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Abstract

Research examining dysfunctional attitudes in Seasonal Affective Disorder (SAD) has produced contrasting results. The present study sought to resolve this contradiction by addressing some methodological problems of the previous studies. The study examined dysfunctional attitudes using the Dysfunctional Attitudes Scale (DAS) in individuals with SAD and never-depressed controls. The SAD group were tested both when depressed in the winter (Time 1) and during their remission period (Time 2). At Time 1 the SAD group displayed a relatively elevated DAS compared to controls and to their Time 2 scores. These data therefore provide potential support for a view that SAD is characterized by underlying dysfunctional attitudes.

**KEYWORDS:** seasonal affective disorder (SAD), dysfunctional attitudes

## 1. Introduction

Clinical shifts in affective response across the different seasons have been classified in the DSM-IV (APA, 2000) as Recurrent Mood Disorder with Seasonal Pattern, a condition also known as Seasonal Affective Disorder (SAD). SAD is characterised by a pattern of Major Depressive Episodes that recur in the autumn and winter and remit in the summer. There are established differences between SAD and nonseasonal depression in terms of symptom profile (with, for example, SAD being characterized by reversed neurovegetative symptoms such as hypersomnia and increased appetite, and nonseasonal depression being typically associated with early-morning waking and reduced appetite) and treatment of choice (phototherapy for SAD and psychological or pharmacotherapy for nonseasonal depression) (Dalglish, Rosen & Marks, 1996).

However, recent research suggests that SAD and nonseasonal depression may also differ in terms of their cognitive profile (Dalglish, Spinks, Golden & du Toit, 2004; Dalglish, Spinks, Kuyken & Yiend, 2001; Levitan, Rector & Bagby, 1998; Rohan, Sigmon & Dorhofer, 2003). In particular, patients with SAD do not seem to show either the usual depressotypic mood-congruent memory bias for negative words (Dalglish et al., 2004) or the usual difficulty that depressed individuals have in accessing specific autobiographical memories when cued (Dalglish et al., 2001). It has been proposed that such biases in underlying cognitive processes in nonseasonal depression are a function of underlying depressogenic dysfunctional beliefs or schemas (Beck, Rush, Shaw & Emery, 1979). On this basis, it has been argued that the pattern of null results across certain cognitive measures in SAD is a sign that the

disorder is not characterised by such underlying dysfunctional beliefs (Dalglish et al., 2001, 2004).

Recent data from Rohan et al. (2003) speak directly to this 'differential schemas' hypothesis. They presented SAD patients with a number of cognitive measures including the Dysfunctional Attitudes Scale (DAS; Weissman & Beck, 1978). The DAS is a widely used measure of underlying depressotypic attitudes or schemas. For example, "I cannot be happy unless most people I know admire me". Many studies have reported higher DAS scores (reflecting more depressotypic attitudes) in nonseasonally depressed groups compared to controls (e.g. Peselow, Robins, Block, Barouche & Fieve, 1990). However, Rohan et al. (2003) found no significant difference between SAD participants and controls on the DAS when administered in the autumn/winter.

On the face of it, these autumn/winter data of Rohan et al. (2003) are consistent with the hypothesis that SAD is not characterized by the same patterns of depressotypic attitudes or schemas found in non-seasonal depression and therefore offer support to the differential schemas hypothesis (Dalglish et al., 2004). Indeed, Rohan et al. (2003) concluded: "the schemas involved in SAD may be different from those found in nonseasonal depression and, hence, not adequately captured by the DAS" (p.28). If reliable, this finding would have potential clinical implications as it would suggest that aspects of cognitive therapy for depression, that target certain dysfunctional schemas, may have relatively less purchase for individuals with SAD and this may need to be taken into account when further developing psychological treatments for the seasonal version of the disorder - for which the initial results have been promising (Rohan, et al., 2003; 2004).

However, there are at least two sources of concern regarding the DAS findings of Rohan et al. (2003). The first is that the SAD patients had a *history* of the disorder, rather than being currently in episode. Indeed, only 12 out of 18 SAD participants were in episode at the time of autumn/winter testing. The second is that data from a previous study by Hodges and Marks (1998) indicated that SAD patients who were currently in episode did show higher DAS scores than non-depressed controls. However, a potential problem with the Hodges and Marks (1998) study is that SAD diagnosis was not established using a structured clinical interview. It is therefore possible that some of the SAD group were in fact patients with nonseasonal depression and that this might account for the depressotypic profile on the DAS.

Given the potential theoretical and clinical importance of understanding the nature of dysfunctional attitudes in SAD (Dalglish et al., 2004), it seems important to try and clarify these contrasting data regarding the DAS in SAD samples, especially as there are methodological concerns regarding both of the previous studies (Hodges & Marks, 1998; Rohan et al., 2003). The first aim of the current study was therefore to compare DAS scores from a group of SAD participants currently in episode, and diagnosed using a structured clinical interview, with those of a group of never-depressed controls.

