THE ROLE OF METACOGNITION WITHIN SOCIAL ANXIETY DISORDER (SAD)
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Abstract
Social Anxiety Disorder (SAD) is one of the most common anxiety disorders and a highly disabling condition. SAD usually develops in early to late teens, with clinical trials highlighting impairments in mental health, general health, vitality and social functioning. Since Wells & Mathews (1994) introduced the metacognitive model, beliefs about thinking have been associated with the development of psychopathologies within clinical trials but, little is known about the contribution of individual differences in metacognition to SAD specifically.
In this study a cross sectional design was utilised and opportunity sampling used for acquiring participants in order to assess the contribution of metacognition, a specific form of thinking style and cognition, when measured outside the clinical environment. Participants completed a questionnaire pack and the following hypotheses were tested; metacognition will correlate positively with social anxiety; metacognitive beliefs about uncontrollability and danger will be the strongest independent predictor of social anxiety; metacognition will display a role, which is independent of cognition, within social anxiety. Multiple regression analysis was run to test these hypotheses and to determine the best independent metacognitive predictors. The results supported each hypothesis and revealed three metacognitive predictors of social anxiety. Overall this study indicated that metacognition may have an important role in social anxiety, a role independent of cognition.

Keywords: Social Anxiety Disorder (SAD), Students, S-REF, Metacognition, Mental Health, Metacognitive Therapy (MCT).

Introduction
Social anxiety disorder (SAD) is the persistent fear of, or anxiety about, social performance situations that is out of proportion, in frequency or duration, to the actual threat presented by the situation (National Institute for Health and Care Excellence [NICE] 2013; DSM 5; American Psychiatric Association [APA] 2013). This can result in situations being evaded or endured under severe distress (Veale 2003). SAD is believed to be one of the most common anxiety disorders, with high prevalence rates (Furmark 2002; NICE 2013; Kashdan & Herbert 2001; Kessler et al. 2005), stressing the need for a better understanding of the complexities of social anxiety.
When anxiety reaches levels which allows it to interfere with functioning, it can become a highly disabling condition and may develop into a psychiatric disorder resulting in detrimental consequences for quality of life (de Visser et al. 2010). SAD usually develops in early to late teens (Otto et al. 2001; Schneier et al. 1992), and Keller (2003) reports low remission rates. Sufferers were severely impaired in mental health, general health, vitality and social functioning (Acarturk et al. 2009). Research emphasises the comorbidity of SAD with depression (Stein et al. 1990), personality disorder (PD) (Schneier et al. 1992), general anxiety disorder (GAD) (Mennin, Heimberg & Jack 2000), and specific phobias (Garber & Weersing 2010; Ohayon & Schatzberg 2010). Furthermore, research reveals that it can be detrimental to educational, social and, eventually, occupational performance (Stein & Kean 2000).

Many young people enter university during a stage of adolescence which can be a time of high anxiety levels (Brady & Kendall 1992). With the academic and social demands, students undertake psychological and psychosocial changes which can make them more vulnerable to mental health problems (Bayram & Bilgel 2008). Academic and social performance amongst students, has been linked to mental health issues (Backels & Wheeler 2001) which increasingly interfere with academic achievement (Young 2004).

The aetiology of SAD encompasses many factors including: genetic (Kendler, Karkowski & Prescott 1999; Stein, Jang & Liveley 2002), environmental (Knappe et al. 2009; Lieb et al. 2000), personality (Schofield, Coles & Gibb 2009) and neurobiological (Mathew, Coplan & Gorman 2001; Tillfors 2004). Investigation of the neural bases of emotional reactivity and cognitive regulation in SAD (Goldin et al. 2009) reveals that patients with SAD demonstrate greater negative emotion and reduced cognitive regulation to threatening stimuli than controls.

Maladaptive cognitions have been widely investigated and offered as the maintaining factor of social anxiety, with Beck (1976) stating that cognitive distortions result in negative evaluation of the environment, themselves and future prospects. Clark and Wells (1995) extend on this, with their cognitive model emphasising the role of specific processes, such as worry, rumination and self-focused attention, in the maintenance of social anxiety. Three specific processes are prominent in the maintenance of the disorder: anticipatory processing, which refers to worry preceding entry to social situations; post mortem processing, dwelling on negative evaluations of past social events; and the focus on an inner image from the perspective of observers, all factors which can be problematic within a university environment. In addition to being self-focused, SAD individuals
become selectively focused on negative external information, making them more likely to perceive negative social feedback and misread ambiguous exchanges as negative (Rapee & Heimberg 1997). Selective attention, or bias, towards negative information is seen as a contributing factor in the development and maintenance of social anxiety (Mathews & MacLeod 1994).

