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Is mentalization-based therapy effective in treating the symptoms of borderline personality disorder? A systematic review

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Objective. This review sought to systematically review evidence on the efficacy of mentalization-based therapy (MBT) for the treatment of borderline personality disorder (BPD), in particular, in decreasing psychiatric symptoms associated with BPD and its comorbid disorders.

Method. Fourteen papers were included in the review which examined the effectiveness of MBT in the context of BPD; these included 11 original studies and three follow-up papers.

Results. Mentalization-based therapy was found to achieve either superior or equal reductions in psychiatric symptoms when compared with other treatments (supportive group therapy, treatment as usual/standard psychiatric care, structured clinical management, and specialized clinical management).

Discussion. Mentalization-based therapy can achieve significant reductions in BPD symptom severity and the severity of comorbid disorders as well as increase quality of life. However, caution is required, as the need for better quality research such as randomized controlled trials is pressing. Research is also needed on the proposed mediators of MBT.

Practitioner points

- Mentalization-based therapy (MBT) is increasingly being considered as a treatment for people with borderline personality disorder (BPD), and a systematic review was required to investigate its effectiveness.
- MBT was found to be equally as effective or superior to well-established comparison treatments of BPD, however, the majority of studies was of unsatisfying quality.
- Little is known about the mechanisms of MBT.
- Further, better quality trials are needed to investigate its efficacy in treating BPD.

Borderline personality disorder (BPD), a cluster B personality disorder (PD) in the DSM-V, is a psychiatric condition associated with high rates of suicide (American Psychiatric

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Association (APA), 2000, 2013). Other cluster B personality disorders include narcissistic, antisocial, and histrionic PD; a categorization which results from the observation that all four disorders have dramatic and impulsive manifestations at their core (APA, 2000, 2013; Soeteman *et al.*, 2010).

The prevalence of BPD in the general population is thought to be around 2%. Patients usually present with unstable (inter-) personal relationships, heightened impulsivity, and profound deficits in their self-image and affective behaviour (APA, 2000, 2013). Intense fears of rejection, feeling maltreated by the people around them, and having great difficulties in controlling emotions, such as anger and frustration, are often reported (Rossouw, 2015). Consequently, patients often behave and react in extreme, unstable, and precarious ways. Patients with BPD also report lower health-related quality of life compared to healthy individuals (Perseius, Andersson, Asberg, & Samuelsson, 2006), often requiring disproportionately more medical attendance and hospitalization as a result of self-mutilating behaviours and suicide attempts – associated with a 'substantial cost' to health care systems (van Asselt, Dirksen, Arntz, & Severens, 2007).

Typically, patients with BPD have more than one psychiatric diagnosis (NICE, 2009, and commonly reported comorbid disorders include (other) personality disorders (Grant *et al.*, 2008; Stinson *et al.*, 2008; Swanson, Bland, & Newman, 1994), substance use disorders, anxiety disorders, post-traumatic stress disorders, and eating disorders (APA, 2000, 2013; NICE, 2009; Robinson *et al.*, 2016). The presence of other psychiatric disorders further exacerbates the extremely impaired functioning of patients (APA, 2013), their dysfunctional perceptions of themselves, and others. As a result, BPD is regarded as very difficult to treat (Rossouw, 2015) with very high therapy attrition rates (NICE, 2009).

Patients with BPD have been found to more frequently report childhood abuse or other traumatic events than individuals with other personality disorders or healthy individuals (APA, 2000, 2013; Ntshingila, Poggenpoel, Myburgh, & Temane, 2016; Perry, Herman, Vanderkolk, & Hoke, 1990; Zanarini *et al.*, 2002). These self-reported negative and often traumatic childhood experiences have been linked to impairments in the abilities to 'mentalize' (e.g., Bateman & Fonagy, 2010; Brüne, Walden, Edel, & Dimaggio, 2016; Fonagy & Bateman, 2006; Petersen, Brakoulias, & Langdon, 2016). Mentalization, 'a form of social cognition', is thought to depend on positive social childhood experiences (Allen & Fonagy, 2006; Bateman & Fonagy, 2012). It describes someone's ability to understand their own and others' mental states (Bateman & Fonagy, 2012; Rossouw, 2015). It is theorized that this lack of mentalization ability has profound negative future psychiatric consequences and, consequently, is central to the BPD aetiology (Bateman & Fonagy, 2004, 2010, 2012): It can, for example, prevent individuals from forming lasting and stable relationships (Bateman & Fonagy, 2004). Mentalization-based therapy (Mentalization-based treatment or MBT) therefore aims to address what is thought to be BPD patients' fundamental deficit (Bateman & Fonagy, 2010). It is rooted in attachment theory (Fonagy & Bateman, 2006; Laurenssen, Hutsebaut, *et al.*, 2014) and incorporates the notion that childhood experiences influence the quality of future interpersonal relations (Brüne, Dimaggio, & Edel, 2013). It is aimed at increasing patients' mentalization skills to improve their functioning in daily social interactions and to achieve a greater quality of life. MBT was originally developed to be used for around 18 months, with both weekly individual and group sessions and a provision of additional medical care, such as medication (Daubney & Bateman, 2015); however, it has since been adapted.

There have been some reviews assessing the contributions of psychological treatments for borderline personality disorder that included mentalization-based therapy

(Binks *et al.*, 2006; Cristea *et al.*, 2017; Stoffers *et al.*, 2012). These reviews reported positive outcomes for MBT on BPD symptomatology; however, the reviews only included one (Binks *et al.*, 2006) or two randomized control trials (RCTs) (Cristea *et al.*, 2017; Stoffers *et al.*, 2012) – all of which were conducted by the developers of the therapy themselves. Across these RCTs, effect sizes for MBT were either moderate or large; however, it has been shown that these effect sizes may be overestimated; results are likely to be influenced by both risk of bias and publication bias (Cristea *et al.*, 2017).

Therefore, there is a lack of scientific evidence for MBT's efficacy with BPD patients. However, despite these limitations, MBT is now regarded as a 'promising evidence-based treatment' (Laurenssen, Hutsebaut, *et al.*, 2014), however, the evidence for this claim needs to be reviewed systematically.

The present systematic review assesses the evidence for MBT's efficacy in decreasing the symptoms of borderline personality disorder in patients, its effect on common comorbidities, such as anxiety and depression, and its effect on patients' quality of life.

Materials and methods

Evidence for the effectiveness of mentalization-based therapy in the treatment of borderline personality disorder was assessed by conducting a systematic review of published research findings. The protocol for this systematic review was registered on PROSPERO (Reference number: CRD42017071091) on 3 July 2017.

