; BDI, Beck Depression Inventory; BEST, Borderline Evaluation of Severity over Time; BPDSI-IV, Borderline Personality Disorder Severity Index Version IV; BPRS, Brief Psychiatric Symptom Inventory; BSI, Brief Symptom Inventory; DES, Dissociative Experiences Scale; DIB(-R), Diagnostic Interview for Borderline Personality Disorder (-Revised); DSM-III or IV, Diagnostic and Statistical Manual for Mental Disorders III or IV; DSS, Dissoziations-Spannungs-Skala; F, analysis of variance coefficient; HAMA, Hamilton Anxiety Scale; HAMD, Hamilton Depression Scale; r, correlation coefficient; RR, risk ratio; SASII, Suicide Attempt Self Injury Interview; SBQ, Suicidal Behaviors Questionnaire; SCID-II, Structured Clinical Interview for DSM-IV Axis II; SCL-90-R, Symptom Checklist 90 Revised; SSI, Suicide and Self-harm Inventory; STAI, Spielberger State Trait Anxiety Inventory; STAXI, State Trait Anger Expression Inventory; ZAN-BPD, Zanarini Rating Scale for Borderline Personality Disorder.

Golynkina (2000) found that patients with a recent or lifetime history of self-harm were less likely to achieve remission from BPD. The size of the effect in both studies could be classified as medium, approaching strong ($r = 0.48^a$, $r = 0.49^a$ respectively). Conversely, Black et al. (2009) found that patients with a lifetime history of self-harm achieved greater improvement in BPD symptoms during treatment. This was a small effect ($r = 0.19$). It is possible that a positive effect of self-harm was found in Black's study versus a negative effect in Harned and Ryle's studies due to differences in the outcome used in these studies: symptom improvement in Black' study versus symptom remission in Harned and Ryle's studies. Thus, it is possible that patients with a self-harm history achieve a greater degree of improvement in symptom severity overall but are less likely to manage to completely stop self-harming or to no longer meet full criteria for BPD.

5.6. Axis I symptoms

Patients' Axis I comorbidities were generally not found significantly associated with outcome, including current major depression (Bateman & Fonagy, 1999; Black et al., 2009), current or lifetime anxiety disorders (Bateman & Fonagy, 1999; Black et al., 2009; Harned et al., 2010), current or lifetime substance use disorders (Bateman & Fonagy, 1999; Ryle & Golynkina, 2000) and total number of current Axis I disorders (Bohus et al., 2004; Harned et al., 2010; Spinhoven et al., 2008). Predictor analyses in all of these studies were of

moderate or high quality. An exception was the finding that patients with a lifetime history of substance use disorder achieved greater improvement in BPD symptoms during treatment (Black et al., 2009, r = 0.19 small effect, moderate predictor analysis quality). The proportion of participants with a lifetime history of substance abuse was higher in Black and colleagues' study than in Bateman and Fonagy (1999) or Ryle and Golynkina (2000) (61% versus 45% and 37%). These differences may partially account for the stronger association between substance abuse and outcome in Black and colleagues' study.

Pre-treatment Axis I symptom severity was sometimes found associated with greater symptom improvement. Black et al. (2009) found that higher general psychiatric symptom severity was associated with greater improvement in BPD symptoms (r = 0.30, medium effect size), whilst Bohus et al. (2004) and Kleindienst et al. (2011) found the same for improvement in general psychiatric symptoms (respectively, r = 0.32[b] and r = 0.31[b], medium effect sizes), albeit in somewhat overlapping samples. Bohus et al. (2004) also found that higher initial depression or anxiety severity predicted greater improvement in depression and anxiety respectively (r = 0.50[b] and r = 0.39[b], moderate–large effect sizes). These three studies all used predictor analyses of moderate or high quality. Conversely, Harned et al. (2010) found that patients with more severe PTSD symptoms were less likely to achieve remission from self-harm (r = 0.44[a], medium effect, poor predictor analysis quality). In other studies, general psychiatric, depression or anxiety severity were not found associated with outcome (Bateman & Fonagy, 1999; Koons et al., 2001; Laddis, 2010, Ryle & Golynkina, 2000; Yen et al., 2009). When the severity of general psychiatric and depressive symptoms were compared between studies, there was no indication that symptom severity was higher in studies with significant positive findings, possibly countering the argument that significant results simply represent regression to the mean. However, anxiety severity was notably higher in Bohus and colleague's studies than in others, which could offer a partial explanation for the larger association between anxiety severity and symptom change in this study.

5.6.1. Social adjustment

Social adjustment refers to a person's functioning in terms of employment, leisure activities, family life and interpersonal situations. In six studies, there was no significant effect of this variable on symptom change (Bateman & Fonagy, 1999; Black et al., 2009; Bohus et al., 2004; Harned et al., 2010; Kleindienst et al., 2011; Ryle & Golynkina, 2000). Predictor analyses in all studies were of moderate or high quality, with one exception.

5.6.2. Psychiatric medication use

Most studies assessing this predictor used a binary variable (taking psychiatric medication at pre-treatment versus medication-free), with the exception of Black et al. (2009), who considered the total number of medications taken. No studies gave details of the types of medication taken by their samples. All predictor analyses were of moderate or high quality. In three studies there was no significant association between patients' medication usage and their outcome (Bateman & Fonagy, 1999; Black et al., 2009; Ryle & Golynkina, 2000). However, two studies found that patients initially taking psychiatric medication had a poorer outcome in terms of general psychiatric symptom improvement (Doering et al., 2010) and BPD symptom improvement (Giesen-Bloo et al., 2006). In both studies this was a large effect (r = 0.55 and risk ratio = 0.40 respectively).

