




# Patients' interpersonal problems as moderators of depression outcomes in a randomized controlled trial comparing mindfulness-based cognitive therapy and a group version of the cognitive-behavioral analysis system of psychotherapy in chronic depression

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## Abstract

**Objectives:** Interpersonal problems were examined as moderators of depression outcomes between mindfulness-based cognitive therapy (MBCT) and cognitive behavioral analysis system of psychotherapy (CBASP) in patients with chronic depression.

**Methods:** Patients received treatment-as-usual and, in addition, were randomized to 8-weeks of MBCT ( $n = 34$ ) or 8-weeks of CBASP ( $n = 34$ ). MBCT and CBASP were given in a group format. The Hamilton depression rating scale (HAM-D) was the primary and the Beck Depression Inventory (BDI-II) the secondary outcome. The subscales of the Inventory of interpersonal problems (IIP-32) were moderators. Multilevel models were performed.

**Results:** Higher scores on the “vindictive/self-centered” subscale were associated with a better outcome in MBCT than in CBASP (HAM-D:  $p < .01$ ; BDI-II:  $p < .01$ ). Higher scores on the “nonassertive” subscale were associated with

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a better outcome in CBASP than in MBCT (HAM-D:  $p < .01$ ; BDI-II:  $p < .01$ ).

**Conclusions:** If these results can be replicated in larger trials, MBCT should be preferred to CBASP in chronically depressed patients being vindictive/self-centered, whereas CBASP should be preferred to MBCT in chronically depressed patients being nonassertive.

#### KEYWORDS

chronic depression, cognitive behavioral analysis system of psychotherapy, interpersonal problems, mindfulness-based cognitive therapy

## 1 | INTRODUCTION

Precision medicine addresses the research question “what works best for whom.” A recent publication by Cohen and DeRubeis (2018) provides an excellent overview regarding treatment selection in depression. For chronic depression (persistent depressive symptoms lasting at least 2 years), the European Psychiatric Association (Jobst et al., 2016) recommends a combined treatment with psychotherapy and pharmacotherapy. The psychotherapy should have an interpersonal focus like the cognitive behavioral analysis system of psychotherapy (CBASP). CBASP can be provided in individual and group settings (Sayegh et al., 2012; Schramm, Brakemeier, & O'Fangmeier, 2012). In the group setting applied in the current study, CBASP consisted of the following elements: Situational analyses, identifying, and describing the impact of the patients' dysfunctional behavior with Kiesler's interpersonal circle model, and contrasting the patients' transference hypotheses with the actual behavior of the other group members. CBASP has been shown to be effective for patients with chronic depression in meta-analyses (Kriston, von Wolff, Westphal, Hölzel, & Härter, 2014; Negt et al., 2016). It is more effective than interpersonal psychotherapy (Schramm et al., 2011), supportive therapy (Schramm et al., 2017), or care-as-usual (Wiersma et al., 2014). However, not all patients with chronic depression benefit equally from CBASP. In an individual participant data network metaregression, Furukawa et al. (2018) compared CBASP, pharmacotherapy, or their combination and identified several patient characteristics (pretreatment depression, anxiety, previous pharmacotherapy, age, depression subtype) as moderators of outcomes between these treatments.

In contrast to CBASP, mindfulness-based cognitive therapy (MBCT) was originally developed for patients with recurrent depression, currently in remission. Unlike CBASP, MBCT does not have an interpersonal focus but combines cognitive therapy and mindfulness practice. MBCT is traditionally applied in a group setting and integration into individual therapy is less researched (Mander et al., 2019; Michalak et al., 2019; Schroevers, Tovote, Snippe & Fleer, 2016). A meta-analysis by Kuyken et al. (2016) reported that patients with recurrent depression receiving MBCT have a reduced risk of depression relapse during a 60-week follow-up compared with those not receiving MBCT (hazard ratio, 0.69; 95% CI: 0.58–0.82) as well as compared with those receiving other active treatments (hazard ratio, 0.79; 95% CI: 0.64–0.97). Kuyken et al. (2016) also analyzed treatment moderators and found that beneficial effects of MBCT were strongest in those patients with recurrent depression who had more severe depressive symptoms at pretreatment. In patients with current depression, a meta-analysis by Goldberg et al. (2019) reported a positive effect of MBCT at posttreatment compared with nonspecific control conditions ( $d = 0.71$ , 95% CI: 0.47–0.96) but no superiority of MBCT compared with other active treatments ( $d = 0.002$ , 95% CI: –0.43, 0.44). With regard to chronic or treatment-resistant depression, studies found promising but inconsistent results for MBCT (e.g., Barnhofer et al., 2009; Chiesa, Mandelli, & Serretti, 2012;

