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Review

Comparing the efficacy of mindfulness-based therapy and cognitive-behavioral therapy for depression in head-to-head randomized controlled trials: A systematic review and meta-analysis of equivalence

Kristine Trettø Sverre [a], Eva Rames Nissen [b], Ingeborg Farver-Vestergaard [c], Maja Johannsen [b], Robert Zachariae [b,d,*]

[a] Department of Adult Psychiatry, Volda Hospital, Volda, Norway
[b] Department of Psychology and Behavioural Sciences, Aarhus University, Aarhus, Denmark
[c] Department of Medicine, Vejle Hospital, Vejle, Denmark
[d] Department of Oncology, Aarhus University Hospital, Aarhus, Denmark

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ABSTRACT

Background: While Cognitive Behavioral Therapy (CBT) is recommended as first-line treatment for depression, a significant minority do not show an adequate treatment response. Despite evidence for the efficacy of Mindfulness-Based Therapies (MBT) both in treating current depression and preventing relapse, it remains unknown whether MBT and CBT are equivalent in the treatment of current depression.

Methods: Five databases were searched for randomized controlled trials (RCTs) directly comparing MBT with CBT and including depression as primary or secondary outcome.

Results: When pooling the results of 30 independent RCTs with a total of 2750 participants, MBT and CBT were statistically significantly equivalent at both post-intervention (Hedges's $g = -0.009$; $p < .001$) and follow-up ($g = -0.033$; $p = .001$). Supplementary Bayesian analyses provided further support for the alternative hypothesis of no difference between MBT and CBT. When exploring possible sources of heterogeneity, the differences at follow-up were smaller between CBT and mindfulness-based cognitive therapy (MBCT) than between CBT and mindfulness-based stress-reduction (MBSR) (Slope = 0.37;$p = .022$).

Conclusion: The currently available evidence suggests that that MBT and CBT are equally efficacious in treating current adult depression. It remains unclear whether the similar effects of the two intervention types are due to different mechanisms or common factors.

1. Introduction

Depression is one of the most common mental disorders worldwide, and it is estimated that around 280 million people suffer from depression at any time (World Health Organization, 2021). Depression affects not only the depressed individual and his or her immediate family but also has consequences for society at large (Lépine & Briley, 2011). Due to impaired functioning and early mortality, depression is an economic burden in terms of reduced or lost work and increased use of health care services (Lépine & Briley, 2011; P. S. Wang, Simon, & Kessler, 2003). The World Health Organization (2021) considers depression to be a substantial contributor to global disability, confirming the severe negative impact of depression.

Cognitive-behavioral therapy (CBT) has proven efficacious in the treatment of depression (e.g., Butler, Chapman, Forman, & Beck, 2006; Cuijpers et al., 2013) and is recommended as a first-line psychological treatment for depression (American Psychological Association, 2019; The National Institute for Health and Care Excellence, 2009). However, many patients relapse or continue to show residual symptoms (Paykel, 2007; Thase et al., 1992; Vittengl, Clark, Dunn, & Jarrett, 2007) or continue to experience residual symptoms (Taylor, Walters, Vittengl, Krebaum, & Jarrett, 2010). During the last two decades, mindfulness-based therapies (MBT) have received increased attention as possible interventions for depression, and the results of several meta-analyses

* Corresponding author at: Unit for Psychooncology and Health Psychology, Department of Psychology and Department of Oncology, Aarhus University Hospital/Aarhus University, Bartholins Alle 11, DK8000C Aarhus, Denmark.
E-mail address: bzach@rm.dk (R. Zachariae).

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provide support for the efficacy of MBT in treating current adult depression, e.g. (Goldberg et al., 2018; Khoury et al., 2013; Y.-Y. Wang et al., 2018). Mindfulness has been defined as \the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment" (J. Kabat-Zinn, 2003). The two most investigated MBTs are mindfulness-based stress reduction (MBSR) (Kabat-Zinn, 1990) and mindfulness-based cognitive therapy (MBCT) (Segal, Williams, & Teasdale, 2012). Both teach mindfulness meditation techniques to help individuals become aware of their thoughts, feelings, and bodily sensations in the present moment and to subsequently help them change how they relate to these experiences. The MBSR program was developed for people with chronic illnesses and stress-related disorders, and is an eight-week course consisting of eight weekly 2.5-h group sessions and a silent retreat day, with focus on systematic training in mindfulness (Kabat-Zinn, 1990). In addition, the participants engage in home practice between sessions, including both formal (e.g., body scan) and informal practice (e.g., mindful awareness to everyday activities). MBCT, which was developed for preventing relapse of depressive episodes, is based on the MBSR program and uses the same format, length, number of sessions, and home practices (Segal et al., 2012). The main difference between the two programs is that MBCT explicitly includes the cognitive model, including an increased focus on negative thought patterns and mood. MBTs, including MBSR and MBCT, are currently used in the treatment of a wide range of different psychiatric disorders and other mental and behavioral conditions, including anxiety, substance use, eating disorder, smoking addiction, and sleep difficulties, and are delivered in various formats, including eHealth and individual therapy (see Goldberg et al., 2018).

While traditional "second wave" CBT is focused on the content, frequency, and validity of maladaptive cognitions and emotions, MBT belongs to the group of more recently developed "third wave" CBTs, which focus primarily on the context and function of problematic psychological events such as negative self-referential processing (e.g., rumination, worry) (Hayes, 2004). Indeed, studies show that rumination is inherent to depressive disorders (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). In the context of depression, the primary aim of traditional CBT is to change the content of thoughts to more realistic interpretations, whereas MBT focuses on changing how individuals relate to their thoughts, e.g., distancing themselves from the thought rather than changing the thought content. Among other related processes reinforced in MBT is the process of acceptance, defined as the willingness to experience unwanted private events with the purpose of pursuing one's values (Bond et al., 2011; Hayes, Levin, Plumb-Vilardaga, Villatte, & Pistorello, 2013) and self-compassion, defined as being kind and understanding towards oneself during times of pain and failure (Evans, Wyka, Blaha, & Allen, 2018).

While considerable evidence supports both traditional MBT and CBT for treating depression, it remains unclear whether they are equivalent in terms of efficacy. While some studies have found MBT to produce larger reductions in depressive symptoms than CBT (e.g., Abolghasemi, Gholami, Narimani, & Gamji, 2015; Aslami, Alipour, Najib, & Aghayosefi, 2017), other studies have not found such differences (Omidi, Mohammadkhani, Mohammadi, & Zargar, 2013; Tovote et al., 2014). Furthermore, two recent meta-analyses found no statistically significant differences between MBT and various types of active control groups (Goldberg et al., 2019; Y.-Y. Wang et al., 2018).

Regardless of these indications, it remains unclear whether MBT and CBT are equally efficacious in treating depression. First, to the best of our knowledge, so far, no meta-analyses have specifically investigated the relative efficacy of MBT and CBT for depression. The types of active controls used in previously reviewed studies are highly heterogeneous. They include, in addition to CBT, e.g., health enhancement programs (Eisendrath et al., 2016), rest and music control (Fissler et al., 2016), and walking control (Schuver & Lewis, 2016). Second, since the publication of the two meta-analyses (Goldberg et al., 2019; Y.-Y. Wang et al., 2018), several randomized controlled trials (RCTs) comparing CBT with MBT have been published (e.g., Gaigg et al., 2020; Giommi et al., 2021; Hofheinz, Reder, & Michalak, 2019). Lastly, when comparing MBT with active controls, the available meta-analyses have used the traditional non-superiority null hypothesis test procedure. Here, a non-significant result only means that the authors failed to reject the null hypothesis, not that there was support for the null hypothesis (Lakens, Scheel, & Isager, 2018). To truly test equivalence, we need to reject the null hypothesis of non-equivalence, i.e., that the difference in effect sizes is as large or larger than a given minimal clinically important difference (MCID) (Rogers, Howard, & Vessey, 1993).

