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Social Anxiety and Fear of Causing Discomfort to Others: Diagnostic Specificity, Symptom Correlates and CBT Treatment Outcome

Yasunori Nishikawa

University of Toronto and Sunnybrook Health Sciences Centre, Toronto

Judith M. Laposa

University of Toronto and Center for Addiction and Mental Health

Rotem Regev

Sunnybrook Health Sciences Centre, Toronto

Neil A. Rector

University of Toronto and Sunnybrook Health Sciences Centre, Toronto

Background: Patients with social anxiety disorder (SAD) report fear content relating to the perceived aversive consequences of their anxiety for others in their social environment. However, no studies to date have examined the diagnostic specificity of these fears to SAD as well as predictors to treatment response of these fears. **Aims**: To examine relative specificity of fears related to causing discomfort to others, as measured by Social Anxiety–Fear of Causing Discomfort to Others (SA-DOS), among patients with anxiety disorders, obsessive compulsive disorder (OCD) and major depressive disorder (MDD), in addition to relation between dysfunctional attitudes and treatment response among patients with SAD. **Method**: In study 1, a large ($n = 745$) sample of DSM diagnosed OCD, MDD and anxiety disorder participants completed the SA-DOS. In study 2, patient participants with SAD ($n = 186$) participated in cognitive behavioural group therapy (CBGT) and completed measures of social anxiety symptoms and dysfunctional attitudes. **Results:** In study 1, the SAD group demonstrated significantly elevated SA-DOS scores compared with participants with generalized anxiety disorder (GAD), OCD and panic disorder with or without agoraphobia (PD/A), but not the MDD group. In study 2, CBGT treatment was found to lead to significant reductions in SA-DOS scores. Need for approval (NFA) but not perfectionism, predicted treatment response to

Correspondence to Neil A. Rector, Sunnybrook Health Sciences Centre, 2075 Bayview Avenue, Toronto, Ontario, M4N 3M5, Canada. E-mail: neil.rector@sunnybrook.ca

fears related to causing discomfort to others, with greater change in NFA relating to greater change in SA-DOS scores. **Conclusions**: These findings extend previous research linking allocentric fears to the phenomenology and treatment of SAD.

Keywords: Fear of causing discomfort to others, social anxiety disorder, dysfunctional attitudes, perfectionism, need for approval, cognitive behavioural group therapy.

Introduction

Cognitive models of social anxiety disorder (SAD) emphasize the central role of fear of negative evaluation and embarrassment in the aetiology and maintenance of the disorder (Clark and Wells, 1995; Leary and Kowalski, 1995; Rapee and Heimberg, 1997). These models propose that upon entering social situations, maladaptive assumptions about themselves (i.e. as socially inadequate and unlikeable) and their social world (i.e. as inherently critical) are activated in individuals with SAD. In turn, these assumptions lead individuals with SAD to perceive even potentially innocuous social situations as dangerous. Furthermore, it is proposed that a shift in attentional resources towards a detailed monitoring of themselves follows. Consequent interoceptive cues are thought to automatically and reflexively lead to the construction of distorted mental representations of their perceived negative appearance to others. In order to avoid negative evaluation, individuals with SAD employ a variety of avoidance and safety behaviours (Clark and Wells, 1995).

Experimental data provide some support for these contemporary models of SAD with particular emphasis on biased information processing (see Musa and Lépine, 2000, for a review). Cognitive behavioural interventions are commonly employed to treat SAD based on this cognitive-behavioural conceptualization of the disorder. Cognitive behavioural group therapy (CBGT; Heimberg and Becker, 2002), which integrates cognitive restructuring and exposure techniques, is one of the most empirically investigated treatment for individuals with SAD. Randomized clinical trials have demonstrated substantive efficacy of CBGT in treating SAD relative to control conditions, with enduring effects following treatment endpoint through to follow-up (Acarturk et al., 2009; Canton et al., 2012).

Although fear of negative evaluation is considered to be the central negative cognitive content in SAD, there has been increasing recognition of the importance of additional aspects to fear content identified in patients with SAD that are not traditionally conceptualized within contemporary CBT accounts or treatments. Specifically, in contrast to focus on aversive consequences for *oneself*, some patients with SAD also report fear content relating to the perceived negative consequences of their bodily symptoms or anxiety for *others* in their social environment (Takahashi, 1989; Rector et al., 2006a,b). The importance of causing discomfort to others is also captured in well-developed interpersonal models of SAD (Alden, 2001), cross-cultural models of SAD (Takahashi, 1989; Dinnel et al., 2002), and has become a defining feature of SAD in the description of the condition in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5, fifth edition; APA, 2013). Specifically, the diagnostic criteria for SAD in the recent publication of the DSM-5 (APA, 2013) have broadened the scope of defined fears of SAD to include 'fears of being rejected by or offending others' (APA, 2013; p. 202). Given the growing recognition of this distinct allocentric fear content to SAD, further elucidation of their specificity to SAD, cognitive correlates and treatment changes in CBGT are warranted.

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Study 1: interpersonal and cultural models of SAD

Interpersonal theories of SAD (Schlenker and Leary, 1982; Alden, 2001) extend motivations of individuals with SAD to include the desire to maintain affiliation and closeness with others while also avoiding negative evaluation. Early relationships are thought to shape an individual's maladaptive expectations of how other people will treat them interpersonally. In turn, developed maladaptive social assumptions, expectations and behavioural patterns are proposed to be maintained by eliciting confirming negative responses from others, further shaping an individual's sense of self and others (Coyne, 1976; Alden and Taylor, 2004). The dysfunctional interpersonal styles of SAD are characterized by submissiveness, suppression of emotions and interpersonal dependency (Davila and Beck, 2002; Grant et al., 2007).