Chiesa et al., 2015; Cladder-Micus et al., 2018; Eisendrath et al., 2008, 2016; Kenny & Williams, 2007; Michalak, Probst, Heidenreich, Bissantz, & Schramm, 2016; Michalak, Schultze, Heidenreich, & Schramm, 2015). In the study reanalyzed here, Michalak et al. (2015) compared treatment-as-usual (TAU), TAU+MBCT, and TAU+CBASP in patients with chronic depression and found no significant differences in treatment outcomes when TAU+CBASP was directly compared with TAU+MBCT. However, TAU+CBASP was more consistently superior to TAU than TAU+MBCT. In their study, childhood maltreatment moderated depression outcomes between TAU+CBASP and TAU (in favor of CBASP) as well as between TAU+MBCT and TAU (in favor of MBCT) but not between TAU+CBASP and TAU+MBCT (Michalak et al., 2016). Childhood maltreatment has been reported to put patients at risk of developing chronic depression in a review by Nelson, Klumpparendt, Doebler, and Ehring (2017) but a recent review on differences between chronic and nonchronic depression in direct comparisons found inconsistent results regarding childhood maltreatment (Köhler, Chrysantou, Guhn, & Sterzer, 2019). Yet, Köhler et al. (2019) found problematic interpersonal styles (submissive and hostile) as characteristics of patients with chronic depression and this result is supported by another recent review (Bird, Tarsia, & Schwannauer, 2018). It is important to consider interpersonal problems in psychotherapy practice and research due to several reasons. Individual and group therapy are interpersonal situations and interpersonal problems can influence in-session processes that are relevant for a good outcome, for example, the therapeutic alliance (Muran, Segal, Samstag, & Crawford, 1994), therapeutic factors in group therapy (Macnair-Semands & Lese, 2000), or the application of therapeutic techniques (McMillen & Hilsenroth, 2019). As patients' interpersonal problems can affect in-session processes, it is crucial to investigate whether the patients' interpersonal problems are predictors of psychotherapy outcome as well. According to McFarquhar, Luyten, and Fonagy (2018), this question has been addressed by 13 studies on depression with inconsistent results. Some of these studies investigated interpersonal problems as predictors of depression outcomes in different types of psychotherapies. For example, McEvoy, Burgess, and Nathan (2014) reported that interpersonal problems predicted a less favorable outcome in group therapy for depression but not in individual depression therapy. This result indicates that interpersonal problems might be moderators of the outcome between psychotherapies for depression, that is, there is an interaction effect between the patients' interpersonal problems and type of psychotherapy on depression outcomes. Investigating moderators is a more appropriate way than studying predictors when it comes to treatment selection and precision medicine (Kraemer, Wilson, Fairburn, & Agras, 2002).

Therefore, data of the trial comparing CBASP and MBCT in chronic depression (Michalak et al., 2015) were reanalyzed in this explorative secondary analysis to investigate whether MBCT and CBASP differ in depression outcomes for chronically depressed patients with specific interpersonal problems. Since the moderation analyses were explorative, we did not hypothesize which of the interpersonal problems might be moderators.

## 2 | MATERIALS AND METHODS

This randomized controlled trial was approved by the research ethics committee of the German Psychological Association (JM 072009) and registered in ClinicalTrials.gov (NCT01065311). The methods and main results of this randomized controlled trial (RCT) were published by Michalak et al. (2015).

### 2.1 | Participants and design

A total of 106 patients participated in this trial. All patients had a current major depressive episode according to the Diagnostic and Statistical Manual of Mental Disorders (4th ed.; DSM-IV; American Psychiatric Association, 1994) with depressive symptoms for at least 2 years without remission. The diagnoses resulted from Structured

Clinical Interviews for DSM-IV (SCID, German version by Wittchen, Wunderlich, Gruschwitz, & Zaudig, 1997) conducted by trained and certified clinical psychologists.