This negative bias is also evident within metacognitive models. Metacognition relates to ‘cognition applied to cognition’ (Wells 2007, 18) and views the persistence of negative beliefs and thoughts to be the product of metacognitions controlling cognitions (Wells 2007). The S-REF model has been produced proposing a description of the cognitive and metacognitive factors associated in the top-down maintenance of emotional disorders (Wells & Mathews 1994; Wells 2000 & 2011). It stresses the importance of metacognition within the maintenance and psychopathology of emotional disorders and suggests three levels in which cognitive processes are spread: low level processing, which is automatic and involuntary; online conscious processing, believed to be voluntary and within the individual’s awareness; and self-knowledge, which can be declarative and procedural. The procedural knowledge includes metacognitive strategies used to guide the styles of controlled processing containing the rules and thinking skills required to direct cognition towards the reduction of conflict between the felt current state and the desired state. Declarative self-knowledge contains metacognitive beliefs, which are the beliefs about our own cognitions. These are differentiated by positive beliefs, relating to the usefulness of worry, rumination and threat monitoring, and negative beliefs, which involve the uncontrollability of thoughts and the danger and importance attached to them (Wells & Mathews 1994; Wells 2000 & 2011). These are key elements which this study investigates.

The S-REF model (Wells & Mathews 1996) has drawn attention to an association between metacognition and the pathological symptomology of anxiety. Recent research has supported the connection between metacognitive beliefs, especially negative beliefs about worry, and the maintenance of psychological disorders (Bailey & Wells 2013; Barahmand 2009; McEvoy & Mahoney 2013; Spada, Georgiou & Wells 2010), including those within university student populations (Omid, Somayeh & Saeed 2010; Tajrishi, Mohammadkhani & Jadidi 2011; Yilmaz, Gencoz & Wells 2011).

Metacognition is viewed as a transdiagnostic factor within psychopathologies (Bailey & Wells 2013) and therefore should emphasise variation within SAD. Furthermore, metacognition should also account for a large part of the relationship normally observed between cognition and psychological symptoms (Wells 2000). To corroborate this claim, this study hopes to demonstrate that, in
accordance to the S-REF model, metacognition will correlate positively with social anxiety. It is also predicted, in line with previous research identified above, that the negative beliefs about the uncontrollability of thoughts and danger subset, will be the strongest independent predictor of social anxiety. Additionally, it hopes to test the assumption that metacognition will display a role which is independent of cognition, within social anxiety.

**Method**

**Design**

A between subjects cross-sectional design, using stepwise forward regression, was utilised with the aim being to determine the role of predictor variables: positive beliefs about worry (MCQPOS), negative beliefs about uncontrollability of thoughts and danger (MCQNEG), cognitive confidence (MCQCC), cognitive self-confidence (MCQSC), beliefs about the need to control thoughts (MCQNC), subsets of the Meta-Cognitions-30 questionnaire, and Social Cognitions Questionnaire (SCQ) on the criterion variable of social anxiety, the Social Phobia Inventory (SPIN). Two further hierarchal regressions were carried out to highlight the roles played by MCQNEG and the Social Phobia Total (SCQTOT) within the model. Pearson correlations were computed between measures of Social Anxiety (SPIN), Metacognitions Total (MCQTOT), SCQTOT and the five MCQ-30 subscales.

**Participants**

A total of 169 students from a North West University, Male (N=33) and Female (N=133), with ages ranging from 18-24 (N=111), 25-34 (N=24), 35-54 (N=29) and 55+ (N=2), with 3 participants not disclosing age or gender, were opportunity sampled and asked to complete three questionnaires, either in hard copy or online: 1) Social Phobia Inventory (SPIN), 2) Social Cognitions Questionnaire (SCQ), 3) Metacognitions Questionnaire (MCQ-30).

**Measures**

**Social Phobia Inventory [SPIN] (Connor et al. 2000)**

This 17 item questionnaire measures fear, avoidance and physiological symptoms in social phobia and has good test-retest reliability (r=.86, p<.001) (Antony et al. 2006). The questionnaire lists problems which may have worried the participant over the previous week such as ‘I avoid talking to people I don’t know’, and are scored from a Likert scale of 0 – 4 with 0 representing ‘not at all’ and 4 indicating ‘extremely’. These are added to give a total score with a range of 0 – 68. A score of 19 or above indicates caseness, the level where introducing treatment is appropriate. SPIN is the recommended measure of SAD (Improving Access to Psychological Therapies (IAPT) 2012).
Social Cognitions Questionnaire (SCQ) (Wells, Clark & Stopa 1993).
This consists of 22 items, utilised within two separate scales: measuring frequency of specific cognitions when anxious, and the strength of belief in each cognition when anxious.

