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ORIGINAL ARTICLE

Pre-treatment CBT-Mindedness Predicts CBT Outcome

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Abstract
While CBT is considered efficacious for a range of mental health conditions, identifying pre-treatment predictors of differential response to CBT is an important direction for research. This study investigated whether pre-treatment attitudes aligned with cognitive behaviour therapy (CBT) (termed CBT-mindedness) predicts CBT outcome within a clinical sample of adults diagnosed with social phobia ($N=50$). Pre-treatment CBT-mindedness, measured by the CBT Suitability Scale, was found to predict treatment outcome immediately and 3 months following treatment. Higher CBT-mindedness was associated with lower clinician-rated diagnostic severity and client self-reported social anxiety symptoms following CBT. CBT-mindedness predicted self-reported, but not clinician-reported severity, even when controlling for existing client-factors that predict outcome (expectancy for symptom change and treatment credibility). However, CBT-mindedness was not associated with therapy session attendance. Results suggest that pre-treatment CBT-mindedness is a promising predictor of CBT outcome. Clinical implications for this predictor of CBT response are discussed.

Keywords Cognitive behaviour therapy · Treatment outcome · Predictor of outcome · Client characteristics · Social anxiety disorder

Introduction

Research indicates that cognitive behaviour therapy (CBT) is an efficacious treatment for a range of psychological disorders, particularly anxiety disorders (Butler et al. 2006; Norton and Price 2007). However, while efficacious, empirical data indicate that CBT does not work equally well for all clients. Retention rates, adherence, and response to treatment are not optimal. Of the anxiety disorders, there is some evidence to suggest poorer CBT outcomes for social anxiety disorder (SAD; Norton and Price 2007). Dropout rates for CBT vary based on definition (Bados et al. 2007). For social anxiety dropout is typically between 10 and 20% (Rodebaugh et al. 2004). Additionally, between 40 and 50% of patients who receive CBT for social anxiety will not report clinically significant improvement (Lincoln et al. 2005). As a result, research has attempted to identify individual differences that predict differential response to treatment.

The strongest predictors of treatment across a range of disorders including SAD appear to be diagnostic, for example symptom severity (Eskildsen et al. 2010; Kampman et al. 2008; Keeley et al. 2008; Mululo et al. 2012; Ong et al. 2008). For social anxiety, comorbid depression and avoidant personality disorder have also been identified as potential moderators of CBT. Yet, predictors of CBT improvement are less consistent. Other client factors that have been investigated reflect a mindset aligned with or at odds with the therapeutic framework, for example, treatment expectancy or credibility. Research has found that clinicians are able to assess broad factors thought to influence suitability for cognitive therapy via semi-structured interview (Myhr et al. 2007; Safran et al. 1993) or clinician-report form (Myhr et al. 2013; Renaud et al. 2014). Recently, research efforts have explored how a match between an individual's mental and emotional (or attitudinal) fit with CBT (hereafter CBT-mindedness) impacts treatment response (for a more detailed

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discussion of the conceptual and theoretical background of CBT-mindedness see McLellan et al. 2016). Clients well matched to therapy improve more, suggesting that effective treatment capitalises on pre-treatment strengths rather than compensates for deficiencies (e.g., Beutler et al. 2011; Elkin et al. 1999; Kocsis et al. 2009; van Doorn et al. 2012). This would suggest that higher pre-treatment CBT-mindedness should be associated with improved outcome. Awareness of a client's pre-treatment CBT-mindedness might indicate suitability for CBT, identify the need for preparatory work with the client (e.g., to pave the way for the CBT rationale), or the need to modify standard CBT protocols in order to maximize treatment response (e.g., ordering treatment components to begin with skills that align with the client's pre-treatment mindset). Consequently, a measure of CBT-mindedness, named the CBT Suitability Scale (CBT SUITS; McLellan et al. 2016), was developed and evaluated. Research indicates that this tool has promising psychometric properties within community, university, and treatment-seeking samples (McLellan et al. 2016). Next, research needs to examine whether this new construct predicts treatment outcome.