While CBT is currently the recommended psychotherapy for depression, a significant minority fails to achieve an adequate treatment response following CBT (Paykel, 2007; Taylor et al., 2010; Vittengl et al., 2007), emphasizing the importance of identifying additional, equally efficacious evidence-based treatments. Thus, if MBT and CBT are shown to be equivalent, this will expand the available treatment options. We, therefore, systematically reviewed RCTs comparing the efficacy of MBT and CBT for treating depressive symptoms in adults and conducted a meta-analysis testing the hypothesis of equivalence of the two intervention types. As MBCT, in contrast to MBSR, was specifically developed to prevent relapse of depression (Segal, Williams, & Teasdale, 2002), we also aimed to explore possible differences between MBCT and MBSR and compare the relative efficacy in depressed and remitted patients, if the number of available studies allowed it.

2. Methods

The study was preregistered with the International Prospective Register of Systematic Reviews (PROSPERO) (registration number: CRD42020167252) and conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement (Page et al., 2021).

2.1. Search strategy

The electronic databases of PubMed, PsycInfo, Embase, CINAHL, and the Cochrane Central Register of Controlled Trials were searched from the first available date until June 30, 2022. The following search terms were used: (depression OR depressive disorder OR depressive) AND (mindfulness* OR MBSR OR MBCT) AND (cognitive behavioral therapy OR CBT OR cognitive OR behav* OR TAU OR treatment as usual OR usual care) and (randomized controlled trial OR random* OR RCT). See Appendix A for the full search string.

2.2. Inclusion and exclusion criteria

Based on the PICO approach (Sackett, Richardson, Rosenberg, & Haynes, 1997), the following inclusion criteria were used: Population: adults ($\geq$ 18 years) with current depressive symptoms; Intervention: MBT; Comparison: CBT; Outcome: depressive symptoms at post-treatment for both the intervention and comparison groups, assessed with validated scales for depression. Concerning study design, only RCTs were included. MBTs were defined as interventions where mindfulness skills training is regarded as the core component, e.g., MBCT and MBSR. Studies were excluded if mindfulness was not the core component of the intervention (e.g., Acceptance and Commitment Therapy (Hayes, Strosahl, & Wilson, 1999) and Dialectical Behavioral Therapy (Linehan, 1993). Based on previous definitions of CBT (López-López et al., 2019; Nenova et al., 2013; O'Toole, Zachariae, Renna, Mennin, & Applebaum, 2017), CBTs were defined as interventions described explicitly as CBT or including one or more of the following components: cognitive restructuring, behavioral activation, in vivo or interoceptive (imagined) exposure, problem-solving, coping skills training, and behavioral experiments. As long as one or more of these components were included, CBT could also include additional non-CBT-specific

components, e.g., relaxation, goal setting, self-monitoring, psychoeducation, and social skills training. To ensure specificity, i.e., no content overlap between the interventions, studies were excluded if the CBT comparison group included mindfulness or acceptance-based strategies.

2.3. Study selection process and data extraction

Duplicates were removed from the identified references, and the remaining references were imported into the online software program Covidence (Veritas_Health_Innovation_Ltd, 2021) for title and abstract screening, followed by full-text screening. Two authors (IFV and KS) conducted the screening process independently, and disagreements were solved by a third author (MJ). The data extraction was first carried out by one author (KS) and then checked by a second author (EN). When available, the information extracted included: (1) participant characteristics (i.e., sample size, mean age, percentage of women, population, depression severity), (2) intervention characteristics (i.e., type of MBT, type and number of components in CBT, delivery format, number of sessions, duration of treatment, drop out-rates), (3) information related to the outcome measure (i.e., type of outcome measure and time points reported). We also registered whether the studies had examined (4) possible adverse effects, (5) treatment fidelity, and (6) therapist competencies.

2.4. Risk of bias assessment

The revised Cochrane Risk of Bias tool (Sterne et al., 2019) was used to evaluate possible bias in the included studies. Five sources of bias were assessed: (1) bias arising from the randomization process, (2) bias due to deviations from intended interventions, (3) bias due to missing outcome data, (4) bias in the measurement of the outcome, and (5) bias in the selection of the reported result. All studies were evaluated for each of the five potential sources of bias and rated as either "low risk", "high risk", or "some concerns". In addition, an overall assessment of the risk of bias was conducted for each study. The assessments were conducted independently by two authors (EN and KS). Disagreements were solved by negotiation.

2.5. Data analysis

Hedges's *g*, a variation of Cohen's *d* correcting for possible bias due to small sample size, was used as the standardized effect size (ES). ESs were computed based on pre-intervention, post-intervention, and follow-up means or mean change scores of the MBT and CBT intervention groups and their standard deviations. In case of missing data, we attempted to contact the authors, asking them to provide this information.

Pooled ESs and 95% confidence intervals were calculated using the inverse variance method, taking the precision of each study into account. A random-effects model was used in all analyses, with positive values indicating a difference in favor of MBT being more efficacious than CBT. If studies reported results for more than one measure per outcome, e.g., both BDI and HADS-D, the ESs were averaged across outcomes so that only one result per study was used in each data synthesis, thereby ensuring the independence of results.

Differences between MBT and CBT were first analyzed using a conventional test of superiority. The pooled ESs were then subjected to analyses of equivalence (Rogers et al., 1993), testing whether the confidence interval fell within an equivalence interval of ±0.25 SD. This interval was chosen based on the MCID previously suggested for depression (Cuijpers, Turner, Koole, van Dijke, & Smit, 2014). The equivalence test is based on the largest *p*-value of two one-sided tests, with the two interventions considered to be statistically significantly equivalent if the largest of the two *p*-values is <0.05 (Rogers et al., 1993). If only one of the two tests reaches statistical significance, this is taken to indicate non-inferiority of one of the interventions (Walker & Nowacki, 2011).

Heterogeneity was explored by calculating the I^2 statistic and its 95% confidence interval (Cooper, Hedges, & Valentine, 2009; Higgins, Thompson, Deeks, & Altman, 2003). As an additional indicator of heterogeneity, we calculated the 95% prediction interval, i.e., the interval in which 95% of future observations from the same family of studies will fall (IntHout, Ioannidis, Rovers, & Goeman, 2016).

Possible reasons for heterogeneity of the differences between MBT and CBT were explored with moderator analyses comparing the ESs of studies according to the following study characteristics: Mean sample age, percent women in the sample, studies of participants with severe depression (vs. mild-moderate depression), studies of patients with depression defined as their primary diagnosis/symptom (vs. comorbid depression), studies that used diagnostic interviews to assess depression (vs. studies that did not), studies comparing CBT with MBCT (vs. MBSR), MBT number of sessions, CBT number of sessions, MBT duration (minutes), CBT duration (minutes), MBT dropout (percent), CBT dropout (percent), number of CBT components, whether the MBT included a retreat (yes/no), risk of bias score, and follow-up time (months). In addition, we explored the possible role of the presence of the different CBT components used in the various studies. Both categorical and continuous moderators were analyzed with meta-regression when the number of studies in the analysis was $\geq$10.

The possibility of publication bias was evaluated with funnel plots and Egger's method (Egger, Smith, Schneider, & Minder, 1997). If the results were suggestive of publication bias, we planned to calculate an adjusted ES using the Duval and Tweedie trim and fill method (Duval & Tweedie, 2000). The calculations were conducted with Comprehensive Meta-Analysis, Version 3 (Borenstein, Hedges, Higgins, & Rothstein, 2013) and various formulas in Microsoft Excel.