The participants were randomized to three conditions (see Michalak et al., 2015 for the CONSORT flow-chart of this RCT). Thirty-five participants were randomized to TAU, 36 to TAU+MBCT, and 35 to TAU+CBASP. The TAU condition included individual treatment by psychotherapists or psychiatrists according to clinical guidelines, mostly pharmacotherapy. TAU was not manualized, however, manuals were used to deliver MBCT or CBASP. In the MBCT condition, patients received TAU and an additional 8 weeks of group MBCT. In the CBASP condition, 8 weeks of group CBASP was added to TAU. The TAU condition was necessary to evaluate whether adding MBCT and/or CBASP to TAU enhances TAU alone, but the present manuscript focuses on moderators between specific psychotherapies. Thus, the TAU condition was not further analyzed here. Moreover, patients with missing inventory of interpersonal problems (IIP) pretreatment scores had to be excluded, since the moderating effects of interpersonal problems cannot be investigated for these patients. These were two MBCT patients and one CBASP patient. In summary, the sample of the current study comprised  $n = 34$  MBCT patients and  $n = 34$  CBASP patients. In the 6-month follow-up,  $n = 19$  of the MBCT patients and  $n = 19$  of the CBASP patients participated. The sample description and the results of comparisons between MBCT and CBASP in pretreatment variables are given in Table 1.

**TABLE 1** Sample description and comparisons between MBCT and CBASP in pretreatment variables

Variable		MBCT $n = 34$	CBASP $n = 34$	Statistics
Gender $n$ (%)	Female	21 (61.8)	21 (61.8)	Fisher's exact test: $p = 1.00$
	Male	13 (38.2)	13 (38.2)	
Diagnosis <sup>a</sup> $n$ (%)	Current major depressive episode at least two years	27 (79.4)	29 (85.3)	Fisher's exact test: $p = .87$
	Current major depressive episode with preceding dysthymic disorder	1 (2.9)	1 (2.9)	
	Current major depressive episode as part of recurrent major depression with incomplete recovery between episodes during the last two years	6 (17.6)	4 (11.8)	
Age $M$ ( $SD$ )		48.09 (11.62)	51.03 (10.60)	$t(65) = -1.08; p = .28$
IIP-32 subscale PA $M$ ( $SD$ )		0.84 (0.62)	0.84 (0.57)	$t(66) = 0.00; p = 1.00$
IIP-32 subscale BC $M$ ( $SD$ )		1.39 (0.86)	1.21 (0.98)	$t(66) = 0.81; p = .42$
IIP-32 subscale DE $M$ ( $SD$ )		1.88 (1.01)	1.62 (0.96)	$t(66) = 1.11; p = .27$
IIP-32 subscale FG $M$ ( $SD$ )		2.43 (0.89)	2.51 (0.81)	$t(66) = -0.39; p = .70$
IIP-32 subscale HI $M$ ( $SD$ )		2.52 (0.94)	2.82 (0.72)	$t(66) = -1.45; p = .15$
IIP-32 subscale JK $M$ ( $SD$ )		2.64 (0.81)	2.88 (0.75)	$t(66) = -1.21; p = .23$
IIP-32 subscale LM $M$ ( $SD$ )		2.10 (0.99)	2.51 (0.83)	$t(66) = -1.86; p = .07$
IIP-32 subscale NO $M$ ( $SD$ )		1.48 (0.83)	1.65 (0.71)	$t(66) = -0.94; p = .35$

Abbreviations: BC, vindictive/self-centered; CBASP, cognitive behavioral analysis system of psychotherapy; DE, cold/distant; FG, socially inhibited/avoidant; HI, nonassertive; IIP-32, short version of the inventory of interpersonal problems; JK, overly accommodating/exploitable; LM, self-sacrificing/overly nurturant; M, mean; MBCT, mindfulness-based cognitive therapy; NO, intrusive/neediness; PA, domineering/controlling; SD, standard deviation.

<sup>a</sup>Criteria for chronic major depression according to DSM-IV were therefore met by  $n = 56$  patients, and criteria for persistent depressive disorder according to DSM-5 (American Psychiatric Association, 2013) by  $n = 58$  patients.

## 2.2 | Therapists

MBCT was conducted by three therapists (clinical psychologist certified in MBCT, psychiatrist certified in MBCT, a clinical psychologist and psychotherapist with 5 years of mindfulness practice). All MBCT groups were supervised by J.M.

CBASP was conducted by two therapists (both clinical psychologists and certified CBSAP therapists). CBASP groups were supervised by E.S.