5.6.3. Pre-treatment characteristics evaluated in fewer than three studies

The following characteristics evaluated in fewer than three studies were found associated with symptom change: special educational needs (negatively associated with remission from suicide attempts, Davidson et al., 2010), endorsement of individual BPD criteria (various positive and negative associations with outcome, Yen et al., 2009), comorbid paranoid personality disorder (positively associated with improvement in BPD symptoms, Black et al., 2009), experiential avoidance (negatively associated with change in depression, Berking, Neacsiu, Comtois, & Linehan, 2009), and personality as rated by Cloninger's temperament dimensions (various positive and negative associations, Chapman et al., 2009), positive attitude towards talking to a therapist (positively associated with improvement in depression and suicidality, Wenzel, Jeglic, Levy-Mack, Beck, & Brown, 2008), and expectations for improvement (positively associated with improvement in BPD symptoms and suicidality, Wenzel et al., 2008). The following were not significantly associated with symptom change: living alone (Bateman & Fonagy, 1999, Davidson et al., 2010), age at first self-harm (Davidson et al., 2010), recent major life events (Ryle & Golynkina, 2000), sexual orientation (Ryle & Golynkina, 2000), timing of index trauma in patients with comorbid PTSD (Harned et al., 2010), history or severity of childhood abuse (Bateman & Fonagy, 1999; Ryle & Golynkina, 2000), history of alcohol abuse (Ryle & Golynkina, 2000), history of eating disorder (Bateman & Fonagy, 1999; Ryle & Golynkina, 2000), total number of Axis II comorbidities (Spinhoven et al., 2008), history of violence (Ryle & Golynkina, 2000), treatment history (Bateman & Fonagy, 1999; Ryle & Golynkina, 2000), and patient–therapist schema dissimilarity (Spinhoven et al., 2007).

5.7. Treatment processes

5.7.1. Therapeutic alliance

The only treatment process evaluated in more than two studies was the therapeutic alliance. The timepoint at which the alliance was evaluated varied from 1 month (Marziali, Munroe-Blum, & McCleary, 1999) to 1 year (Leerer, 1997) into treatment. Four studies evaluating the patient-rated therapeutic alliance found evidence of a relationship with outcome improvement, as shown in Table 3, with some studies finding associations between the alliance and multiple symptom constructs (Leerer, 1997; Marziali et al., 1999; Spinhoven et al., 2007; Turner, 2000). However, predictor analyses in these studies were all of poor (Leerer, 1997; Marziali et al., 1999) or moderate (Spinhoven et al., 2007; Turner et al., 2000) quality. A fifth study, using predictor analyses of moderate quality, found no evidence for association with symptom change (Gunderson, Najavits, Leonhard, Sullivan, & Sabo, 1997). In three studies, the effect sizes for statistically significant associations were large according to Cohen's classification (Cohen, 1988), ranging from r = 0.40 to 0.68 (Leerer, 1997; Marziali et al., 1999; Turner, 2000). Another study reported odds ratios (Spinhoven et al., 2007), indicating that for each unit increase in the rating of the therapeutic alliance the odds of achieving reliable improvement or recovery from BPD increased by 1.36 and 1.39 times respectively. Since these odds ratios refer to a continuous predictor, Cohen's classification for odds ratio size does not apply, but they may be considered clinically meaningful effects.

A sixth study measured the observer-rated alliance, and, using analysis of moderate quality, found a positive correlation with reliable change in BPD symptoms (Goldman & Gregory, 2010). Again, this was a large effect (r = 0.74).

5.7.2. Treatment processes evaluated in fewer than three studies

Treatment processes evaluated in fewer than three studies and found associated with symptom change were the balance between acceptance and change-oriented techniques used by the therapist in DBT sessions (positive association with reduction in self-harm, Shearin & Linehan, 1992), therapist use of DDP techniques (positively associated with improvement in BPD symptoms, Goldman & Gregory, 2010), therapist adherence to the DBT manual (positively associated with improvement in substance use, Linehan et al.,

Table 3
Association between patient-rated therapeutic alliance and symptom change.

Predictor	Paper	Sample size for analysis	Timepoint of alliance measurement (months)	Timepoint of outcome measurement (months)	Outcome	Association	Effect size	Instruments
Therapeutic alliance — patient-rated	Gunderson et al. (1997)	15	1.5	36	Improvement in BPD symptoms	0	/	HAQ, DIB
					Improvement in general psychiatric symptoms	0	/	HAQ, SCL-90-R
						(+)	r = 0.55 [a]	HAQ, OAS-O
	Leerer (1997)	12	6 or 12	6 or 12	Improvement in anger	+	r = 0.67 [a]	HAQ, OAS-P
						+	r = 0.68 [a]	HAQ, OAS-V
					Improvement in self-harm	0	/	HAQ, LSRAS
	Marziali et al. (1999)	34	1	12	Improvement in general psychiatric symptoms	0	r = 0.65[a]	TAS_e, SCL-90
			2			+	r = 0.60 [a]	TAS_l, SCL-90
			1			0	r = 0.17 [a]	GTAS_e, SCL-90
			2			+	r = 0.57 [a]	GTAS_l, SCL-90
			1		Improvement in depression	+	r = 0.57 [a]	TAS_e, BDI
			2			+	r = 0.57 [a]	TAS_l, BDI
			1			0	r = 0.00 [a]	GTAS_e, BDI
			2			+	r = 0.41 [a]	GTAS_l, BDI
	Spinhoven et al. (2007)	78	3	36	Improvement in BPD symptoms	+	OR = 1.36	WAI, BPDSI-IV
					Recovery from BPD	+	OR = 1.39	WAI, BPDSI-IV
	Turner et al. (2000)	24	6	12	Improvement in clinical outcomes (aggregate)	+	r = 0.63	HRQ, HRSD BPRS TBR BDI BAI BSSI

0, no association; +, positive association ($p \leq 0.5$); (+), trend positive association ($0.5\ p < 0.10$); /, no effect size given; a, effect size converted to r by review authors; BAI, Beck Anxiety Inventory; BDI, Beck Depression Inventory; BPDSI-IV, Borderline Personality Disorder Severity Index Version IV; BPRS, Brief Psychiatric Rating Scale; BSSI, Beck Scale for Suicidal Ideation; DIB, Diagnostic Interview for Borderline Personality Disorder; F, analysis of variance coefficient; GTAS_e, Group Therapeutic Alliance Scale — early; GTAS_l, Group Therapeutic Alliance Scale — late; HAQ, Helping Alliance Questionnaire; HRQ, Helping Relationship Questionnaire; HRSD, Hamilton Rating Scale for Depression; LSRAS, Lethality of Suicide Attempt Rating Scale; OAS-O, Overt Agression Scale — Objects; OAS-P, Overt Aggression Scale — People; OAS-V, Overt Aggression Scale — Verbal; OR, Odds ratio; r, correlation coefficient; SCL-90-(R), Symptom Checklist 90 (Revised); TAS_e, Therapeutic Alliance Scale — early; TAS_l, Therapeutic Alliance Scale — late; TBR, target behaviour ratings; WAI, Working Alliance Inventory.

