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A randomized pilot study of mindfulness-based cognitive therapy and group cognitive-behavioral therapy for young adults with social phobia

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Twenty-six young participants, 18–25 years, with social phobia (SP) were randomly assigned to eight 2-hour sessions of group mindfulness-based cognitive therapy (MBCT) and twelve 2-hour sessions of group cognitive-behavioral therapy (CBT) in a crossover design with participants receiving treatments in reversed order. Outcome was assessed after treatments, and at 6- and 12-month follow-ups. MBCT achieved moderate-high pre-post effect sizes ($d = 0.78$ on a composite SP measure), not significantly different from, although numerical lower than those of CBT ($d = 1.15$). Participants in both groups further improved in the periods following their first and second treatment until 6-months follow-up (pre-follow-up ds = 1.42 and 1.62). Thus, MBCT might be a useful, low cost treatment for SP, although, probably, less efficacious than CBT.

Key words: Social phobia, social anxiety disorder, cognitive behavior therapy, group therapy, mindfulness, mindfulness-based cognitive therapy.

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INTRODUCTION

Background

Social phobia (SP), or social anxiety disorder is, according to the Diagnostic and Statistical Manual of Mental Disorders – 4th edition (DSM-IV), characterized by a marked and persistent fear of social or performance situations in which embarrassment may occur leading to marked distress for the person or significantly interfering with his or her work, education or social activities (American Psychiatric Association, 2000). The disorder might be specified as generalized SP if the anxiety includes most social situations.

According to a review by Furmark (2002) most epidemiological studies in Western countries based on DSM-III-R or DSM-IV have found lifetime prevalence rates of 7–13%. However, the figures vary considerably in different studies; probably mainly due to different cut-off lines for clinical caseness, since the required degree of distress or functional impairment is not specified in the DSM. A new, very large epidemiological study in six European countries found a lifetime prevalence estimate for SP of only 2.4% (Alonso, Angermeyer, Bernert *et al*., 2004). The onset of SP most often occurs in adolescence, and without intervention the disorder is likely to run a chronic course, characterized by a high degree of comorbidity and impairments in social and occupational functioning (Keller, 2003; Kessler, 2003). Only 5–10% of persons with SP receive treatment, and if treatment is sought, patients await on average more than 15 years after the onset of the disorder (Kessler, 2003; Wittchen & Fehm, 2003). The period from age 15 to 25 has been considered critical for the development of social impairments and comorbid disorders among persons with SP, thus implying the relevance of early interventions in the youth and young adult periods of life (Kessler, 2003). There has, however, been little specific focus on the group of young adult persons with SP within the treatment literature (but see Tilfors, Carlbring, Furmark *et al*., 2008).

Cognitive behavioral therapy (CBT) has been shown to be efficacious for SP, and CBT is considered the psychological intervention of first choice for the disorder (Ponniah & Hollon, 2008; Rodebaugh, Holaway & Heimberg, 2004). Within-group, pre-post effect sizes (ES) in the form of Cohen's *d* vary between 0.84 and 1.16 in different meta-analyses (Federoff & Taylor, 2001; Norton & Price, 2007); and between-group, controlled ESs vary between 0.62 and 0.80 (Gould, Buckminster, Pollack, Otto & Yap, 1997; Hofmann & Smits, 2008). Clinical trials suggest, however, that up to 40–50% of patients with SP referred to CBT show little or no improvement (Hofmann & Bögels, 2006; Rodebaugh *et al*., 2004). It is therefore generally agreed upon that there is a need for further developments of treatments for SP.

Cognitive models of SP assume that attentional processes are important in the maintenance of SP (Clark and Wells, 1995; Hope, Gansler & Heimberg, 1989; Rapee & Heimberg, 1997). In a recent review, Bögels and Mansell (2004) outlined three types of such attentional processes supported by empirical evidence: hypervigilance, attentional avoidance, and heightened self-focus. The authors concluded that there is reasonable evidence to promote the use of attentional strategies in the treatment of SP.

Preliminary evidence from a few studies indicates that attentional training aimed at continuously redirecting the focus of attention from the self to the task at hand, or simply focusing attention outward, may be effective components in the treatment of SP (Bögels, 2006; Mulkens, Bögels, de Jong & Louwers, 2001; Wells & Papageorgiou, 1998).

