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Perspectives on social anxiety

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Thesis submitted in fulfilment of the requirements for the degree of Doctor of Psychology

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Declaration

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PART A: PREFACE

Introduction

The theme of this portfolio is social anxiety which is defined as an excessive fear of one or more social situations which may result in embarrassment or humiliation (American Psychiatric Association, 2013). Historically it has been labelled and positioned as a phobia which masks the complex and disabling nature of the problem. Humans are social beings and avoidance of others can be extremely problematic as a coping strategy. Where situations are regularly avoided, there are likely to be long-term negative consequences for an individual's education, employment and personal life (Furmark, 2002).

Anxiety is a response to threat. In cognitive behavioural models of social anxiety the threat is framed as the fear of negative evaluation in social situations (Clark & Wells, 1995; Rapee & Heimberg, 1997). Being judged negatively can be understood as a threat to the sense of self (Alden, Auyeung & Plasencia, 2014). Sociologists and evolutionary psychologists have highlighted that social anxiety relates to a threat to social bonds and to social rank which are central to the functioning of societies (Scheff, 2015; Gilbert, 2000). The cognitive model of social anxiety (Clark & Wells, 1995) arguably aligns with this perspective as it positions negative beliefs about the self and the perspective others have of them, as central to the maintenance of social anxiety (Hedman, Ström, Stünkel, & Mörtberg, 2013).

My interest in this topic has grown through many routes. As a clinician, I have observed that clients with social anxiety thought their problem was a personality issue and therefore did not seek treatment until they were very depressed. As a university lecturer, I found that many students avoided participating in learning activities because of social anxiety and would exit university courses prematurely or seek recognition of special circumstances to have modified assessments, particularly where it involved a

degree of public presentation. In life generally, I have observed the struggles and upset experienced by teenagers and young adults in their attempts to manage the fear of being judged negatively by their peers. The rapid development of social media and networking has created a new challenge and a complexity to the task of safeguarding one's social standing (Shaw, Timpano, Tran, & Joormann, 2015).

I have been struck by how little attention social anxiety receives in mental health literature and general communication, particularly the lack of acknowledgement of the problem on university websites. This is despite studies highlighting that it is a very common mental health problem and more prevalent than any other anxiety disorder (Kessler et al. 2005). So why is this the case? The National Institute for Health and Care Excellence (NICE, 2013) highlight that there is "poor recognition, inadequate assessment and limited awareness of social anxiety" (p.7). In addition those who are in most need of help are unlikely to come forward, not only because they do not perceive their distressing experiences as treatable, but because they fear the social contact psychological therapy would involve.

This portfolio examines social anxiety from multiple perspectives. I am a counselling psychologist and an accredited cognitive behavioural psychotherapist and I am guided in my clinical work by the evidence-base and by recommended protocols for practitioners (British Association for Behavioural and Cognitive Psychotherapies, 2010). CBT models of social anxiety therefore figure prominently in this portfolio. CBT is a wide ranging family of therapies and as Palmer (2008, p.vi) points out, it is "constantly developing, acquiring and integrating new ideas." It is therefore an exciting area for research that can have direct relevance to clinical practice.

I have chosen to do a quantitative study of social anxiety for three reasons. Firstly, there can be difficulties in recruiting socially anxious individuals for a study

requiring in-depth interviews due to the nature of the problem. Another important reason was my desire to arrive at findings that were generalizable and had direct application to the current debates in social anxiety and the mental well-being of students at university. A further reason for choosing a quantitative approach is that my skills in this area have been under-used since undergraduate studies and having completed a qualitative study at Masters' level, it seemed important to consolidate my research skills by re-engaging in quantitative data gathering and analysis.

Corrie (2003) suggests that knowing and considering the evidence-base available in clinical practice relates to the moral principle of doing the best for a client. My aim in the compilation of this portfolio is to demonstrate my knowledge, skills and attitudes as a scientist-practitioner (Bury & Strauss, 2006, p.120) engaging in evidence-based psychotherapy and as a practitioner-scientist reappraising the evidence emerging from clinical practice to add to the development of guidance for evidence-informed practice. Scientific research is the progression towards greater degrees of certainty rather than arriving at certainty (Sense about Science, 2013). When working with complex clients, clinicians are likely to find some gaps or controversy in the evidence-base relevant to treatment. While a clinician needs to take the perspective of a practitioner-scientist combining clinical experience and scientific principles, they also need to engage in the relationship as an authentic individual listening to and appreciating a client's unique personal narrative and concerns.