1999), therapist level of training (positively associated with improvement in suicide attempt frequency, Pasieczny & Connor, 2011), affective communication between patient and therapist (positive association with reduction in anger, Meehan, 2008), patient shame after reporting self-harm (negatively associated with self-harm reduction, Brown et al., 2009), patient use of behavioural skills taught in DBT (positively associated with self-harm improvement, Neacsiu et al., 2010), patient improvement in emotion regulation ability (positively associated with reduction in substance use, Axelrod, Perepletchikova, Holtzman, & Sinha, 2011), patient reduction in experiential avoidance (positively associated with improvement in depression, Berking et al., 2009), patient change in attachment status (various associations with change in general psychiatric symptom severity, Strauss, Mestel, & Kirchmann, 2011). The only treatment process found not to be significantly associated with outcome was therapist prediction of patient outcome (Spinhoven et al., 2008).

6. Discussion

6.1. Main findings

This review synthesised research findings on patient characteristics and treatment processes as predictors of symptom change during psychotherapy for BPD. Predictors evaluated in three or more studies were considered sufficiently well-studied to permit research synthesis. Most research on patient characteristics at pre-treatment has focused on the predictive value of sociodemographics, symptom severity or comorbidity. Findings on the predictive value of sociodemographics have mainly been non-significant, although a few studies have found that characteristics such as gender or employment can influence symptom change (Black et al., 2009; Ryle & Golynkina, 2000). The few studies with significant findings on sociodemographics did not markedly differ in the quality of their predictive analyses from those with non-significant findings, although the relatively large sample size of Black et al. (2009) may have increased statistical power. Perhaps most notably, age is consistently not found associated with symptom change. This was true even for analyses of high quality and/or large sample size.

When considering symptom severity, a fairly common finding was that higher pre-treatment BPD or Axis I severity predicted greater symptom change. This was particularly common when the effect of symptom severity on change in the same symptom construct was considered, and was found both in studies with high and those with moderate or poor quality predictor analyses, and those with small or large sample sizes. The effect size, however, varied from small to large from study to study. Countering the argument that the results reported here simply reflect regression to the mean, there was little indication that studies reporting significant severity–change associations had samples with higher initial symptom severity. The only exception was the finding that anxiety severity seemed notably higher in the one study to find a positive association between anxiety severity and symptom improvement, i.e. that of Bohus et al. (2004). It should also be noted that some studies of high quality did not find a significant effect of symptom severity on outcome, whilst a few found an opposite effect, such as higher pre-treatment dissociation predicting *less* symptom change (Kleindienst et al., 2011).

Findings on the influence of self-harm on outcome were mixed. Two studies found that patients with a recent or lifetime history of self-harm achieved poorer outcomes during therapy (Harned et al., 2010; Ryle & Golynkina, 2000), whilst a third found a positive effect of self-harm (Black et al., 2009), and another four studies found no association with outcome. These discrepant results could be explained by the differences in outcome criteria between studies, such that patients with a self-harm history achieve a greater degree of improvement in symptom severity overall but are less likely to manage to completely stop self-harming or to no longer meet full criteria for BPD.

Pre-treatment comorbidity with Axis I disorders, including depression, anxiety and substance abuse, was often not found significantly associated with outcome. However, there were a few exceptions, such as the finding that patients with a history of substance abuse achieved greater change in BPD symptoms (Black et al., 2009). There was also some indication that patients using psychiatric medication at pre-

treatment achieved less symptom change, although other analyses of equal quality found no such association. There is no evidence to date that patients with poor social adjustment do less well in psychotherapy.

The only treatment process assessed in more than two studies was the therapeutic alliance. The patient-rated alliance was found to consistently and strongly predict greater symptom change, across different studies and treatment models. However, the quality of the predictor analyses assessing this variable was either moderate or poor. Other treatment processes have commonly been assessed in single studies only, nearly always with significant results. This could reflect the potential relevance of these variables to outcome, or could reflect publication bias.

6.2. Comparison with the wider literature

It is perhaps surprising that sociodemographics such as age or gender were rarely or never found associated with symptom change. That older age is not associated with lesser change in BPD traits runs counter to the assumption made by notable personality researchers, such as Costa and McCrae, that personality becomes relatively immutable by mid-late adulthood (McCrae & Costa, 1994). More recent findings have challenged this view, illustrating that personality can change throughout adulthood (Roberts, Walton, & Viechtbauer, 2006). Indeed, in unpublished results shared at the Association for Advancement of Behavior Therapy, Linehan and colleagues reported that older age predicted superior outcome in their trial of DBT versus treatment by community experts (Linehan et al., 2002, referenced in Robins & Chapman, 2004), whilst Robins and colleagues reported the same for patients in the DBT arm of their trial (Robins, Koons, Morse, & Lynch, 1999, referenced in Robins & Chapman, 2004). However, these findings are inconsistent with a ten year epidemiological study of borderline personality disorder, which found that younger patients were more likely to achieve recovery (Zanarini, Frankenburg, Hennen, Reich, & Silk, 2006).