Mindfulness is generally defined as non-judgmental awareness of present moment experiences (Baer & Krietemeyer, 2006), and mindfulness training is a type of attentional training intervention with increasing influence within CBT (Hayes, Folette & Linehan, 2004). Mindfulness-based stress reduction (MBSR) (Kabat-Zinn, 1982, 1990), and mindfulness-based cognitive therapy (MBCT) (Segal, Williams & Teasdale, 2002) are clinical intervention programs based on systematic training in mindfulness (there is a high degree of overlap between the two interventions). Clinical trials of MBSR and MBCT have reported significant reductions in symptoms of stress, anxiety and depression across a broad range of clinical and non-clinical populations (Baer, 2003; Brown, Ryan & Creswell, 2007). It is theoretically plausible that MBCT might have an effect on SP symptoms by training clients to gain attentional control and increased tolerance of negative affects, and thereby reducing worry, rumination and negative aspects of self-focused attention (Brown *et al.*, 2007; Segal *et al.*, 2002; Teasdale, 1999; Teasdale, Segal & Williams, 1995).

So far, only two studies have investigated mindfulness training in the treatment of SP, and none included MBCT. A pilot study conducted by Bögels, Sijbers & Voncken (2006) evaluated the effect of a 9-session individual treatment aimed at task concentration and mindfulness training in nine participants with severe SP. The treatment achieved a mean pre-post ES of 0.85 on self-reported symptoms of SP with results maintained at 2-month follow-up. Koszycki, Benger, Shlik and Bradwejn (2007) conducted a comparative randomized controlled trial of group CBT (GCBT) and MBSR including 53 participants with generalized SP. GCBT was significantly more effective than MBSR in reducing symptoms of SP, although treatments were equally effective in improving general functioning, mood and subjective well-being. The authors concluded that CBT remains the treatment of choice for SP, while MBSR may be a potentially useful alternative intervention for some individuals with SP that might be easier to deliver in some treatment settings. It is possible that a combination of mindfulness and CBT might lead to a better result than monotherapy with one of the methods, since the two methods focus on different aspects of SP maintenance mechanisms.

Aims of the present study

The aim of the study was to pilot test MBCT alone and in combination with GCBT for young adults with SP. It was hypothesized: (1) that MBCT alone would achieve a moderate pre-post ES ($d \geq 0.50$); somewhat smaller than the large ES ($d > 0.80$) expected for GCBT; and (2) that adding MBCT to GCBT would achieve a moderately higher ES than GCBT alone (immediately after GCBT treatment). The hypotheses are expressed in terms of ESs, since the study has insufficient power (0.23) to detect significant between-group differences for moderate ESs.

METHOD

Participants

The study was carried out at the Anxiety Specialty Clinic at the Educational and Research Clinic of the Department of Psychology, University of Aarhus, Denmark, and included 26 participants, aged 18–25 years with a primary diagnosis of SP according to DSM-IV criteria (American Psychiatric Association, 2000). Exclusion criteria comprised: psychosis, severe depression, alcohol or drug dependence, bipolar disorder, cluster A and B personality disorders, and current (but not previous) psycho-pharmacological or psychotherapeutic treatment.

Participants were recruited by an announcement at the website of the Anxiety Clinic, a newspaper advertisement, a pamphlet with information on the study sent to general practitioners in the area, and by contacts to the Student Counselling Centre, and the Clinic for Anxiety and OCD at the Psychiatric Hospital. Potential participants were asked to send in a letter with a short description of their problems, and those judged to suffer from SP were invited to an assessment interview. Initially 43 patients were assessed, and 17 patients were excluded (see Fig. 1 for the flow of participants and reasons for exclusion).

Procedure

The participants were diagnosed by use of the Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV; Brown, DiNardo & Barlow, 1994), a reliable, structured interview for anxiety disorders and related conditions, and with the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II; First, Gibbon, Spitzer & Williams, 1997). Diagnostic interviews were carried out by trained research assistants. Diagnoses were assigned according to DSM-IV criteria. Information on demographic variables was collected during the first and second assessment interviews. Informed consent was obtained from all participants. The study was approved by the local county Ethical Committee, and by the Danish Data Protection Agency.

The participants were randomly allocated to one of the two treatment conditions in a crossover design, with both groups receiving both forms of treatment in reversed order, i.e., half of the participants first received MBCT (group 1) and the other half GCBT (group 2). Randomization was carried out in blocks of 14 or 12 (for group 1 and 2 respectively) by a secretary at the institute independent of the Anxiety Clinic. Outcome measures were collected at five data points: (1) prior to therapy; (2) after participants' first treatment (post 1), (3) after their second treatment (post 2); and at follow-ups (4) six months; and (5) 12 months after end of treatment. Since there was a 1–2-months' break between the two treatments, the study altogether covered a period of about 19 months (Fig. 1 illustrates the design of the study).