Search strategy

Studies were searched for in the three electronic databases, Scopus, Web of Science, and PsycInfo in July 2017. The search terms were as follows: '(mentali* based therapy) AND borderline', 'MBT AND Borderline', 'Effect AND (mentali* based therapy) AND (personality disorder)', 'Effect AND MBT AND (Personality disorder)', '(mentali* based treatment) AND borderline', and 'Effect AND (mentali* based treatment) AND (personality disorder)'.

Inclusion and exclusion criteria

The following criteria had to be met in order for studies to be included in this review: Only English language papers were considered. Papers were considered for inclusion if their samples consisted either of patients with BPD diagnoses, or whether it was demonstrated that the sample consisted of patients with BPD symptoms, despite a lack of full clinical diagnoses. Comorbid psychiatric diagnoses did not lead to exclusion. Patients must have undergone, or must currently be undergoing, MBT treatment. Adult, adolescent, and child samples were included. Studies considered for inclusion had to have quantitative pre- and post-treatment measures of either BPD severity or associated measures, such as functioning, depression, or anxiety. Reviews, case studies, and qualitative studies were excluded. A paper using MBT-ED was also excluded (Robinson *et al.*, 2016).

Study selection

Overall, 1,399 articles were identified and saved to the reference manager 'Mendeley'. After duplicate removal, the number reduced to 373. The titles were screened, which led to the exclusion of 313 articles. Full-text assessment of 60 original articles was conducted,

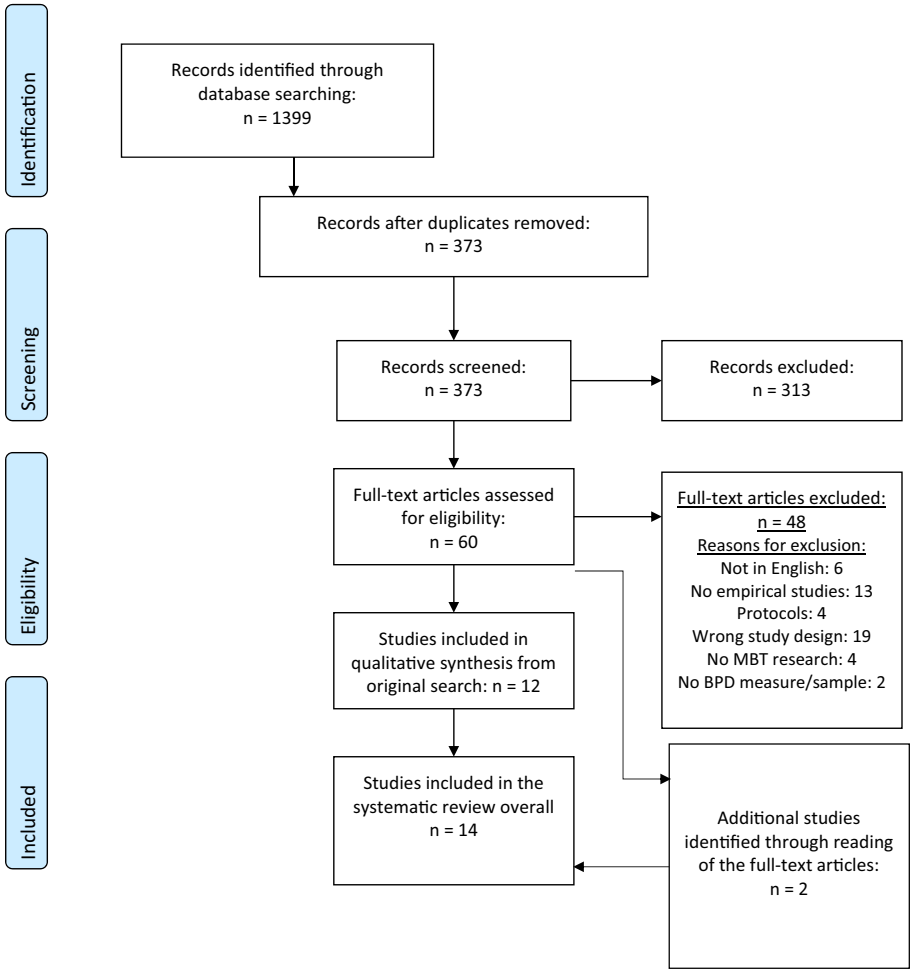

Figure 1. The PRISMA diagram detailing the study selection process. [Colour figure can be viewed at wileyonlinelibrary.com]

and 12 were found to match the inclusion criteria for this review. One of the 12 papers identified was an 8-year follow-up to the first RCT to use MBT (Bateman & Fonagy, 2008). As a result, the original paper (Bateman & Fonagy, 1999) and another follow-up of the same study (Bateman & Fonagy, 2001) were included (see Figure 1).

During the search process, four research protocols were identified (Beck *et al.*, 2016; Laurenssen, Smits, *et al.*, 2014; Robinson, Barrett, & Bateman, 2014; Weijers *et al.*, 2016) matching the inclusion criteria. Three papers reporting findings from these protocols were already included (Bo *et al.*, 2016; Laurenssen, Hutsebaut, *et al.*, 2014; Robinson *et al.*, 2016.). Results from the fourth protocol (Weijers *et al.*, 2016) were not yet available.

Assessment of methodological quality

Once the 14 studies for this review were identified, their quality was assessed using the Downs and Black (1998) quality assessment tool for randomized and non-randomized studies testing health care inventions. This tool is a 27-item checklist; encompassing items