Cultural models of SAD similarly underscore interpersonal aspects in the onset and maintenance of the disorder. While the main concern for SAD has been conceptualized as concerns around negative evaluation in Western cultures, the principle concern among individuals experiencing social anxiety in East Asian cultures is the disruption of social harmony (Marques et al., 2011). For instance, individuals with Taijin-Kyofusho (TKS), a cultural syndrome predominantly prevalent in East Asian cultures, are preoccupied with fear of offending others through their bodily characteristics rather than embarrassing themselves in social situations (Takahashi, 1989). Concerns pertaining to the perceived consequences of one's bodily symptoms (Kleinknecht et al., 1997; Choy et al., 2008) and one's anxiety (Rector et al., 2006a) for others are, however, not absent among individuals in Western cultures. Dinnel and colleagues (2012) found that irrespective of cultural background, individuals who construed themselves as high on interdependence endorsed higher TKS symptoms.

Extending this line of work, we (Rector et al., 2006a) previously presented evidence among a sample of treatment-seeking SAD patient participants that allocentric fears relevant to social anxiety are not confined to offence-related fears focused on bodily parts, but also extend to fears that one's anxiety in general would cause discomfort in others. The authors constructed a psychometrically valid unidimensional scale measuring these fears, the Social Anxiety–Discomfort to Others Scale (SA-DOS). Cross-sectional replication revealed that SA-DOS scores are significantly higher among SAD patients relative to their panic disorder with or without agoraphobia (PD/A) and student controls. Finally, the authors reported that while SAD patients receiving standard CBGT reported significantly reduced social anxiety on standard measures, SA-DOS scores remained stable across treatment. Subsequent investigations have further extended these findings, demonstrating that SA-DOS scores also account for unique variance on other dimensions of social anxiety including negative interpretation of positive social events (Laposa et al., 2010) and post-event processing (Laposa and Rector, 2011).

It remains unclear whether allocentric SA-DOS fears should be regarded as unique to SAD or as a transdiagnostic factor relevant to other anxiety and mood disorders. For instance, studies have found that although both TKS and SA-DOS symptoms have higher correlations with social anxiety measures, they are also significantly associated with depressive symptoms (Rector et al., 2006a; Choy et al., 2008). Consistent with these findings, Zhu and colleagues (Zhu et al., 2014) reported elevated levels of SA-DOS scores among Euro-Canadian and particularly among Chinese depressed psychiatric out-patients reporting social anxiety concerns. Finally, generalized anxiety disorder (GAD) is the most prevalent concurrent diagnosis for SAD (Mennin et al., 2000) and content analysis of reported worries among GAD

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patients demonstrate that interpersonal concerns are the most prevalent among all domains (Shadick et al., Borkovec, 1991).

A related issue is the extent to which first-line psychological treatments for SAD are effective in reducing allocentric fears. In the only available study addressing treatment of SA-DOS concerns to date, Rector et al. (2006a) reported preliminary findings that CBGT did not lead to significant changes on SA-DOS concerns amongst a small sample of patients with a principal diagnosis of SAD. The authors suggested the lack of changes may be due to the fact that standard CBGT does not explicitly outline step-by-step procedures to target and reduce this fear content. Another possibility, however, may relate to the influence of other individual differences, including cognitive vulnerabilities that may moderate treatment impact.

Study 2: cognitive moderators of SA-DOS symptom reduction in CBGT

Dysfunctional attitudes related to perfectionism/self-criticism and need for approval/dependency are considered to be central to cognitive conceptualization of SAD (Clark and Wells, 1995), highlighting dysfunctional attitudes related to excessively high standards of social performance, critical social evaluation, and unconditional negative self-beliefs. Interpersonal models of SAD highlight the excessive need for acceptance, nurturance and approval of others as characteristics of SAD (Darcy et al., 2005; Grant et al., 2007).

Consistent with the above clinical conceptualizations, studies have found elevated scores on both these dimensions among individuals with SAD relative to controls (Antony et al., 1998; Saboonchi et al., 1999; Cox et al., 2000; Davila and Beck, 2002; Darcy et al., 2005; Grant et al., 2007). Furthermore, higher scores on both dimensions have been associated with greater levels of social anxiety (Leary, 1983; Regev et al., 2012; Kopala-Sibley et al., 2014; Lancu et al., 2015). However, very few studies have examined the role of dysfunctional attitudes as potential predictors and/or moderators of response to treatment of SAD. Cox et al. (2002) found that even after controlling for depressive symptoms, as well as pre-treatment self-criticism and dependency scores, changes in self-criticism but not dependency predicted unique variance in change in social anxiety. Recently, Hawley et al. (2016) found that higher levels of pre-treatment perfectionism moderated (i.e. reduced) treatment outcomes to CBGT of SAD.