Treatments

GCBT was carried out according to a treatment program developed at the Clinic for Anxiety and OCD, Aarhus University Hospital. This program, described in a manual by Hougaard (2006) for both therapists and patients, combines elements from Heimberg's GCBT (Heimberg & Becker, 2002) and Clark & Wells' (1995) individual cognitive therapy for SP. The main components of treatment included: (a) psycho-education on SP and CBT, (b) analysis of patients' individualized case-formulations based on the Clark & Wells (1995) model, (c) cognitive restructuring (i.e., analysis and change of negative automatic thoughts), and (d) exposure to feared social situations via behavioral experiments. The participants borrowed a copy of the manual during the CBT treatment period. Homework assignments were given after each session of therapy. Treatment consisted of two weekly 2-hour sessions of individual therapy prior to 12 weekly 2-hour sessions of group therapy. Each group included up to six clients and two therapists. One therapist in each group had extensive training and experience (>10 years) in CBT for anxiety disorders.

MBCT was carried out according to a manual by Segal *et al.* (2002) developed for the treatment of chronic depression, with a few modifications for SP, mainly concerning the content of psycho-education. Main treatment components were mindfulness meditation techniques such as the body scan, gentle mindful yoga exercises, and sitting meditation. Participants were recommended to spend 30–40 minutes daily on homework practices of mindfulness. The intervention consisted of 8 weekly 2-hour sessions in groups with up to 14 participants. The therapist conducting MBCT was a highly experienced mindfulness instructor (trained by Mark Williams).
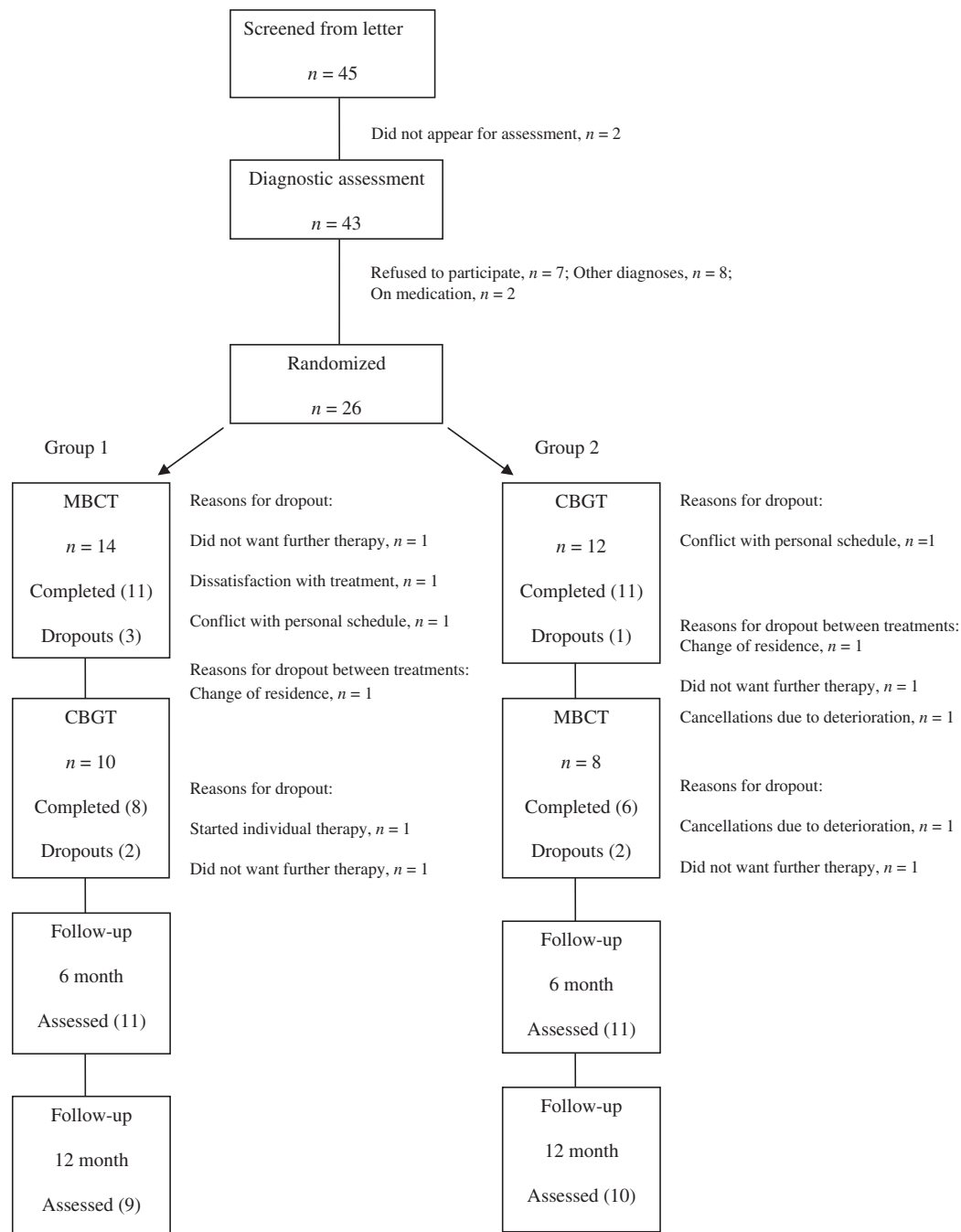
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n = 45