Adherence to the manuals and competence was good in MBCT and CBASP (for more details see Michalak et al., 2015).

## 2.3 | Treatments

MBCT (Segal, Williams & Teasdale, 2002): Patients received eight manualized weekly 2.5 hr group sessions. Moreover, one individual preclass interview was conducted.

CBASP (McCullough, 2000). A group version of CBASP (Schramm et al., 2012), consisting of eight manualized weekly 2.5 hr group sessions, was provided. Furthermore, patients in the CBASP condition took part in two individual treatment sessions (to derive the so-called transference hypotheses).

## 2.4 | Measures

Hamilton depression rating scale (HAM-D; Hamilton, 1967; Guy, 1976): HAM-D is a widely used clinician-rating for depressive symptoms and was chosen for this study to enable comparisons with other randomized psychotherapy trials. HAM-D interviews were conducted with the patients before MBCT/CBASP, at the end of MBCT/CBASP, and at a 6-month follow-up to obtain observer ratings of depression severity. The 24-item version was the primary outcome measure in this RCT. Higher values indicate more severe depression symptoms. The interviewers were blinded to the treatment condition and not otherwise involved in the study. The Structured Interview Guide for the HAM-D (Moberg et al., 2001) was used to enhance reliability. In a critical review, Bagby, Ryder, Schuller, and Marshall (2004) reported that internal reliability of the HAM-D ranged between 0.46 and 0.97, interrater reliability between 0.82 and 0.98 (Pearson's  $r$ ) and between 0.46 and 0.99 (intraclass  $r$ ), retest reliability between 0.81 and 0.98. Convergent and discriminant validity have been described as adequate but content validity as poor (Bagby et al., 2004). Factor analyses found between two and eight factors but poor replication (Bagby et al., 2004).

Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996; German version by Hautzinger, Keller, & Kühner, 2006): The BDI-II is a patient-reported outcome measure to assess depression severity with 21 items. Higher scores indicate more severe depression symptoms. Patients filled in the BDI-II before MBCT/CBASP, at the end of MBCT/CBASP, and at a 6-month follow-up. The BDI-II was a secondary outcome measure in this RCT. According to a comprehensive review by Wang and Gorenstein (2013), retest reliability of the BDI-II ranged from 0.73 to 0.96 and factor analyses revealed a robust dimension of general depression with two constructs (cognitive-affective and somatic-vegetative). The German version had an internal reliability of 0.84 and retest reliability of 0.75 and good convergent and divergent validity (Kühner, Bürger, Keller, & Hautzinger, 2007).

IIP-32 (Horowitz, Alden, Wiggins, & Pincus, 2000; German version by Thomas, Brähler, & Strauß, 2011): The IIP-32 is a self-report instrument to assess the amount of eight interpersonal problems. The eight subscales on interpersonal problems with examples are as follows (Lo Coco et al., 2018, pp. 3–4). Domineering/controlling (PA), that is, being too controlling or manipulative in interpersonal interactions; vindictive/self-centered (BC), that is, being frequently egocentric and hostile in dealing with others; cold/distant (DE), that is, having minimal feelings of

affection for, and little connection with, other people; socially inhibited/avoidant (FG), that is, being socially avoidant and anxious, and having difficulty approaching others; nonassertive (HI), that is, having difficulty expressing one's needs to others; overly accommodating/exploitable (JK) that is, being gullible and easily taken advantage of by people; self-sacrificing/overly nurturant (LM), that is, being excessively selfless, generous, trusting, caring, and permissive in dealing with others; and intrusive/needy (NO), that is, imposing one's needs and having difficulty respecting the personal boundaries of other people. The mean scores of the eight subscales obtained before MBCT/CBASP were used as potential moderators in the current study. Higher values represent more severe interpersonal problems. The German version was psychometrically evaluated by Thomas et al. (2011). Internal reliabilities of the subscales ranged from 0.59 to 0.83 in clinical samples, the factor structure was adequate in clinical samples but better in nonclinical samples, and convergent as well as divergent validity was shown. Recent studies investigated the psychometric properties of the IIP-32 in Italy (Lo Coco et al., 2018) and in the United States (Bailey, Abate, Sharp, & Venta, 2018). Limited divergent validity was criticized by Bailey et al. (2018) and Lo Coco et al. (2018) replicated previous findings that the eight-factor solution did not provide an acceptable fit in confirmatory factor analysis and showed that exploratory structural equation modeling resulted in a better fit.