Part B: Research

The research thesis examines social anxiety in the first term of undergraduate studies and the breadth of investigation moves through from prevalence rates to cognitive processes and their interaction. Methods used include cross-sectional surveys

and laboratory-based investigations involving eye-tracker during a live social interaction. The research is divided into three studies to provide greater clarity as each study has a separate focus although there are interweaving strands. Study 1 looks at the prevalence of social anxiety among new undergraduates and the associated beliefs and behaviours. Study 2 examines attentional bias in social anxiety and addresses the challenge of ecological validity in this field of research (Barry, Vervliet, & Hermans, 2015) by using an innovative design involving an eye-tracker connected to Skype. Study 3 examines the association between cognitive processes in social anxiety, specifically interpretive and attentional bias and interpretive bias and rumination which all play a part in the maintenance of the problem. All three studies are exploratory in nature as the sampling size limits the conclusions that can be drawn. The implications of the findings are discussed both in clinical and educational settings and directions for future research are proposed. Applications of a new research method for investigating attentional bias in social anxiety are also described.

Part C: Critical Literature Review

The critical literature review considers the role of shame in social anxiety. The definition of social anxiety in the Diagnostic and Statistical Manual for Mental Disorders, Fifth Edition (DSM-5) refers to the excessive fear of being negatively judged by others (APA, 2013, p.202). It also describes the socially anxious individual as fearing they will behave in a way that will lead to embarrassment or humiliation and rejection. Socio-evaluative emotions such as embarrassment and humiliation are often poorly defined and used in a confusing fashion. In this literature review, shame is the term used for this family of emotions and a definition is offered which encompasses embarrassment and humiliation. Lynd (1958) suggests that shame is overlooked often

because it is a hidden and isolating emotion although it is very pervasive in human relationships.

Although shame is not explicitly acknowledged in CBT models of social anxiety, the cognitive model of Clark and Wells (1995) appears to acknowledge its presence indirectly in the types of negative self-referential cognitions which are described as strongly associated with social anxiety. The critical literature review in this portfolio examines this association so that conclusions can be drawn as to whether shame warrants greater prominence in the formulation and treatment of social anxiety.

Part D: Professional Practice

The case study presented is of a client with social anxiety. It aims to highlight how the client's unique presentation shapes the formulation and treatment plan, whilst placing the evidence-based cognitive model of social anxiety and associated protocol (Clark & Wells, 1995) as central to the work. In this case, my understanding of how to apply theory to practice was enhanced by the research I had carried out for other parts of this portfolio, particularly in relation to the heterogeneity of social anxiety and the link between imagery in social anxiety and past memories of experiencing shame.

I left the case study until I was close to completing my research thesis and my critical literature review so they could inform the clinical work. This broader understanding of social anxiety led to adaptions to the formulation and treatment approach and allowed me to respond more effectively to the client's priorities for treatment.

Reflections on the portfolio

I have chosen to look at social anxiety across all three pieces of this portfolio to achieve a depth of understanding that can inform my clinical practice and make a contribution to the research literature on identifying and treating social anxiety, particularly among young adults. The process of developing this portfolio has led me to reflect on how much related theory and research there is to consider in psychological therapies. More importantly it has led me to reflect on the process of effective engagement with emerging research in general: how to absorb, keep up to date and apply knowledge in my professional practice. It has highlighted the importance of holding coherent, well-reasoned hypotheses rather than rigid conclusions and avoiding the danger of sticking to patterns of practice without review, challenge and experimentation. There are many pathways for further research and reflection that emerge from this portfolio. For example, the need to consider the dimension of the virtual world of social interaction in the assessment, formulation and treatment of social anxiety.

BPS research ethics (2014, p. 11) point out "Psychology researchers should seek to maximise the benefits of their work at all stages, from inception through to dissemination". I have tried to bear this in mind throughout the data gathering and writing-up of my research thesis. I have done some preliminary work with the university where the research was carried out so that student services, from induction to career guidance and particularly counselling and well-being services, can identify and support students with problematic levels of social anxiety more effectively.

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PART B: RESEARCH

SOCIAL ANXIETY: PREVALENCE AND PROCESSES

Abstract

While there is empirical support for cognitive behavioural models of social anxiety, the attentional processes underlying social anxiety are not clearly understood in part due to the poor ecological validity of studies. There is also a scarcity of research on social anxiety among students. Across three interconnected studies using the same sample, this research examined the prevalence and nature of social anxiety in new undergraduates using a cross-sectional design.