A secondary aim of the current study was to include a longitudinal component to investigate whether DAS scores in the summer were lower than those in the autumn/winter in the SAD group (as was found by Rohan et al., 2003) and to explore the within-participant stability of DAS scores across autumn/winter and summer.

## **2. Methods**

### *2.1. Participants*

Power analysis based on the Hodges and Marks (1998) data, with 80% power and alpha set at .05, to investigate whether DAS scores were higher in SAD than in controls at autumn/winter testing indicated a sample size of only 5 participants in each group. However, this was augmented to 13 to ensure that the present sample size included more patients in episode than both the Hodges and Mark's study ( $N = 10$ ) and the Rohan et al. (2003) study ( $N = 12$ ). This was to avoid any concern that the present study had less power than the previous studies.

Consequently, thirteen (11 women, 2 men; mean age = 40.31 years;  $SD = 14.89$ ; all Caucasian) members of the U.K. Seasonal Affective Disorder (SAD) Association, a self-help organization, were recruited via oral advertisement for the research at their annual meeting. The inclusion criteria were: 1) meeting DSM-IV criteria for Recurrent Mood Disorder with Seasonal Pattern (APA, 2000) and presenting with a current Major Depressive Episode, as assessed by clinical interview at Time 1 (autumn/winter testing); 2) being available for re-testing at Time 2 (summer testing); 3) presenting with no evidence of psychosis or organic brain damage; and 4) being between the ages of 16 and 60. Diagnosis was determined using the Structured Clinical Interview for the DSM-IV (SCID; First, Spitzer, Gibbon & Williams, 1997). All SAD cases were of the Major-Depressive sub-type and all individuals were receiving light therapy during the autumn/winter period following initial testing.

Control participants were group-matched for age and sex with the clinical participants. There were 20 controls, 16 women and 4 men (mean age = 40.11 years;  $SD = 12.07$ ; all Caucasian), all of whom were recruited from the participant panel at the Cognition and Brain Sciences Unit, U.K. None of the controls met criteria for a current or past Major Depressive Episode (APA, 2000), according to the SCID, and none reported a history of depression.

## 2.2. *Materials*

### 2.2.1. *Measures of symptom severity*

SAD participants were administered the Hamilton Rating Scale for Depression (HRSD) – SAD version (SIGH-SAD; Williams, Link, Rosenthal, Amira, & Terman, 1988). The SIGH-SAD is a structured interview, modified from the HRSD (Hamilton, 1960), that measures levels of SAD symptomatology. There are 21 depression questions reflecting the original HRSD (which has well established reliability coefficients of .84 to .90), and 8 SAD questions that can be added in to give a total score (SIGH-SAD). All participants completed the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock & Erbaugh, 1961).

### 2.2.2. *Dysfunctional Attitudes Scale (DAS-Form A; Weissman & Beck, 1978).*

The DAS was designed to measure dysfunctional assumptions or schemas in depression. It consists of 40 beliefs that are typically endorsed by depressed individuals e.g. “If I fail partly, it is as bad as being a complete failure”. Participants endorse each item on a 1-7 scale, ranging from 1 = totally agree to 7 = totally disagree. The DAS has well-established test-retest reliability and high internal consistency (Weissman & Beck, 1978; Dobson & Breiter, 1983), and has been shown to distinguish nonseasonally depressed and never-depressed individuals in numerous studies (e.g. Peselow et al., 1990).

## 2.3. *Procedure*

Participants were administered the SCID before completing the mood measures and the DAS. The SAD participants were assessed at two time points. Time 1 was in November/December (autumn/winter) and Time 2 was in June/July

(summer) of the following year. The inter-test interval ranged from 6-8 months. The same procedure and measures were used at the two time points.

### **3. Results**

#### *3.1. Demographic and mood variables*

The demographic and mood measure data are presented in Table 1. As expected, at Time 1 the SAD group scored significantly higher than the controls on the mood measures but there was no significant difference between groups on demographic variables. At Time one, as already noted, all of the SAD group met criteria for a Major Depressive Episode (APA, 2000), and 11/13 met criteria for an episode on the SIGH-SAD (score > 19), according to the recommendations of Terman, Terman and Rafferty (1990), with the remaining 2 participants scoring 19. None of the SAD participants met criteria for either a Major Depressive Episode (APA, 2000) or an episode as defined by Terman et al. (1990), at Time 2. Using the Frank et al. (1991) criteria for interpreting scores on the HRSD (in this case the SIGH-SAD scores with the scores for the 8 SAD items removed), 12 of the SAD participants were fully remitted in the summer and 1 was partially symptomatic. Comparison of winter mood scores with those in the summer for the SAD participants revealed highly significant improvements in mood, lowest  $t = 3.7$ , all  $P_s < .001$ .