2.6. Supplementary Bayesian analyses

To aid the interpretation of the results, we conducted a supplementary Bayesian Model-Averaged meta-analysis (Gronau et al., 2017) of the overall comparisons of MBT and CBT at post-intervention at follow-up. In the present case, the procedure examined the results of four models: a) The fixed-effect null hypothesis, i.e., that the difference between MBT and CBT is non-zero (fH_0), b) the fixed-effect alternative hypothesis, i.e., that the difference is zero (fH_1), c) the random-effects null hypothesis (rH_0), and d) the random effects alternative hypothesis (rH_1). Bayesian Model-Averaged analysis thus avoids selecting either a fixed- or random-effects model and addresses two questions in light of the observed data: What is the plausibility that the overall effect is zero, and is there between-study variability in the effect sizes? We chose uninformed prior probability, i.e., 25%, of the four models and 2000 iterations. Concerning parameter distributions, we chose previously recommended defaults (Gronau et al., 2017). We thus used a zero-centered Cauchy prior with a scale of 0.707 for the effect size. For the between-study variation, we used an empirically informed prior distribution of non-zero between-study deviation estimates based on standardized mean difference effect sizes from 705 meta-analyses published in Psychological Bulletin between 1990 and 2013 (van Erp, Verhagen, Grasman, & Wagenmakers, 2017). This distribution has been approximated by an Inverse-Gamma (1, 0.15) prior on the standard deviation (Tau) (Gronau et al., 2017). The Bayesian analyses were conducted with the computer software JASP, Version 14 (JASP_Team, 2020).

3. Results

3.1. Study selection

A total of 4976 records were identified. After 2312 duplicates were removed, 2664 references were screened by title and abstract. Full-text screening was carried out for 529 references, and after carefully assessing eligibility criteria, we identified 40 full-text articles describing

the results of 30 unique RCTs. The results of the study selection process are shown in Fig. 1, and a full reference list of included studies is shown in Appendix B.

3.2. Study characteristics

The characteristics of the included studies are summarized in Table 1. The per-protocol sample size ranged from 20 to 309, with an average sample size across studies of 81. The average age of the sample age was 42.2 years (range of means: 21.9 to 51.9), and an average of 66% of the study samples were women (range 13–100%). Sixteen studies focused on patients with depression or depressive symptoms as the primary outcome, and 11 of these studies assessed depression with diagnostic interviews. Three of the sixteen studies focused on patients in remission from recurrent depression. The remaining 14 studies considered depression a comorbid symptom or a secondary outcome. Based on self-report depression scales, the severity of depression at baseline was categorized as severe in five studies, moderate in 10, and mild or minimal in 12. Most of the studies used a group format (K = 23; 77%), three studies investigated individually delivered interventions, and four delivered the interventions online or via a web- or smartphone-based application (eHealth studies). Sufficient details regarding the CBT components were provided for 26 studies (see Appendix C). The median number of components in these studies was 4 (range: 1 to 6). The components included in the CBT, listed in the order of their frequency, were 1) psychoeducation (k = 21; 81%), 2) cognitive restructuring (k = 20; 77%), 3) behavioral activation (k = 15; 58%), 4) self-monitoring (k = 12; 46%), 5) problem-solving (k = 10; 38%), 6) relaxation (k = 8; 31%), 7) exposure (k = 7; 27%), 8) goal setting (k = 6; 23%), and 9) social skills training (k = 5; 19%).

In 15 studies, MBT was closely modeled after MBCT, and in five studies after MBSR. The remaining ten studies examined other mindfulness-based interventions (MBIs), which had included elements from MBCT and MBSR but had modified intervention content or duration to the degree that precluded categorization as MBCT or MBSR. Twenty-eight studies provided data on effects at post-intervention, and follow-up data were available for 19 studies, with a mean follow-up time of 6.6 months, range: 1–24 months). Thirteen studies assessed treatment fidelity, and 20 studies described therapist competence. Only five studies reported possible adverse effects.

3.3. Risk of bias

The risk of bias in the individual studies is summarized in Appendix D. None of the included studies were free from risk of bias. Only half of the thirty studies were assessed as being at low risk of bias regarding the randomization process. The remaining half of the studies were rated as being of "some concern" due to lacking information about allocation concealment. Most studies (77%) were rated as having a low risk of bias due to deviation from the intended intervention, and all but three studies were evaluated as being at low risk of bias concerning the measurement of the outcome (90%). Almost half of the studies (47%)

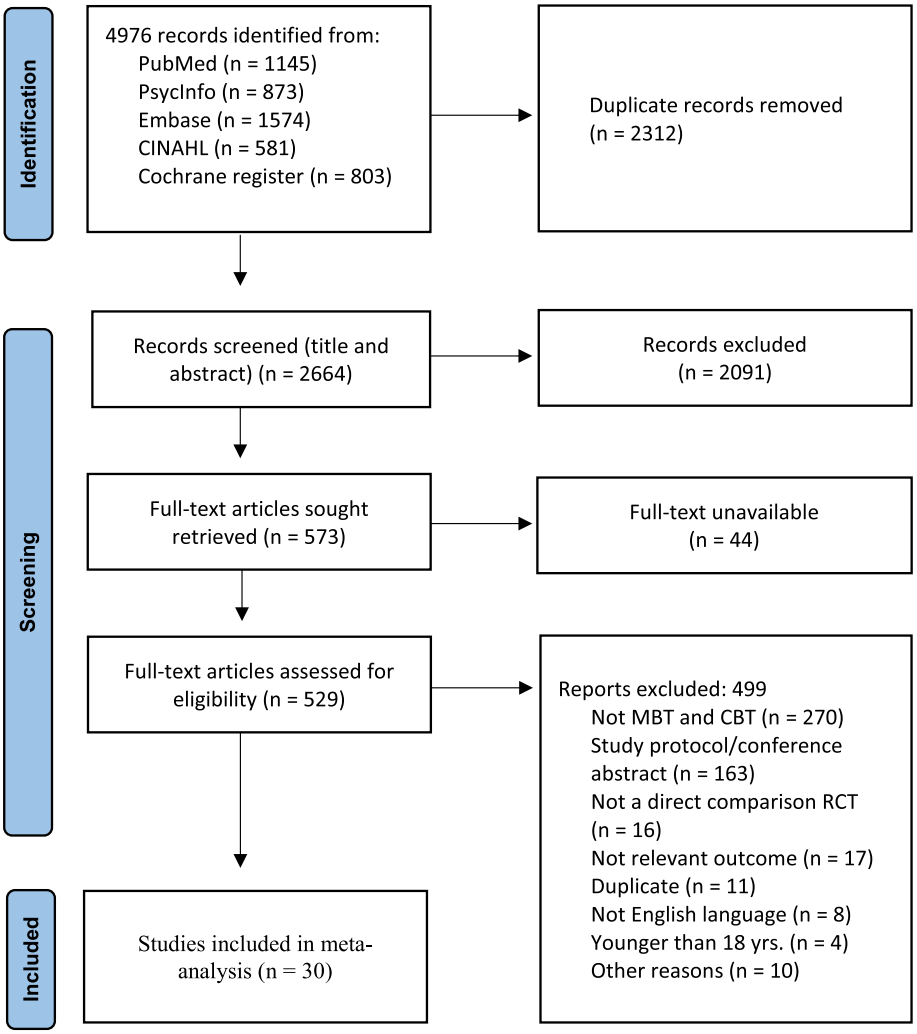

Fig. 1. Study selection process.

Table 1
Study characteristics.