## 2.5 | Data analysis

Two linear multilevel models were performed with SPSS 25 to evaluate whether the eight IIP subscales moderate depression outcomes between MBCT and CBASP. These multilevel models had two levels. Assessments of depression outcomes at level-1 (before MBCT/CBASP, end of MBCT/CBASP, and 6-month follow-up) nested within patients at level-2. A third level (center or therapists or groups) was not included, since there were only two study centers, only two/three therapists per condition and only six groups per condition. The HAM-D score was the dependent variable in one multilevel model and the BDI-II score in the other. We performed two multilevel models, one for each depression outcome, since the HAM-D was the primary outcome and the BDI-II the secondary outcome in this trial. A single multivariate multilevel model integrating both outcomes would also be possible (e.g., Baldwin, Imel, Braithwaite, & Atkins, 2014; Mander et al., 2019), but we did not want to treat the primary and secondary outcome as equal.

The full maximum likelihood estimation was used to handle missing data in the dependent variable. In both models, the intercept was allowed to vary randomly (random intercept models), a random slope was not entered, since the models did not converge with an unstructured variance-covariance matrix when including both a random intercept and a random slope. As fixed effects, we evaluated main effects (IIP subscales, condition, time), two-way interaction effects (condition×IIP subscales, time×IIP subscales, time×condition), and three-way interaction effects (time×condition×IIP subscales). A significant three-way interaction (time×condition× IIP subscale) indicates that interpersonal problems moderate the depression outcome between MBCT and CBASP. All eight IIP subscales at pretreatment (time-invariant covariates) were entered into one model to evaluate the specific effect of each IIP subscale independent of the effect of the other seven IIP subscales. The condition was added as a dichotomous factor (coded as 0, MBCT; 1, CBASP). Time represents the average change of depression severity between each assessment point (coded as 0 = before MBCT/CBASP; 1, end of MBCT/CBASP; 2, 6-month follow-up). All statistical tests were performed two-tailed and the significance value was set to  $p < 0.05$ .

## 3 | RESULTS

The results of the multilevel model with the primary outcome HAM-D as the dependent variable are presented in Table 2. Table 3 shows the results of the multilevel model with the secondary outcome BDI-II as dependent variable.

**TABLE 2** Estimates of the multilevel model with HAM-D as dependent variable

Parameter	Estimate	SE	df	t	p
Intercept (MBCT)	21.98	4.94	103.96	4.45	<.01
PA	-4.12	3.59	103.14	-1.15	.25
BC	0.59	2.28	101.00	0.26	.80
DE	-1.09	1.76	100.77	-0.62	.54
FG	2.53	2.48	99.83	1.02	.31
HI	-3.70	3.47	101.72	-1.07	.29
JK	2.81	2.78	103.19	1.01	.32
LM	1.72	1.61	101.92	1.07	.29
NO	-1.50	2.64	102.52	-0.57	.57
Condition (CBASP)	-0.46	8.35	104.34	-0.06	.96
Condition×PA	4.10	4.44	103.23	0.92	.36
Condition×BC	-2.83	2.82	100.88	-1.01	.32
Condition×DE	0.95	2.63	103.31	0.36	.72
Condition×FG	0.91	3.37	102.41	0.27	.79
Condition×HI	2.64	4.52	102.09	0.58	.56
Condition×JK	-0.95	3.77	102.49	-0.25	.80
Condition×LM	-4.12	2.55	101.42	-1.62	.11
Condition×NO	1.66	3.57	101.60	0.47	.64
Time (MBCT)	-2.69	3.63	109.21	-0.74	.46
Time×PA	0.30	2.39	107.26	0.13	.90
Time×BC	-1.92	1.42	98.21	-1.35	.18
Time×DE	-0.40	0.97	96.33	-0.42	.68
Time×FG	-0.27	1.37	95.92	-0.20	.84
Time×HI	3.15	2.20	98.47	1.43	.16
Time×JK	-1.75	1.91	99.66	-0.92	.36
Time×LM	-0.01	1.06	101.95	-0.01	.99
Time×NO	-0.51	1.56	102.34	-0.33	.74
Time×condition (CBASP)	9.96	6.46	110.47	1.54	.13
Time×condition×PA	-2.86	3.07	107.94	-0.93	.35
Time×condition×BC	5.12	1.71	98.54	3.00	<.01
Time×condition×DE	1.83	1.95	104.17	0.94	.35
Time×condition×FG	-0.92	2.37	105.90	-0.39	.70
Time×condition×HI	-9.14	2.84	100.32	-3.22	<.01
Time×condition×JK	3.10	2.47	101.17	1.26	.21
Time×condition×LM	0.84	1.57	100.49	0.53	.60
Time×condition×NO	-1.13	2.07	99.53	-0.54	.59