Pre-treatment BPD severity was found a consistent positive predictor of greater improvement in BPD symptoms, with one exception. Axis I symptom severity was also often found to be a positive predictor of change in Axis 1 symptoms. Such effects are apparent in the wider psychiatric literature, including that on antidepressant treatment (Fournier et al., 2010; Kirsch et al., 2008) and psychotherapy for Axis I mental illness (Gjestad, Franck, Hagtvet, & Haver, 2011) although results in the opposite direction are often reported (Hamilton & Dobson, 2002, Keeley, Storch, Merlo, & Geffken, 2008). In a sample with BPD symptoms (not all meeting full diagnostic criteria), superior response to STEPPS psychotherapy over Treatment As Usual was also predicted by higher pre-treatment BPD symptoms (Bos, van Wel, Appelo, & Verbraak, 2011). The present findings could be interpreted either as a statistical artefact, resulting from phenomena such as floor effects in those with low initial symptom severity and regression to the mean in those with high initial symptom severity or could be interpreted as a meaningful indication that more severely ill patients actually have greater potential for change. The former interpretation was not generally supported when initial symptom severity levels were compared across studies, whist the latter interpretation accords well with findings that even some of the most behaviourally severe symptoms of BPD, such as self-harm and affective instability, are more likely than not to remit over a ten year period (Zanarini et al., 2007).

The findings on the use of psychiatric medication are difficult to interpret, since the studies assessing this variable did not detail the types of medication or reasons for prescription. Perhaps those patients on prescribed medication are more ill, or have certain comorbidities disposing them to poorer outcomes. However, this explanation seems contrary to the findings of this review that patients with higher symptom severity or Axis I comorbidities do not achieve less improvement. Alternatively, the negative association may be due to the palliative effect of medication, resulting in lower symptoms pre-therapy and thus a floor effect for symptom reduction. Indeed, perhaps patients on medication tend towards increased reliance on pharmacological amelioration of their symptoms and hence are less motivated to engage with therapeutic work. Another possible explanation is that these results represent an absent or even negative effect of psychiatric medication for patients with BPD, as reflected in the most recent NICE guidelines which state that medication should not be used to treat the symptoms of BPD (NICE 2009).

The findings on the patient-rated alliance accord well with the large body of literature identifying the alliance as a strong predictor of therapy outcome, across diagnosis and therapeutic modality (Horvath & Greenberg, 1994; Orlinsky & Howard, 1986; Priebe, Richardson, Cooney, Adedeji, & McCabe, 2011). Indeed, the therapeutic alliance has been described as one of the core common factors enabling psychotherapy clients to achieve change, regardless of therapeutic modality (Frank, 1971; Wampold, 2001). These findings may suggest that the alliance as a common factor extends to BPD also, and highlight the importance of common factors even in highly specific therapy models. However, it should be noted that most of the included studies did not adjust for potential confounders when assessing the effect of the alliance. Thus, it is not known whether the alliance per se contributes to positive outcome in BPD, or whether its effect is instead due to the confounding influence of patient characteristics such as higher motivation for change or more positive treatment expectations.

6.3. Implications of the findings for clinical work

Based on the findings that seem most consistent across studies, at least three clinical implications can be drawn.

Firstly, there is no evidence that older clients are more difficult to treat, as may often be assumed (Lievesley, Hayes, Jones, Clark, & Crosby, 2009). Thus, services should not impose an upper age limit upon the receipt of therapy. However, it should be noted that most of the included studies had an upper age limit of 65. Thus it is unclear whether these findings can be generalised to those above this age, although the successful adaptation and clinical effectiveness of dialectical behaviour therapy for older adults with personality disorder offer some evidence that they can (Lynch et al., 2007).

Secondly, there is no evidence to date that clients with very severe symptoms benefit less from therapy, as may often be assumed. Indeed, it is these clients that may have the most potential for change. Thus, severely ill patients should be referred to psychotherapy, and psychotherapy services should ensure that these patients are included.

Thirdly, these findings reinforce the importance of the therapeutic alliance in the treatment of BPD — a group with whom establishing a strong alliance is reported to be especially difficult (Linehan, 1989). Therapists should make development and maintenance of the alliance a priority in their therapeutic interactions. Indeed, perhaps the alliance should be explicitly targeted during treatment and be addressed in training and supervision of therapists.

6.4. Implications of the findings for future research

The mixed quality, and methodological and conceptual heterogeneity of the papers included in this review has important implications for future research on predictors of psychotherapy outcome. In too many of the included papers, effect size data for predictor analyses was absent. Effect sizes should be published regardless of significance, as such information is essential for meta-analysis. Furthermore, many of the included papers did not use an intention-to-treat analysis, did not assess the effects of data missingness, and did not use techniques such as maximum likelihood estimation or multiple imputation to minimise bias from missing data. Future studies on this topic should use these strategies to minimise bias and improve the generalisability of their findings. Moreover, a focus on degree of symptom change rather

than dichotomous outcomes such as 'recovery' is recommended, since improvements need not entail dropping below diagnostic thresholds in order to be meaningful (Tyrer, Gunderson, Lyons, & Tohen, 1997). Recommendations for variables upon which to focus future research are made as follows.

Firstly, existing research has enabled us to reach some consensus on which patient characteristics are likely to influence the outcome of therapy for BPD. However, the conclusions reached by this review need replication in more well-designed and well-powered studies, which can then be subject to meta-analysis. Furthermore, such research will be most useful to clinicians if it can identify characteristics which differentially influence outcome in different treatment models. Such research would enable clinicians to determine which clients are likely to benefit most from which treatment models — something which existing research cannot do.

Secondly, there are two main future directions for research on treatment processes in patients with BPD. The first is to focus on a variable identified consistently by existing research as important — the therapeutic alliance. In the general psychiatric literature, patient-rated measures of alliance are more consistently linked to outcome than therapist-rated (Horvath & Symonds, 1991). Thus, further research in BPD should perhaps continue to focus on patient ratings. Findings on this variable could be solidified by perhaps consistently using only a few, well-validated measures of alliance across studies, such as the Penn Helping Alliance Questionnaire (Luborsky, 1976) or the Working Alliance Inventory (Horvath & Greenberg, 1989), in order to reduce cross-study measurement variance. Measurement of the alliance and outcome at many different time-points, e.g. early, mid and late-therapy, or 1, 3, 6, 9 and 12 months, could enable easier comparison across studies and also better delineation of the direction of the relationship between alliance and outcome. Future research should also test potential mediators between alliance and outcome, such as patient adherence to therapy tasks or improvement in self-esteem, and potential confounders of this association such as patient attitudes to therapy. Further work could include testing and refinement of existing theories about how best to establish and maintain an alliance with BPD clients, such as Linehan's theory on building an alliance through a balance of validation and change techniques (Linehan, 1993). This could also include testing interventions in which clients give regular feedback on their perception of the alliance, since this has been shown to improve outcome in mixed diagnosis groups (Harmon et al., 2007; Whipple et al., 2003).