			MBTs				CBTs									
Authors	Target population	Mean age; % women	N[a]	Type of MBT	No. sess; min	Drop-out[b]	N[a]	No. CBT components	No. sess.; min	Drop-out[b]	Dep. scale; severity of dep.	Delivery format	Follow-up time (months)	Adverse effects[f]	Treatm. fidelity[f]	Therapist competence[f]
Abolghasemi et al., 2015	Depressive disorder	29; 60	15	MBCT	12; 720	NR	15	NR	12; 720	NR	BDI-II; Severe	Group	2			
Arch et al., 2013	Veterans w/ anxiety disorder	45.9; 17	45	MBSR	9; 990	29%	60	5	10; 900	37%	BDI-II; Moderate	Group	3		+	+
Aslami et al., 2017	Pregnant women w/ depression and anxiety	28.2; 100	30	MBI	8; 960	NR	30	5	8; 1440	NR	BDI-II; Severe	Group	NA			
Bostanov et al., 2018	In remission from recurrent depression	44.1; 73	41	MBCT	8; 960	14%	19	3	8; 960	22%	CES-D; Minimal	Group	12			+
Cherkin et al., 2016	Chronic back pain	49.3; 66	116	MBSR	8; 960	19%	112	6	8; 960	13%	PHQ-8; Mild	Group	12	+	+	+
Chiesa et al., 2015	MDD	48.9; 70	23	MBCT	8; 960	9%	20	3	8; 960	15%	BDI-II & HAM-D; Moderate	Group	6			+
Day et al., 2019	Chronic low back pain	50.7; 52	23	MBCT	8; 960	13%	23	3	8; 960	17%	PROMIS-D; Minimal	Group	6	+	+	+
Farb et al., 2018	In remission of MDD	40.6; 68	82	MBCT	8; 960	40%	84	5	8; 960	44%	HAM-D; NA	Group	24		+	+
Gaigg et al., 2020	Autistic adults with anxiety	41.6; 13	14	MBI	NA[c]	26%	19	4	NA[c]	44%	HADS-D; Minimal	eHealth	6			
Giommi et al., 2021	GAD or panic disorder	44.9; 54	23	MBCT	8; 960	30%	21	6	8; 960	36%	BDI-II; Mild	Group	6			+
Hofheinz et al., 2019	MDD	49.9; 72	33	MBI	2; 180	18%	39	1	2; 180	41%	BDI-II; Moderate	Group	NA			+
Jelinek et al., 2020	Depressive symptoms	45.4; 83	32	MBI	NA[d]	16%	37	4	NA[d]	22%	PHQ-9; Moderate	eHealth	1			
Kladnitski et al., 2020	Anxiety and/or depressive disorder	39.2; 86	38	MBI	6; NR	34%	37	5	6; NR	19%	PHQ-9; Moderate	eHealth	3	+		
Koszycki et al., 2007	Generalized social anxiety disorder	38.2; 53	26	MBSR	8; 1200	15%	27	3	12; 1800	33%	BDI-II; Mild	Group	NA		+	+
Koszycki et al. ., 2021	Social anxiety disorder	40.9; 63	52	MBSR	12; 1440	19%	45	4	12; 1440	22%	BDI-II; Mild	Group	6		+	+
Kristeller et al., 2014	Binge eating disorder	46.6; 88	40	MB-EAT	12; 1080	25%	33	6	12; 1080	34%	BDI-II; Moderate	Group	4		+	+
Ly et al., 2014	MDD	36.1; 70	41	MBI	NA[e]	12%	40	3	NA[e]	10%	BDI-II & PHQ-9; Moderate	eHealth	6			
Manicavasagar et al., 2012	MDD	46; 64	19	MBCT	8; 1080	13%	26	3	8; 1080	31%	BDI-II; Severe	Group	12		+	+
McIndoo et al., 2016	College students w/ depr.sympt. and/or MDD	19.3; 64	20	MBSR	4; 240	10%	16	4	4; 240	6%	BDI-II & HAM-D; Moderate	Individual	1		+	+
Michalak et al., 2015	Chronic depression	49.3; 61	34	MBCT	8; 1200	22,22	35	4	8; 1200	34%	HAM-D; Severe	Group	NA	+	+	+
Omidi et al., 2013	MDD	28; 67	30	MBCT	8; 960	NR	30	NR	8; 960	NR	BSI-Dep; NA	Group	NA			
Piet et al., 2010	Social phobia		14	MBCT	8; 960	21%	12	3		8%		Group	NA			+

(*continued on next page*)

Table 1 (*continued*)

Authors	Target population	Mean age; % women	MBTs N[a]	Type of MBT	No. sess; min	Drop-out[b]	CBTs N[a]	No. CBT components	No. sess.; min	Drop-out[b]	Dep. scale; severity of dep.	Delivery format	Follow-up time (months)	Adverse effects[f]	Treatm. fidelity[f]	Therapist competence[f]
		21.9; 69							12; 1440		BDI-II; Mild					
Sheikhzadeh et al., 2021	Cancer	47.8; 92	19	MBCT	8; 720	5%	19	6	8; 720	5%	BDI-II; Moderate	Group	NA		+	+
Siritienthong et al., 2018	Insomnia	48.8; 85	10	MBI	8; 720	23%	10	NR	8; 720	17%	HADS-D; NA	Group	NA			
Spears et al., 2017	Smoking cigarettes	48.7; 55	154	MBAT	8; 960	33%	155	4	8; 960	35%	CES-D; NR	Group	NA			
Sundquist et al., 2019	Depression, anxiety, and/or adjustment disorders	41.5; 80	83	MBI	8; 960	18%	71	NR	6; 360	10%	HADS-D & PHQ-9; Mild	Group	12			+
Tovote et al., 2014	Diabetes and depressive symptoms	51.9; 48	31	MBCT	8; 360	29%	32	2	8; 360	28%	BDI-II; Moderate	Individual	NA			
Williams et al., 2014	In remission of recurrent depression	43; 72	52	MBCT	8; 960	8%	54	3	8; 960	6%	BDI-II; Minimal	Group	7.5	+	+	+
Wong et al., 2016	Insomnia	49.5; 63	26	MBCT	4; 240	0%	31	3	4; 240	0%	DASS-Dep; Mild	Individual	3			+
Wong et al., 2016	GAD	50; 79	61	MBCT	8; 960	10,00	61	6	8; 960	11,00	CES-D; Severe	Group	NA		+	+

Notes: [a] Number of analyzed participants; [b] Drop-out calculations based on study drop-outs (intent-to-treat sample); [c] The participants were encourage to complete the course within 6–8 weeks; [d] The interventions lasted 2 weeks; [e] The intervention lasted 8 weeks; [f] studies that have reported any of the following. Abbreviations: BDI-II = Beck Depression Inventory-II; BSI-Dep = Brief Symptom Inventory – depression module; CES-D = Center for Epidemiological Studies-Depression Scale; DASS = Depression Anxiety and Stress Scale – depression subscale; Dep = depression; Dep.scale = depression scale; GAD = Generalized anxiety disorder; HADS-D = Hospital Anxiety and Depression Scale-Depression subscale; HAM-D = Hamilton Depression Rating Scale; MBAT = Mindfulness-Based Addiction Treatment; MBCT = Mindfulness-Based Cognitive Therapy; MB-EAT = Mindfulness-based Eating Awareness Training; MBIs = Mindfulness-Based Interventions; MBSR = Mindfulness-Based Stress Reduction; MDD = Major Depressive Disorder; Min = minutes; NA = not applicable; NR = not reported; No. = number; PHQ-8 = Patient Health Questionnaire-8; PHQ-9 = Patient Health Questionnaire-9; R = reported; w = with; sess = sessions.

were evaluated as having a low risk of bias due to missing outcome data, and the remaining half (50%) were assessed as being at high risk. The large number of studies at high risk in this domain was due to those studies having >5% missing data and no evidence of appropriate analyses to handle missing data. Due to the lack of study protocols with pre-specified analysis plans, only four studies (13%) were evaluated as having a low risk of bias in the selection of the reported result. The remaining studies were evaluated as being of "some concern." The overall judgment of risk of bias in each study indicated a low risk of bias in 4 studies (13%), some concern in 11 studies (37%), and a high risk of bias in 15 studies (50%).

3.4. Comparing intervention characteristics of MBT and CBT

No statistically significant differences were found between MBT and CBT in dropout rates (19.0% vs 22.3%; $p = .295$), average number of sessions (8.0 vs 8.4; $p = .419$), and average duration of therapy (14.5 h vs 15.1 h, $p = .864$). Correlations (Spearman's rho) between MBT and CBT dropout rates, sessions, and duration were 0.69, 0.76, and 0.85 ($p < .001$).