Abbreviations: BC, vindictive/self-centered; CBASP, cognitive behavioral analysis system of psychotherapy, DE, cold/distant; FG, socially inhibited/avoidant; HAM-D, hamilton depression rating scale; HI, nonassertive; JK, overly accommodating/exploitable; LM, self-sacrificing/overly nurturant; MBCT, mindfulness-based cognitive therapy, MBCT was coded as 0 and CBASP as 1 in this multilevel model; NO, intrusive/neediness; PA, domineering/controlling; SE, standard error.

**TABLE 3** Estimates of the multilevel model with BDI-II as dependent variable

Parameter	Estimate	SE	df	t	p
Intercept (MBCT)	16.36	5.93	105.80	2.76	<.01
PA	-6.10	4.31	104.69	-1.42	.16
BC	-0.22	2.74	102.57	-0.08	.94
DE	1.60	2.11	102.39	0.76	.45
FG	3.03	2.97	101.45	1.02	.31
HI	-2.80	4.16	103.86	-0.67	.50
JK	4.36	3.34	105.46	1.31	.19
LM	1.66	1.94	103.85	0.86	.39
NO	0.36	3.16	104.00	0.11	.91
Condition (CBASP)	12.18	10.02	105.90	1.22	.23
Condition×PA	8.99	5.32	104.74	1.69	.09
Condition×BC	-1.05	3.37	102.44	-0.31	.76
Condition×DE	-0.56	3.15	104.80	-0.18	.86
Condition×FG	-1.09	4.04	103.91	-0.27	.79
Condition×HI	5.60	5.42	103.95	1.03	.30
Condition×JK	-6.31	4.53	104.42	-1.39	.17
Condition×LM	-5.37	3.05	103.11	-1.76	.08
Condition×NO	0.42	4.28	103.11	0.10	.92
Time (MBCT)	-1.74	4.42	112.13	-0.39	.69
Time×PA	0.67	2.88	108.41	0.23	.82
Time×BC	-2.72	1.71	99.64	-1.59	.12
Time×DE	-0.95	1.16	97.30	-0.82	.41
Time×FG	0.72	1.64	97.01	0.44	.66
Time×HI	0.59	2.71	103.71	0.22	.83
Time×JK	0.54	2.37	106.21	0.23	.82
Time×LM	-1.32	1.29	104.91	-1.03	.31
Time×NO	0.24	1.87	102.91	0.13	.90
Time×condition (CBASP)	4.07	7.78	111.54	0.52	.60
Time×condition×PA	-0.20	3.69	108.75	-0.05	.96
Time×condition×BC	5.94	2.05	99.75	2.90	<.01
Time×condition×DE	-0.05	2.34	104.70	-0.02	.98
Time×condition×FG	2.80	2.84	106.41	0.99	.33
Time×condition×HI	-10.58	3.45	103.71	-3.06	<.01
Time×condition×JK	4.49	3.02	105.33	1.48	.14
Time×condition×LM	1.68	1.89	102.23	0.89	.38
Time×condition×NO	-4.29	2.48	100.20	-1.73	.09

Abbreviations: BC, vindictive/self-centered; BDI-II, beck depression inventory; CBASP, cognitive behavioral analysis system of psychotherapy; DE, cold/distant; FG, socially inhibited/avoidant; HAM-D, hamilton depression rating scale; HI, nonassertive; JK, overly accommodating/exploitable; LM, self-sacrificing/overly nurturant; MBCT, mindfulness-based cognitive therapy, MBCT was coded as 0 and CBASP as 1 in this multilevel model; NO, intrusive/needsy; PA, domineering/controlling; SE, standard error.



Two of the tested three-way interactions attained statistical significance for the HAM-D as well as for the BDI-II. The IIP subscales “vindictive/self-centered (BC)” and “nonassertive (HI)” moderated both depression outcomes between MBCT and CBASP.