The first measures ‘how often’ thoughts such as ‘I am weird/different’ occurred within the last week on a 5 point Likert scale, 0 representing ‘thought never occurs’ and 5 signifying ‘thought always occurs when I am nervous’. Scores are added together to give a total score for frequency with a range of 0 – 90.

The second section comprises of how much the participants ‘believe’ each of these thoughts to be true when anxious. These are measured on a sliding scale, with a range of 0 – 100, 0 representing ‘I do not believe this thought’ and 100 indicating ‘I am completely convinced this thought is true’. The ‘believe’ items are added to give a total score for strength of belief, with a range of 0 – 2200.

The scores from both sections are then added together to create a total. This questionnaire was used in its original format for the hard copy but was modified for the on-line questionnaire, being produced as two separate questionnaires, to aid understanding and clarity for participants.

This is a brief multidimensional measure of metacognitions, which has good dimensionality and subscale internal consistency (Spada, Mohiyeddini & Wells 2008). It consists of five correlated but distinct factors:

1) Positive beliefs about worry (MCQPOS), assesses the individuals beliefs that worry is helpful
2) Negative beliefs about worry (MCQNEG), assesses beliefs that worrying is uncontrollable and dangerous
3) Lack of cognitive confidence (MCQCC), measures low confidence in memory
4) The need to control thoughts (MCQNC), assesses the need to control ones thoughts and consequences of the inability to do so

Each subset contains a scoring range of 6 – 24, rated on a 4 point Likert scale, varying from 1 ‘do not agree’ to 4 ‘very much agree’; the higher the score, the higher the metacognitive beliefs. Total scores (MCQTOT) are obtained by adding together all item scores, these range from 24 – 120.
Procedure
The study received ethical authorisation and convenience sampling was used to recruit participants. Participants obtained a brief of the study outlining confidentiality and informed that they could withdraw at any stage up until they hand back, or submit for online copies, their completed questionnaires. After this point data could not be retrieved due to the anonymity, with only participant’s age and gender being retained. If agreeing to take part, they were asked, or directed for online study, to complete questionnaires, containing the SPIN, SCQ and MCQ:30. On completion participants were presented with a study de-brief, questionnaires were collected, scores collated and results generated before being entered into SPSS for analysis.

Results
Raw data consisted of; age and gender; the scores for each section of the SCQ; individual scores for the MCQ subsets and; the scores which were totalled for the MCQTOT. In order to ascertain the relationship between the predictor variables with social anxiety, Pearson correlations were computed between measures of SPIN, MCQTOT, Social Phobia Total (SCQTOT) and the five MCQ:30 subscales. A summary of results are reported in Table 1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.SPIN</td>
<td>.587**</td>
<td>.740**</td>
<td>.333**</td>
<td>.540**</td>
<td>.338**</td>
<td>.229**</td>
<td>.349**</td>
<td>21.52</td>
<td>14.11</td>
</tr>
<tr>
<td>2.MCQTOT</td>
<td>.642**</td>
<td>.631**</td>
<td>.735**</td>
<td>.578**</td>
<td>.336**</td>
<td>.784**</td>
<td>62.96</td>
<td>15.49</td>
<td></td>
</tr>
<tr>
<td>3.SCQTOT</td>
<td>.344**</td>
<td>.553**</td>
<td>.404**</td>
<td>.252**</td>
<td>.406**</td>
<td>661.22</td>
<td>527.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.MCQPOS</td>
<td></td>
<td>.264**</td>
<td>.165*</td>
<td>.178*</td>
<td>.469**</td>
<td>11.52</td>
<td>4.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.MCQNEG</td>
<td></td>
<td>.292**</td>
<td>.185*</td>
<td>.446**</td>
<td>13.57</td>
<td>5.21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.MCQCC</td>
<td></td>
<td></td>
<td>.185*</td>
<td>.270**</td>
<td>11.15</td>
<td>4.13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.MCQNC</td>
<td></td>
<td></td>
<td></td>
<td>.234**</td>
<td>12.14</td>
<td>9.29</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.MCQCSC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15.26</td>
<td>4.45</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Correlation significant at .01 level (Two Tailed)
*Correlation significant at .05 level (Two Tailed)
All correlations were significant ($p<.05$), indicating high scores on all total measures relate to high scores on the social anxiety measure. With relation to metacognition, the MCQ-30 was positively and significantly associated with social anxiety, showing significance in each variable. Multicollinearity was investigated by inspection of variance inflation factor (VIF) and tolerance statistics. After entering all predictors none were shown to be problematic with all tolerance values greater than .2 (range .59 – .93; Menard 1995) and all VIF values lying below 10 (Myers 1990). MCQTOT was omitted as this is a total value of all metacognition subsets and has obvious correlation with the other predictors.