3.5. Equivalence analysis

As shown in Table 2 and Fig. 2 the pooled between-group difference between MBT and CBT at post-intervention approached zero ($g = -0.009$; $p = .883$). The 90% equivalence CI for this contrast was −0.113 to 0.095. As this CI was included in the pre-specified equivalence interval (−0.25 to 0.25), the null hypothesis of non-equivalence was rejected ($p < .001$). Statistically significant equivalence was also found for MBT and CBT at follow-up ($p = .001$) (See Fig. 3), for studies of relapse ($p = .007$), and for the subgroup of studies comparing MBCT vs. CBT at post-intervention ($p = .015$), studies of patients with mild-to-moderate depression (post-intervention ($p < .001$) and follow-up ($p = .002$), and for studies of patients with depression as the primary diagnosis having assessed depression with diagnostic interviews ($p = .024$). At follow-up, MBCT was not equivalent ($p = .485$), but non-inferior ($p = .004$) to CBT. Likewise, MBT was not equivalent ($p = .337$), but non-inferior ($p = .006$) to CBT in studies which did not assess depression with diagnostic interviews (data not shown). In the subgroups of studies of MBSR and studies with patients with severe depression, the results were inconclusive.

3.6. Publication bias and outliers

Based on visual inspection of funnel plots and Egger's tests of post-intervention and follow-up data, there were no indications of publication bias. When examining for possible outliers, defined as ESs larger than the pooled ES ±2 SDs (±0.82), two post-intervention ESs were identified (Aslami et al., 2017; Siritienthong, Awirutworakul, & Vallibhakara, 2018). Omitting these studies in a sensitivity analysis did not have any influence on the overall results: g (post-intervention) = −0.041 (−0.125–0.044), $p = .348$ (equivalence test (−0.112–0.030), $p < .001$).

3.7. Heterogeneity and moderator analyses

Tests of heterogeneity suggested that a significant proportion ($I^2 = 48.6\%$) of the variance in post-intervention ESs stems from between-study differences beyond random error. The heterogeneity test for follow-up ESs did not reach statistical significance, and the proportion of the variance potentially explained by true between-study differences was smaller ($I^2 = 22.0\%$). As seen in Table 3, when exploring possible explanations for the heterogeneity with meta-regression, one moderator reached statistical significance. At follow-up, differences between MBCT and CBT were larger than differences between MBSR and CBT (slope:

Table 2
Results of meta-analysis of studies directly comparing the efficacy of mindfulness-based therapies (MBTs) with cognitive-behavioral therapies (CBTs), including tests of effect sizes (ESs) being different from zero and tests of statistical equivalence.

Comparison: MBT [g] vs CBT [h]				Heterogeneity			Pooled effect size				Equivalence [f]	
Subgroup	Timepoint	K [a]	N [b]	I^2	95%CI (I^2)	T^2	Hedges's g [c]	95%CI (g)	P[d]	95%PI [e]	90%CI	p
All studies	Post	28	2003	48.6	22.8–75.2	0.049	−0.009	−0.133–0.114	0.883	−0.481 – 0.464	–0.113–0.095	**<0.001***
–	FU	16	1132	22.0	14.6–29.4	0.016	−0.033	−0.170–0.104	0.640	−0.343–0.277	−0.148–0.082	**0.001***
–	Rel.	3	450	0.0	0.0–80.5	0.0	−0.018	−0.203–0.168	0.852	−1.224–1.188	−0.174–0.138	**0.007***
MBT=MBSR[i]	Post	5	519	0.0	0.0–62.1	0.0	−0.119	−0.291–0.052	0.174	−0.397–0.159	−0.264–0.026	0.068
–	FU	4	466	0.0	0.0–69.5	0.0	−0.146	−0.328–0.035	0.114	−0.543–0.251	−0.299–0.007	0.132
MBT = MBCT [j]	Post	14	821	27.4	17.5–36.5	0.026	−0.044	−0.230–0.143	0.647	−0.452–0.364	−0.200–0.112	**0.015***
–	FU	6	227	49.0	39.3–58.7	0.103	0.243	−0.126–0.612	0.196	−0.790–1.276	−0.066–0.552	0.485 ¤
Severe depression	Post	5	326	87.0	24.9–100	0.451	0.162	−0.474–0.799	0.617	−2.212–2.536	−0.373–0.697	0.393
Mild-to-moderate depression	Post	20	1488	0.0	0.0–31.0	0.0	−0.006	−0.160–0.148	0.939	−0.171–0.159	−0.136–0.124	**<0.001***
–	FU	14	1079	26.2	0.0–63.1	0.019	−0.040	−0.185–0.105	0.590	−0.380–0.300	−0.162–0.082	**0.002***
Depression as primary outcome	Post	14	962	56.9	19.9–94.1	0.078	0.108	−0.089–0.306	0.282	−0.539–0.755	−0.040–0.246	0.080 ¤
–	FU	8	475	37.7	31.0–45.0	0.042	0.025	−0.211–0.261	0.836	−0.544–0.586	−0.153–0.195	**0.030***
Comorbid depression	Post	14	1241	23.2	0.0–60.1	0.014	−0.114	−0.250–0.022	0.101	−0.413–0.185	−0.228–0.000	**0.024***
–	FU	8	657	4.3	0.0–53.3	0.002	−0.082	−0.240–0.077	0.312	−0.309–0.145	−0.215–0.051	**0.020***
Assessed with diagn. Interview.	Post	9	587	0.0	0.0–46.2	0.0	−0.011	−0.249–0.227	0.930	−0.298–0.276	−0.210–0.188	**0.024***
–	FU	5	258	58.5	45.6–72.4	0.115	0.013	−0.388–0.414	0.973	−1.263–1.289	−0.324–0.350	0.124
No diagnostic interview	Post	5	375	77.8	18.5–100	0.206	0.318	−0.001–0.636	0.051	−1.216–1.852	0.052–0.584	0.337 ¤
–	FU	3	217	0.0	14.9–100	0.0	0.053	−0.349–0.455	0.797	−2.553–2.659	−0.189–0.259	0.070

Notes: a) Post = post-intervention, FU = follow-up, Rel. = relapse; a) K = number of studies; b) N = total number of participants; c) Hedges's g: Standardized Mean Difference adjusted for small sample bias (Hedges & Olkin, 1985), with positive values indicating difference of effects in favor of MBTs; d) P-values (two-tailed): Statistically significant ($p < .05$) in **bold**. e) 95% prediction interval, i.e., the interval in which 95% of future observations from the same family of studies will fall (IntHout et al., 2016); f) Test of equivalence: tests whether the confidence interval (CI) falls within an equivalence interval (ES ±0.25) based on the minimal important difference (MID) of 0.24 suggested for depression (Cuijpers et al., 2014). The equivalence test is based on the largest p-value from two one-sided tests (Rogers et al., 1993). P-values marked with * indicate equivalence. Result marked with ¤ indicates non-inferiority of MBI; g) MBT = all mindfulness-based therapies; h) Cognitive-behavioral therapies; i) MBSR = Mindfulness-based stress reduction; j) MBCT = mindfulness-based cognitive therapy.