Table 1. Summary of studies included in the review

Authors (Country)	Type of study	MBT treatment setting, intensity, and duration	Comparison treatment	MBT sample (mean age)	Attrition rate	BPD-related outcome measures	Pre- and post-treatment comparisons for MBT sample *p* values	Effect size for change in pre-/post-measures (d) (Effect size for group comparisons indicated by *)	Quality rating
Bales *et al.* (2015) NE	Matched control study	Day hospital 36 months	Supportive group therapy (SGT)	BPD patients; *n* = 58 (F: 69%) Mean ages MBT: 30.0 (*SD*: 6.17) SGT: 30.3 (*SD*: 7.76)	Nr.	BSI SIPP-118 *Identity Integ.* *Relational Funct.* *Responsib.* *Self-contr.* *Social concrd*	None reported	1.42 1.30 0.81 2.08 1.76 0.95	18
Bales *et al.* (2012) NL	Cohort study	Day hospital Up to 18 months		BPD patients *n* = 45 (F: 71.1%) Mean age = 30.1 (*SD*: 6.5)	16%	SCL-90-R BDI EQ-5D SSHI IIP-C Dissat. IPR Dissat. SR BPDSI SIPP-118 *Identity Integ.* *Relational Funct.* *Responsib.* *Self-contr.* *Social concrd*	<.001 <.001 .003 <.001 <.001 <.001 <.001 <.001 <.001 <.001 <.001 <.001 <.001	1.23 1.26 0.68 Nr. 1.36 0.99 0.81 1.23 1.74 1.24 1.45 1.62 1.23	12
Bateman and Fonagy (1999) UK	RCT	Partial hospitalization 18 months	Standard psychiatric care (SPC)	BPD patients *n* = 38 (F: 58%) Mean ages MBT: 30.3 (*SD*: 5.86) SPC: 33.3 (*SD*: 6.60)	13%	SCL-90-R BDI STAI-T STAI-S SAS-R IIP-C	Nr. sign. sign. sign. sign. Nr.	0.76* 2.05* 1.04* 2.58* 1.04* Nr.	17

Continued

Table 1. (*Continued*)

Authors (Country)	Type of study	MBT treatment setting, intensity, and duration	Comparison treatment	MBT sample (mean age)	Attrition rate	BPD-related outcome measures	Pre- and post-treatment comparisons for MBT sample *p* values	Effect size for change in pre-/post-measures (d) (Effect size for group comparisons indicated by *)	Quality rating
Bateman and Fonagy (2001)	18-month follow-up of Bateman and Fonagy (1999)	2 weekly group therapy as maintenance		BPD patients *n* = 44		SCL-90-R BDI STAI-T STAI-S SAS-R IIP-C	Sign. Sign. Sign. Sign. Sign. Sign.	1.16* 0.50* 0.81* 0.53* 0.98* 0.98*	16
Bateman and Fonagy (2008)	8-year follow-up of Bateman and Fonagy (1999)					ZAN-BPD GAF	Nr. Nr.	1.4* 3.0*	18
Bateman and Fonagy (2009) UK	RCT	Outpatients 18 months	Structured clinical management (SCM)	BPD patients *n* = 134 (F: 80%) Mean ages MBT: 30.3 (*SD*: 7.6) SC1: 30.9 (*SD*: 7.9	20%	GAF SCL-90-R BDI SAS-SR IIP-C	Nr. Nr/ Nr. Nr. Nr.	0.91* 0.59* 0.48* 0.96* 0.67*	16
Bo *et al.* (2016) DE	Cohort study (MBT-Adolescent)	Outpatient 12 months		Adolescent BPD patients *n* = 34 (F: 100%) mean age = 16.4 (*SD*: .9)	27%	BPFS-C YSR RFQ-Y BDI-Y RTSHI IPPA Peer total Peer trust Parent total Parent trust	<.001 .004 <.001 <.001 .216 <.001 <.001 <.001 <.001	Nr. Nr. Nr. Nr. Nr Nr. Nr. Nr. Nr	16

Continued

Table 1. (*Continued*)

Authors (Country)	Type of study	MBT treatment setting, intensity, and duration	Comparison treatment	MBT sample (mean age)	Attrition rate	BPD-related outcome measures	Pre- and post-treatment comparisons for MBT sample *p* values	Effect size for change in pre-/post-measures (d) (Effect size for group comparisons indicated by *)	Quality rating
Brüne *et al.* (2013) GE	Pilot/cohort study	Inpatient 4 weeks	MBT combined with DBT	Adult BPD patients *n* = 16 (F: 100%) mean age = 27.2 (9.5)	6.7% (*n* = 1)	BSL-23	<.001	1.05	11
Edel, Raaff, Dimaggio, Buchheim, and Brüne, (2017) GE	Pilot/cohort study	Inpatient MBT combined with dialectical behavioural therapy (DBT) 4 weeks	DBT	BPD patients *N* = 73 (F: 100%) Mean age = 27.1 (*SD*: 7.9)	22%	BSL-23 Borderline symptoms Subjective health Self-harm	.001 .003 .008	0.6 0.6 0.6	18
Jørgensen *et al.* (2013) DE	Randomized but not controlled trial	Outpatient 24 months	Supportive group therapy (SGT)	BPD patients *N* = 111 (F: 96%) MBT: Mean age = 29.2 (*SD*: 6.1) SGT: Mean age = 29.0 (*SD*: 6.4)	43%	SCL-90 BDI-II BAI SAS-SR IIP GAF-F GAF-S STAI-T STAI-S	<0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005	0.76 1.15 0.53 0.80 0.84 1.09 1.83 1.15 0.75	17
Jørgensen *et al.* (2014)	18-month follow-up of Jørgensen *et al.* (2013)					SCL-90-R BDI-II BAI SAS-SR IIP GAF-F GAF-S	<.005 <.005 <.005 <.005 <.005 <.005 <.005	1.21 1.11 0.81 0.93 0.99 1.21 1.70	18

Continued

Table 1. (*Continued*)

Authors (Country)	Type of study	MBT treatment setting, intensity, and duration	Comparison treatment	MBT sample (mean age)	Attrition rate	BPD-related outcome measures	Pre- and post-treatment comparisons for MBT sample *p* values	Effect size for change in pre-/post-measures (d) (Effect size for group comparisons indicated by *)	Quality rating
						STAI-T	<.005	1.23	
						STAI-S	<.005	0.62	
Kvarstein *et al.* (2015) NOY	Cohort study	Day hospital; then weekly outpatient sessions 18 weeks – 26 months; maximum of 3 years	Traditional psychodynamic approach (TPT)	BPD patients *n* = 345 (F: 83% Mean age = 30 (*SD*: 7.00)	Nr.	BSI	Nr.	1.79	15
						CIP	Nr.	1.41	
						Mistrust	Nr.	1.46	
						GAF	Nr.	4.6	
Laurenssen, Hutsebaut, *et al.* (2014) NE	Pilot/cohort study	Outpatient 12 months		Adolescent BPD patients *n* = 11 (F: 83.3%) Mean age = 16.5 (*SD*: 1.57)	Nr.	ADIS-C	<.001	Nr.	17
						BSI	<.01	1.46	
						SIIP-118	<.01	1.42	
						Identity Integ.	.067	0.72	
						Relational Funct.	<.05	0.58	
						Responsib.	<.01	1.29	
						Self-contr.	<.05	0.70	
						Social concrd	<.05	1.11	
						EQ-5D			