Study 1 examined the prevalence and nature of social anxiety and found that new undergraduates experience very high levels of social anxiety, with a third of participants experiencing levels equivalent to a clinical population. In line with the Clark and Wells (1995) cognitive model of social anxiety, the findings also suggest that high levels of social anxiety are associated with frequently occurring and strongly believed negative self-referential cognitions and the frequent use of problematic avoidance and impression-management behaviours. The implications of these findings for students' engagement in university life are discussed.

Study 2 examined the relationship between social anxiety and self-focused attention during a live social interaction using an innovative design involving an eye-tracker connected to Skype to measure self-focused attention in a naturalistic setting. A positive correlation was found between social anxiety and fixation time on the live self-image using a Spearman Rho test, $rs(58) = .29$, $p = .02$. The implications of this new approach for elucidating the nature of attentional bias in social interactions are examined and possible clinical applications are discussed.

Study 3 examined the association between interpretive bias and attentional bias and between interpretive bias and ruminative processes, all processes implicated in the maintenance of social anxiety. A positive association was found between these processes providing support for the cognitive model of social anxiety.

Chapter 1

Introduction

1.1 Overview

Humans are social beings and daily life typically involves interactions with individuals and groups across a number of situations. Social anxiety is an excessive and persistent fear of negative evaluation in one or more social situations which results in marked distress or impairment in functioning (American Psychiatric Association [APA], 2013). Public speaking is a situation commonly feared (Dwyer & Davidson, 2012) but for most people it can usually be avoided. An individual with high levels of social anxiety in common situations will experience frequent distress or significant functional impairment.

Despite extensive research into the processes linked to social anxiety, some findings are inconclusive and have been hindered by difficulties researching social anxiety in a naturalistic setting. Two cognitive behavioural treatment protocols however have been developed for social anxiety which are recommended by the National Institute for Health and Care Excellence (NICE) (2013): one is a cognitive therapy approach based on Clark and Wells' model (1995) and the other is a behavioural approach based on Rapee and Heimberg's model (1997).

As a mental health problem, social anxiety is poorly recognised and there are difficulties delivering treatment to those who would most benefit (Clark et al., 2013, p.21). Individuals with high levels of social anxiety avoid contact with strangers wherever possible and are disinclined to seek treatment. These factors, along with recent advances in technology, have spurred research into ways of offering treatment over the internet with varying degrees of therapist support (Andersson, Carlbring, &

Furmark, 2014). A greater understanding of the processes involved in social anxiety would be beneficial in fine-tuning treatment protocols especially where there is little or no therapist involvement.

This research examines social anxiety in students transitioning to university, exploring the phenomenon from multiple perspectives. There is a lack of data on the UK adult prevalence rates of social anxiety although Kessler et al. (2005), in an analysis of American survey data, found social anxiety was the third most common mental health problem. Kessler et al. also found that 50% of mental health problems are established by age fourteen and 75% by age twenty-four. Given that social anxiety problems are likely to be present or emerging amongst vulnerable individuals whilst at university, and the transition itself involves many new challenging social situations, this setting provides an ideal environment to examine this phenomenon.

This research consists of 3 studies of social anxiety conducted on the same sample of first year undergraduate students in their first term at university:

- Study 1 examined the prevalence and associated beliefs and behaviours.
- Study 2 examined attentional bias in social anxiety which is believed to be a key maintenance factor. The study used an innovative method to achieve a naturalistic setting for tracking attention in a live social interaction.
- Study 3 examined the interaction of cognitive processes involved in the maintenance of social anxiety specifically attention, interpretation and ruminative processes.

This chapter will firstly define key terms and then describe the literature on social anxiety as a mental health phenomenon providing background information relevant to all three studies. Finally, the aims and structure of the dissertation will be described.

1.2 Definitions

Social Anxiety Disorder (SAD) is the term given to social anxiety where the symptoms meet the criteria for a clinical diagnosis. The diagnostic criteria for SAD as outlined in the Diagnostic and Statistical Manual of Mental Disorders (5th ed., DSM-5; APA, 2013, p.202 - 203) are given in Appendix A. The key criteria that are particularly relevant to this study are summarised below:

- A persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or to possible scrutiny by others.
- The individual fears that he or she will act in a way or show anxiety symptoms that will be negatively evaluated.
- Social situations are avoided or endured with intense fear or anxiety.
- There is a significant adverse impact on social, occupational and other important areas of functioning.