The second direction for the future is to identify new variables on which to focus research efforts. This review has highlighted that little research has been done on variables relevant to BPD-specific theories of therapeutic change, such as use of the skills taught in DBT, improvement in mentalizing capacity, or change in attachment. For instance, attachment status has been shown to change during transference focused psychotherapy (Levy, Meehan, Kelly, et al., 2006), but this has only been linked to outcome in a single small study (Strauss et al., 2011). More frequent use of the DBT skills has been linked to better outcomes (Neacsiu et al., 2010; Stepp, Epler, Jahng, & Trull, 2008), but the direction of this relationship has not been established and existing work did not adjust for potential confounders such as the therapeutic alliance. Future research considering such variables might lead to a better understanding of what processes are specifically helpful in achieving positive outcomes, which in turn could change the focus of existing specialised interventions or even routine care to improve outcomes. Furthermore, such work could add to the active debate on the relative importance of specific versus common factors in therapy outcome (Oei & Shuttlewood, 1996; Wampold, 2001).

6.5. Strengths and limitations of the findings

Strengths of this review include the wide and systematic search strategy, the use of multiple independent reviewers and the inclusion of both naturalistic and efficacy studies. The inclusion of non-English papers and unpublished dissertations also aimed to mitigate the effect of publication bias. Nonetheless, publication bias is an inevitable caveat, and it is likely that some non-significant findings on predictor–outcome relationships were not published and were hence unrepresented in the present review. In addition, during the screening process it became apparent that several studies had tested associations between predictors and outcomes, most commonly that between baseline severity and symptom change, but had not reported the statistical significance or direction of effect (e.g. Bateman & Fonagy, 2009; Linehan et al., 1991). Thus, several potentially relevant findings exist which were not available for inclusion in the review. Furthermore, the reviewers were aware of publication details during the quality rating of the included analyses and hence could have been biased by the prestige of the authors, their institutional affiliations or the journal of publication. The review authors' ability to synthesise the available data was limited by variable measurement timepoints and instruments across studies. This difficulty was exacerbated by the different treatment lengths in each study, ranging from a 5 day intensive inpatient therapy (33 h total duration, Yen et al., 2009), to a 3 year course of schema or transference focused therapy (Giesen-Bloo et al., 2006). It is possible that inconsistent findings between studies could have resulted from a mismatch between the time course of a predictive effect (i.e. an immediate short-term effect versus a slow-developing effect) and the duration over which symptom change was measured in some studies. Furthermore, studies in which patients achieved little symptom change may have been less able to detect significant predictor–outcome associations, since the variance in the degree of change achieved could have been too small, and findings may have differed depending on whether symptom improvement was considered as a continuous outcome or as a dichotomous recovery criterion. Nonetheless, some consistent findings across studies could be determined despite the heterogeneity of the data. Whilst some effort to take account of sample size and other study quality indicators was made, it should be acknowledged that synthesising results on the basis of 'statistical significance' is inferior to effect size meta-analysis, which offers a more systematic method of accounting for the influence of sample size and other confounding factors (Hunter & Schmidt, 2004). However, a meta-analysis was not possible for reasons detailed in the Methods.

7. Conclusion

There are two consistent findings from research on predictors of therapy outcome for patients with BPD: patients who experience a stronger alliance with their therapist, and patients with more severe initial symptoms, may often achieve greater symptom reduction. This confirms the alliance as an important common factor even in highly disorder-specific treatments, and dispels the myth that more severely ill patients will not benefit from therapy. There is also no evidence as yet to support the view that older patients are more resistant to change. However, interpretation of these findings is complicated by the heterogeneity in research methods and analysis quality, and beyond these two factors, there is still a lack of consensus on what influences the outcome of therapy for these patients.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.cpr.2012.04.004.

References

Ansell, E. B., Sanislow, C. A., McGlashan, T. H., & Grilo, C. M. (2007). Psychosocial impairment and treatment utilization by patients with borderline personality disorder, other personality disorders, mood and anxiety disorders, and a healthy comparison group. *Comprehensive Psychiatry*, *48*(4), 329–336.

APA (2000). *Diagnostic and statistical manual of mental disorders* Text revision (DSM-IV-TR) (4th edition). Washington DC: American Psychiatric Association.

Axelrod, S. R., Perepletchikova, F., Holtzman, K., & Sinha, R. (2011). Emotion regulation and substance use frequency in women with substance dependence and borderline personality disorder receiving dialectical behavior therapy. *American Journal of Drug and Alcohol Abuse*, *37*(1), 37–42.

Barnicot, K., Katsakou, C., Marougka, S., & Priebe, S. (2011). Treatment completion in psychotherapy for borderline personality disorder — A systematic review and meta-analysis. *Acta Psychiatrica Scandinavica*, *123*, 327–338.

Bateman, A., & Fonagy, P. (1999). The effectiveness of partial hospitalisation in the treatment of borderline personality disorder: A randomised controlled trial. *American Journal of Psychiatry*, *156*, 1563–1569.

Bateman, A., & Fonagy, P. (2006). *Mentalization-based treatment for borderline personality disorder: A practical guide.* Oxford: Oxford University Press.

Bateman, A., & Fonagy, P. (2009). Randomized controlled trial of outpatient mentalization based treatment versus structured clinical management for borderline personality disorder. *American Journal of Psychiatry*, *166*, 1355–1364.

Berking, M., Neacsiu, A., Comtois, K. A., & Linehan, M. M. (2009). The impact of experiential avoidance on the reduction of depression in treatment for borderline personality disorder. *Behavior Research and Therapy*, *47*, 663–670.

Black, D. W., Allen, J., St. John, D., Pfhol, B., McCormick, B., & Blum, N. (2009). Predictors of response to systems training for emotional predictability and problem solving (STEPPS) for borderline personality disorder: An exploratory model. *Acta Psychiatrica Scandinavica*, *120*, 53–61.