Notwithstanding the non-significant findings in studies to date, there are additional reasons to hypothesize a role of need for approval in moderating treatment outcome for SAD. Interpersonal and ethological theories posit that individuals with dependent SAD are often pre-occupied with themes of abandonment and threats to nurturance, affiliation and emotional security (Gilbert and Trower, 2001; Darcy et al., 2005; Kopala-Sibley et al., 2014). Therefore, need for approval may have particular relevance to interpersonal expressions of social anxiety such as SA-DOS concerns. Dysfunctional beliefs reflecting need for approval reflect excessive fears of being abandoned or not having needs met by others (Gilbert and Trower, 2001). In turn, SA-DOS appraisals and their dependent behavioural expressions (i.e. submissiveness and cooperation) may be directed at eliciting attachment, care and support from others (Kopala-Sibley et al., 2014).

Aims of study 1

The first study extends comparisons beyond the SAD, PD/A and student samples which were examined in Rector et al. (2006a) to include additional anxiety disorders, OCD and

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Table 1. Demographic characteristics of study 1

Variable	Total (%)	SAD ($n = 223$)	MDD ($n = 33$)	GAD ($n = 213$)	OCD ($n = 89$)	PD/A ($n = 187$)	F or χ^2 value
Age (*SD*)	34.47 (11.24)	33.37 (11.37)	36.21 (12.08)	35.45 (11.32)	32.28 (10.32)	35.42 (11.12)	2.31
Sex							
Female	451 (61)	121 (54)	20 (61)	147 (69)	39 (44)	124 (66)	23.59**
Male	293 (39)	102 (46)	13 (39)	65 (31)	50 (56)	63 (34)	
Highest education[a]							40.20§**
High school	100 (13)	34 (15)	4 (12)	8 (3.5)	13 (15)	41 (22)	
College/university	522 (70)	156 (70)	22 (66)	156 (74)	66 (75)	122 (66)	
Graduate degree	122 (16)	33 (15)	7 (21)	49 (23)	9 (10)	24 (13)	
Ethnicity							23.40§*
Caucasian	597 (80)	170 (76)	25 (76)	178 (84)	71 (80)	153 (82)	
Asian	62 (8)	22 (10)	3 (9)	19 (9)	8 (9)	10 (5)	
Hispanic	17 (2)	4 (2)	1 (3)	2 (1)	0	10 (5)	
African American	18 (2)	9 (4)	1 (3)	1 (.5)	0	7 (4)	
Other/no report	51 (7)	18 (8)	3 (9)	13 (6)	10 (11)	7 (4)	
Marital status							30.81§**
Single	422 (57)	145 (65)	17 (53)	107 (50)	63 (72)	90 (48)	
Married/cohabiting	256 (35)	59 (26)	11 (34)	89 (42)	23 (26)	74 (40)	
Divorced/separated	61 (8)	19 (9)	4 (13)	16 (18)	1 (1)	21 (11)	
Other/no report	1 (.1)	–	–	–	–	1 (1)	

SD, standard deviation; §Monte Carlo estimate of Fisher's exact test excluding other/no report; [a]the categories here collapse achievement (i.e. none/some/completed) within the educational category; $^{*}p < .05$; $^{**}p < .01$.

a sample of mood disorder comparisons. Specifically, study 1 aimed to examine cross-sectional comparisons of the SA-DOS among a large sample with DSM-IV-TR diagnosed SAD, GAD, major depressive disorder (MDD), OCD and panic disorder with or without agoraphobia (PD/A). It was hypothesized that SA-DOS scores would be highest in the SAD group compared with all other groups, thus demonstrating the hypothesized disorder-specific associations with SAD.

Method (study 1)

Participants

Seven-hundred and forty five ($n = 745$) participants meeting DSM-IV-TR (APA, 2000) criteria for primary SAD ($n = 223$), GAD ($n = 213$), PD/A ($n = 187$), MDD ($n = 33$) and OCD ($n = 89$) based on the Structured Clinical Interview for Axis I Disorder (SCID-I/P version 2.0; First et al., 1996) were recruited from a large university-based mental health facility and consented to participate in a clinical-research database consisting of a broad range of symptom and cognition rating scales. Demographic details of the cross-sectional sample are given in Table 1. Within each of the diagnostic groups, the majority of patients had one co-morbid psychiatric disorder with the following frequencies: MDD ($n = 16$; 48.49%), SAD ($n = 88$; 39.46%), GAD ($n = 74$; 34.74%), OCD ($n = 31$; 34.83%) and PD/A ($n = 58$; 31.02%).

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Assessments were conducted by research staff who received extensive formal training in the administration and scoring of the SCID-I/P protocol. Prior to administration, assessors completed a rigorous inter-rater reliability-training programme. Assessors had weekly clinical case conference meetings supervised by senior psychologists with expertise in the assessment and treatment of anxiety disorders in order to establish consensus primary psychiatric diagnosis. A diagnosis was considered primary when it referred to a patient's main source of distress as determined by the SCID diagnostic severity rating and the disorder to which participants were seeking treatment. SCID-I/P interviews were performed after participants provided written informed consent.

Measures

The Social Anxiety–Discomfort to Others Scale (SA-DOS; Rector et al., 2006a) is a 14-item scale that was designed to assess fears focused on the perceived negative affective and behavioural consequences of one's anxiety on others' well-being. Each item is rated on a 5-point Likert scale ranging from 1 (not at all) to 5 (extremely). The items refer to anxiety in general and not bodily characteristics (i.e. 'I often think that if I don't create a comfortable environment for others, then I am to blame'). This scale has demonstrated good convergent and discriminant validity (Rector et al., 2006a). In the current study, SA-DOS demonstrated excellent internal consistency (Cronbach's $\alpha = .91$).