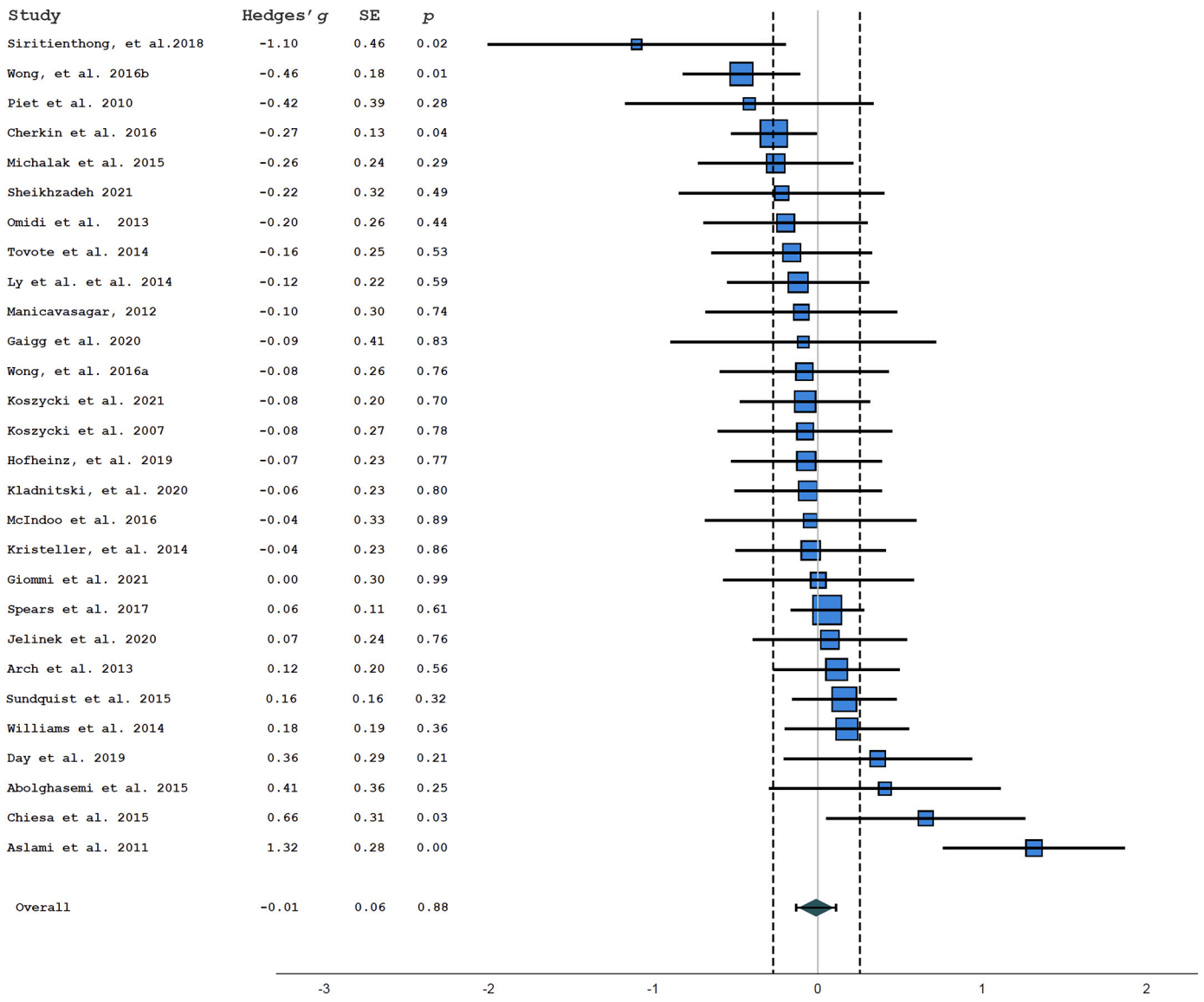

Fig. 2. Forest plot of effect sizes (Hedges' g) and 95% CI for post-intervention differences between effects on depression of MBT and CBT with positive values indicating effects in favor of MBT.

0.37, $p = .022$). The remaining moderators, including demographic factors (mean sample age, percent women in the sample), depression characteristics (severe vs. mild-moderate, primary vs. comorbid), risk of bias (high vs. low risk of bias), and intervention characteristics (MBT type, number of sessions, duration, follow-up time, dropout rates, use of diagnostic interview, assessment of treatment fidelity, and description of therapist competence) all failed to reach statistical significance. Finally, with meta-regression, we tested the possible moderating effects of the inclusion versus non-inclusion of each individual CBT component. Significant moderating effects were found for the CBT component 'goal setting' (slope: −0.31, $p = .002$). The moderating effect of goal setting remained statistically significant when adjusting for the presence of each of the remaining components. Still, it only approached statistical significance ($p = 0.054$) when adjusting for the risk of bias. No statistically significant moderating effects were found for the number of components or any of the remaining eight components, neither at post-intervention (slopes: −0.31 to 0.24; p-values: 0.051 to 0.72), nor at follow-up (slopes: −0.11 to 0.05; p-values: 0.37 to 0.99) (see Appendix E).

3.8. Results of supplementary Bayesian analyses

Concerning the overall comparison of MBT and CBT at post-intervention, the results of the supplementary Bayesian Model-Averaged meta-analysis favored the alternative hypothesis, i.e., that the difference between the efficacy of MBT and CBT for depression is zero. The probability of the alternative hypothesis is 94.0%, with the relative probability of the competing hypotheses corresponding to a Bayes Factor (BF) (Goodman, 1999) of 15.7, which is interpreted as strong evidence (Jeffreys, 1961). In contrast, the evidence for non-heterogeneous post-intervention ESs was only moderate, with a BF of 3.8. The follow-up results also supported the alternative hypothesis: The probability of no difference between MBT and CBT is 92.1%, with the relative probability of the alternative and the null hypothesis corresponding to a BF of 11.7. In contrast, evidence for heterogeneity of ESs at follow-up was inconclusive, with a BF of 2.3 in favor of non-heterogeneity. The results for relapse also favored the alternative hypothesis. The probability was 89.6%, and the relative probability of the alternative vs. the null hypothesis corresponded to a BF of 8.6. The level of the evidence was moderate. While the results favored non-heterogeneity, the evidence was inconclusive (BF = 2.53).