Bland, J. M., & Altman, D. G. (1994). Statistics notes: Regression to the mean. *British Medical Journal*, *308*(6942), 1499.

Blum, N., Bartels, N., St. John, D., & Pfohl, B. (2002). *STEPPS: Systems training for emotional predictability and problem solving: Group treatment for borderline personality disorder.* Coralville, Iowa: Blum's Books.

Blum, N., St John, D., Pfohl, B., Stuart, S., McCormick, B., Allen, J., et al. (2008). Systems training for emotional predictability and problem solving (STEPPS) for outpatients with borderline personality disorder: A randomized controlled trial and 1 year follow-up. *American Journal of Psychiatry*, *165*, 468–478.

Bohus, M., Haaf, B., Simms, T., Limberger, M. F., Schmahl, C., Unckel, C., et al. (2004). Effectiveness of inpatient dialectical behavioral therapy for borderline personality disorder: A controlled trial. *Behavior Research and Therapy*, *42*, 487–499.

Bos, E. H., van Wel, E. B., Appelo, M. T., & Verbraak, M. J. P. (2011). Effectiveness of systems training for emotional predictability and problem solving (STEPPS) for borderline personality problems in a 'real-world' sample: Moderation by diagnosis or severity? *Psychotherapy and Psychosomatics*, *80*(3), 173–181.

Braakman, D., Ludewig, S., Milde, J., Stiglmayr, C. M., Hüppe, M., Sipos, V., et al. (2007). Dissoziative Symptome im verlauf der Behandlung der Borderline Personlichkeitsstorung. *Psychotherapie Psychosomatik Medizinische Psychologie*, *57*, 154–160.

Brauer, M. (2002). L'analyse des variables indépendantes continues et catégorielles: Alternatives à la dichotomisation. *L'Année Psychologique*, *102*, 449–484.

Brown, M. Z., Linehan, M. M., Comtois, K. A., Murray, A., & Chapman, A. L. (2009). Shame as a prospective predictor of self-inflicted injury in borderline personality: A multi-modal analysis. *Behavior Research and Therapy*, *47*, 815–822.

Chapman, A. L., Derbridge, C. M., Cooney, E., Hong, P. Y., & Linehan, M. M. (2009). Temperament as a prospective predictor of self-injury among patients with borderline personality disorder. *Journal of Personality Disorders*, *23*(2), 122–140.

Clarkin, J. F., Levy, K. N., Lenzenweger, M. F., & Kernberg, O. F. (2007). Evaluating three treatments for borderline personality disorder: A multiwave study. *American Journal of Psychiatry*, *164*, 922–928.

Cohen, J. (1988). *Statistical power for the behavioral sciences* (2nd ed.). Hillsdale, New Jersey: Erlbaum.

Davidson, K. M., Tyrer, P., Norrie, J., Palmer, S. J., & Tyrer, H. (2010). Cognitive therapy v. usual treatment for borderline personality disorder: Prospective 6-year follow-up. *British Journal of Psychiatry*, *197*(6), 456–462.

Doering, S., Horz, S., Rentrop, M., Fischer-Kern, M., Schuster, P., Benecke, C., et al. (2010). Transference-focused psychotherapy versus treatment by community psychotherapists for borderline personality disorder: Randomised controlled trial. *British Journal of Psychiatry*, *196*, 389–395.

Fournier, J. C., DeRubeis, R. J., Hollon, S. D., Dimidjian, S., Amsterdam, J. D., Shelton, R. C., et al. (2010). Antidepressant drug effects and depression severity. *Journal of the American Medical Association*, *303*(1), 47–53.

Frank, J. D. (1971). Therapeutic factors in psychotherapy. *American Journal of Psychotherapy*, *25*, 350–361.

Gerber, A. J., Kocsis, J. H., Milrod, B. L., Roose, S. P., Barber, J. P., Thase, M. E., et al. (2011). A quality-based review of randomized controlled trials of psychodynamic psychotherapy. *American Journal of Psychiatry*, *168*(1), 19–28.

Giesen-Bloo, J., Van Dyck, R., Spinhoven, P., van Tilberg, W., Dirksen, C., Van Asselt, T., et al. (2006). Outpatient therapy for borderline personality disorder: Randomized trial of schema-focused therapy versus transference-focused therapy. *Archives of General Psychiatry*, *63*, 649–1008.

Gjestad, R., Franck, J., Hagtvet, K. A., & Haver, B. (2011). Level and change in alcohol consumption, depression and dysfunctional attitudes among females treated for alcohol addiction. *Alcohol and Alcoholism*, *46*(3), 292–300.

Goldman, G. A., & Gregory, R. J. (2010). Relationships between techniques and outcomes for borderline personality disorder. *American Journal of Psychotherapy*, *64*(4), 359–371.

Gunderson, J. G., Najavits, L. M., Leonhard, C., Sullivan, C. N., & Sabo, A. N. (1997). Ontogeny of the therapeutic alliance in borderline patients. *Psychotherapy Research*, *7*(3), 301–309.

Hamilton, K. E., & Dobson, K. S. (2002). Cognitive therapy of depression: Pretreatment patient predictors of outcome. *Clinical Psychology Review*, *22*(6), 875–893.

Harmon, S. C., Lambert, M. J., Smart, D. W., Hawkins, E. J., Nielsen, S. L., Slade, K., et al. (2007). Enhancing outcome for potential treatment failures: Therapist/client feedback and clinical support tools. *Psychotherapy Research*, *17*, 379–392.

Harned, M. S., Jackson, S. C., Comtois, K. A., & Linehan, M. M. (2010). Dialectical behavior therapy as a precursor to PTSD treatment for suicidal and/or self-injuring women with borderline personality disorder. *Journal of Traumatic Stress*, *23*(4), 421–429.

Horvath, A. O., & Greenberg, L. S. (1989). Development and validation of the Working Alliance Inventory. *Journal of Consulting and Clinical Psychology*, *36*, 223–233.

Horvath, A. O., & Greenberg, L. S. (1994). *The working alliance: Theory, research and practice.* New York: Wiley.

Horvath, A. O., & Symonds, B. D. (1991). Relation between working alliance and outcome in psychotherapy: A meta-analysis. *Journal of Counselling Psychology*, *38*, 139–149.