The aim of this study, therefore, was to investigate whether CBT-mindedness, measured using the CBT-SUITS, predicts CBT outcome. It was hypothesised that higher pre-treatment CBT-SUITS scores would predict better outcomes measured diagnostically (i.e., clinician severity ratings) and via self-reported anxiety symptoms. It was also expected that higher CBT-SUITS scores would predict more therapy attendance. To determine the benefits of CBT-mindedness over established predictors as a predictor of outcome, incremental validity of the CBT-SUITS over and above existing client-factor predictors of outcome (treatment expectancy and credibility) was assessed.[1]

Method

Participants

Fifty participants were recruited as part of a clinical trial investigating the role of preparatory sessions in improving response to group CBT for social phobia.[2] Participants ranged in age from 19 to 56 years ($M = 30.44$, $SD = 9.10$) and 44% were female. For inclusion in the trial participants met Diagnostic and Statistical Manual of Mental Disorders (DSM-IV TR; American Psychiatric Association [APA] 2000) criteria for a primary diagnosis of social phobia as determined by the Anxiety Disorders Interview Schedule-IV (ADIS-IV; Di Nardo et al. 1994) and reported at least moderate (Clinician Severity Rating of 4 or more) associated impairment. Participants were excluded from the trial if there was evidence of active suicidal intent, comorbid psychosis, or a mood/substance use disorder was expected to interfere with treatment. Participants received 12 sessions of group CBT for social phobia through the Macquarie University Centre for Emotional Health. Participants recruited in 2010 ($n = 26$) received three sessions of individually delivered motivational interviewing prior to group treatment, while participants recruited in 2011 ($n = 24$) did not. The two treatment groups did not differ on demographic or pre-treatment characteristics.

Measures

Pre-treatment CBT-Mindedness

The CBT-SUITS (McLellan et al. 2016) was used to measure CBT-mindedness prior to commencing therapy. The CBT-SUITS consists of 13 statements, where participants rate their agreement according to a five-point Likert scale ranging from 1 (*strongly disagree)* to 5 (*strongly agree)*. Total and three factor scores are calculated such that higher scores reflect more CBT-mindedness. CBT-SUITS factor scores measure agreement with the cognitive behavioural rationale (CBT Rationale e.g., "If I change the way I think my emotions would be different"), awareness of, and ability to, express thoughts and feelings (Insight, e.g., "I put my thoughts into words"), and flexibility and learning from behaviour (Behaviour, e.g., "Even though trying new things is difficult for me, it means things change for the better"). In this study, we use only the CBT-SUITS Total Score. Fair to good internal consistency has been reported across university, community, and treatment seeking samples (McLellan et al. 2016). Cronbach's alpha was .81 for CBT-SUITS total score in this sample.

Self-Reported Severity of Social Anxiety

The Social Interaction Anxiety Scale (SIAS; Mattick and Clarke 1998) was used to measure severity of social anxiety symptoms. The 20 self-report items were rated using a five-point Likert scale ranging from 0 (*not at all characteristic or true of me*) to 4 (*extremely characteristic or true of me*), such that higher scores reflected greater social anxiety. A total score was calculated after reverse scoring three items. Strong

[1] While we would expect CBT-mindedness to predict outcome in clients seeking treatment for any disorder, the current study utilised a sample of adults seeking treatment for social anxiety disorder, a common and impairing anxiety disorder.

[2] Australian and New Zealand Clinical Trials Registry [Internet]: Sydney (NSW): Centre for Emotional Health, Macquarie University (Australia); 2010—Identifier ACTRN12610000469011. Efficacy of motivational interviewing prior to cognitive behavioural treatment for social phobia; 2010 June 9; [1 page]. Available from http://www.anzctr.org.au/ACTRN12610000469011.aspx.

test retest reliability (Mattick and Clarke 1998) and internal consistency (Heimberg et al. 1992; Mattick and Clarke 1998) have been reported in the literature. Adequate validity has been found comparing SIAS scores to other measures of social anxiety and across diagnostic groups (Heimberg et al. 1992; Mattick and Clarke 1998). Internal consistency was $\alpha = .796$ in the current sample.

Clinician Rated Diagnostic Severity

Participants were interviewed using the ADIS-IV (DiNardo et al. 1994). Diagnoses and clinician severity ratings were assigned by graduate clinical psychology students or registered clinical psychologists. The agreement between raters in our clinic is acceptable (intraclass correlation $r = .85$; Rapee et al. 2009). Clinician severity ratings ranged from 0 to 8 and were used to assess diagnostic severity of social anxiety.