A multiple regression, using the stepwise selection, was carried out on the MCQ subsets to assess whether they were significant predictors of social anxiety and to ascertain the strongest independent predictor. The overall model was significant ($F(3,163)=31.06, \ p<.001$) indicating that metacognition significantly predicts social anxiety with the model explaining 36% of variance in social anxiety scores ($R^2=.36$, Adjusted $R^2=.35$). Of the five predictors three were significant; MCQCC ($B=.18, t=2.80, p=.006$) added 3% to the model, MCQPOS ($B=.21, t=3.19, p=.002$) added a further 4% to the model and; MCQNEG ($B=.54, t=8.25, p<.001$) which added a further 29% to the model and was shown to be the strongest predictor of the subsets. MCQNC and MCQCSC were excluded as they were not significant predictors of social anxiety. The results are shown in Table 2.

### Table 2: Forward Stepwise Regression Analysis of Social Anxiety

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>Beta</th>
<th>t</th>
<th>Sig.</th>
<th>$R^2$</th>
<th>Adj. $R^2$</th>
<th>$R^2$change</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MCQNEG</td>
<td>.54</td>
<td>8.25</td>
<td>.000</td>
<td>.29</td>
<td>.29</td>
<td>.29</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>MCQPOS</td>
<td>.21</td>
<td>3.19</td>
<td>.002</td>
<td>.33</td>
<td>.33</td>
<td>.04</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>MCQCC</td>
<td>.18</td>
<td>2.80</td>
<td>.006</td>
<td>.36</td>
<td>.35</td>
<td>.03</td>
<td>$F(1,163)=7.83, p=.006$</td>
</tr>
</tbody>
</table>

ANOVA: $F(3,166) = 31.06, p<.001$

A hierarchical regression was then carried out to examine the unique contribution of MCQNEG, the strongest metacognitive predictor, when controlling for the measure of cognition, SCQTOT. At step 1 SCQTOT was entered into the model to control for cognition. This explained 55% of the variance ($R^2=.55$, Adjusted $R^2=.55$). MCQNEG was then entered at step 2 and explained a further 3%. Statistics for the final step were: the multiple $R$ was .57 and significant ($F(2,166)=110.61, p=.002$).
The results are shown in Table 3.

<table>
<thead>
<tr>
<th>Table 3: Summary of Hierarchical Regression Controlling for Cognition</th>
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<tbody>
<tr>
<td>Step</td>
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<tr>
<td>------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
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<td></td>
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</table>

ANOVA: \( F(2,166)=110.61, p=.002 \)

With MCQNEG proving to be the strongest predictor of social anxiety within the subsets, it was considered relevant to examine the contribution made by cognition to the variance in the sample. Therefore a further hierarchal regression was then carried out to examine the effect of cognitions on social anxiety when controlling for metacognition. At step 1 MCQNEG was entered into the model this now explained 29% of the variance \( (R^2=.29, \text{Adjusted } R^2=.29) \). SCQTOT was then entered at step 2 and explained 28% of the variance. Statistics for the final step were: the multiple R was .57 and significant \( (F(2,166)=110.61, p<.001) \). A summary of these results is shown in Table 4.

<table>
<thead>
<tr>
<th>Table 4: Summary of Hierarchical Regression Controlling for the Strongest Metacognitive Predictor Variable, MCQNEG, of Social Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
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<td></td>
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</tbody>
</table>

ANOVA: \( F(1,164)=108.82, p<.001 \)

Discussion

Correlation analysis confirmed that metacognition is a determinant of social anxiety, with all subsets of the MCQ-30 positively and significantly associated with social anxiety. Regression analysis highlighted three distinct subsets; MCQNEG; MCQPOS and; MCQCC, as positive and significant predictors of social anxiety. Further regression analysis, to determine the strongest predictor within the MCQ subsets, highlighted, as predicted and in support of previous research, MCQNEG to be the strongest metacognitive predictor variable. When controlling for cognition, the SCQTOT was also shown to be a positive and significant predictor of social anxiety, adding over half of the variance within the model. However, when controlling for metacognition, this resulted in MCQNEG
contributing 29%, with the SCQTOT contributing 28%. This supported the hypothesis that the MCQNEG subset would be the strongest predictor of social anxiety. The relationship shown here between metacognition, especially the MCQNEG subset, and social anxiety, replicates those shown within previous research and highlights the influence of metacognition within the development of a range of psychological symptoms. These results offer further support of the S-REF model, put forward by Wells and Mathews (1994), which highlights the cognitive and metacognitive factors involved within emotional disorders (Wells, 2011) and, in support of the final hypothesis, shows that metacognition has a role, independent of cognition, within social anxiety.