There have been four previous versions of the DSM published by the APA which include reference to social anxiety or to social phobia as it was previously labelled. The main changes between these versions are as follows:

- DSM-III (introduced in 1980) makes the first mention of social phobia, defined as a simple phobia relating to situations such as speaking or eating observed by others.
- DSM-III-R (introduced in 1982) expands the criteria to include social interactions and delineates a generalised subtype allowing co-morbidity with Avoidant Personality Disorder. Furmark (2002) notes that prevalence rates increased from DSM-III to DSM-III-R which may be a result of these changes.

- DSM-IV (introduced in 1994) contains very minor revisions from DSM-III-R and prevalence rates assessed against these two versions are very similar (Furmark, 2002).

The significant change from DSM-IV to DSM-5 (APA, 2013) is that the latter no longer includes the criterion that the individual recognises that their fears are excessive.

The International Classification of Diseases (10th ed.; ICD-10, World Health Organisation, 1992) still uses the term social phobia. For the purposes of this study the DSM- 5 definition will be used as it is the definition referenced in most research studies. It has also been revised more recently and more regularly than the ICD-10 definition. A revision to ICD-11 is due to be adopted in May 2019 and implemented in 2022.

Like most mental health problems, social anxiety can be conceptualised as presenting on a continuum in terms of severity (McNeil & Randall, 2014). Whether an individual meets the formal criteria for a psychiatric label of SAD is not an inclusion criterion for this research which aims to examine sub-clinical levels of social anxiety as well as possible clinical levels. Previous studies have identified that subclinical levels of social anxiety can give rise to avoidance behaviours in a university setting which can disrupt learning (Russell & Shaw, 2009). The use of the term 'mental health problem' will be used to describe distress or impairment at a level that interferes with an individual's functioning and mental well-being. The use of the term 'mental health disorder' will be used to refer to the medical model of labelling psychological problems where there is a match between formal diagnostic criteria and an individual's presenting problems.

Generalised social anxiety (GSA) is a term often used clinically to refer to anxiety experienced in a number of different social situations. These can be many and

varied and are likely to include such situations as meeting or phoning unfamiliar people, speaking up when there is a group of people present, entering a room where others are seated and speaking to someone in authority. Non-generalised social anxiety (NGSA) refers to anxiety experienced in one or two specific situations which most commonly involve a type of performance, such as giving a public talk or giving a performance in the Arts. The term performance anxiety is often used to refer to this specific type of social anxiety. Whether the distinction between performance and generalised social anxiety is useful, is the subject of debate. Clark and Beck (2010) conclude that the two categories differ in terms of severity based on number of feared social situations and associated functional impairment. When levels of social anxiety are measured and reported using validated measures that ask about a range of social situations in which anxiety may be triggered, generalised social anxiety will give rise to higher scores than performance anxiety based on the number of situations which are reported. In this research a distinction will not be made explicitly between GSA and performance anxiety but levels of social anxiety will be referred to.

1.3 Differentiation of social anxiety from shyness

Shyness is a non-clinical term used to describe some of the characteristic that might be associated with social anxiety such as wariness, timidity and unease in new social situations (Crozier & Alden, 2005). The categorisation and differentiation of social anxiety as a clinical disorder distinct from shyness, has been controversial and is still debated. One position holds that social anxiety is a severe form of shyness which lies on a continuum of severity of symptoms and impairment (McNeil & Randall, 2014; Stein, 1999). An alternative position holds that while it can be acknowledged that shyness and social anxiety have areas of clear overlap, they differ qualitatively and that

shyness is a more general construct than social anxiety (Heiser, Turner, Beidel, & Roberson-Nay, 2008; Heiser, Turner, & Beidel, 2003; Henderson, Gilbert, & Zimbardo, 2014).

Research studies that examine the development of self-consciousness in children arguably make a helpful contribution to differentiating shyness from an excessive fear of negative evaluation which defines social anxiety. Lewis (2011) proposes that the development of the primary emotions of fear, anger, sadness, disgust, joy and surprise occurs in the first few months of life and that the emotion of embarrassment can be experienced usually from 15 months to 2 years old. Embarrassment, at this stage, comes with the capacity for self-recognition and self-referential behaviour and is referred to as exposure embarrassment i.e. self-consciousness relating to being the object of someone else's attention and could be seen as an aspect of shyness. Lewis (1995) points out that exposure embarrassment can vary greatly in children.