Results (study 1)[1]

Between-diagnostic group comparisons

A one-way ANOVA was performed to determine whether diagnostic groups significantly differed on age. There was no significant main effect for age ($p > .05$). Diagnostic groups significantly differed on proportion of gender, $\chi^2\,(4) = 23.59$, $p < .01$. Monte Carlo estimates of Fisher's exact tests revealed significant differences in proportion of categories within education, marital status and ethnicity between diagnostic groups (Fisher's exact test, all p values $< .05$).[2]

A one-way ANOVA was performed to determine whether diagnostic groups significantly differed on SA-DOS scores. A significant main effect was found for diagnostic group;

[1] All analyses herein (studies 1 and 2) were performed using SPSS 20.0 statistical package (SPSS Inc., Chicago, IL, USA). Consistent with recommendations (Tabachnick and Fidell, 1996), standardized values (Z scores) > 13.291 and critical value of Mahalanobis distance scores were used to screen for univariate and multivariate outliers in relevant analyses, respectively. All participants in study 1 analyses had all items comprising SA-DOS scales. We elected for the study 2 sample to include participants who completed pre- and post-SA-DOS.

[2] Age was uncorrelated with SA-DOS scores for both overall sample $p > .05$ and within diagnostic groups, except the MDD group in which age was inversely correlated with SA-DOS scores ($r = -0.38$), $p < .05$. t-tests revealed that SA-DOS scores were not significantly different between gender overall, $p > .05$, and within each of the diagnostic groups. One-way (Welch) ANOVA revealed that SA-DOS scores did not differ between marital status, $p > .05$. Similarly one-way ANOVA (or Kruskal–Wallis test when indicated) revealed that SA-DOS scores did not differ between ethnic groups, $p > .05$ for both overall and within diagnostic samples. However, a non-parametric, Kruskal–Wallis test revealed a significant main effect, $p < .05$, for ethnicity. A Mann–Whitney U-test revealed that median values of 'other' were significantly higher than Caucasian, and African American was significantly higher than Hispanic, $p < .05$. Because of sample-size concerns and the findings above, we have elected to retain analyses as reported.

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Table 2. Means, standard deviations and results of multiple comparison analysis of groups on the SA-DOS scores (study 1)

Group	SAD ($n = 223$)	MDD ($n = 33$)	GAD ($n = 213$)	OCD ($n = 89$)	PD/A ($n = 187$)	F value
SA-DOS	50.16[a] (9.50)	48.97[a, b] (12.16)	46.79[b] (11.01)	43.06[b,c] (12.73)	40.79[c] (12.64)	19.83*

Values in parentheses denote standard deviation; means across rows that do not share superscript letters differ at $p < .01$ in the Games–Howell *post hoc* analysis.

F (4, 740) = 19.83, $p < .001$, $\mu = 0.097$. Consistent with recommendations for *post hoc* tests for unequal sample sizes (Toothaker, 1993), Games–Howell *post hoc* tests were conducted to clarify differences between groups. Results indicated that the SAD group scored significantly higher than GAD, OCD, PD/A diagnostic groups ($p < .01$) but not the MDD group.[3] Furthermore, the PD/A group scored significantly lower than all other diagnostic groups except OCD ($p < .01$). A one-way ANOVA controlling for the most prevalent secondary diagnoses (MDD) revealed a significant main effect for diagnostic group; F (4, 554) = 15.60, $p < .001$. Games–Howell *post hoc* tests indicated an identical patterning to the cross-sectional results reported above. Table 2 gives means, standard deviations and *post hoc* (Games–Howell) comparisons.

Discussion (study 1)

The results of study 1 provided only partial support for the diagnostic specificity of the SA-DOS to SAD. While contrary to predictions, the finding that SA-DOS scores were equivalent between SAD and MDD groups is consistent with past research demonstrating a significant positive correlation between SA-DOS and depression (Rector et al., 2006a; Zhu et al., 2014). Furthermore, the finding may be attributable to the considerable overlapping personality and cognitive structural vulnerabilities underlying the two disorders. For example, anaclictic depression (Blatt and Zuroff, 1992), a depressive subtype focused on close and nurturing relations, and dependent subtypes of SAD (Darcy et al., 2005) have common elevations in dysfunctional attitudes related to need for approval and affiliation with others. Given previous findings of stable SA-DOS scores across treatment (Rector et al., 2006a), further examination of the potential role of need for approval in predicting and/or moderating treatment response of the fear dimension is warranted.

[3] Forty-two per cent of patients in the MDD group had a secondary diagnosis of SAD. To clarify no differences between the SAD and MDD group, a one-way ANOVA was performed between patients with SAD *vs* patients with MDD with and without a secondary diagnosis of SAD. The main effect for diagnostic group was insignificant ($p > .05$), suggesting that non-significant differences in SA-DOS scores between SAD and MDD groups cannot be accounted for by confounding secondary SAD diagnosis. Furthermore, one-way Kruskal–Wallis test with identical groups revealed similarly non-significant differences between groups, $p > 0.05$. Thirty-one per cent of participants with principle SAD had secondary MDD. Secondary SAD or MDD were present in 40% of participants with PD/A, 39% with OCD, and 48% with GAD.