Research undertaken into metacognitive profiles in anxiety disorders (Barahmand 2009) revealed that the relationship between metacognitions and anxiety disorders was predictable in 70% of all cases. Also, recent research carried out on university students in Turkey (Yilmaz, Gencoz & Wells 2011) and Iran (Omid, Somayeh & Saeed 2010; Tajrishi, Mohammadkhani & Jadidi 2011) to study the interaction of metacognitive beliefs with the symptoms of anxiety and depression, again supported the relationship between metacognitive beliefs in the maintenance of anxiety and depression. Furthermore, as in the present study, all showed negative beliefs about uncontrollability of thoughts and danger to be the strongest predictor of anxiety.

To combat SAD, sufferers are signposted to therapies such as Cognitive Behavioural Therapy (CBT). CBT is an accessible, skills based, therapy (Briers 2009) that concentrates on negative automatic thoughts. It shows medium to large effect sizes in randomized clinical trials (Barmish & Kendall 2005; Compton et al. 2004; Walkup et al. 2008) and is utilised as the first line of defence against anxiety disorders in adults and children (NICE 2013). NICE (2013) guidelines, for the treatment of children (school aged to 17 yrs), state that: either individual or group CBT should be offered. There should be between 8-12 sessions, 45 (90 for group) minutes in duration, delivering psycho-education and exposure to feared or avoided social situations, training in social skills and the opportunity to rehearse these skills in social situations. However, it has been noted that youths with SAD may be less responsive to CBT treatments, due to the negative beliefs about social outcomes, than those presenting with other anxiety disorders (Kearns et al. 2013). Therefore, for those individuals presenting with SAD, it may be more productive to attend directly to the concepts of self-focused attention, negative beliefs and repetitive thinking patterns (Wells 2011). Consequently, a greater importance is placed on modifying attention and worry processes, focusing on the metacognitions which maintain the maladaptive cognitive mechanisms and their corresponding coping strategies (Wells & Mathews 1994).
MCT (Wells 2011) focuses on the view that thoughts are not important; it is the reaction to thoughts that matter. Intervention is aimed towards establishing new ways of relating to negative thoughts and beliefs, by modifying metacognitive beliefs that give rise to obstructive patterns of thinking (Wells 2011). It has recently been shown as an effective therapy in disorders such as; psychosis (Morrison et al. 2014), GAD (Hjemdal, Hagen & Nordahl 2013), body dysmorphic disorder (Rabiei et al. 2011) and the reduction of student anxiety (Valizade et al. 2013). MCT may be a more effective form of treatment for those with SAD, as it would directly focus on modifying the mechanisms for maintaining this disorder.

There are some limitations to the present study. The cross sectional nature of the study does not allude to causation, and the causality of the relationship between metacognition and social anxiety remains to be examined. Also, the use of self-report measures can be problematic. Although checked for both validity and reliability, they rely on participant honesty and can be inexact, mistaken or misinterpreted (Razavi 2001).

**Conclusion**

Social anxiety is one of the most common disorders which is, detrimental in all areas of social interaction (Acarturk et al. 2009), evident within university students (Omid, Somayeh & Saeed 2010; Tajrishi, Mohammadkhani & Jadidi 2011; Yilmaz, Gencoz & Wells 2011) and highly prevalent (Furmark 2002; NICE 2013). Clinical trials have shown beliefs about thinking, metacognition, to be associated with the development of psychopathologies, however, specific investigations of this area within SAD is limited. This study was implemented in order to explore the role of metacognition within social anxiety. A questionnaire pack was produced and presented to a non-clinical sample of university students. Hypotheses were established predicting; the correlation of measures of metacognition with social anxiety; negative beliefs about uncontrollability of thoughts and danger, to be the strongest indicator of social anxiety and; that metacognition would reveal a role within social anxiety which was independent of cognition. The results support all three hypotheses. In support of previous research, the study further highlighted the role of negative beliefs about uncontrollability of thoughts and danger, in the maintenance of social anxiety. Additionally, the results validate the prognostic potential of specific metacognition measures, above other established indicators of symptoms, and offer further support for the metacognitive theory of psychopathology.
References


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