The emergence of self-conscious evaluative emotions of shame, guilt and pride require more advanced cognitive capacity and are seen as emerging at around three years old (Muris & Meesters, 2013) but emerge clearly during middle childhood (Olthof, Schouten, Kuiper, Stegge, & Jenekens-Schinkel, 2000). Shame or evaluative embarrassment is a more intense emotion than exposure embarrassment and while in both there is a self-consciousness aspect, in shame there is an additional negative self-evaluative aspect which is in relation to a particular standard. These development studies suggest that social anxiety, defined as the excessive fear of negative evaluation, links to evaluative embarrassment and that shyness links to exposure embarrassment.

In a study in the US with 10,000 adolescents aged 13 -18 years old, Burstein, Ameli-Grillon, and Merikangas (2011) found that only 12% of the adolescents who identified as shy also met the criteria for chronic social anxiety. Those who did not meet

the criteria for social anxiety but identified as shy, were likely to experience less functional impairment and were less likely to have other mental health issues such as depression and substance misuse, than those with social anxiety. Those who meet the criteria for SAD as an adult may not have been shy as a young child (Crozier, 2014; Schmidt, Polak & Spooner, 2005) and therefore there is a body of research that suggests that while there is an overlap between social anxiety and shyness, they should not be seen as synonymous (Clark & Beck, 2010; Lewis; 1995). DSM-5 (APA, 2013) highlights that shyness is a common personality trait and is evaluated positively in some societies suggesting that when differentiating between SAD and normative shyness particular reference should be made to examining the impact on functioning.

The ongoing debate about differentiating social anxiety from shyness may contribute to the problems of diagnosing and treating SAD. The NICE guidelines for SAD (2013) highlight that it is under-diagnosed. Clark et al. (2013) conclude there are several reasons for this which they identify as "… general practitioners not identifying the disorder, a general lack of understanding about its severity and complexity, and a lack of clearly defined care pathways" (p.21). It may also be linked to the public's lack of knowledge of its existence i.e. an appreciation of social anxiety as a mental health problem and not as a personality characteristic. The very nature of the problem of social anxiety means that individuals affected are likely to avoid seeking help for fear of being negatively evaluated by a healthcare professional.

1.4 Relationship to other mental health problems

There is a degree of controversy about the relationship between avoidant personality disorder (APD) and SAD. APD is characterised in DSM-5 (APA, 2013 p.672-673) as a pervasive pattern of social inhibition, feelings of inadequacy, extreme

sensitivity to negative evaluation and avoidance of social interaction. Individuals with APD tend to avoid a broader range of situations that those who have SAD, being less likely to tolerate the distress they experience and stay in situations they fear. Huppert, Strunk, Ledley, Davidson, and Foa (2008) examined the relationship between SAD and APD in a sample of patients seeking treatment for social anxiety to evaluate whether they are two independent constructs. Their conclusions as to whether they should be independent diagnoses are not conclusive. They found those with SAD and APD differed from those with a diagnosis of SAD alone in having more severe symptoms of social anxiety and being more depressed. Reich (2014) concludes from a review of empirical studies, that APD differs from SAD in the degree of dysfunction and not in major features. McNeil and Randall (2014) suggest that social anxiety should be conceptualised as a continuum of severity with specific or performance social anxiety at the milder end, generalised social anxiety in the moderate range and generalised social anxiety with APD as the most severe form of the disorder.

Body dysmorphic disorder (BDD) and SAD have overlapping features of self-consciousness and self-monitoring (APA, 2013, p.242-246). BDD is a preoccupation with perceived physical defects which are not observable or appear slight to others and which lead to anxiety and to avoidance in social situations. Social anxiety is a more general fear of negative evaluation by others. In those whose main presenting issue was SAD, Zimmerman and Mattia (1998) found rates of BDD co-morbidity of 8% and Wilhelm, Otto, Zucker, and Pollack (1997) found rates of 12%. Those whose primary presenting problem is BDD, however, appear to have higher rates of lifetime comorbid SAD of approximately 39% (Coles et al., 2006). Fang and Hoffmann (2010) suggest that SAD and BDD may be closely related with some overlap in underlying constructs

and in some Eastern cultures BDD is positioned as a subtype of SAD (Choy, Schneier, Heimberg, Kang-Seob, & Liebowitz, 2008).