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Study 2

In study 2, we sought to determine the extent to which SA-DOS fears improve following treatment with CBGT in a large treatment seeking sample of patients with SAD ($n = 175$). Studies examining the role of perfectionism in CBGT treatment response among individuals with SAD have typically found that after controlling for pre-treatment social anxiety, changes in perfectionism, but not pre-treatment levels of perfectionism, predict treatment outcome (Cox et al., 2002; Rosser et al., 2003; Ashbaugh et al., 2007). However, there is a significant dearth of comparative empirical examination pertaining to the role of need for approval.

We selected the Dysfunctional Attitude Scale (DAS; Weissman and Beck, 1978) as a measure of dysfunctional attitudes because its interpersonal vulnerability subscale, need for approval, more appropriately resembles SA-DOS concerns relative to its counterparts (i.e. Depressive Experiences Questionnaire; DEQ-dependency; Blatt et al., 1976). Specifically, whereas the dependency scale of the DEQ primarily measures an immature dependent attitude, the need for approval dimension of the DAS is thought to measure a more mature ability to relate to others (Blatt et al., 1995). Individuals high on this subscale are thought to feel genuinely saddened by the grief of losing a significant relationship (Blatt et al., 1995), and are high in compliance, modesty and tender mindedness (Dunkley et al., 1997; Bagby et al., 2001), thus more closely mirroring the interdependent aspects of SA-DOS concerns. Given that SA-DOS concerns have greater relation with and are oriented towards interpersonal and allocentric concerns relative to achievement and performance fears (Rector et al., 2006a,b), interpersonal vulnerabilities related to need for approval may have greater association with SA-DOS concerns compared with perfectionism.

In study 2, we sought to examine predicted associations between perfectionism and need for approval and treatment response. Consistent with previous literature, we hypothesized that changes in, rather than pre-treatment levels of, dysfunctional attitudes related to perfectionism would predict treatment response related to typically measured SAD-related performance fears. Furthermore, we hypothesized that changes in, rather than pre-treatment levels of, dysfunctional attitudes related to need for approval would predict treatment response related to interpersonal fears including SA-DOS and interaction fears.

Method (study 2)

Participants

One hundred and seventy-five patients meeting DSM-IV (APA, 2000) criteria for SAD based on the Structured Clinical Interview for Axis I Disorders (SCID-1/P version 2.0; First et al., 1996) referred for cognitive behavioural treatment for SAD at a large university-based anxiety clinic were recruited for this study. All patients received 12 consecutive weeks of CBGT for SAD as per manualized treatment protocol at a large university-based mental health hospital consisting of psycho-education, behavioural exposures, cognitive restructuring and core belief interventions. Participant mean age was 34.32 years ($SD = 10.81$), 50% were female, and the majority were Caucasian (83.77%) and single (67.79%).[4] Participants were excluded to enter treatment if they had substance abuse/dependence, psychosis and mania. In the current

[4] The reported demographics here comprise 93.7% of sample data for the demographic variables.

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study, 70.4% of participants completed at least seven of 12 sessions, with *t*-tests revealing no differences in pre-treatment outcome measures between completers *versus* non-completers; all *p* values > .05.

Measures

The Social Anxiety–Discomfort to Others Scale (SA-DOS; Rector et al., 2006a). In the current study, SA-DOS demonstrated good internal consistency (Cronbach's $\alpha = .89$).

The *Social Interaction Anxiety Scale* (SIAS; Mattick and Clarke, 1998) is a 20-item measure that evaluates anxiety in social interactions. Each item is rated on a 5-point Likert scale ranging from 0 = not at all, to 4 = extremely. This scale has been shown to be reliable and valid (Mattick and Clarke, 1998). In the current study, the SIAS evidenced very good internal consistency (Cronbach's $\alpha = .86$).

The *Social Phobia Scale* (SPS; Mattick and Clarke, 1998) is a 20-item scale that measures fears of being seen by others while engaging in mundane activities. Each item is rated on a 5-point Likert scale. The measure is comprised of three factors: general scrutiny concern, specific fears, and the fear of being seen as ill or as losing control (Mattick and Clarke, 1998). This scale has been shown to have good validity and reliability (Mattick and Clarke, 1998; Osman et al., 1998). In the current study, the SPS evidenced excellent internal consistency (Cronbach's $\alpha = .93$).

The *Dysfunctional Attitude Scale* (DAS; Weissman & Beck, 1978) is a 40-item self-report measure consisting of depressogenic attitudes and was designed to measure cognitive vulnerability to depression. The present study used the DAS-Form A. Each item is rated on a 7-point Likert scale. Scores on each scale range from 40 to 280, with higher scores reflecting increasing levels of depressogenic beliefs. The DAS has been shown to possess good reliability and validity (Hamilton and Abramson, 1983). Two underlying dimensions have been identified, one measuring an interpersonal vulnerability termed need-for-approval (DAS-NFA) and another measuring an achievement-related vulnerability termed perfectionism (DAS-P) (Cane et al., 1986; Imber et al., 1990). Beliefs include 'my life is wasted unless I am a success' (DAS-P) or 'I am nothing if a person doesn't love me' (DAS-NFA). Moderate to high correlations between the two dimensions have been reported in a number of studies (e.g. Blatt et al., 1995) and the two dimensions were found to be correlated at $r = .54$ in this study. In the current study, the DAS-P evidenced excellent internal consistency (Cronbach's $\alpha = .90$) and DAS-NFA evidenced good internal consistency (Cronbach's $\alpha = .83$).