Continued

Table 1. (*Continued*)

Authors (Country)	Type of study	MBT treatment setting, intensity, and duration	Comparison treatment	MBT sample (mean age)	Attrition rate	BPD-related outcome measures	Pre- and post-treatment comparisons for MBT sample *p* values	Effect size for change in pre-/post-measures (d) (Effect size for group comparisons indicated by *)	Quality rating
Rossouw and Fonagy (2012) UK	RCT with MBT-A	Outpatient 12 months	Treatment as usual (TAU)	Adolescent patients with BPD symptoms $n = 80$ (F: 85%) Mean age = 14.7 (*SD*: nr.)	54%	RTSHI Self-harm Risk-taking CI-BPD BPFS-C MFQ	None reported	Nr. Nr. Nr. Nr. 0.36* Nr.	23

Note. N/A = non-applicable; Nr. = not reported by the authors. *Country codes*: NE = Netherlands; DE = Denmark; GE = Germany; NOY = Norway; UK = United Kingdom. Measures: ADIS-C = Anxiety Disorders Interview Schedule for Children; ADSHI = Acts of Deliberate Self-Harm Inventory; BAI = Beck's Anxiety Inventory; BDI/BDI-II = Beck's Depression Inventory; BDI-Y = Youth Version of BDI; BSL-23 = Brief Symptom List-23; BSI = Brief Symptom Inventory; BPDSI = Borderline Personality Disorder Severity Index; BPFS-C = Borderline Personality Features Scale for Children; BSI = Brief Symptom Inventory; CI-BPD; CIP = California Psychological Inventory; DASS-21 = Depression; Anxiety and Stress Scales-21; EQ-5D = EuroQol; GSI = Global Severity Index; GAF = Global Assessment of Functioning; GAF-F = Global Assessment of Functioning – Level of functioning; GAF-S = Global Assessment of Functioning – Level of symptoms; IIP = Inventory of Interpersonal Problems; IIP-C = Inventory of Interpersonal Problems – Circumplex version; IPPA = Inventory of Parent and Peer Attachment; MCQ = Mood and Feeling Questionnaire; RFQ-Y = Reflective Functioning Questionnaire – Youth version; RTSHI = Risk-taking and self-harm inventory; SCL-90-R = (Psychiatric) Symptom Checklist,SIIP-118 = Severity Index of Personality Problems; STAI-T = Spielberger Trait Inventory; STAI-S = Spielberger State Inventory; STAI = Spielberger State-Trait Inventory; SAS-R = Social Adjustment Scale – Revised version; ZAN-BPD = Zanarini BPD rating scale; YSR = Youth Self-Report.

relating to the reporting, power, external, and internal validity. The measure has been rated as one of the top six quality assessment tools suitable for systematic reviews (Deeks *et al.*, 2003). Scores can be grouped in four categories: excellent (28–26), good (20–25), fair (15–19), and poor (14 or below) (Hooper, Jutai, Strong, & Russell-Minda, 2008).

Data extraction

Extraction table

A data extraction table was created to ensure all relevant aspects of the studies were recorded (e.g., country of conduction, attrition rates, age, and effect size/s) (Table 1). Table 1 presents a summary of the extracted data. The section 'BPD related outcome measures' refers to quantitative measures used in the studies to record pre- and post-treatment scores for either BPD-specific outcomes, related psychiatric symptoms, or QoL measures. Extracted data were checked by all authors to ensure accurate reporting.

Effect sizes

There were some discrepancies concerning the reporting of effect sizes; that is some papers did not report any effect sizes and some reported selected effect sizes only.

As both cohort and RCT study designs were included in this review, between- and within-effect sizes are reported. Between-effect sizes are indicated by an asterisk (*) in Table 1. Between-effect sizes that were not reported in papers were calculated, wherever possible, using Morris' formula for pre-test–post-test control groups (Morris, 2008).

Results

Study characteristics

Study type

The 14 studies included in this review comprised 11 original studies and three follow-up studies. The studies included three randomized control trials, one of which had two different follow-up periods (18 months and 8 years post-treatment) (Bateman & Fonagy, 1999, 2001, 2008, 2009; Rossouw & Fonagy, 2012) , one 'randomized yet not controlled trial' and its18-month follow-up (Jørgensen *et al.*, 2013, 2014), one matched control study (Bales *et al.*, 2015), three cohort studies (Bales *et al.*, 2012; Bo *et al.*, 2016; Kvarstein *et al.*, 2015), and three pilot studies (Brüne *et al.*, 2013; Edel *et al.*, 2017; Laurenssen, Hutsebaut, *et al.*, 2014).

Quality assessment

Scores obtained ranged from 11 to 23, with the highest scoring being awarded to the randomized control trial conducted by Rossouw and Fonagy (2012) while the lowest score of 11 was assigned to a pilot study (Brüne *et al.*, 2013). The remaining studies were classed as having a fair to good quality.

Country of study

All studies were conducted in European countries, either in the United Kingdom or northern European countries (Germany, Netherlands, Denmark, and Norway).

Study participants

The majority of studies specifically recruited participants with a full diagnosis of BPD; only one study did not report this full inclusion criterion (Rossouw & Fonagy, 2012). Rossouw and Fonagy (2012) recruited adolescents who self-harmed, unaware that almost 75% of participants would meet BPD diagnostic criteria according to DSM-IV. It was not reported what criteria Kvarstein *et al.* (2015) used to choose their participants.

A total of 885 participants took part in the eleven baseline studies; the number subsequently reduced after attrition. At baseline, 684 participants were female (77%) and 201 were male (23%). The number of participants taking part in the studies ranged from 11 to 345. Three studies used adolescent samples. Across adult samples, mean ages ranged from 26 to 31.

Attrition

High attrition rates are common in BPD samples: They ranged from 7% to 54%.

Study settings

The majority of the original studies were conducted in day hospital and outpatient settings: Four organized their treatment plans in a day hospital setting (partial hospitalization), two of which continued to offer MBT in an outpatient setting after the termination of the initial day hospital period (Bateman & Fonagy, 1999; Kvarstein *et al.*, 2015). Three other studies were conducted in an outpatient setting (Bateman & Fonagy, 2009; Jørgensen *et al.*, 2013; Rossouw & Fonagy, 2012). All pilot studies were conducted in inpatient settings (Brüne *et al.*, 2013; Edel *et al.*, 2017; Laurenssen, Hutsebaut, *et al.*, 2014).