Using data from the US National Epidemiologic Survey on Alcohol and Related Conditions, Schneier, Foose, Hasin, Heimberg, and Liu (2010) examined rates of co-morbidity of SAD and alcohol use disorder (AUD) i.e. alcohol abuse and alcohol dependence. This survey, carried out in 2001-2002, was based on face-to-face interviews with over 43,000 adults. They found that the onset of SAD pre-dated AUD and that lifetime rates of co-morbidity was 2.4% with co-morbidity being associated with increased severity of AUD and associated with lower rates of seeking treatment. Among individuals seeking treatment for SAD, studies have found high rates of alcohol use problems of between 15% and 28% (Lepine & Pelissolo, 1998; Merikangas & Angst, 1995) and this is more than twice the rate for the general population.

Sub-clinical levels of social anxiety have also been associated with increased alcohol use (Kidorf & Lang, 1999) although there are a number of studies that found a negative association between social anxiety and alcohol consumption (Tran, Haaga, & Chambless, 1997). Ham, Bonin, and Hope (2006) in a study of undergraduates in the US found that social anxiety was unrelated to alcohol-related problems with a small negative correlation with typical weekly alcohol use. They conclude that the relationship is complex and suggest that more research needs to be done examining the reasons not to drink among socially anxious individuals. These reasons may relate to concern about negative judgement for disinhibited behaviour, not being invited to social events where there will be significant alcohol consumption or choosing not to attend such events. Ham et al. conclude from a study of drinking motives that those students with higher levels of social anxiety who do drink frequently, appear to do so to deal with unpleasant feelings possibly related to their social anxiety making them vulnerable

to developing AUD in the future. Eggleston, Woolaway-Bickel, and Schmidt (2003) found a negative association between alcohol consumption and social anxiety among college students and examined this relationship further to see whether alcohol outcome expectancies were moderators or mediators. They found that social anxiety was associated with increased positive and negative expectancies. Overall the conclusion from these studies is that the relationship between alcohol use and social anxiety, particularly in individuals with sub-clinical levels, is complex and requires further research (Morris, Stewart, & Ham, 2005).

Studies on SAD and suicide are also inconclusive. Schneier, Johnson, Hornig, Liebowitz, and Weissman (1992) only found an association between SAD and higher rates of suicide attempts wherever there was co-morbidity, although they did find an increased rate of suicidal ideation among those with uncomplicated SAD. McMillan, Asmundson, and Sareen (2017) found individuals with SAD with co-morbid post-traumatic stress disorder (PTSD) which is often co-occurring, had an elevated risk of suicide. Katzelnick et al. (2001) in a study across two outpatient clinics found that 22% of individuals with SAD had attempted suicide. Katzelnick et al. highlight from their study that lifetime suicide attempt rates were the same between a group with SAD co-morbid with depression, and a group that had pure generalised social anxiety. Gallager, Prinstein, Simon, and Spirito (2014) conclude from a study of adolescents with social anxiety, that loneliness may be particularly implicated in the relationship between social anxiety and suicidality in teens.

Wittchen, Stein, and Kessler (1999) using data from the US National Comorbidity survey and DSM-III criteria, looked at lifetime co-morbidity between social anxiety and depression and found that 34% of those with chronic social anxiety reported a lifetime mood disorder compared to only 14% of those who did not have

social anxiety. Lifetime co-morbidity rates found in two studies of community samples using DSM-IV criteria were also high. In one, the population was young Germans aged between 14-24 years (Wittchen et al., 1999) where the rate was 50% for anxiety disorders and 36% for mood disorders. In the other study of American adults aged over 18 years (Grant et al., 2005) the comorbidity rate was 54% for anxiety disorders and 43% for mood disorders. Separate studies of current co-morbidity rates in community samples of adults in Germany, Australia and the US, found that between 50-70% of individuals with SAD had another anxiety disorder and between 35-65% had a current mood disorder (Lampe et al., 2003; Grant et al., 2005; Fehm et al., 2008). In most cases the onset of SAD predates the other co-morbid problems (Magee et al., 1996) and where there is comorbidity, the severity of social anxiety symptoms and functional impairment tend to increase (Acarturk, de Graaf, van Straten, ten Have, & Cuipers, 2008). In a review of studies of co-morbidity using DSM-IV criteria, Wenzel and Jager-Hyman (2014) highlight that the presence of another mental health problem with SAD is very common and this raises the question whether social anxiety is a unique disorder rather than a prodromal expression of another disorder. Rates of co-morbidity, however, are even higher in other anxiety and mood disorders (Grant et al., 2005). The issue of the high level of co-morbidity may say more about the problems of the diagnostic classification systems (Cummings, Caporino, & Kendall, 2014).