Results (study 2)

Associations between outcome measures at pre-treatment

Pearson correlation coefficients were calculated between SA-DOS, SIAS, SPS, DAS-P and DAS-NFA at pre-treatment (see Table 3). SA-DOS was significantly and positively associated with all baseline social anxiety symptoms ($r = .31$ to $.43$), all *p* values < .001. Furthermore, SA-DOS was significantly and positively associated with both DAS-P and DAS-NFA scores at baseline ($p < .001$). Both DAS-P and DAS-NFA were significantly and positively associated with SIAS ($p < .05$), but SPS was only associated with DAS-P; $p < .05$. However, partial correlations indicated that once controlling for BDI-II scores, SA-DOS remained positively

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Table 3. Pearson correlations, means and standard deviations for variables at pre-treatment (study 2)

Variable	1	2	3	4	5
SA-DOS	–	.43**	.38**	.31**	.29*
SIAS		–	.58**	.23*	.17*
SPS			–	.16*	.11
DAS-P				–	.58**
DAS-NFA					–

SA-DOS: Social Anxiety and Fear of Causing Discomfort to Others Scale; SIAS: Social Interaction Anxiety Scale; SPS: Social Phobia Scale; DAS-P: Dysfunctional Attitudes Scale – Perfectionism; DAS-NFA: DAS-Need For Approval. *p <.05; **p <.001.

Table 4. Pre-treatment and post-treatment scores for CBGT group analyzed with paired-sample *t*-tests (study 2)

Group	Pre-test	Post-test	Paired *t*-tests	Cohen's *d* effect size
SA-DOS	48.16 (10.28)	42.22 (12.00)	7.60*	0.58
SIAS	52.44 (12.93)	41.66 (13.99)	10.37*	0.83
SPS	32.67 (17.07)	22.33 (15.07)	10.07*	0.80
DAS-P	4.05 (1.19)	3.73 (1.29)	3.64*	0.29
DAS-NFA	4.47 (1.13)	4.22 (1.09)	3.06*	0.24

SA-DOS: Social Anxiety and Fear of Causing Discomfort to Others Scale; SIAS: Social Interaction Anxiety Scale; SPS: Social Phobia Scale; DAS-P: Dysfunctional Attitudes Scale – Perfectionism; DAS-NFA: DAS-Need For Approval. *p < .01 (α adjusted; 0.05/5); Cohen's d (Cohen, 1988) effect size adjusted using Morris and DeShon's (2002) procedure.

associated with only SIAS ($r = .33$), $p < .05$; and DAS-P and DAS-NFA were no longer positively associated with SIAS and SPS, $p > .05$.

Changes across CBGT on symptom measures, DAS-P and DAS-NFA

Means, standard deviations and effect sizes for each outcome measure at pre- and post-treatment are shown in Table 4. Effect sizes were computed as per Cohen (1988), with recommended adjustments (Morris and DeShon, 2002). Paired *t*-tests were used to determine significant reductions pre–post treatment on each outcome measure.[5] The alpha rate was Bonferroni-corrected at $p = 0.01$ to adjust for multiple comparisons. Results indicated that scores on SIAS (t (152) = 10.35) and SPS (t (161) = 10.07), were significantly reduced pre- to post-treatment, all p values < .001, with large mean within-group effect sizes

[5] Rector et al. (2006a) performed a repeated measures ANCOVA controlling for pre-treatment social anxiety when calculating SA-DOS changes across treatment. This was considered a robust test of SA-DOS changes after CBGT. In the current study, we elected to run analyses without pre-treatment social anxiety as a covariate because the current study aimed to determine the amount of SA-DOS changes across CBGT *independent* of other social anxiety change.

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Table 5. Hierarchical regressions for social anxiety symptoms measures (study 2)

Dependent variable	Predictor variable		R^2	R^2_Δ	F_Δ	β	t
$SA\text{-}DOS_{pst}$	Model 1	$SA\text{-}DOS_{pre}$	.31	.31	71.17***	.56	8.44***
	Model 2		.42	.11	31.32***		
		$SA\text{-}DOS_{pre}$				.53	8.69***
		DAS-NFA				.34	5.60***
		DAS-P				.09	1.11
$SIAS_{pst}$	Model 1	$SIAS_{pre}$	.34	.34	72.29***	.58	8.50***
	Model 2		.05	.05	11.80***		
		$SIAS_{pre}$				.57	8.54***
		DAS-NFA				.23	3.44**
		DAS-P				.10	1.16
SPS_{pst}	Mode1 l	SPS_{pre}	.44	.44	118.38***	.67	10.89***
	Model 2		.54	.10	15.25***		
		SPS_{pre}				.67	11.94***
		DAS-NFA				.20	2.83**
		DAS-P				.14	2.01*

SA-DOS: Social Anxiety and Fear of Causing Discomfort to Others Scale; SIAS: Social Interaction Anxiety Scale; SPS: Social Phobia Scale; DAS-P: Residualized Dysfunctional Attitudes Scale – Perfectionism; DAS-NFA: Residualized DAS-Need For Approval. * $p < .05$; ** $p < .01$; *** $p < .001$; $_{pre}$ = pre-treatment; $_{pst}$ = post-treatment.

($d = .80$ to .83). Furthermore, DAS-P (t (161) = 3.64) and DAS-NFA (t (161) = 3.06) significantly decreased following treatment, all p values $< .01$. Finally, SA-DOS scores also evidenced significant change pre–post treatment (t (174) = 7.60; $p < .001$). Both DAS subscales and SA-DOS evidenced small to medium mean within-group effect sizes ($d = .24$ to .58).