Comparison treatments

Seven studies compared MBT to another form of treatment. These include supportive group therapy (SGT) (n = 2), 'Standard psychiatric care' (n = 1) or 'Treatment as usual' (n = 2) (Bateman & Fonagy, 1999, 2001, 2008; Rossouw & Fonagy, 2012), traditional psychodynamic treatment (Kvarstein *et al.*, 2015), and structured supportive clinical management (SSCM) (Bateman & Fonagy, 2009).

Treatment duration

Mentalization-based therapy was developed to be used for 18 months (Daubney & Bateman, 2015); however, most studies deviated from this. Only one study offered treatment for 18 months without providing further therapy (Bateman & Fonagy, 2009). Three studies offered an initial 18-month treatment in a day hospital setting, with an additional 18 months of outpatient maintenance treatment (Bales *et al.*, 2012, 2015; Bateman & Fonagy, 1999, 2001). Three others offered a 12-month mentalization-based programme (Bo *et al.*, 2016; Laurenssen, Hutsebaut, *et al.*, 2014; Rossouw & Fonagy, 2012). All other studies described variations in their treatment length: The shortest MBT course was 4 weeks (Brüne *et al.*, 2013; Edel *et al.*, 2017), and the longest duration was up to three years (Kvarstein *et al.*, 2015).

Treatment content and intensity

The MBT manual specifies both weekly MBT individual and group sessions as a treatment plan (Daubney & Bateman, 2015). This format was largely adhered to: Only three studies did not specifically state how many individual or group sessions were scheduled (Bales *et al.*, 2012, 2015; Brüne *et al.*, 2013). Bales *et al.* (2012, 2015) referred to MBT guidelines in their method sections, suggesting they offered weekly group and individual sessions in both studies.

Three studies used MBT-A, mentalization-based-therapy specifically adapted for adolescents (Bo *et al.*, 2016; Laurenssen, Hutsebaut, *et al.*, 2014; Rossouw & Fonagy, 2012). The intensity, content, and length of MBT-A can vary depending on the setting and include individual and family MBT (Rossouw, 2012). Laurenssen, Hutsebaut, *et al.* (2014) offered weekly groups and one individual group session, family sessions, and complementary therapies in an inpatient setting, over the course of 4 weeks. Rossouw and Fonagy (2012) offered weekly individual sessions and monthly MBT family session. Bo *et al.* (2016) offered a combination of individual MBT, family MBT, and group MBT. The MBT-A programmes differed substantially in their intensity.

Efficacy of MBT in reducing symptom distress in borderline personality disorder

Overall, patients with MBT showed improvements on different measures of psychiatric symptom severity across the 14 studies.

Seven baseline as well as two follow-up studies used the Symptom Checklist (SCL-90-R), or its brief version the BSI, to assess general psychiatric and psychological problems. All studies found that MBT significantly reduced overall psychiatric symptoms with effect sizes (*d*) ranging from 0.59 to 1.79 (Bales *et al.*, 2012, 2015; Bateman & Fonagy, 1999, 2001, 2008, 2009; Jørgensen *et al.*, 2013, 2014; Kvarstein *et al.*, 2015; Laurenssen, Hutsebaut, *et al.*, 2014). Compared to the comparison treatments (supportive group therapy, standard psychiatric care, and traditional psychodynamic approach), MBT achieved better outcomes and larger effect sizes (Bales *et al.*, 2015; Bateman & Fonagy, 1999, 2001; Kvarstein *et al.*, 2015). The cohort studies also reported significant differences with large effect sizes between pre- and post-treatment scores (d = 1.23; 1.46) (Bales *et al.*, 2012; Laurenssen, Hutsebaut, *et al.*, 2014). In the study comparing MBT with supportive group therapy, significant differences were reported between baseline and post-intervention scores for MBT and SGT patients. Both treatments achieved the same effect size (d = 1.21) (Jørgensen *et al.*, 2013, 2014).

Effects on global functioning

The Global Assessment of Functioning (GAF), a measure of the Axis-V of the DSM-IV, assesses global functioning across different domains (Aas, 2011; APA, 2000). Studies reported increases in GAF scores across MBT and comparison treatment groups (treatment as usual, structured clinical management) with effect sizes between 0.44 and 3.00 (Bateman & Fonagy, 2008, 2009; Jørgensen *et al.*, 2013, 2014). MBT patients reported significantly better outcomes: Jørgensen *et al.* (2013, 2014) reported that MBT patients achieved substantially better ratings on the GAF measure following treatment compared to SGT patients at 18-month follow-up.

Efficacy of MBT in reducing borderline personality disorder-specific symptoms

BPD-specific measures

One study used the Zanarini Rating Scale for Borderline Personality Disorder (ZAN-BPD) measuring borderline personality symptom severity (Zanarini, 2003). It described significantly better outcomes 8 years after treatment begin for the MBT group than the control group who underwent standard psychiatric care (Bateman & Fonagy, 2008).

Two studies used the short version of the Borderline Symptom List (BSL-23), a self-assessment of borderline symptoms, found to have good psychometric properties and a sensitivity to changes over the course of therapy (Bohus *et al.*, 2009). One study was the pilot study conducted by Brüne *et al.* (2013) who offered MBT combined with DBT over 4 weeks; a significant difference between pre- and post-treatment scores was reported ($p > .05$) with an effect size of 1.05. The second study was conducted by Edel *et al.* (2017). Participants underwent MBT combined with dialectical behaviour therapy (DBT) or just DBT. The study reported significant changes for both participant groups over the course of treatment. Across its three subscales, 'borderline symptoms', 'subjective health', and 'self-harm', patients receiving MBT combined with DBT scored significantly better post-treatment with effect sizes of 0.6 for all three subscales. Patients in the DBT group achieved effect sizes of 0.6, 1.0, and 0.1 for the subscales, respectively.

Two specific measures to assess BPD symptoms in children were used. First, the Borderline Personality Features Scale for Children (BPFS-C) (Crick, Murray-Close, & Woods, 2005; Sharp, Steinberg, Temple, & Newlin, 2014) was used in two studies: one RCT and one cohort study. Both studies report significant decreases in borderline symptomatology (Bo *et al.*, 2016; Rossouw & Fonagy, 2012). Neither of the studies reported effect sizes. Second, the CI-BPD, an interview developed to assess childhood BPD severity, was used in another study capturing BPD severity and treatment progress (Zanarini, 2003). A significantly greater reduction in BPD symptoms was found in the MBT group compared to the control group (Rossouw & Fonagy, 2012); however, no effect sizes were reported.