Expectancy for Change

The Anxiety Change Expectancy Scale (ACES; Dozois and Westra 2005) is a measure of belief in the ability to change anxiety symptoms or expectancy for anxiety change. The 20 self-report items were rated for agreement on a five-point Likert scale ranging from 1 (*strongly disagree)* to 5 (*strongly agree*), such that higher scores represented more positive beliefs and expectancy for change in anxiety. Strong reliability and validity results have been reported for the ACES in clinical samples (Dozois and Westra 2005). Internal consistency was $\alpha = .912$ in the current sample.

CBT Credibility

Three items from the Credibility Expectancy Questionnaire (CEQ; Devilly and Borkovec 2000) assess credibility of the CBT model of treatment. The self-report items were rated on a 10-point Likert scale ranging from 1 (*not at all logical, useful, confident*) to 10 (*extremely logical, useful, confident*), such that higher scores reflected greater credibility in the CBT treatment model described during the first treatment session. Total CBT credibility scores were calculated by summing responses to the three items. Internal consistency was $\alpha = .730$ in the current sample.

Therapy Attendance

The number of CBT group sessions attended was recorded for each participant. Therapy attendance could therefore range from 1 to 12 sessions, and was treated as a continuous variable.

Procedure

Macquarie University Human Research Ethics Committee approved the study procedures. Potential participants made contact with the research trial via a range of referral sources, including general practitioners, word of mouth advertising, and occasional media coverage. At first contact participants received a brief screening assessment over the phone, and subsequently completed a structured clinical interview to confirm diagnostic status, clinician-rated diagnostic severity of social anxiety, and eligibility for the trial. Participants who met inclusion criteria were part of a larger clinical trial, a subset of whom contributed data towards this study. Prior to treatment participants completed self-report measures of pre-treatment CBT-mindedness, severity of social anxiety symptoms, and expectancy for change. During the first group therapy session a CBT model was presented. Immediately after this session participants rated the credibility of the CBT model that had been explained. Approximately 1 month and 3 months after treatment participants again completed measures of social anxiety symptoms and CBT-mindedness and completed ADIS interviews where clinician diagnostic severity ratings of social anxiety were determined.

Data Scoring and Analysis

Univariate descriptives were inspected for all variables. An inverse log transformation was required on the attendance variable to correct for normality assumptions. Differences in CBT-SUITS scores based on categorical demographic variables were investigated. Bivariate relationships between study variables were estimated in order to screen for collinearity issues and identify necessary covariates in regression models.

In order to examine whether CBT-SUITS scores predicted treatment outcome, a series of hierarchical multiple regressions were conducted. Separate regressions were run for each measure of outcome (i.e., self-reported anxiety or clinician-rated diagnostic severity) and at each timepoint (post and 3 months following treatment). For each DV, initial hierarchical regressions were run with pre-treatment severity (self- or clinician-reported), treatment allocation (preparatory motivational interviewing or not), and any demographic variables associated with outcome entered in Block 1, and CBT-SUITS total score entered in Block 2. When CBT-SUITS proved to be a significant predictor of the DV, additional hierarchical regressions were run with treatment expectancy and credibility added into Block 1. CBT-SUITS factor scores were not entered separately in order to ensure regression models were sufficiently powered and due the high alpha (.81) that indicated the measure likely best reflected one construct. Furthermore, theoretically there was no reason to expect one factor score to be more closely

Table 1 Summary of correlations, means and standard deviations for study variables using complete analysis

Measure	1	2	3	4	5	6	7	8	9	10	11
1. CBT-SUITS total	–										
2. Age	.33*	–									
3. Pre CSR	−.11	−.01	–								
4. Pre SIAS	−.24	−.40**	.37**	–							
5. ACES	.64***	.11	−.28*	−.24	–						
6. CBT credibility rating	.51***	.25	.06	−.09	.51***	–					
7. Post CSR[a]	−.37*	−.31*	.04	.30*	−.38*	−.19	–				
8. Post SIAS[b]	−.53***	−.37*	.15	.58***	−.37*	−.43**	.57***	–			
9. Follow-up CSR[c]	−.36*	−.23	.17	.38*	−.42**	−.29	.78***	.68***	–		
10. Follow-up SIAS[d]	−.45**	−.31	.27	.60***	−.44**	−.31	.54***	.84***	.76***	–	
11. Attendance[e]	.02	−.21	.12	.02	−.19	−.15	−.24	−.12	−.19	−.04	–
M	47.26	30.44	6.0	56.50	65.40	23.53	4.82	39.48	4.63	40.51	0.32
SD	6.29	9.10	0.67	11.01	12.06	3.53	1.15	13.51	1.22	13.31	0.32