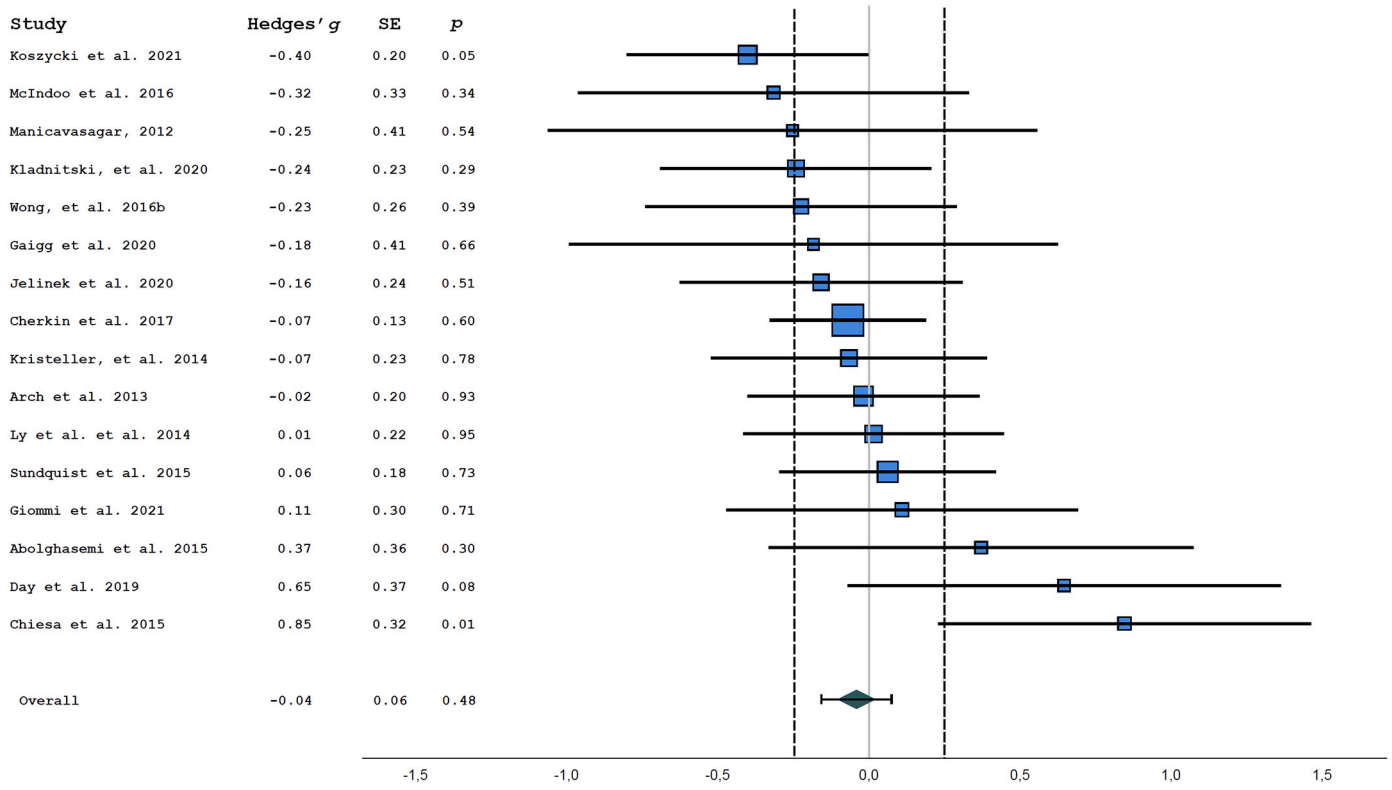

Fig. 3. Forest plot of effect sizes (Hedges' g) and 95% CI for differences at follow-up between effects on depression of MBT and CBT with positive values indicating effects in favor of MBT.

4. Discussion

In the present systematic review and meta-analysis, we examined the relative efficacy of MBT and traditional CBT in treating depressive symptoms, hypothesizing that the effects of MBT and CBT would be equivalent when compared in head-to-head RCTs. We identified a total of 30 studies, and when subjecting the data to meta-analysis, we found no statistically significant differences between the two intervention types at post-intervention, at follow-up, and for patients with recurrent depression (Hedges's g from −0.03 to −0.02; *p*-values from 0.64 to 0.85). Moreover, all three comparisons reached statistical significance (*p*-values from <0.001 to 0.007) when testing whether the confidence interval fell within an equivalence interval of ±0.25 standard deviations, based on a previously suggested MCID for major depression (Cuijpers et al., 2014) providing support for the hypothesis of equivalence of MBT and CBT for treating depression. The results of the supplementary Bayesian analyses supported the findings, which, based on an uninformed prior and the currently available data, provided strong evidence for the hypothesis of equivalence. The hypothesis of no difference was 14.5 and 11.7 times more likely than the hypothesis of non-zero difference at post-intervention and follow-up, respectively.

4.1. Heterogeneity

As indicated by the statistically significant Q-statistic and the I^2 value of 48%, the data suggested that approximately half of the variance in effect sizes is explained by systematic differences in study characteristics. When we tested the possible moderating effects of differences in sample characteristics, including sample age, percent women, the severity of depression, whether depression was the primary problem or comorbid, and dropout in the MBT and CBT groups, no statistically significant moderating effects were found at either post-intervention or follow-up. Likewise, no moderating effects were found for intervention characteristics such as the number and duration of therapy sessions, number of CBT components, or whether MBT had included a retreat or not. In addition, no moderating effects were found for percent dropout in MBT or CBT, high versus low risk of bias, or time to follow-up. The only statistically significant moderator was the type of MBT. At follow-up, the differences between MBCT and CBT were significantly larger than between MBSR and CBT. This finding at follow-up may not be too surprising, as MBCT was specifically developed to prevent relapse of depression (Segal et al., 2002). However, it should be noted that the number of studies of MBCT and MBSR reporting data at follow-up (6 and 4 studies, respectively) was limited and that MBCT was only found to be non-inferior, not superior, to CBT at follow-up. At post-intervention, but not at follow-up, MBT and CBT were statistically significantly equivalent in studies of depression as the primary outcome, using diagnostic interviews to assess depression. While the moderating effect did not reach statistical significance ($p = .083$), the difference in efficacy between MBT and CBT tended to be smaller in these studies compared with studies that had not used diagnostic interviews, which showed ESs in favor of MBT. This could be cautiously interpreted as supporting the validity of our findings. Specifically, including patients based on a diagnostic interview both i) support the internal validity of the findings by ensuring that the effects are depression-specific rather than effects on 'psychological distress' and ii) increases the translational value as patients treated in healthcare systems present with clinical depression (i.e., diagnosed depression disorder) rather than subclinical depression (i.e., depressive symptoms). It should, however, be noted that we generally did not take potential associations between moderators into account in our analyses due to statistical power issues. When we further explored the possible moderating role of the number of specific components included in the CBT and the presence of each of the individual components, only the reported use of "goal setting" reached statistical significance. Studies including goal setting tended to show effects in favor of CBT compared to MBT. The finding appeared robust when attempting to adjust for the presence of each of the other CBT components but less so when adjusting for the risk of bias. While more research into the role of

Table 3
Results of moderator analyses based on comparisons between MBT and CBT at post-intervention and follow-up.

Moderator	Time-point [a]	K [b]	Slope [c]	95%CI	*P*[d]
Mean sample age	Post	28	−0.011	−0.025–0.003	0.132
	FU	16	0.008	−0.001–0.025	0.392
Percent women	Post	28	0.002	−0.005–0.008	0.611
	FU	16	−0.001	−0.007–0.005	0.786
Severe depression (ref.: mild-moderate)	Post	25	0.095	−0.234–0.427	0.576
	FU	16	0.152	−0.392–0.696	0.583
Depression primary (ref. comorbid depression)	Post	28	0.218	−0.003–0.439	0.053
	FU	16	0.098	−0.137–0.333	0.415
Diagnostic interview (ref. no diagnostic interview)	Post	14	−0.321	−0.685–0.042	0.083
MBCT (ref.: MBSR)	Post	19	−0.048	−0.197–0.292	0.703
	FU	10	0.370	0.053–0.687	**0.022**
MBT number of sessions	Post	26	0.013	−0.051–0.077	0.696
	FU	14	−0.007	−0.070–0.056	0.822
CBT Number of sessions	Post	25	0.031	−0.025–0.086	0.279
	FU	13	−0.021	−0.081–0.039	0.486
MBT minutes of therapy	Post	25	0.000	−0.000 – 0.001	0.750
	FU	13	0.001	−0.001–0.001	0.750
CBT minutes of therapy	Post	23	0.000	−0.000 – 0.000	0.661
	FU	12	−0.000	−0.001–0.001	0.602
MBT dropout	Post	25	0.121	−0.906–1.147	0.818
	FU	12	0.041	−0.902–0.983	0.932
CBT dropout	Post	25	0.231	−0.515–0.977	0.544
	FU	15	0.311	−0.609–1.232	0.508
Number of CBT components	Post	24	−0.029	−0.118–0.061	0.529
	FU	14	−0.036	−0.146–0.075	0.525
Retreat (ref: no retreat)	Post	28	−0.104	−0.438–0.229	0.540
	FU	16	−0.018	−0.273–0.238	0.892
High risk of bias (ref. low risk of bias)	Post	18	0.272	−0.107–0.652	0.160
	FU	11	0.084	−0.207–0.377	0.569
Follow-up time (months)	FU	16	0.006	−0.022–0.035	0.663
Treatment fidelity (ref. not assessed)	Post	21	−0.152	−0.430–0.125	0.282
Therapist competence (ref. not described)	Post	22	−0.112	−0.424–0.200	0.482

Notes: a) Post = post-intervention; FU = follow-up; b) K = number of studies in the analysis; c) Meta-regression (maximum likelihood method), conducted when K ≥ 10. Negative slope: difference between CBT and MBT in favor of CBT. Positive slope: difference between CBT and MBT in favor of MBT; d) Two-tailed *p*-value.

the individual components is needed when comparing CBT with other approaches, the finding could perhaps speak to the specificity of CBT and the directiveness of the approach. On the other hand, it is difficult to imagine CBT without some element of goal setting, and the component can be considered a common integral element across CBTs (Mennin, Ellard, Fresco, & Gross, 2013). Only four studies had explicitly described goal setting as a component, and those that did not report this component's inclusion may thus represent either a lower quality intervention or lower study quality. Finally, given the exploratory nature of these analyses, it could also be a chance finding.