Did not appear for assessment, *n* = 2

Diagnostic assessment

n = 43

Refused to participate, *n* = 7; Other diagnoses, *n* = 8;
On medication, *n* = 2

Randomized

n = 26

Group 1

MBCT

n = 14

Completed (11)

Dropouts (3)

Reasons for dropout:

Did not want further therapy, *n* = 1

Dissatisfaction with treatment, *n* = 1

Conflict with personal schedule, *n* = 1

Reasons for dropout between treatments:
Change of residence, *n* = 1

CBGT

n = 10

Completed (8)

Dropouts (2)

Reasons for dropout:

Started individual therapy, *n* = 1

Did not want further therapy, *n* = 1

Follow-up

6 month

Assessed (11)

Follow-up

12 month

Assessed (9)

Group 2

CBGT

n = 12

Completed (11)

Dropouts (1)

Reasons for dropout:

Conflict with personal schedule, *n* =1

Reasons for dropout between treatments:
Change of residence, *n* = 1

Did not want further therapy, *n* = 1

Cancellations due to deterioration, *n* = 1

MBCT

n = 8

Completed (6)

Dropouts (2)

Reasons for dropout:

Cancellations due to deterioration, *n* = 1

Did not want further therapy, *n* = 1

Follow-up

6 month

Assessed (11)

Follow-up

12 month

Assessed (10)

Fig. 1. Flow diagram.

Measures

Treatment outcome was evaluated by the following measures. The *Liebowitz Social Anxiety Scale* (*LSAS*; Liebowitz, 1987) is a widely used clinician administered 24-item scale assessing fear and avoidance of social interaction and performance situations. Fear and avoidance are separately assessed for each item on four-point scales from 0–3 (in the analyses we combined the two dimensions of the scale).

The *Social Phobia Scale* (*SPS*) and the *Social Interaction Scale (SIAS)* (Mattick & Clarke, 1998) are self-administered scales with 20 and 19 items, respectively, assessing fear of being scrutinized by others during social activities, and fear of social interaction in general. Items in SPS and SIAS are rated on five-point scales from 0–4.

The *Symptom Checklist-90-Revised (SCL-90-R*; Derogatis, 1977) is a 90-item self-report inventory designed to measure psychological symptoms common in psychiatric patients. Each item is rated on a five-point

scale from 0–4. The scale's global severity index (GSI), the mean score on all filled items, measures the overall level of psychological distress.

The *Beck Anxiety Inventory (BAI*; Beck & Steer, 1993) and the *Beck Depression Inventory (BDI-II*; Beck, Steer & Brown, 1996) are 21-item questionnaires assessing symptoms of anxiety and depression, respectively, with each item scored from 0–3.

The Inventory of Interpersonal Problems – Circumplex Version (IIP-C; Alden, Wiggins & Pincus, 1990) is a 64-item questionnaire assessing interpersonal problems with each item scored from 0–4.

The Fear of Negative Evaluation-Brief Version (FNE-BV; Leary, 1983) is a shortened version of the original 30-item version of FNE (Watson & Friend, 1969) that measures expectations and distress related to negative evaluation by others. The *FNE-BV* consists of 12 items each scored from 0–5.

Shehan Disability Scale (*SDS*; Shehan, 1983) is a simple scale of three items assessing current impairment in work, social life, and family life. Each

item is rated on a 0–10 point scale. SDS also assesses the number of days lost at work and the number of days of markedly reduced work productivity.

All of the above scales are widely used measures with acceptable psychometric properties (cf. references above), except for SDS, which has rather low internal consistency due to its very few items (e.g., Hambrick, Turk, Heimberg, Schneier & Liebowitz, 2004). LSAS, SPS and SIAS are generally recommended as measures of outcome in clinical studies of SP (Strupp, Horowitz & Lambert, 1997). SPS and SIAS measure different aspects of SP symptomatology that might be specifically relevant for specific and generalized SP, respectively.

A patient evaluation questionnaire was developed for measuring (1) satisfaction with treatment, and (2) experienced value of different treatment components. Each item was rated on scales from 1–5. (Only the satisfaction part of the questionnaire is dealt with in the present paper.)

All measures were administered at the first three data points. Follow-up assessment 6 months after treatment did not include IPP and FNE, and the follow-up 12 months after treatment only consisted of SIAS and SPS.

In line with general recommendations of focusing on disorder-specific symptoms in outcome research (Strupp *et al.*, 1997), measures of SP symptoms (LSAS, SPS and SIAS) are considered the primary measures of outcome in the study.