Table 1 about here

#### *3.2. DAS scores*

Mean DAS scores for the SAD and control groups at Time 1 and for the SAD group at Time 2 are also presented in Table 1. SAD participants scored higher on the DAS than controls at Time 1,  $t(31) = 3.38$ ,  $P < .01$ , Cohen's  $D = 1.2$ , and DAS scores in the SAD group were significantly lower at Time 2 than at Time 1,  $t(10) = 2.50$ ,  $P < .05$ . The present mean DAS scores for SAD patients in-episode are around 1 SD

higher than the mean DAS scores for the SAD-history group (of whom only 2/3rds were in episode) in the study by Rohan et al. (2003).

### *3.3. Stability of the DAS*

DAS scores at Time 1 were not significantly correlated with DAS scores at Time 2 for the SAD participants,  $r(10) = -.38, p > .3$ .

## **4. Discussion**

The primary aim of this study was to examine whether SAD patients currently in episode, would score higher on the Dysfunctional Attitudes Scale (DAS) than non-depressed controls. The data indicated that this was the case, with a large effect size (Cohen's  $D = 1.2$ ). The second aim was to examine whether scores on the DAS changed significantly when patients with SAD entered a period of symptom improvement (at Time 2) and to examine the stability of DAS scores in the SAD group over time. The results revealed that DAS scores were significantly lower in SAD patients at Time 2, relative to in-episode, and that DAS scores in-episode were not significantly associated with DAS scores in remission.

The present cross-sectional data at autumn/winter testing replicate the findings of Hodges and Marks (1998) who also found a significant difference between SAD in-episode patients and controls on the DAS. These two sets of data contrast with the findings of Rohan et al. (2003), which did not support such a difference at the time of autumn/winter testing (although the present data did replicate the longitudinal findings of Rohan et al. in showing that DAS scores were significantly lower in summer in SAD patients than in fall/winter). As noted in the Introduction, the Rohan et al. study included a number of SAD patients who were not in-episode at the time of

autumn/winter testing and this may have accounted for their null result. For example, even though levels of depression overall were less severe in the present study than in the Rohan et al. dataset, there may be some *qualitative* difference between patients meeting diagnostic criteria for being in-episode, compared to those with sub-diagnostic levels of symptoms - for instance, sub-diagnostic individuals may be more able to implement cognitive mood repair strategies, thus 'normalising' their profile of responses on the DAS.

The present cross-sectional data therefore provide *no support* for a differential schemas hypothesis as outlined in the Introduction (Dalglish et al., 2004), which proposes that SAD patients, unlike their non-seasonally depressed counterparts, do not possess underlying dysfunctional beliefs or schemas. However, it is still not possible to conclude from the present data that such negative schemas are a characteristic of SAD. It remains possible that SAD patients, when symptomatic, endorse items on the DAS simply as a result of some form of depressive response bias, rather than because those items genuinely reflect underlying schemas/beliefs (Dalglish et al., 2004). One way to examine this issue would be to investigate whether DAS scores in *remitted* SAD patients became elevated following a negative mood induction, as they do in remitted nonseasonally depressed individuals. Such state elevation of DAS scores is seen as a marker of underlying trait-like dysfunctional attitudes or schemas (e.g. Miranda & Persons, 1988) and would mitigate against a simple response bias explanation.

The lack of a significant correlation between Time 1 and Time 2 DAS scores in the SAD participants is perhaps surprising, suggesting that DAS scores are not highly stable in this population when individuals undergo remission. This contrasts with non-seasonal depression where the Das seems relatively stable even during

recovery following treatment (e.g. Zuroff, Blatt, Sanislow, Bondi & Pilkonis, 1999). It is unwise, of course, to read too much into a null finding. However, these data do reinforce the possibility that DAS scores are measuring something different in seasonal and non-seasonal depression.

The present study has a number of limitations. It would have been preferable to have also followed-up the control participants at Time 2 to investigate whether DAS scores in the summer in the SAD group were significantly different from those of controls. In addition, the SAD participants in the current study were recruited from an annual meeting of the SAD self-help organisation. This has implications for generalizability and raises the question as to whether such participants are truly representative of the average SAD patient.

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Table 1

Scores for the mood and cognitive variables across groups

	SAD (N=13)		Controls (N=20)	
	11 women & 2 men		16 women & 4 men	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
AGE	40.31	14.89	40.11	12.07
BDI - winter** <sup>a</sup>	21.77	14.01	2.20	2.93
BDI - summer	6.00	5.05	-	-
SIGH-SAD - winter	32.10	9.80	-	-
SIGH-SAD - summer	5.00	5.11	-	-
DAS - winter*	141.77	23.24	109.35	28.99
DAS - summer <sup>b</sup>	114.45	19.19	-	-

Note

BDI = Beck Depression Inventory.

DAS = Dysfunctional Attitudes Scale

SIGH-SAD = Hamilton Rating Scale for Depression-SAD version

a = one of the SAD group did not complete this measure.

b = two of the SAD group did not complete this measure.

\*\* = groups significantly different at  $p < .001$

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