1.5 Development, course and impact

Social anxiety is probably best understood within a biopsychosocial model. SAD appears to have a familial and a genetic basis but this is not clearly understood and appears to be complex (Stein & Gelernter, 2014). Several studies suggest that environmental experiences and factors play an important role (Brook & Schmidt, 2008;

Spence & Raapee, 2016). Proposed factors include modelling of fear and avoidance by caregivers in social situations, overprotective parenting and insecure parent-child attachment (Bar-Haim et al., 2007; Biedel & Turner, 2007; Brumariu & Kerns, 2008; de Rosnay et al., 2006; Lewis-Morrarty et al., 2012).

Experiences of being bullied or publicly embarrassed are commonly reported by people with SAD. McCabe, Antony, Summerfeldt, Liss, and Swinson (2003) found that over 90% of participants within a social anxiety group reported a history of being teased to a very distressing degree compared with 50% of those with obsessive compulsive disorder and 35% with panic disorder. Several studies have demonstrated that negative peer experiences such as bullying or low peer acceptance predict higher levels of later social anxiety (e.g. Loukas & Pasch, 2013; Tillfors et al., 2012). Some studies also suggest that social anxiety is also a predictor of peer victimization over time (Acquah, Topalli, Wilson, Juntilla,, & Niemi, 2016; Siegel, La Greca, & Harrison, 2009; Vernberg, Abwender, Ewell, & Beery, 1992). Siegel et al. (2009) found that social anxiety is particularly associated with relational victimization for both boys and girls which they define as the deliberate exclusion of an individual rather than overt victimisation which includes the use of, or threat of, physical aggression by peers.

It is widely agreed that anxiety disorders can be identified in adolescence. DSM-5 (APA, 2013) states that the median age of SAD in the US is 13 years with 75% of those affected having an age of onset between 8 and 15 years. As described previously, exposure embarrassment can be present as young as two (Lewis, 1995), however, SAD requires the cognitive awareness of the self as a social object and this does not develop until later, around the age of eight (Hudson & Rapee, 2000). Miller (2014) points out that the changing nature of children's capacity for embarrassment from early childhood to adolescence appears to parallel the course of cognitive development and perspective-

taking found in research studies. Miller (2014) suggests that around the ages of 11-13 years the capability for adult perspective-taking emerges and the early adolescent can imagine what others may be thinking and are embarrassed in the way an adult can be, suggesting this marks a development stage where vulnerability to SAD may emerge.

The biological and physical changes along with changes in social demands as a child transitions into adulthood, can present enormous challenges for an adolescent. Studies suggest that puberty may increase the risk of anxiety disorders generally (Hayward, 2003; Gunnar, Wewerka, Frenn, Long, & Griggs, 2010) and several studies suggest there is a sudden jump in the onset of social anxiety at this developmental stage (e.g. Rapee & Spence, 2004; Van Duijvenvoorde & Westenberg, 2016). As adolescents become more independent of their families they look to peers for support and seek acceptance and approval in these social groups. For some individuals this period may be navigated successfully and they emerge from this period of hypervigilance about how others see them without problematic levels of social anxiety. However, if an individual goes on to develop SAD, longitudinal studies with adults indicate that it is usually unremitting in the absence of treatment (Bruce et al., 2008; Reich, Goldenberg, Goisman, Vasile, & Keller, 1994) and most individuals with SAD do not seek treatment unless they develop an additional mental health problem, typically another anxiety disorder, depression or a substance-use disorder (Wittchen & Fehm, 2003). Clark and Beck (2010) point out that a number of factors predict whether social anxiety will be an enduring problem if untreated, in particular symptom severity and functional impairment as well co-morbidity with APD.

Social anxiety can have a very significant negative impact on functioning across all aspects of an individual's life and this will relate to the range and specific nature of the individual's social or performance fears. Van Ameringen, Mancini, and Farvolden

(2003) conclude that individuals with high levels of generalised social anxiety are more likely to drop out of education and underachieve than those with low levels. Katzelnick et al. (2001) report that those high in social anxiety are more likely to earn less. Wittchen, Fuetsch, Sonntag, Müller, and Liebowitz (2000) found that individuals with SAD are more likely to be unmarried in their mid-30s than individuals with other anxiety disorders. In adolescence they are likely to have fewer and less satisfying relationships (Hebert, Fales, Nangle, Papadakis, & Grover, 2013).