CBT-SUITS CBT Suitability Scale, *CSR* Clinician Severity Rating, *SIAS* Social Interaction Anxiety Scale, *ACES* Anxiety Change Expectancy Scale, *CBT* cognitive behaviour therapy

*$p < .05$, **$p < .01$, ***$p < .001$

[a]$n = 45$

[b]$n = 44$

[c]$n = 43$

[d]$n = 39$

[e]An inverse log transformation was performed on this variable

related to outcome than any other, making the analysis with CBT-SUITS total score a more parsimonious and theoretically meaningful model to investigate.

Analyses based on complete-case data can be biased. The degree of missing data in this study was: ADIS-IV (pre = 0%, post = 10%, follow-up = 14%); SIAS (pre = 0%, post = 12%, follow-up = 22%). Complete-case analyses were repeated with multiply imputed datasets to assess the impact of missing data. Sixty imputed datasets were created using chained equations, a recommended procedure for handling missing data (Schafer and Graham 2002) that assumes data are missing at random (MAR) conditional on the variables in the imputation model. To ensure plausibility of the MAR assumption, the imputation model included auxiliary variables predictive of incomplete variables and/or missingness, (e.g., anxiety symptoms at each session, full list available on request). The resulting fraction of missing information (FMI) estimates were no larger than .47 and the Monte Carlo standard errors were acceptably small, indicating that 60 imputed datasets was more than sufficient. There was little difference to the pattern of results derived from analyses with imputed data compared to complete-case analyses, although uncertainty around estimates was increased in the imputed data and for the association between CBT-mindedness and clinician-rated diagnostic severity 3 months post-treatment, the p value increased from 0.015 to 0.06. Results of complete case analyses are reported, with results of hierarchical multiple regression analyses using multiply imputed data reported in the Online Appendix results.

Results

Preliminary Statistics

Thirty-seven (74%) participants completed treatment (i.e., attended 80% or greater CBT sessions). On average 10.2 sessions were attended (SD = 2.507, range 2–12 sessions). Means, standard deviations, and bivariate correlations between primary variables of interest are presented in Table 1, along with correlations between age and variables of interest. Older participants reported fewer social anxiety symptoms pre-treatment and post treatment and were rated by clinicians as having lower levels of diagnostic severity post treatment. As a result, age was included as a covariate in regression models where outcome (symptoms and clinician severity) was measured at post-treatment. Age was unrelated to social anxiety symptoms and clinician severity ratings at follow-up, and was unrelated to treatment attendance.

Table 2 Hierarchical multiple regression analyses predicting diagnostic severity at post and follow-up from CBT-SUITS scores over and above control variables and existing client-factors

Predictors	Block 1		Block 2			Δ F (df)	ΔR^2	p
	β	t	β	t	η^2%			
DV: post-treatment CSR[a]								
Treatment allocation	.257	1.79	.241	1.73	5.71	2.70 (3, 41)	.165	.059
Age	−.304	−2.12*	−.204	−1.38	3.65			
Initial CSR	−.004	−0.03	−.011	−0.08	0.01			
CBT-SUITS total			−.283	−1.91	6.97	3.64 (4, 40)	.070	.064
DV: post-treatment CSR[a]								
Treatment allocation	.207	1.49	.214	1.53	4.37	2.97 (5, 39)	.276	**.023**
Age	−.316	−2.20*	−.271	−1.80	6.00			
Initial CSR	−.101	−0.69	−.102	−0.69	0.88			
Expectancy for change	−.403	−2.36*	−.324	−1.71	5.43			
Treatment credibility	.139	0.79	.198	1.07	2.13			
CBT-SUITS total			−.191	−0.98	1.80	0.96 (6, 38)	.018	.332
DV: follow-up CSR[b]								
Treatment allocation	.548	4.19***	.520	4.22***	26.42	9.63 (2, 40)	.325	**< .001**
Initial CSR	.105	0.80	.107	0.88	1.14			
CBT-SUITS total			−.310	−2.53*	9.55	6.42 (3, 39)	.10	**.015**
DV: follow-up CSR[b]								
Treatment allocation	.487	3.88***	.492	3.92***	22.94	7.15 (4, 38)	.429	**< .001**
Initial CSR	.097	0.74	.095	0.72	0.77			
Expectancy for change	−.233	−1.56	−.168	−1.04	1.64			
Treatment credibility	−.144	−0.97	−.075	−0.46	0.32			
CBT-SUITS total			−.175	−1.08	1.74	1.17 (5, 37)	.017	.287