### 3.1 | Moderating effects of the “vindictive/self-centered (BC)” subscale

Higher values on the “vindictive/self-centered (BC)” subscale at pretreatment did not influence the depression trajectories in MBCT. As MBCT was coded as 0 in the multilevel models, this is represented by the “time×BC” interaction in Tables 2 and 3 (HAM-D: estimate  $-1.92$  ( $SE = 1.42$ );  $t(98.21) = -1.35$ ;  $p = .18$ ; BDI-II: estimate  $-2.72$  ( $SE = 1.71$ );  $t(99.64) = -1.59$ ;  $p = .12$ ). Yet, elevated scores on the “vindictive/self-centered (BC)” subscale at pretreatment led to less reductions of depressive symptoms in CBASP compared to MBCT. As CBASP was coded as 1 in the multilevel models, this is represented by the “time×condition×BC” interaction in Tables 2 and 3 (HAM-D: estimate  $5.12$  ( $SE = 1.71$ );  $t(98.54) = 3.00$ ;  $p < .01$ ; BDI-II: estimate  $5.94$  ( $SE = 2.05$ );  $t(99.75) = 2.90$ ;  $p < .01$ ).

### 3.2 | Moderating effects of the “nonassertive (HI)” subscale

Elevated scores on the “nonassertive (HI)” subscale at pretreatment did not affect the course of depressive symptoms in MBCT. As MBCT was coded as 0 in the multilevel models, this is represented by the “time×HI” interaction in Tables 2 and 3 (HAM-D: estimate  $3.15$  ( $SE = 2.20$ );  $t(98.47) = 1.43$ ;  $p = .16$ ; BDI-II: estimate  $0.59$  ( $SE = 2.71$ );  $t(103.71) = 0.22$ ;  $p = .83$ ). But higher values on the “nonassertive (HI)” subscale at pretreatment were associated with more reductions of depressive symptoms in CBASP compared to MBCT. As CBASP was coded as 1 in the multilevel models, this is represented by the “time×condition×HI” interaction in Tables 2 and 3 (HAM-D: estimate  $-9.14$  ( $SE = 2.84$ );  $t(100.32) = -3.22$ ;  $p < .01$ ; BDI-II: estimate  $-10.58$  ( $SE = 3.45$ );  $t(103.71) = -3.06$ ;  $p < .01$ ).

## 4 | DISCUSSION

Interpersonal problems are an important characteristic of patients with chronic depression (Bird et al., 2018; Köhler et al., 2018) and the study at hand revealed that specific interpersonal problems of patients with chronic depression moderate depression outcomes between MBCT and CBASP. Although more vindictive/self-centered patients had greater benefit with MBCT than with CBASP, more nonassertive patients had greater benefit with CBASP than with MBCT. Vindictive/self-centered patients are characterized by egocentricity and hostility, whereas nonassertive patients by difficulties expressing one's needs to others.

Interestingly, interpersonal problems moderated depression outcomes between MBCT and CBASP, whereas childhood maltreatment did not in the same trial (Michalak et al., 2016). In other studies on chronic depression, childhood maltreatment has also been investigated as a potential moderator of treatment outcomes (e.g., Bausch et al., 2017; Klein et al., 2018; Nemeroff et al., 2003) with inconsistent results. Although childhood maltreatment has been shown to be associated with interpersonal problems that are specific to chronic depression (Klein et al., 2018), no study—as far as we know—investigated the moderating role of interpersonal problems between psychotherapies for chronic depression. It has, however, been shown that changes in interpersonal problems affect the outcome (Constantino et al., 2012) as well as the alliance-outcome association (Constantino et al., 2016) in treatments for chronic depression. In addition, a recent study reported that changes in the alliance and interpersonal problems serially mediate the effect of CBASP (compared to supportive therapy) on depression outcome in chronic depression (Klein et al., 2020). The present study showed a moderating effect of interpersonal problems between MBCT and CBASP in patients with chronic depression and this finding corresponds to psychotherapy studies on other mental

disorders, where interpersonal problems moderated outcomes between psychotherapies (bulimia nervosa: Gomez Pendeo, Constantino, Coyne, Bernecker & Smith-Hansen, 2018; generalized anxiety disorder: Gomez Pendeo, Constantino, Coyne, Westra & Antony, 2017; Newman, Jacobson, Erickson, & Fisher, 2017). Therefore, interpersonal problems might be an important patient characteristic in the context of treatment selection.