Statistical approach

Differences in baseline demographics and clinical characteristics as well as pre-treatment scores on outcome measures were compared between treatment groups using, as appropriate, Pearsons χ^2, Fisher's exact test or Student's *t*-test.

Within-group changes were analyzed by paired *t*-tests, and magnitude of change was estimated according to Cohen's formula: $d = (M_{before} - M_{after}) / SD_{(within)pooled}$ (Cohen, 1988; Rosenthal, 1984). This analysis was carried out for all outcome measures, as well as for a composite measure for the three specific SP measures (LSAS, SPS and SIAS). Following a procedure recommended by Rosenthal & Rosnov (2008) these measures were added and standardized $(M = 0, SD = 1)$ by converting scores *to Z* scores across all data points.

We also examined the number of participants with reliable and clinical change on the SP symptom scales according to the Jacobson & Truax (1991) criteria. In line with recommendations of Bauer, Lambert and Nielsen (2004) we used psychometric values from standardization studies with the scales in these calculations (cf. references to the scales above) (besides, there are no Danish norms for the scales).

A one-way between-group analysis of covariance (ANCOVA) with pre-treatment scores as covariates was used to compare treatments in the first treatment period. This method controls for baseline differences between groups, and it is useful when dealing with small sample sizes, as it reduces error variance and, thereby, increases the chance of detecting significant between-group differences. After crossover, groups were compared by means of unpaired *t*-tests.

All outcome analyses were conducted on both the intention-to-treat (ITT) sample and on treatment completers. Except for within-group ESs, only ITT data are presented, since results from the two analyses were almost identical for the first treatment period, and the high dropout rate in the second period made completer results difficult to interpret. In the ITT analyses, which included all randomized participants, missing values were substituted by means of last observation carried forward. All data were analyzed using SPSS Version 17, and all tests performed were two-tailed with α set at 0.05.

RESULTS

Baseline characteristics

Demographics and clinical characteristics for both groups are seen in Table 1, and baseline scores on outcome measures are seen in Table 2. There were no significant differences between the two groups on any of the baseline variables.

Table 1. *Demographic and clinical characteristics*

	Group 1 $n = 14$	Group 2 $n = 12$	*p*-values
Demographics			
Age, mean (*SD*)	21.6 (2.84)	22.1 (2.54)	0.68
Female gender, *n* (%)	11 (79)	7 (58)	0.40
Steady partnership, *n* (%)	5 (36)	4 (33)	1.00
In occupational or student role, *n* (%)	12 (86)	10 (83)	1.00
Clinical characteristics			
Age of onset, mean (*SD*)	13.1 (2.97)	15.3 (2.77)	0.06
Severity of SP (0–8), mean *(SD)*	5.6 (1.02)	5.4 (1.08)	0.71
Generalized SP, *n* (%)	12 (86)	12 (100)	0.48
Co-morbid axis-I disorders, *n* (%)	6 (43)	5 (42)	1.00
Co-morbid personality disorder, *n* (%)	1 (7)	3 (25)	0.30
Previous treatment			
Psychiatric hospitalization, *n* (%)	0	2 (17)	0.20
Antidepressants, *n* (%)	2 (14)	5 (42)	0.19
Psychotherapy, *n* (%)	9 (64)	7 (58)	1.00
Treatment in the follow-up period			
Antidepressants, *n* (%)	2 (14)	1 (8)	1.00
Psychotherapy, *n* (%)	3 (21)	3 (25)	1.00

Adherence to treatment

There was a high degree of adherence to treatments for both groups in the first treatment period, with 11 of 14 participants (78.6%) in group 1 (MBCT) and 11 of 12 (91.7%) in group 2 (GCBT) completing at least 75% of the sessions (difference not significant). Meanwhile, only 8 of 14 participants (57%) in group 1, and 6 of 12 (50%) in group 2 completed at least 75% of the second part of the treatment. Reasons for dropout are noted in Fig. 1.

Between group comparisons

A one-way analysis of covariance (ANCOVA) showed no significant differences between MBCT and GCBT after the first treatment period (post-1) on any of the included outcome variables (ITT data). However, as can be seen in Table 2, most outcome variables numerically favored the CBT group with a small between-group ES of 0.24 ($p = 0.54$) on the composite measure of SP.

There were also no differences between groups on any measure at the later data points (post-2, 6- and 12-months' follow-up) (unpaired *t*-tests).

Within-group changes

As can be seen in Table 2, both groups achieved moderate to large within-group ESs on most measures in the first treatment period (pre-post 1) with an ES on the SP composite measure for group 1 (MBCT) of 0.77 ($p = 0.03$), and for group 2 (GCBT) of 1.14 ($p < 0.01$) (ITT data). Both groups continued to improve until the 6-month follow-up. Pre-6-month follow-up ESs on the composite SP measure for the two groups were large, respectively 1.42 ($p < 0.01$) and 1.62 ($p < 0.01$). For the 17 participants that did not receive further treatment in the follow-up period (cf. Table 1)

the respective figures were 1.69 (p < 0.01) for group 1 (*n* = 9) and 1.55 (*p* < 0.01) for group 2 (*n* = 8).