Significant *p* values are given in bold

DV dependent variable, *CSR* clinician severity ratings, *CBT-SUITS* CBT Suitability Scale

*$p < .05$, **$p < .01$, ***$p < .001$

[a]$n = 45$

[b]$n = 43$

Clinician-rated diagnostic severity, social anxiety symptoms and therapy attendance did not vary according to other demographic variables (gender, education, and employment status) at any timepoint. Clinician-rated diagnostic severity and self-reported severity of social anxiety reduced following CBT.[3]

Prediction of Treatment Outcome and Attendance

Clinician-Rated Diagnostic Severity

Overall regression models were significant at post treatment (adjusted $R^2 = .16$, $F(4, 40) = 3.06$, $p = .027$) and 3 month follow-up (adjusted $R^2 = .38$, $F(3, 39) = 9.43$, $p < .001$). Table 2 shows that CBT-mindedness predicted clinician-rated diagnostic severity 3 months following treatment ($\Delta R^2 = .10$, $p = .015$),[4] but not at post treatment ($\Delta R^2 = .07$, $p = .064$). CBT-mindedness explained approximately 9.5% of the unique variance in clinician-rated diagnostic severity 3 months following treatment after controlling for treatment type and initial diagnostic severity. As shown in Table 2, CBT-mindedness did not uniquely predict follow-up clinician-rated diagnostic severity ratings

[3] Mixed model analysis comparing the two treatment groups (preparatory motivational interviewing or no preparatory treat) across time on CSR and SIAS showed a significant main effect of group [F(1, 43.32 = 8.80, p = .005 and F(1, 46.18) = 5.63, p = .022) respectively], time [F(2, 39.14) = 50.91, p < .001 and F(2, 39.68) = 61.65, p < .001 respectively], and group X time interaction [F(2, 39.14) = 11.53, p < .001 and F(2, 39.68) = 3.96, p = .027 respectively]. Pairwise comparisons between the estimated means for each group at the three timepoints, using Bonferroni adjustment for multiple comparisons, showed no difference between groups at pre-treatment (CSR: p = .932, SIAS: p = .262), a trend towards significance at post-treatment (CSR: p = .082, SIAS: p = .063) and a significant reduction in scores for the CBT + preparatory group compared to CBT alone group at follow-up (CSR: p < .001, SIAS: p = .004).

[4] This analysis is marginally significant using the imputed dataset. See the Online Appendix for results.

Table 3 Hierarchical multiple regression analyses predicting social anxiety at post and follow-up from CBT-SUITS Scores over and above control variables and existing client-factors