Reductions in self-harm behaviours

Mentalization-based therapy was found to significantly reduce self-mutilating behaviours across all of the seven studies reporting a measure of parasuicidal behaviours, including two follow-ups (Bales *et al.*, 2012; Bateman & Fonagy, 1999, 2001, 2008, 2009; Kvarstein *et al.*, 2015; Rossouw & Fonagy, 2012). Of these, five studies including two follow-ups comparing MBT to other forms of treatment found that MBT achieved superior reductions on self-harm behaviours compared to their control group (TAU, SGT) (Bateman & Fonagy, 1999, 2001, 2009; Rossouw & Fonagy, 2012). One study reported similar reductions in self-harm, with no significant differences between patients receiving MBT or TPT (Kvarstein *et al.*, 2015). The seventh study reported a significant decline in self-harming behaviour and suicide attempts (Bales *et al.*, 2012).

Two studies conducted with adolescents (Bo *et al.*, 2016; Rossouw & Fonagy, 2012) used the risk-taking and self-harm inventory (RTSHI), developed for the use with this age group with high validity and reliability (Vrouva, Fonagy, Fearon, & Roussow, 2010). One study reported significant differences in scores between the MBT-A and TAU groups for its subscale of 'self-harm' at 12 months with the MBT-A group engaging in significantly less self-harming behaviour; on the second subscale of 'risk taking', no group differences were found (Rossouw & Fonagy, 2012). The other study did not report significant differences in scores of their cohort between pre- and post-treatment (Bo *et al.*, 2016).

Reductions in suicide attempts

Across all seven studies measuring suicide attempts, a significant reduction was found for patients receiving MBT. Significantly fewer suicide attempts for MBT patients compared to patients in control groups were reported at different follow-up points across studies (Bateman & Fonagy, 1999, 2001, 2008, 2009). One study reported no differences between their TPT and MBT patients for suicide attempts (Kvarstein *et al.*, 2015), and one cohort study found a significant reduction on suicidal behaviour (Bales *et al.*, 2012).

Effects of MBT on reducing personality disorder-related symptoms

Three studies used the 'Severity Indices of Personality Problems' (SIPP-118), a self-report questionnaire assessing the severity of impairment across five domains: identity integration, relational functioning, responsibility, self-control, and social concordance (Verheul *et al.*, 2008). The studies (Bales *et al.*, 2012, 2015) found significant improvements with large effect sizes ranging from .081 to 2.08 for MBT patients after 18 and 36 months. Bales *et al.* (2015) further reported that MBT patients achieved substantially higher scores with large effect sizes than patients in SGT, and it was only on the subscale of Relational Functioning subscale where no significant differences between the groups were found. Laurenssen, Hutsebaut, *et al.* (2014) also found significant changes in their adolescent cohort on this measure after 12 months of treatment, with effect sizes ranging from 0.70 to 1.42.

Six studies, including three follow-ups, used the Inventory of Interpersonal Problems (IIP) or its shorter versions, the IIP-C, or CIP (Bales *et al.*, 2012; Bateman & Fonagy, 1999; Bateman & Fonagy, 2001; Bateman & Fonagy, 2009; Jørgensen *et al.*, 2013, 2014). Two original studies and one follow-up study found that the MBT group achieved significantly better scores than the control groups following treatment. One study did not report effect sizes (Bateman & Fonagy, 1999) and the other two studies reported large effect sizes between the treatment groups (Bateman & Fonagy, 1999, 2001, 2009).

In contrast, one study and its follow-up found that both MBT and supportive group therapy patients improved significantly from baseline to post-treatment with equal effect sizes 36 months post-treatment (Jørgensen *et al.*, 2013, 2014). Kvarstein *et al.* (2015) reported superior reductions in interpersonal problems for the MBT patients compared to TPT patients, and the difference was especially significant for the subscale 'Mistrust'; the effect size for the MBT group was reported as 1.46 compared to 0.67 for the TPT group. Bales *et al.*'s (2012) cohort study also reported significant changes in the IIP-C with large effect sizes spanning from 0.81 to 1.26.

The efficacy of MBT to treat the severity of comorbid depression and anxiety

Depression

Depressive symptoms were assessed in eight of the 14 studies. Beck's Depression Inventory (BDI) was used in six of these studies. It is the most commonly used screening tool for depression (Sauer, Ziegler, & Schmitt, 2013). One study (Bo *et al.*, 2016) used its Youth version (BDI-Y) (Beck, Beck, & Jolly, 2001; Stapleton, Sander, & Stark, 2007). Across all these studies, a significant reduction in depressive symptoms was found in individuals in MBT treatment groups with effect sizes ranging from 0.48 to 2.05 (Bales *et al.*, 2012; Bateman & Fonagy, 1999, 2001, 2009; Jørgensen *et al.*, 2013, 2014). Of these studies, only Jørgensen *et al.* (2014) reported effect sizes separately for their MBT and

control group. Patients achieved comparable effect sizes of 1.11 and 1.21 for SGT and MBT, respectively.

The 13-item Mood and Feeling Questionnaire (MFQ) (Angold *et al.*, 1995; Costello & Angold, 1988) was used by Rossouw and Fonagy (2012) to assess the prevalence of clinical depression in their adolescent sample. According to the MGQ, all but three patients of their sampled (TAU+MBT) could be classed as clinically depressed at baseline. At 12-month follow-up, this was reduced to 49% of patients in MBT versus 68% of TAU patients.

Anxiety

The Spielberger State-Trait Inventory (STAI) was used in two original studies and their follow-ups. All four reported improvements for MBT patients (Bateman & Fonagy, 1999, 2001; Jørgensen *et al.*, 2013, 2014). At their 18-month follow-up, Jørgensen *et al.* (2014) reported slightly higher effect sizes for their SGT group compared to the MBT group for both state (0.91 vs. 0.62) and trait (1.27 and 1.23) anxiety measures.

One study and its follow-up used the Beck Anxiety Inventory (BAI). The BAI captures the severity of anxiety irrespective of depressive symptoms (Osman, Kopper, Barrios, Osman, & Wade, 1997). Changes in BAI scores from baseline to 24 months were statistically significant for the MBT group but not for the SGT group at 18 months post-treatment (Jørgensen *et al.*, 2013). Improvements were statistically significant for both groups at 36-month follow-up, although the MBT group had a larger effect size (d = 0.81) than the SGT group (d = 0.67) (Jørgensen *et al.*, 2014).