Perfectionism and need for approval as treatment moderators to CBGT for SAD

A series of stepwise regression analyses were conducted to address whether pre-DAS-P and pre-DAS-NFA predicted post-treatment social anxiety symptom scores. For post-SA-DOS, the overall model was significant, F (2,165) = 5.08, $p < .01$, $R^2 = .06$. DAS-NFA was a trended significant predictor of post-treatment scores on SA-DOS scores ($\beta = .18$), $p = .05$, but was no longer significant once pre-SA-DOS symptoms were hierarchically entered prior to pre-DAS variables. Regression models were not significant for post-SIAS and post-SPS, all p values $> .05$.

Changes in perfectionism and need for approval as predictors to CBGT outcome for SAD

A series of hierarchical regression analyses were conducted to determine unique and cumulative effects of pre-treatment social anxiety symptom and standardized residualized (res) DAS-P and DAS-NFA change scores on SA post-treatment symptom scores (see Table 5). Res scores for variables were calculated as regression analysis with pre-treatment

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scores as independent variables and post-treatment scores as dependent variables. At step 1, pre-treatment (pre) social anxiety symptoms were entered. At step 2, resDAS-P and resDAS-NFA were entered stepwise for regression except for post-SPS regression where routine entry was used for reasons of model parsimony. For post SA-DOS, the overall model of the first block was significant, F (1,160) = 71.17, $p < .001$, $R^2 = .31$. Stepwise entry of resDAS variables in the second block led to significant change, F_Δ (1,159) = 31.32, $p < .001$; $R^2{}_\Delta = .11$. The final model was significant, F (2,159) = 57.99, $p < .001$, $R^2 = .42$ with preSA-DOS symptoms ($\beta = .53$) and res-DAS-NFA ($\beta = .33$), as the significant predictors, all p values < .001.[6] For resSA-DOS, preDAS-NFA was entered at step 1 with preSA-DOS. The overall model of the first block was not significant, $p > .05$. Stepwise entry of resDAS variables in the second block led to significant change, F_Δ (1,158) = 32.18, $p < .001$; $R^2{}_\Delta = .17$. The final model was significant, F (3,158) = 11.59, $p < 0.001$, $R^2 = .18$ with resDAS-NFA ($\beta = .41$) as the lone significant predictor, $p < .001$.

For post SIAS, the overall model of the first block was significant, F (1,140) = 72.29, $p < .001$, $R^2 = .34$. Stepwise entry of resDAS variables in the second block led to significant change, F_Δ (1,139) = 11.80, $p < .001$; $R^2{}_\Delta = .05$. The final model was significant, F (2,139) = 44.84, $p < .001$, $R^2 = .39$ with preSIAS symptoms ($\beta = .57$) and resDAS-NFA ($\beta = .23$), as the significant predictors, all p values < .01. For postSPS, the overall model of the first block was significant, F (1,148) = 118.38, $p < .001$, $R^2 = .44$. resDAS variables entered in the second block led to significant change, F_Δ (2,146) = 15.25, $p < .001$, $R^2{}_\Delta = .10$. The final model was significant, F (3,146) = 57.22, $p < .001$, $R^2 = .54$ with preSPS symptoms ($\beta = .67$), resDAS-NFA ($\beta = .20$), resDAS-P ($\beta = .14$) as the significant predictors, all p values < .05.

Within participants who achieved clinical remission based on SIAS of 34 or less (31%), both t-tests and Mann–Whitney U tests revealed significantly lower SA-DOS scores for those that achieved remission relative to those that did not, all p values < .05. Further, pre–post change scores on the SA-DOS were significantly greater among those that achieved clinical remission relative to those that did not using both t-tests and Mann–Whitney U tests, all p values < .05. Pearson's correlation also indicated resSA-DOS as positively correlated with all residualized change scores on all outcome measures, all p values < .05.

General discussion

Emerging evidence of the relevance of allocentric fears to the experience of social anxiety (i.e. Dinnel et al., 2002; Rector et al., 2006a,b) has warranted expansion of the diagnostic criteria for SAD to include this fear content (APA, 2013). To extend this line of inquiry, study 1 sought to determine the diagnostic specificity of SA-DOS concerns to SAD among a large sample of DSM diagnosed anxiety and MDD participants. The results were partially supportive of predicted diagnostic specificity of SA-DOS concerns to individuals with SAD. Specifically, while SA-DOS concerns were significantly elevated among individuals with SAD relative to individuals with GAD, OCD and PD/A, equivalent scores were found for individuals with

[6] We conducted analyses with an identical regression reported here for a subsample with depression scores as measured by the Beck Depression Inventory (BDI-II; Beck et al., 1996) entered as a covariate. Pre-treatment SA-DOS and resDAS-NFA continued to significantly predict variance in post-SA-DOS scores along with depression scores, all p values < .05.

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MDD. Furthermore, the equivalent scores were not attributable to secondary SAD among MDD patients.

While contrary to expectations, one potential source of equally elevated scores on the SA-DOS between SAD and MDD participants may relate to the shared cognitive and affective profiles between the two disorders. For instance, dependent subtypes of both depression (i.e. anaclitic; Blatt and Zuroff, 1992) and SAD (Darcy et al., 2005) have been described in the literature. Sanz and Avia (1994) found little discriminating power of the DAS between social anxiety and depression. Furthermore, affective profiles (negative affectivity and low positivity) previously hypothesized to be specific to depression (i.e. tripartite model of anxiety and depression; Clark and Watson, 1991) also characterize social anxiety (Kashdan, 2007). Specifically, both disorders are marked by tendencies to suppress or express emotions (Kashdan et al., 2008). Inhibiting emotional experience and expression may serve as a strategy to minimize negative social outcomes such as causing discomfort to others among individuals with SAD and MDD.