Fig. 2 shows the development for the SP composite score up until 6-month follow-up (about one year after the start of the treatment). As can be seen, improvement in the two groups was rather similar. Only group 1 improved significantly during the second treatment period, where this group received GCBT, with a Post 1–Post 2 ES on the composite SP measure of 0.33 (*p* = 0.04). The corresponding ES for group 2 receiving MBCT in the period was 0.20 (*p* = 0.4). The changes from post 2–6-month follow-up were, however, as large as those from Post 1–Post 2 (ESs on the composite SP measure 0.40 [*p* = 0.06] and 0.31 [*p* = 0.11] for group 1 and 2).

Within-group ESs for completers of treatment from pre-post 1 on the composite SP measure were 0.78 (*p* = 0.07) for group 1 (MBCT, *n* = 11), and 1.26 (*p* < 0.01) for group 2 (GBCT, *n* = 11). The corresponding pre-post 2 and pre-6-month follow-up ESs were 0.81 (*p* = 0.02) and 1.34 (*p* = 0.02) for group 1 (*n* = 8), and 2.63 (*p* < 0.01) and 2.86 (*p* < 0.01) for group 2 (*n* = 6),
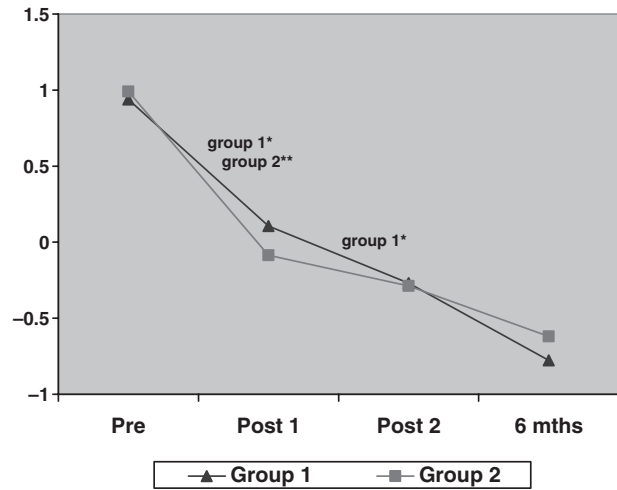

Fig. 2. Changes in mean social phobia composite over time for ITT. Within-group Significant Changes Between Data Points: * *P* ≤ 0.05, ** *P* < 0.01.

Table 2. *Group means, standard deviations, and within-group effect sizes on dependent variables*

Measure	*n*	Pre M (SD) *n* = 26[a]	Post 1 M (SD) *n* = 23[a]	Post 2 M (SD) *n* = 19[a]	6 month follow-up *n* = 22[a]	12 month follow-up *n* = 19[a]	Pre-post 1 ES	Pre-post 2 ES	Pre-6 months ES	Pre-12 months ES
SPC										
Gr. 1	14	0.94 (1.11)	0.11 (1.05)	−0.27 (1.21)	−0.78 (1.31)	-	0.77*	1.04*	1.42*	-
Gr. 2	12	0.99 (1.04)	−0.08 (0.81)	−0.29 (1.18)	−0.62 (0.94)	-	1.15*	1.15*	1.62*	-
SPS										
Gr. 1	14	35.21 (13.22)	25.09 (12.25)	21.36 (12.74)	15.77 (13.79)	15.48 (12.56)	0.79*	1.07*	1.44*	1.53*
Gr. 2	12	35.06 (12.16)	23.90 (11.71)	21.21 (14.45)	19.48 (10.91)	21.33 (14.42)	0.93*	1.04*	1.35*	1.03*
SIAS										
Gr. 1	14	44.52 (13.87)	39.21 (13.90)	34.11 (14.48)	25.22 (18.17)	26.54 (15.51)	0.38	0.73*	1.19*	1.22*
Gr. 2	12	48.67 (15.79)	39.09 (13.27)	36.95 (15.00)	32.18 (14.45)	35.50 (15.34)	0.66*	0.76*	1.09*	0.85*
LSAS										
Gr. 1	14	59.29 (19.78)	41.64 (19.44)	36.21 (22.75)	32.72 (21.31)	-	0.90*	1.08*	1.29*	-
Gr. 2	11	71.37 (19.56)	49.56 (14.49)	46.76 (20.88)	39.79 (16.83)	-	1.27*	1.22*	1.73*	-
SCL-90-R										
Gr. 1	14	0.91 (0.51)	0.67 (0.40)	0.60 (0.41)	0.48 (0.51)	-	0.52*	0.67*	0.84*	-
Gr. 2	12	1.27 (0.49)	0.91 (0.36)	0.84 (0.45)	0.71 (0.48)	-	0.84*	0.91*	1.15*	-
BDI-II										
Gr. 1	14	13.06 (6.69)	9.00 (5.94)	7.57 (7.65)	6.57 (8.10)	-	0.64	0.76*	0.87*	-
Gr. 2	12	19.54 (8.99)	12.30 (7.90)	10.38 (9.39)	10.18 (8.90)	-	0.86*	1.00*	1.05*	-
BAI										
Gr. 1	14	12.31 (7.34)	11.24 (6.84)	10.19 (6.37)	7.29 (7.53)	-	0.15	0.31	0.68*	-
Gr. 2	12	17.93 (5.61)	13.58 (5.25)	10.92 (7.25)	10.92 (6.05)	-	0.80*	1.08*	1.20*	-
IPP										
Gr. 1	14	1.19 (0.52)	0.97 (0.52)	0.84 (0.55)	-	-	0.42	0.65*	-	-
Gr. 2	12	1.18 (0.38)	1.04 (0.45)	0.86 (0.41)	-	-	0.34	0.81*	-	-
FNE										
Gr. 1	14	46.05 (7.99)	41.93 (8.51)	38.75 (7.98)	-	-	0.50	0.91*	-	-
Gr. 2	12	49.32 (7.92)	47.09 (7.08)	43.24 (8.35)	-	-	0.30	0.75*	-	-
SDS										
Gr. 1	14	13.57 (6.00)	9.50 (7.38)	7.14 (4.96)	6.64 (6.86)	-	0.61*	1.17*	1.08*	-
Gr. 2	12	15.75 (6.06)	12.92 (6.99)	10.75 (7.10)	10.92 (6.42)	-	0.43	0.76*	0.77*	-