The efficacy of MBT to increase quality of life in BPD patients

Quality of life

The EQ-5D was used in two studies. It is regarded as useful and appropriate for use with BPD patients (van Asselt, Dirksen, Arntz, Giesen-Bloo, & Severens, 2009), providing a measure of general health status (The EuroQol Group, 1990). The EQ-5D covers five dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression (Szende, Janssen, & Cabases, 2014). Two studies found significant improvements in quality of life over the course of MBT treatment (Bales *et al.*, 2012; Laurenssen, Hutsebaut, *et al.*, 2014).

Medication

Significant reductions in use of medication with psychotropic properties were achieved for individuals assigned to MBT: Bateman and Fonagy (1999) reported that at the end of their initial 18-month RCT, only 38% from initially 95% of individuals in the MBT group were still using the medication; this percentage was further reduced to 27% at 36 months (Bateman & Fonagy, 2001). Studies comparing MBT to structured clinical management or supportive group therapy found reductions in medication for both groups, although a greater reduction in medication use was reported for MBT participants (Bateman & Fonagy, 2009; Jørgensen *et al.*, 2013, 2014). Kvarstein *et al.* (2015) also reported reductions in the use of medication for both patients in the MBT and TPT conditions. However, due to Kvarstein *et al.* (2015)'s reporting, it is unclear which treatment achieved greater reductions.

Social adjustment

The Social Adjustment Scale (SAS-SR) was used in four original studies and two follow-up studies. It provides a general estimate of life satisfaction and social adjustment of individuals (Gameroff, Wickramaratne, & Weissman, 2012). Undergoing MBT was found to improve social adjustment scores across all studies reporting their findings on this measure (one study did not report its findings). Two studies and one follow-up reported significant group differences between individuals in MBT and control conditions, that is standard psychiatric care or structured clinical management (Bateman & Fonagy, 1999, 2001, 2009); one study and its follow-up reported that both treatments (SGT and MBT) achieved the same significant difference between baseline and post-treatment scores, with the same effect size (d = 0.93) (Jørgensen *et al.*, 2013, 2014).

Discussion

Main findings

Borderline personality disorder is a complex and multifaceted disorder that is associated with profound impairment of functioning and a high number of comorbid disorders (APA, 2013; Zimmerman & Mattia, 1999) and is regarded as difficult to treat (National Institute for Health and Care Excellence, 2009; Rossouw, 2015). Mentalization-based therapy (MBT) for BPD is based on the idea that patients with this condition have deficits in their mentalizing ability (Bateman & Fonagy, 2010; Fonagy & Bateman, 2006) and that a patient's symptoms will only improve if they learn to understand and perceive the mental states of other individuals (Bateman & Fonagy, 2010). This review sought to assess whether MBT can be used as a treatment to reduce borderline personality disorder symptoms, symptoms of associated psychiatric illnesses, such as anxiety or depression, and whether it can achieve improvements in quality of life for patients with BPD.

The studies included in the review indicate that MBT can achieve significant reductions in BPD symptom severity, the severity of comorbid disorders, and the use of psychotropic medication. It can also improve general psychiatric well-being, interpersonal functioning, and social adjustment. The effect sizes for the reductions of psychiatric symptoms were consistently large for MBT patients and either superior or comparable to the comparison treatments. Borderline-specific features were also found to decrease over the course of treatment, including substantial reductions in parasuicidal behaviour. Self-harm and suicide are core concerns relating to patient safety in BPD; it is therefore paramount that a psychotherapy for BPD addresses these.

Mentalization-based therapy was also found to significantly reduce levels of anxiety and depression, which provides further evidence that MBT is a successful treatment for BPD patients, as it addresses some of their most common comorbid disorders. These reductions are further indicators of improvements in quality of life for BPD patients following MBT. The finding that the use of psychotropic medications was considerably reduced in MBT groups is also an indicator of the success of the treatment. This reduction may help to improve patients' quality of life as the side effects and adverse consequences of psychotropic drugs are linked with lower quality of life (Hajji, Marrag, Ben Soussia, Zarrouk, & Nasr, 2014; Kopp *et al.*, 2011). Encouragingly, the positive effects of MBT were observed across various settings, including day hospitals as well as inpatient and outpatient clinics.

It could be argued that through the format of individual and group therapy, patients might be able to experience and learn to develop stable relationships with other group

members or therapists in a safe environment. If it was the format rather than the therapy content specifically that patients profited from, this could explain why MBT and SGT patients achieved comparable recovery (Jørgensen *et al.*, 2013, 2014) compared to, for example, treatment as usual (Bateman & Fonagy, 1999, 2001, 2008). Moreover, a number of studies found that MBT achieved superior effects.

The heterogeneity and variation in severity among borderline personality disorder patients present a challenge to researchers and clinicians. For example, despite self-harm and suicide attempts being dominant symptoms of the disorder, not all individuals with BPD present with it (National Institute for Health and Care Excellence, 2009). The DSM-V diagnostic criteria only require individuals to have five of nine symptoms (APA, 2013). It is therefore paramount that studies assessing the effectiveness of MBT on BPD symptom severity cover a range of symptoms and do not exclusively focus on measures of parasuicidal or suicidal behaviours as an indicator of BPD severity. While some studies emphasized a reduction in parasuicidal behaviour as primary outcomes, other studies did not include specific measures. This narrative review combined the results of very heterogeneous studies with different outcome measurements, and found that a reduction across all BPD symptoms was achieved, which indicates that MBT is successful at reducing symptoms both related to self-harming behaviours and to symptoms not associated with them.

Included studies

Systematic reviews are often associated with publication bias as studies with positive results may be more likely to be published than those with null or negative result. Consequently, the findings presented in this review may be biased to more positive outcomes, a limitation which is echoed by Cristea *et al.* (2017)'s systematic review and meta-analysis suggesting that publication bias may 'inflate' the effects of a therapy on symptomatology.

As the review only included publications in the English, several articles found in German and Dutch were excluded when English translations could not be accessed ($n = 6$). This might also represent a publication bias as only successful MBT applications may have been translated. Moreover, the fact that all included studies were conducted in European countries may reduce the generalizability of the findings.