Results of our second study demonstrated that CGBT led to significant reductions on not only standard measures of SAD, but also dysfunctional attitudes and SA-DOS concerns, although effect sizes for the latter were medium. The effect sizes found in our study ($d = .80$ to .83) for SPS and SIAS are consistent with those found in previous studies (Cox et al., 1998; Heimberg et al., 1998). The joint findings of nearly equivalent effect sizes between DAS-P and DAS-NFA, as well as the significantly greater reduction of SIAS and SPS relative to SA-DOS across treatment, suggests that SA-DOS reflect more enduring sources of interpersonal threat. Therefore, the findings highlight the importance of addressing a unique fear dimension that is not incorporated in regnant models and treatment of SAD. Rector and colleagues (2006a,b) have provided an overview of treating SA-DOS concerns by recommending augmenting existing cognitive-behavioural interventions for SAD (Heimberg and Becker, 2002; Wells, 1997) including strategies to empirical test the impact of patient anxiety on others.

As predicted, changes in DAS-P and DAS-NFA, rather than their pre-treatment scores, predicted treatment response, even after controlling for pre-treatment levels of social anxiety and depression. Findings pertaining to perfectionistic dysfunctional attitudes and treatment response are consistent with previous studies (Cox et al., 2002; Rosser et al., 2003; Ashbaugh et al., 2007). A more novel contribution to the literature, however, were the findings that consistent with hypotheses, changes in DAS-NFA were significantly associated with treatment response in interpersonal expression of social anxiety including SA-DOS concerns, whereas changes in DAS-P were only related to performance anxiety. However, contrary to prediction, both changes in DAS-P and DAS-NFA were associated with treatment response in SPS. This is, however, similar to previous findings by Robins et al. (1997) in a depressed clinical sample. The findings further lend credence to the importance of targeting deeper structural vulnerabilities to psychopathology in addition to manifest symptoms and appraisals as echoed by experts in cognitive therapy (Beck et al., 1979; Padesky, 1994; Rector et al., 2000). In the current study, we found only partial support for the role of pre-treatment levels of DAS-NFA in predicting treatment outcome, and their perfectionistic counterparts did not predict treatment outcome. Finally, the findings suggesting that changes in SA-DOS were related to clinical remission is particularly encouraging.

The identification of changes in DAS-NFA as having specific relevance to changes in interpersonal expression of social anxiety across treatment among SAD patients undergoing CBGT is noteworthy. The association between DAS-NFA and SA-DOS is consistent with the

nomological relations found in the personality literature. For example, sociotropy, a dimension closely resembling DAS-NFA (Blaney and Kutcher, 1991), is significantly correlated with the agreeableness facets of compliance, modesty and tendermindedness, and inversely correlated with the assertiveness facet of extraversion (Dunkley et al., 1997; Bagby et al., 2001). Additionally, patients with SAD present in the 'high' range of the tendermindedness facet of the agreeableness domain of the NEO-PI-R (Rector, 2006a; Rector et al., 2012). In turn, the latter was significantly negatively correlated with the assertiveness facet scores of the extraversion domain.

Interpretation of findings here should be tempered by several limitations. First, studies neither included a healthy control sample nor a treatment comparison group. As such, the results are insufficient to draw conclusions regarding diagnostic specificity and isolating effects as a result of treatment *per se*. It is also unclear whether the associations found between cognitive change and treatment outcome and change in study 2 are specific to cognitive interventions (specificity hypothesis; Garratt et al., 2007). Furthermore, we cannot preclude the possibility that the changes in outcomes may have been due to the passage of time. Another limitation is that we did not control for higher-order personality factors (i.e. neuroticism) when testing the predictive contributions of dysfunctional attitudes on treatment change and outcome. It is unclear whether results would have held after controlling for potential confounding variables. Because of the association between need for approval and tendencies towards social desirability (Uziel, 2010), self-reported limitations of postSA-DOS scores as reflecting this motivation should be considered when interpreting study findings. The design of study 2 prohibited us from conducting mediational analyses, limiting the interpretation of dysfunctional attitudes. Burns and Spangler (2001) found that dysfunctional attitudes as measured by the DAS did not mediate treatment changes in anxiety or depression. Rather, the results suggested a mediated effect through an unknown third variable. Causal conclusions regarding DAS have not been established in the current and previous studies (Tryon, 2014).

In conclusion, the current study demonstrated relevance of SA-DOS concerns to both anxiety and mood disorders, particularly among SAD and MDD patients. Furthermore, the current study also established that while SA-DOS concerns did change across treatment, the effects are relatively small. In addition to targeting surface cognitions and appraisals related to fear of causing discomfort to others, the results also suggest that treatment providers might also do well by targeting deeper dysfunctional attitudes related to need for approval to address SA-DOS concerns among SAD patients. However, in line with cross-cultural treatment recommendations for SAD, we uphold the caution that because tendermindedness, low assertiveness, and cooperativeness are culturally valued behaviours, it remains important not to over-pathologize these behaviours (Iwamasa, 1997; Rector et al., 2006a,b).

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