Hunter, J. E., & Schmidt, F. L. (2004). *Methods of meta-analysis: Correcting error and bias in research findings.* California: Sage Publications.

Keeley, M. L., Storch, E. A., Merlo, L. J., & Geffken, G. R. (2008). Clinical predictors of response to cognitive–behavioral therapy for obsessive compulsive disorder. *Clinical Psychology Review*, *28*(1), 118–130.

Kirsch, I., Deacon, B. J., Huedo-Medina, T. B., Scoboria, A., Moore, T. J., & Johnson, B. T. (2008). Initial severity and antidepressant benefits: A meta-analysis of data submitted to the Food and Drug Administration. *PLoS Medicine*, *5*(2), e45.

Kleindienst, N., Limberger, M. F., Ebner-Priemer, U. W., Keibel-Mauchnik, J., Dyer, A., Berger, M., et al. (2011). Dissociation predicts poor response to dialectial behavioral therapy in female patients with borderline personality disorder. *Journal of Personality Disorders*, *25*(4), 432–447.

Koons, C. R., Robins, C. J., Tweed, J. L., Lynch, T. R., Gonzalez, A. M., Morse, J. Q., et al. (2001). Efficacy of dialectical behavior therapy in women veterans with borderline personality disorder. *Behavior Therapy*, *32*, 371–390.

Laddis, A. (2010). Outcome of crisis intervention for borderline personality disorder and post traumatic stress disorder: A model for modification of the mechanism of disorder in complex post traumatic syndromes. *Annals of General Psychiatry*, *9*(19), 1–12.

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, *33*(1), 159–174.

Leerer C. G. (1997). Outcomes of inpatient cognitive–behavioral treatment of borderline personality disorder. Dissertation Abstracts International B: Science and, Engineering, 58 (4-B).

Levy, K. N., Meehan, K. B., Kelly, K. M., et al. (2006). Change in attachment patterns and reflective function in a randomized control trial of transference focused psychotherapy for borderline personality disorder. *Journal of Consulting and Clinical Psychology*, *74*, 1027–1040.

Lieb, K., Zanarini, M. C., Schmahl, C., Linehan, M. M., & Bohus, M. (2004). Borderline personality disorder. *Lancet*, *364*, 453–461.

Lievesley, N., Hayes, R., Jones, K., Clark, A., & Crosby, G. (2009). *Ageism and age discrimination in mental health care in the United Kingdom.* A review from the literature. : Department of Health, Centre for Policy on Ageing.

Linehan, M. M. (1989). Cognitive and behaviour therapy for borderline personality disorder. In A. Tasman, R. E. Hales, & A. J. Francis (Eds.), *American Psychiatric Press review of psychiatry*, *vol. 8*. (pp. 84–102)USA: American Psychiatric Press Inc..

Linehan, M. M. (1993). *Cognitive behavioral treatment of borderline personality disorder.* New York: Guilford Press.

Linehan, M. M., Armstrong, H., Suarez, A., Allmon, D., & Heard, H. (1991). Cognitive–behavioural treatment of chronically parasuicidal borderline patients. *Archives of General Psychiatry*, *50*(2), 157–158.

Linehan, M. M., Comtois, K. A., Brown, M. Z., Reynolds, S. K., Welch, S. S., Sayrs, J., & Korslund, K. E. (2002). DBT vs. non-behavioral treatment by experts in the community: Clinical outcomes at one year. In S. K. Reynolds (Chair), The University of Washington treatment study for borderline personality disorder: DBT vs. non-behavioral treatment by experts in the community. Symposium conducted at the annual meeting of the Association for Advancement of Behavior Therapy, Reno, NV.

Linehan, M. M., Comtois, K. A., Murray, A. M., Brown, M. Z., Gallop, R. J., Heard, H. L., et al. (2006). Two-year randomized controlled trial and follow-up of dialectical behavior therapy versus therapy by experts for suicidal behaviors and borderline personality disorder. *Archives of General Psychiatry*, *63*, 757–766.

Linehan, M. M., Schmidt, H., Dimeff, L. A., Craft, J. C., Kanter, J., & Comtois, K. A. (1999). Dialectical behavior therapy for patients with borderline personality disorder and drug-dependence. *American Journal of Addictions*, *8*, 279–292.

Luborsky, L. (1976). The helping alliance in psychotherapy. In J. L. Claghorn (Ed.), *Successful psychotherapy* (pp. 92–116). New York: Bruner-Mazel.

Lynch, T. R., Cheavens, J. S., Cukrowicz, K. C., Thorp, S. R., Bronner, L., & Beyer, J. (2007). Treatment of older adults with co-morbid personality disorder and depression: A dialectical behaviour therapy approach. *International Journal of Geriatric Psychiatry*, *22*, 131–143.

Marziali, E., Munroe-Blum, H., & McCleary, L. (1999). The effects of the therapeutic alliance on the outcomes of individual and group psychotherapy with borderline personality disorder. *Psychotherapy Research*, *9*(4), 424–436.

McCrae, R. R., & Costa, P. T. (1994). The stability of personality: Observation and evaluations. *Current Directions in Psychological Science*, *3*, 173–175.

McMurran, M., Huband, M., & Overton, E. (2010). Non-completion of personality disorder treatments: A systematic review of correlates, consequences and interventions. *Clinical Psychology Review*, *30*(3), 277–287.

Meares, R., Stevenson, J., & Comerford, A. (1999). Psychotherapy with borderline patients: 1. A comparison between treated and untreated cohorts. *Australian & New Zealand Journal of Psychiatry*, *33*(4), 467–481.

Meehan K. B. (2008). Affective communication as a mechanism of change in the treatment of borderline personality disorder. Dissertation Abstracts International B: Science and, Engineering, 68/9-B, 6320.

Neacsiu, A. D., Rizvi, S. L., & Linehan, M. M. (2010). Dialectical behavior therapy skills use as a mediator and outcome of treatment for borderline personality disorder. *Behavior Research and Therapy*, *48*, 832–839.

NIMH (2001). *Borderline personality disorder.* United States of America: Department of Health and Human Services, National Institute of Mental Health.