Not all studies included in the review were of good quality. For example, studies commonly violated quality standards, such as the reporting of p values or effect sizes. Similarly, this review was not able to summarize therapy adherence and attendance as few papers reported such data, despite the fact that these aspects may substantially contribute to the apparent success or failure of a treatment. As stated, most RCTs included in the review were not double-blind, which can induce further bias (Ryan, Hill, Prictor, McKenzie, & Cochrane Consumers and Communication Review Group, 2013; Karanicolas, Farrokhyar, & Bhandri, 2010). Evidence that is of low or moderate quality, despite large effect sizes, compromises confidence in the effect of the intervention studies. Therefore, risk of bias in these studies is highly likely, and, once better quality research has been conducted, it is likely that the estimate of the effect of MBT will change (e.g., Cristea *et al.*, 2017; Driessen *et al.*, 2015; Verhagen, de Vet, de Bie, Boers, & van den Brandt, 2001).

Further limitations arise from the small sample sizes with high attrition rates and the involvement of the developers of the therapy in five studies: Firstly, a number of studies had relatively small samples with relatively high attrition rates (range: 7–78%, median:

21%), it is likely that many studies were underpowered. While is important to note that BPD patient samples generally have very high attrition rates and clinicians often have difficulties keeping them engaged (National Institute for Health and Care Excellence, 2009) and underpowered studies are therefore likely; non-reporting of power statistics violates a quality standard. Secondly, it must be noted that four of the included studies were conducted by Bateman and Fonagy (1999, 2001, 2008, 2009), who developed MBT. Fonagy was also the second author on another study included in this review (Rossouw & Fonagy, 2012). The limitation of author involvement previously identified for the reviews conducted by Binks *et al.* (2006), Cristea *et al.* (2017) and Stoffers *et al.* (2012) therefore remains. There was also some discrepancy between the number of participants included in the RCTs conducted by Bateman & Fonagy in 1999 and, at follow-up, in 2001.

In the reviewed studies, the effectiveness of MBT was compared to treatment programmes, such as structured clinical management or psychodynamic treatment, and was found to achieve either superior or equal results. However, it is questionable why MBT was not directly compared to dialectical behavioural therapy (DBT) in a randomized control trial, as this has been established as one of the most effective psychotherapeutic treatments for BPD (Bloom, Woodward, Susmaras, & Pantalone, 2012; Cristea *et al.*, 2017; Lee, Cameron, & Jenner, 2015). Two studies included in this review administered MBT alongside DBT: One was a pilot study, investigating the feasibility of administering MBT in a treatment programme together with DBT, and the other compared the combined effect of MBT and DBT versus only DBT (Brüne *et al.*, 2013; Edel *et al.*, 2017). These study designs are unusual as the majority of studies specified that patients could not be receiving or have previously received another form of therapy additional to MBT to avoid a confounding effect. These particular studies achieved a significant reduction in symptom severity over a 4-week period of simultaneously administering MBT and DBT; however, due to concomitant use of both therapies, no conclusions about the effectiveness of either treatment can be drawn. To circumvent this problem, three other studies stated in their exclusion criteria that participants could not be receiving any psychological treatment at the same time or could not have previously received treatment; this is an inclusion criterion that should be adopted by future studies to avoid potential confounding results.

The percentages of women in the samples were disproportionately high: Samples were either dominated by female patients or exclusively female. This could limit the generalizability of the findings. There is some discussion as to whether women are, in fact, disproportionately affected by BPD compared to men: While the current DSM-V (APA, 2013) states that this is the case, other estimates have shown equal prevalence rates of BPD for both genders, but state that men are less likely to seek help when suffering from BPD (Singleton, Bumpstead, O'Brien, Lee, & Meltzer, 2001).

The age ranges of samples were also restricted. The adult sample studies typically included younger, rather middle-aged, or older, adults. While BPD usually emerges between puberty and early adulthood (Chanen, 2015), the process of receiving a diagnosis and treatment is often very slow and patients often do not receive treatment until the disorder has progressed substantially (Bateman, Gunderson, & Mulder, 2015; Gunderson *et al.*, 2011). As a result, the age ranges included in the studies represent the current clinical target population of BPD interventions.

Almost all of the original studies included in the review varied substantially in terms of treatment content, intensity, and length. Given this heterogeneity in studies, it was not possible to conduct a meta-analysis to assess the effectiveness of MBT. However, the fact

that significant reductions in symptom severity were reported across different studies might make the findings slightly more robust and generalizable.

It is further important to note that only one of the included studies specifically measured the mentalization skills of their patients, using a cartoon-based tool where patients were asked to sequence cartoon pictures and chose appropriate endings (Brüne *et al.*, 2013). Brüne *et al.* reported that while borderline symptom severity was significantly reduced over the course of the 4-week MBT/DBT intervention, no significant differences were found on the cartoon task that assessed participants' mentalizing skills and prosocial understanding. This suggests that undergoing MBT does not necessarily increase patients' mentalizing capacities, but that patients might improve substantially as a result of its format. This therefore questions the hypothesized mechanisms underlying MBT.

Recommendations for future research

First, there is a clear need for better quality studies. In particular, all future RCTs should be double-blind; appropriately randomized and report statistical power. RCTs should be conducted without the involvement of the authors of MBT to avoid any potential further bias.

Second, future studies should assess the contributions of potential moderators of the effectiveness of MBT, such as comorbid Axis-I disorders, BPD severity, gender, treatment adherence, or attendance to establish which treatment format is most effective for which category of BPD patient.

Third, future MBT studies must monitor patients' mentalization skills at the start of and end of treatment to assess whether MBT increases mentalization skills; they must further conduct mediation analyses to determine whether changes in mentalization skills mediate the effects of MBT in symptom severity. Investigating this will shed light on the underlying mechanisms of the therapy, and whether it works as a result of its rationale, that is increasing mentalization skills to improve functioning, or as a result of its structure, that is providing group and individual therapy where patients are able to learn and develop stable relationship for potentially the first time in their lives – as suggested above.

Conclusion

This systematic review indicates that MBT is an effective treatment for reducing borderline personality disorder symptom severity in patients. Evidence was collated that MBT leads to reductions in borderline personality disorder-specific symptoms, such as profound interpersonal problems or suicidal behaviour, and common comorbid disorders, such as depression and anxiety. Symptoms of BPD are multifaceted and diverse, associated comorbid disorders further complicate treatment (NICE, 2009) and self-harm and suicidal behaviour is extremely high among the BPD population. The fact that MBT has been shown to be effective to reduce borderline personality disorder symptom severity across all studies included in this review is promising. However, as a consequence of the often low-quality evidence and likely biases of the included studies, the generalizability of findings can be questioned. Further, and better quality, RCTs that also assess changes in mentalization skills are required to add to, and improve, the evidence base for the effectiveness of MBT for reducing BPD symptoms.

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