Predictors	Block 1		Block 2			Δ F (df)	ΔR^2	p
	β	t	β	t	η^2%			
DV: post-treatment SIAS[a]								
Treatment allocation	.202	1.57	.169	1.49	2.66	8.43 (3, 40)	.387	< .001
Age	− .166	− 1.21	− .021	− 0.17	0.03			
Initial SIAS	.455	3.21**	.441	3.53***	14.82			
CBT-SUITS total			− .415	− 3.53***	14.82	12.44 (4, 39)	.148	< .001
DV: post-treatment SIAS[a]								
Treatment allocation	.149	1.24	.163	1.41	2.37	7.61 (5, 38)	.500	< .001
Age	− .064	− 0.48	.018	0.14	0.02			
Initial SIAS	.461	3.45***	.465	3.66***	15.92			
Expectancy for change	− .082	− 0.60	.062	0.43	0.22			
Treatment credibility	− .308	− 2.23*	− .201	− 1.44	2.46			
CBT-SUITS total			− .346	− 2.25	6.00	5.06 (6, 37)	.060	.031
DV: follow-up SIAS[b]								
Treatment allocation	.344	2.81**	.318	2.91**	9.86	16.09 (2, 36)	.472	< .001
Initial SIAS	.544	4.43***	.503	4.58**	24.40			
CBT-SUITS total			− .352	− 3.23**	12.11	10.44 (3, 35)	.121	.003
DV: follow-up SIAS[b]								
Treatment allocation	.277	2.34*	.296	2.61*	8.12	10.67 (4, 34)	.557	< .001
Initial SIAS	.505	4.32***	.498	4.47***	23.72			
Expectancy for change	− .262	− 1.98	− .151	− 1.11	1.46			
Treatment credibility	− .072	− 0.55	.058	0.41	0.20			
CBT-SUITS total			− .305	− 2.09*	5.15	4.35 (5, 33)	.052	.045

DV dependent variable, *SIAS* Social Interaction Anxiety Scale, *CBT-SUITS* CBT Suitability Scale

*$p < .05$, **$p < .01$, ***p < .001

[a]$n = 44$

[b]$n = 39$

after additionally controlling for expectancy for symptom change and treatment credibility ($\Delta R^2 = .02$, $p = .287$).

Self-Reported Severity of Social Anxiety

Overall regression models were significant at post treatment (adjusted $R^2 = .49$, $F(4, 39) = 11.25$, $p < .001$) and at 3 month follow-up (adjusted $R^2 = .56$, $F(3, 35) = 17.01$, $p < .001$). As shown in Table 3, CBT-mindedness predicted social anxiety symptoms post ($\Delta R^2 = .15$, $p = .001$) and 3 months following treatment ($\Delta R^2 = .12$, $p = .003$) over and above control variables. CBT-SUITS total score uniquely explained approximately 12 to 15% of the variance in social anxiety symptoms following group CBT. Additionally, CBT-mindedness remained a significant unique predictor of post ($\Delta R^2 = .06$, $p = .031$) and 3 month social anxiety symptoms ($\Delta R^2 = .05$, $p = .045$) even after controlling for expectancy for symptom change and treatment credibility. CBT-mindedness uniquely explained between 5 and 6% of symptom scores over and above all other variables in the respective regression models.

Attendance

CBT-mindedness was not a significant predictor of therapy attendance, $F(2, 47) = 0.65$, $p = .53$.

Discussion

This paper reports results of the first investigation of CBT-mindedness, measured via the CBT-SUITS, as a predictor of CBT outcome for adults with SAD.

Prediction of Outcome

While CBT-mindedness, as measured by the CBT-SUITS, did not predict therapy attendance, CBT-mindedness predicted scores on self-reported symptom severity at post treatment and 3 months following treatment and clinician-rated diagnostic severity 3 months following treatment. In fact, CBT-mindedness explained equal or more variance in outcome than initial clinician-rated/self-reported severity, between approximately 10 and 15% respectively. This

finding empirically supports the suggestion in previous research that a broad (rather than symptom-focused) mindset aligned with therapy uniquely predicts CBT outcome (McLellan et al. 2016) and extends this finding to a clinical population. As such, this study also provides evidence of the predictive criterion related validity of the CBT-SUITS measure. Given research that indicates symptom severity is the current best predictor of CBT outcome (Eskildsen et al. 2010; Mululo et al. 2012; Keeley et al. 2008) the construct of CBT-mindedness represents a promising predictor of treatment outcome, that is, a predictor of outcome that may provide unique information about a characteristic that is potentially modifiable prior to CBT.

Importantly, the negative direction of the relationship between pre-treatment CBT-mindedness and social anxiety symptoms indicates that those with more CBT-like attitudes prior to treatment report less symptoms following therapy. This finding supports research that suggests effective therapy capitalises on strengths rather than compensates for deficiencies (e.g., Baker and Neimeyer 2003; Kocsis et al. 2009; van Doorn et al. 2012).