NIMHE (2003). *Personality disorder: No longer a diagnosis of exclusion.* United Kingdom: Department of Health, National Institute for Mental Health in England.

Oei, T. P. S., & Shuttlewood, G. J. (1996). Specific and non-specific factors in psychotherapy: A case of cognitive therapy for depression. *Clinical Psychology Review*, *16*(2), 83–103.

Orlinsky, D. E., & Howard, K. I. (1986). Process and outcome in psychotherapy. In A. E. Bergin, & S. L. Garfield (Eds.), *Handbook of psychotherapy and behaviour change* (pp. 311–381). (3rd edition). New York: Wiley.

Pasieczny, N., & Connor, J. (2011). The effectiveness of dialectical behaviour therapy in routine public mental health settings: An Australian controlled trial. *Behaviour Research and Therapy*, *49*(1), 4–10.

Priebe, S., Bhatti, N., Barnicot, K., Bremner, S., Gaglia, A., Katsakou, C., Molosankwe, I., McCrone, P. & Zinkler, M. (in preparation). Effectiveness and cost-effectiveness of dialectical behaviour therapy for self-harming patients with personality disorder: A randomised controlled trial.

Priebe, S., Richardson, M., Cooney, M., Adedeji, O., & McCabe, R. (2011). Does the therapeutic relationship predict outcomes of psychiatric treatment in patients with psychosis? A systematic review. *Psychotherapy & Psychosomatics*, *80*, 70–77.

Roberts, B. W., Walton, K. E., & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: A meta-analysis of longitudinal studies. *Psychological Bulletin*, *132*, 3–27.

Robins, C. J., & Chapman, A. L. (2004). Dialectical behavior therapy: Current status, recent developments and future directions. *Journal of Personality Disorders*, *18*(1), 73–89.

Robins, C. J., Koons, C. R., Morse, J. Q., & Lynch, T. R. (1999). Predictors of outcome in treatment of borderline women veterans. In C. J. Robins (Chair), *Dialectical behavior therapy for multi-problem patients: Findings from controlled studies*. Symposium conducted at the annual meeting of the Association for Advancement of Behavior Therapy, Toronto, Canada.

Ryle, A., & Golynkina, K. (2000). Effectiveness of time-limited cognitive analytic therapy of borderline personality disorder: Factors associated with outcome. *British Journal of Medical Psychology*, *73*, 197–210.

Schünemann, H. J., Oxman, A. D., Vist, G. E., Higgins, J. P. T., Deeks, J. J., Glasziou, P., & Guyatt, G. H. (2008). Chapter 12: Interpreting results and drawing conclusions. In J. P. T. Higgins, & S. Green (Eds.), *Cochrane handbook for systematic reviews of interventions* Version 5.0.1 (updated September 2008). The Cochrane Collaboration. Available from , www.cochrane-handbook.org.

Shearin, E. N., & Linehan, M. M. (1992). Patient–therapist ratings and relationship to progress in dialectical behavior therapy for borderline personality disorder. *Behavior Therapy*, *23*, 730–741.

Spinhoven, P., Giesen-Bloo, J., van Dyck, R., & Arntz, A. (2008). Can assessors and therapists predict the outcome of long-term psychotherapy in borderline personality disorder? *Journal of Clinical Psychology*, *64*, 667–686.

Spinhoven, P., Giesen-Bloo, J., van Dyck, R., Kooiman, K., & Arntz, A. (2007). The therapeutic alliance in schema focused therapy and transference-focused psychotherapy for borderline personality disorder. *Journal of Consulting and Clinical Psychology*, *75*(1), 104–115.

Stepp, S. D., Epler, A. J., Jahng, S., & Trull, T. J. (2008). The effect of dialectical behavior therapy skills use on borderline personality disorder features. *Journal of Personality Disorders*, *23*(6), 549–563.

Strauss, B. M., Mestel, R., & Kirchmann, H. A. (2011). Changes of attachment status among women with personality disorders undergoing inpatient treatment. *Counselling & Psychotherapy Research*, *11*(4), 275–283.

Turner, R. M. (2000). Naturalistic evaluation of dialectical behaviour therapy-oriented treatment for borderline personality disorder. *Cognitive and Behavioral Practice*, *7*, 413–419.

Tyrer, P., Gunderson, J., Lyons, M., & Tohen, M. (1997). Extent of comorbidity between mental state and personality disorders. *Journal of Personality Disorders*, *11*, 242–259.

Wampold, B. E. (2001). *The great psychotherapy debate: Models, methods and findings.* New Jersey & London: Lawrence Erlbaum Associates.

Wenzel, A., Jeglic, E. L., Levy-Mack, H. J., Beck, A. T., & Brown, G. K. (2008). Treatment attitude and therapy outcome in patients with borderline personality disorder. *Journal of Cognitive Psychotherapy: An International Quarterly*, *22*(3), 250–257.

Whipple, J. L., Lambert, M. J., Vermeersch, D. A., Smart, D. W., Nielsen, S. L., & Hawkins, E. J. (2003). Improving the effects of psychotherapy: The use of early identification of treatment failure and problem-solving strategies in routine practice. *Journal of Counselling Psychology*, *58*, 59–68.

Yen, S., Johnson, J., Costello, E., & Simpson, E. B. (2009). A 5-day dialectical behavioural therapy partial hospital program for women with borderline personality disorder: Predictors of outcome from a 3-month follow-up study. *Journal of Psychiatric Practice*, *15*(3), 173–182.

Young, J. E. (1994). *Cognitive therapy for personality disorders: A schema-focused approach, revised.* Sarasota: Professional Resource Press.

Zanarini, M. C., Frankenburg, F. R., Hennen, J., Reich, D. B., & Silk, K. R. (2006). Prediction of the 10 year course of borderline personality disorder. *American Journal of Psychiatry*, *163*, 827–832.

Zanarini, M. C., Frankenburg, F. R., Reich, D. B., Silk, K. R., Hudson, J. I., & McSweeney, M. B. (2007). The subsyndromal phenomenology of borderline personality disorder: A 10 year follow-up. *American Journal of Psychiatry*, *164*, 9.