4.2. Study strengths

Taken together, this first systematic review and meta-analysis to test the equivalence of MBT and CBT for depression has several strengths. First, we avoided the common mistake of assuming equivalence based on statistical non-significance, i.e., the inability to reject the null hypothesis of no difference (Lakens et al., 2018), and instead attempted to reject a null hypothesis of non-equivalence, i.e., that the difference in ESs is as large or larger than a given MCID (Rogers et al., 1993). Second, we explored the possibility of publication bias, a common problem affecting the robustness of the results of meta-analyses (Egger et al., 1997), and found no indications of publication bias. Third, we conducted several moderation analyses exploring the possible sources of heterogeneity. Finally, in addition to the traditional frequentist analyses, we conducted supplementary Bayesian analyses (Gronau et al., 2017), which further supported our findings.

4.3. Study limitations

Some limitations should also be noted. First, while the overall number of available studies with post-intervention data was relatively high (K = 30), only half of the studies had included assessments at follow-up, and the time to follow-up varied considerably, ranging from 1 month (Jelinek et al., 2020) up to 24 months (Farb et al., 2018). This limitation could challenge our ability to conclude whether MBT and CBT remain equivalent in the long term. Second, while the overall conclusion regarding the equivalence of MBT and CBT appears robust, the inconclusive results regarding the equivalence of MBSR and CBT and the equivalence of MBT and CBT in patients with severe depression are likely to be due to the relatively small number in these subgroups of studies. Third, the reporting of other relevant factors in the primary studies is limited. One example is the reporting of possible adverse effects, which has long been neglected (Moritz et al., 2019). While a mean positive effect will usually indicate that the majority of patients experienced improvement, at the same time, a proportion of patients may experience deterioration of their symptoms. In a meta-analysis of deterioration rates in 23 RCTs of psychotherapies for adult depression, the median deterioration rate in the therapy groups was 4% and, in some studies, up to 10% (Cuijpers, Reijnders, Karyotaki, de Wit, & Ebert, 2018). To decide whether MBT should be recommended as a first-line treatment for depression, it is not only necessary to evaluate the relative efficacy of MBT and CBT, but also to determine possible between-treatment differences in adverse effects. Only five studies reviewed in the present study had examined possible adverse effects. However, if we consider the dropout rate as a possible indicator of adverse effects, the average dropout rates for MBT (19%) and CBT (21.3%) were similar and in line with the general dropout rates found for psychotherapy with adults (Swift & Greenberg, 2012). Finally, the indication of heterogeneity found in the overall comparison of MBT and CBT could challenge our ability to draw general conclusions (Higgins & Thompson, 2002). While we conducted several moderator analyses, the available data appear insufficient to identify the sources of heterogeneity. Future primary studies, as well as systematic reviews, are recommended to explore additional moderators, e.g., between-study differences in sample characteristics such as socio-economic status, ethnicity, number of depressive episodes, and therapist-related characteristics in terms of treatment fidelity and therapist allegiance and competence. While the therapist-related factors had been explored in some studies, the information provided in the study reports precluded comparisons across studies.

4.4. Scientific perspectives

From a scientific perspective, the results of the present meta-analysis add to the many decades-old and still ongoing discussion regarding the degree to which psychotherapy works primarily through "common factors," such as various aspects of the patient-therapist relationship and patient expectancies, or the specific ingredients of the therapies (Wampold, 2015). It could be tempting to interpret our overall findings of not only the absence of statistically significant differences between the effects of MBT and CBT in treating depression but also the presence of statistically significant equivalence as supporting a hypothesis that MBT and CBT work through common factors rather than through the specific factors described in their manuals. There are, however, reasons for caution. First, in addition to finding similar pooled effects in meta-analyses of head-to-head comparative studies, heterogeneity should

also be low because there would be no variability in effect sizes caused by a difference between therapies (Cuijpers, Reijnders, & Huibers, 2019). The I^2 of 49% found for the overall comparison of MBT and CBT at post-intervention suggests at least some heterogeneity, thereby challenging our ability to conclude. An additional problem is that the heterogeneity estimates found in meta-analyses have their own level of uncertainty (Cuijpers et al., 2019). When we calculated the 95% confidence interval around I^2, the interval ranged from 23% to 75%. Second, similar effects of different therapies do not guarantee that the mechanisms are the same. Theoretically, different techniques, e.g., cognitive restructuring and exposure in CBT, could yield similar effects on the ability to regulate emotions as the techniques of MBT, i.e., learning to relate differently to thoughts and feelings in a non-judgmental and accepting way. Validating a psychotherapy requires evidence beyond that it has beneficial effects as intended. There should also be evidence that the benefits stem from the specific mechanisms postulated by the approach and the corresponding therapist behaviors (Mulder, Murray, & Rucklidge, 2017). It also remains unclear how much overlap exists between the techniques and approaches of CBT and, e.g., new third-wave therapies such as MBT. There is, therefore, clearly a need for comparative research in the processes of psychotherapies such as MBT and CBT. Finally, the large number of studies assessed as being at high risk of bias suggests the need for methodological improvements. The main reasons for the high risk of bias ratings were > 5% missing data, the lack of appropriate analyses for handling missing data, and the lack of pre-specified analysis plans in pre-registered protocols. Researchers are advised to improve these aspects in future studies.

4.5. Clinical perspectives

From a clinical perspective, the overall finding that MBT and CBT appear equally efficacious in treating depression could provide additional first-line treatment opportunities for patients with depression. While both MBT and CBT encourage awareness of cognitions and emotions and aim to regulate them adequately, they differ in how patients learn to adjust to such experiences. The most frequently included CBT-specific components were cognitive restructuring and behavioral activation. In contrast, the main component in MBT is to learn to relate differently to thoughts and feelings in a non-judgmental and accepting way and observe inner experiences as they come and go (e.g., Segal et al., 2002). Different patients may prefer different approaches, and the evidence supporting the equivalence of MBT and CBT, in particular MBCT, in treating depression opens up for increased flexibility in the choice of treatment. In addition to investigating the common and unique mechanisms of MBT and CBT and which intervention type works best for whom, future research into personalized interventions could address the question of whether patients' own choice of psychotherapy type will improve the efficacy of treatment for depression.

5. Conclusion

Taken together, the present study fills a gap in the literature by systematically reviewing RCTs that have directly compared the efficacy of MBT and CBT for adult depression and by conducting a meta-analysis of equivalence showing not only that MBT and CBT did not differ in their effects but also that they were statistically significantly equivalent. While the results of the available studies do not allow a conclusion that the effects of the two therapies stem from common factors, the equivalent efficacy of MBT and CBT in treating depression opens up for increased flexibility in the choice of treatment.

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CRediT authorship contribution statement

Kristine Trettø Sverre: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Data curation, Project administration, Writing - original draft, Writing - review & editing. **Eva Rames Nissen:** Methodology, Validation, Formal analysis, Investigation, Data curation, Supervision, Project administration. **Ingeborg Farver-Vestergaard:** Data curation, Validation. **Maja Johannsen:** Conceptualization, Methodology, Supervision. **Robert Zachariae:** Conceptualization, Methodology, Validation, Formal analysis, Resources, Data curation, Visualization, Supervision, Writing - review & editing.

Declaration of Competing Interest

The authors declare no conflict of interest.

Data availability

Data will be made available on request.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.cpr.2022.102234.

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