Notes: Data presented are ITT values. SPC: Social Phobia Composite, SPS: Social Phobia Scale, SIAS: Social Interaction Scale, LSAS: Liebowitz Social Anxiety Scale, SCL-90-R: Symptom Checklist-90-Revised, BDI-II: Beck Depression Inventory II, BAI: Beck Anxiety Inventory, IPP: Inventory of Interpersonal Problems, FNE: Fear of Negative Evaluation, SDS: Shehan Disability Scale. *N*: Number of participants, *M*: Mean, *SD*: Standard Deviation, ES: Effect Size.
[a] Number of observations at the data point.
* *p* < 0.05.

respectively. The larger ESs for group 2 at these later data points are related to differences in pre-treatment values for completers, i.e., 0.74 for group 1, compared to 2.10 for group 2 ($p = 0.07$).

Number of participants responding

There were no significant differences between groups on the number of participants with clinical and significant change on the SP symptom scales (LSAS, SPS and SIAS) at any data point based on different ways of calculation. Probably, the most reasonable criteria for a clinical significant response based on these measures are clinical and significant change on the observer-rated LSAS, and on one of the two self-report scales; i.e., from both an observer and a patient perspective (since SPS and SIAS measures different aspects of SP symptomatology relevant for different patients). Number of participants responding (ITT data) based on this criterion was: post 1: 1 (4%; 1 in group 1); post 2: 8 (31%; 4 in each group); and at 6-month follow-up: 15 (58%; 8 in group 1 and 7 in group 2). Number of participants with clinical and statistical change on at least one of the three scales was: post 1: 13 (50%; 6 in group 1 and 7 in group 2); post 2: 13 (50%; 7 in group 1 and 6 in group 2); and at 6-month follow-up: 19 (73%; 10 in group 1 and 9 in group 2). Number of participants with clinical and statistical significant changes on all three scales was: post 1: 1 (4%; 1 in group 1); post 2: 3 (12%; 1 in group 1 and 2 in group 2); and at 6-month follow-up: 9 (35%; 6 in group 1 and 3 in group 2).

Patient satisfaction

Participants were generally highly satisfied with treatment with no statistical differences between groups. Thus, after the first treatment period the mean satisfaction score on item 7 of the satisfaction scale, "How satisfied in general have you been with the treatment you received?" (scores from 1–5) was 3.67 for group 1 (MBCT) and 3.73 for group 2 (GCBT). After the end of the treatment period, when participants had received both treatments, it was 3.93. At that point the mean on item 3, "If a friend had problems like yours, would you recommend the form of treatment you received?" was 4.3.