From a theoretical point of view, the results of the study at hand could be explained as follows. Chronically depressed patients that are more vindictive/self-centered could benefit more from MBCT than from group CBASP because MBCT offers a more intrapersonal and self-directed way of learning. The focus of MBCT is making new experiences with cognitive and bodily processes during mindfulness practices. Here, the nonjudgmental quality of mindfulness practice might help vindictive/self-centered patients to take a more decentered view on maladaptive cognitive and behavioral patterns. In contrast to group CBASP, the interpersonal relationship between a patient and the therapist and between a patient and the other group members is not a specific focus in MBCT. This might have made the MBCT group format more successful for patients with a vindictive/self-centered interpersonal style as they might be prone to engaging in conflicts in more interpersonally focused groups.

Patients with a more nonassertive interpersonal style might benefit more from group CBASP because of the interpersonal approach and because a structured social problem-solving procedure (situational analysis) is the main focus of this therapy. During situational analysis, patients learn to disengage from past experiences with abusive/neglecting significant others and engage more effectively with people in their present-day interactions.

The main limitation of the present study is that the sample size was small in relation to the estimated parameters. On the one hand, the problem of statistical overfitting limits confidence; on the other hand, it is an obligation to derive as much information as possible from data (Babyak, 2004). To conclude, our results need to be replicated in larger trials. Compared with post hoc interpretations of moderation analyses, a more convincing approach would be to prospectively select chronically depressed patients with higher vindictive/self-centered scores as well as those with higher nonassertive scores and to allocate both samples randomly either to MBCT or CBASP. Based on our results, one would expect that MBCT shows more favorable depression outcomes than CBASP in the vindictive/self-centered sample and that the nonassertive sample benefits more from CBASP than from MBCT. It also remains to be seen if the same results emerge if psychotherapy is conducted in an individual format as opposed to group format and if CBASP or MBCT are compared with other forms of psychotherapy. Results of a recent study comparing CBASP as an individual therapy with supportive psychotherapy in patients with chronic depression, however, suggests that individual CBASP as well is particularly effective for nonassertive patients, since comorbid social anxiety moderated outcomes in favor of CBASP (Assmann et al., 2018). Furthermore, more research is necessary to explore whether interpersonal problems moderate intervention effects on other outcome or process variables like the therapeutic alliance (Mander et al., 2019). Another shortcoming of the current study is that interpersonal problems were assessed only by one self-report. The "interactive test of interpersonal behavior" (ITIB; Klein et al., 2016) or the "impact message inventory" (IMI; Kiesler & Schmidt, 2006), for example, could provide valuable complementary information. The ITIB is a self-assessment instrument in which patients have to give answers to specific interpersonal dilemmas. The IMI is an observational measure, which assesses the amount of certain covert reactions (feelings, thoughts, action tendencies) a patient evokes in someone (e.g., therapist or significant other). The IIP and the IMI have been shown to differentially correlate with psychotherapy process and outcome in a recent study (Altenstein-Yamanaka, Zimmermann, Krieger, Dörig, & Grosse Holtforth, 2017). Moreover, we only analyzed interpersonal problems as moderators. A combination of different moderators (IIP and for example age of onset or mindfulness skills) might lead to other results. With regard to the combination of moderators, it should also be kept in mind that patients can score high on multiple interpersonal problems. We investigated whether specific interpersonal problems moderate depression outcomes independently of other interpersonal problems. Future studies should investigate which treatment works best for patients with combinations of interpersonal problems. For patients being vindictive/self-centered and nonassertive at the same time, we cannot say whether MBCT or CBASP should be preferred.

Despite these shortcomings, the study has a high internal validity due to the randomization of the participants to the treatment conditions. Moreover, two measures of depression outcomes were applied, one self-report and one observer-based rating. The fact that the same interpersonal problems (vindictive/self-centered; nonassertive) moderated self-reported as well as observer-based depression outcomes, increases the trustworthiness of our results.

## 5 | CONCLUSION

If the results of the current study can be replicated, implications for clinical decision making would be to prefer MBCT over CBASP for chronically depressed patients being more vindictive/self-centered and to prefer CBASP over MBCT for chronically depressed patients being more nonassertive.

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## CONFLICT OF INTERESTS

The authors declare that they have no conflict of interests.

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