Furthermore, as hypothesised, CBT-mindedness uniquely predicted self-reported symptom severity over and above expectancy for anxiety change and treatment credibility. Over and above all other control variables, CBT-mindedness accounted for between 5 and 6% of variance in post/follow-up symptom severity. Although small in magnitude, this unique variance demonstrates that CBT-mindedness represents a unique, and potentially modifiable, client-factor that explains variable treatment response. Overall there is strong evidence that pre-treatment CBT-mindedness predicts CBT outcome for socially anxious adults.

Strengths, Limitations, and Directions for Future Research

The findings of this study need to be interpreted within the context of several strengths and limitations. Every effort was made to retain participants in the study, and missing data was minimal (ranging from 0 to 22% depending on the assessment tool and time-point). Analyses with multiply imputed datasets were conducted to verify that conclusions were robust to the potential impact of missing data; this is a strength of the study. The multi-informant and multi-measure assessment of outcome is also a strength. The generally consistent pattern of results across measures of outcome strengthens our conclusions and the methodological quality of the study. Future research should also consider other methods of measuring outcome. Importantly, this study undertook a stringent investigation of the utility of the CBT-SUITS and pre-treatment CBT-mindedness as a new predictor of CBT outcome by examining the prediction of outcome over and above existing client-factors.

Despite these strengths, this is the first study to investigate the CBT-SUITS within a clinical sample. As a result, this study's findings are preliminary in nature. Without a control group it is unclear whether results reflect an association between CBT-mindedness and outcome, or general therapeutic-mindedness and outcome. Research with a control group will clarify these alternative explanations of study results. Future research with larger and broader transdiagnostic clinical samples will be important in order to confirm the value of the CBT-SUITS as a predictor of treatment outcome more generally, and adding value over and above existing clinician-rated suitability measures that show promising results amongst transdiagnostic (i.e. depression and anxiety) samples (Myhr et al. 2007, 2013; Renaud et al. 2014; Safran et al. 1993). Research comparing CBT-SUITS with existing clinician measures like those of Safran et al. (1993) will also be an important direction for future research.

Furthermore, the study was conducted using a sample taken from controlled clinical trials. Future research in naturalistic clinical settings is therefore necessary and would add weight to the current findings. The lack of variability on the 8 point clinician-rated measure of severity is also a study limitation, and may explain why CBT-SUITS scores did not significantly predict change using this measure. Future research should use alternative clinician-rated measures of social anxiety, for example the Liebowitz Social Anxiety Scale. Additionally, more advanced measures of treatment engagement should be used to extend the initial investigation of the relationship between CBT-mindedness and the primitive measure of engagement used in this study, therapy attendance.

Overall, this study provides information about whether greater CBT-mindedness prior to treatment predicts fewer symptoms following CBT. Future research should now examine whether clients with low CBT-mindedness benefit from additional information about the treatment rationale in order to understand and engage with treatment or whether these individuals may benefit from evidence-based treatments other than CBT.

Implications and Conclusions

Results indicate that scores on a new measure of pre-treatment CBT-mindedness (the CBT-SUITS) predicted clinician-reported diagnostic severity following treatment and self-reported symptom severity post and 3 months following treatment in a clinical sample of socially anxious adults. Additionally, evidence suggests that CBT-mindedness provides unique prognostic information, predicting symptom severity over and above initial symptom severity, expectancy for change, and treatment credibility. Although CBT-SUITS scores explained a modest amount of unique variance in

outcome, understanding the match between CBT principles and pre-treatment mindsets is important because these potential obstacles can be addressed to influence clinical practice in meaningful ways. This short self-report research tool has the potential for clinical use to assess suitability for CBT, and provide clinicians with information that can inform treatment selection or treatment modification (e.g., offering preparatory work to target CBT-mindedness or the CBT rationale, or alternatively, presenting the rationale for CBT in a manner that aligns more closely with pre-treatment attitudes). The current results suggest that identifying broad attitudes that align with treatment, but do not confound symptom severity, is useful and represents an important marker of treatment response that has the potential to improve treatment response for more clients.

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Compliance with Ethical Standards

Conflict of Interest Lauren F. McLellan, Lexine A. Stapinski and Lorna Peters declare that they have no conflicts of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Animal Rights No animal studies were carried out by the authors for this article.

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