DISCUSSION

The primary aim of the study was to pilot test MBCT alone and in combination with GCBT as a treatment for young adult patients with SP. MBCT produced significant pre-post improvements with moderate to high ESs (0.77 on the composite SP measure), not significantly different from, although numerically smaller than those achieved by group CBT (1.15 on the composite measure). Participants were generally highly satisfied with both treatments. The larger ESs achieved by completers in group 2 at post 2 and at 6-month follow-up are probably due to higher pre-treatment scores, which might be explained by a differential drop-out, with severe cases more likely to drop out after initial MBCT than after GBCT. Reasons for this differential dropout are, however, not obvious, and completer results are based on a small number of cases (8 and 6 for group 1 and 2, respectively).

The results of the study are similar to those of Koszycki *et al.* (2007) as to the ranking of results achieved by mindfulness and

GCBT, although they found a significant difference between GCBT and MBSR, possibly due to their larger sample ($n = 53$). Their pre-post ESs for both treatments were, however, larger than those of the present study, e.g., 1.49 for MBSR and 1.83 for GCBT on the LSAS (compared to 0.90 and 1.27 in the present study). The ESs achieved by GCBT in the present study are, however, in line with those generally reported in meta-analyses (Fedoroff and Taylor 2001; Norton & Price, 2007); as well as with ESs on SPS and SIAS in other recent studies (McEvoy, 2007), except for the studies by Clark and colleagues (Clark, Ehlers, Hackmann *et al.*, 2006; Mörtberg, Clark, Sundin & Åberg-Wistedt, 2007; Stangier, Heidenreich, Peitz, Lauterbach & Clark., 2003) that achieved very high ESs for individual CBT.

Even though mindfulness might not be as efficacious as traditional CBT, it could have some advantages in terms of low costs (one therapist can lead a rather large group), easiness to implement in many treatment settings, and acceptability for some SP patients preferring general stress-related courses to treatment for a psychiatric disorder.

The hypothesis that combined treatment with MBCT and GCBT would achieve moderately larger ESs than GCBT alone was not supported. Combining the two treatments only resulted in a significant, small increase in the within group composite ES of 0.33 when GCBT was added after MBCT, while the increase in ES of MBCT added to GCBT of 0.20 was insignificant. Besides, these changes were in line with those that took place in the no-treatment 6-month follow-up period. Generally, results from crossover studies are difficult to interpret, since changes after the crossover might be due to the new treatment introduced, or to late coming effects of the prior treatment – and, in the absence of a no-treatment control group, also to spontaneous recovery. The high degree of dropout in the second treatment period is, however, an argument against offering MBCT as a standard treatment after (or before) CBT. Some of the participants also complained of difficulties with the rather abrupt shift in treatment, since the two interventions require different home work, and some of their methods might not harmonize well (e.g., cognitive restructuring vs. mindful acceptance). A better strategy for combining the two methods probably would consist in assimilative integration of methods from MBCT into CBT, or vice versa. Thus, for instance, MBCT methods of training clients to gain attentional control and increased tolerance of negative affects might be useful supplements to CBT; while MBCT for SP might profit from CBT's disorder focused psychoeducation and scheduled exposure exercises.

An interesting result from the study, where we followed SP patients over a period of 19 months, is the gradual improvement that took place during the whole first year (see Fig. 2). This result is in line with meta-analytic findings of improvements for patients with SP in the follow-up period after treatment (Fedoroff and Taylor 2001; Norton & Price, 2007), although mean changes found have been small (mean $d < 0.20$). The rather impressive ESs at the 6-month follow-up in the study (composite ds of 1.42 and 1.62) is an argument for offering patients with SP treatment early in life, thereby counteracting their longstanding mental disorders and impediments of life documented in other studies (Keller, 2003; Kessler, 2003). However, in line with other studies we also found many non-responders, even at 6-month follow up (42%). Thus, the combined treatment of GCBT and MBCT did not

succeed in reducing the high number of patients with unsatisfactory outcomes found in prior studies of short-term CBT.

In the absence of a no treatment control condition it is, of course, not possible to rule out the possibility that improvement was due to natural history. Long-term, naturalistic studies have, however, found little spontaneous improvement among patients with SP (Bruce, Yonkers, Otto *et al.*, 2005), and SP patients on waitlists generally do not improve. One meta-analysis (Taylor, 1996) actually found a small, insignificant, *negative* pre-post ES of 0.15 for SP waitlist control groups. Further treatment in the follow-up period for nine participants might also have influenced follow-up data, even though there were no differences between participants with and without such treatment.

The study has several limitations. Thus, the study is a small pilot study with insufficient power to test the primary hypotheses. It has no wait-list or placebo control condition. The cross-over design limits any conclusion to be drawn from the follow-up data. The clinicians' rating on the LSAS was not blind as to treatment conditions, but the results on LSAS were in line with those based on patient self-report scales.

The main conclusion from the study is that it preliminarily supports MBCT as a useful, low cost treatment for patients with SP, although probably less efficacious than CBT.

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