Hofmann, Asnaani, and Hinton (2010) note that social anxiety appears to be experienced globally across cultures but highlight that the nature of the anxiety needs to be understood in the specific cultural norms to which the individual has been exposed. In the studies reviewed by Furmark (2002), cultural differences in the expression of social anxiety appear to be significant and Hong and Woody (2007) argue that, in current research studies, social anxiety is conceptualised from the perspective of Western culture. McNeill and Randall (2014) point out that, while interpreting epidemiological studies across cultures and nationalities is problematic due to methodological variables, the variability in the data which has emerged may also reflect cultural differences in views of the self and of interpersonal relationship. Hong and Woody (2007) note that Western culture generally cultivates independence and self-promotion whilst many Asian cultures value interdependence and submissiveness. A socially anxious individual in the West may fear being seen as passive or quiet but in East Asia they may fear being insensitive to the impact of their behaviours on others. This cultural variability presents problems in drawing conclusions across studies internationally and also suggests that the use of the same assessment tools across cultures is problematic.

1.6 Social media and social networking

Emerging environmental factors also need to be considered in examining the prevalence and nature of social anxiety. Many of the factors that appear to be most relevant are related to developments in electronic communication and the internet. Arguably, no overview of social anxiety would be complete without consideration of communication and social connection in the digital age. The use of threat-avoidance or threat-management behaviours are hypothesised to maintain the problem of social anxiety (Clark & Wells, 1995). Many technological advances promote messaging rather than speaking directly and/or facilitate the construction of an online persona rather than encouraging the presentation of the unedited, authentic self to others. As the digital social world has grown in importance, this presents new challenges but also opportunities for socially anxious individuals. This will now be examined as a potential factor in the development and maintenance of social anxiety.

In the last decade there has been a transformation in how adults, but particularly children and young people, communicate and carry on their social interactions arising from developments in digital technology, particular in social media and social networking. Strictly speaking, social media refers to communication channels that deliver a message and social networking is two-way and direct communication that includes sharing information. In reports and studies this distinction is often not made and therefore in this thesis, the term social media will be used to refer to both. Given that the majority of individuals starting undergraduate studies are in the 18-20 age group it is important to note that the 16-24 age group are by far the most active social media users. Among this age group, 99% report weekly use of social media sites and use them for 27% of their total communication time (Frith, 2017). Frith found that 95% of 15 year olds used social media (including sites such as Facebook, Instagram and Snapchat)

before or after school. Among 10-15 year olds, 11% of girls and 5% of boys used social media for over 3 hours on a normal school day and much more at weekends.

Social anxiety is an excessive fear of negative evaluation and therefore a desire to present the self as positively as possible. For the socially anxious individual, social media presents both a potential opportunity to avoid or reduce direct face-to-face social contact with others and to manage self-presentation in the digital world (Mazalin & Klein, 2008). The online self may be presented to others with photographs and information that can be carefully selected to make a positive impression which more closely matches an internal standard held by the socially anxious individual. Validation for an online identity can be sought through 'likes', particularly from peers.

Many studies examining social media use and mental health have found cause for concern. A number of studies found a positive association between social anxiety and time spent on social media (Shaw, Timpano, Tran, & Joormann, 2015; Vannucci, Flannery, & Ohannessian, 2017). In studies among university students, those with higher levels of social anxiety had fewer Facebook friend and were more passive users of Facebook (Fernandez, Levinson, & Rodebaugh, 2012; Shaw et al., 2015). Weidman et al. (2012) found that individuals with high levels of social anxiety appear to perceive online communication as more comfortable than face-to- face interactions and tend to self-disclose more online. They found, however, that high use of social media to communicate was also associated with lower self-esteem and lower mood. Prizant-Passal, Shechner, and Aderka (2015) in a meta-analysis of 22 studies found that social anxiety did not correlate with time spent online but correlated positively with feelings of comfort online and is associated with negative consequences such as low self-esteem and low mood, with the correlation getting stronger with increasing age.

Dobrean and Păsărelu (2016) conducted a systematic review of studies into social anxiety and social networking sites. The studies mainly looked at a student populations or a general population, although three studies focused on an adolescent population. Of the 20 studies reviewed, 16 studies found a positive correlation between online social networking use and social anxiety levels although it is important to note that correlation does not mean causation. Four studies found no relationship between online social networking use and social anxiety. Some studies in the review suggested that the relationship between social anxiety and social media is bi-directional, with those more socially anxious using more social media, and the use of social media making individuals more vulnerable to social anxiety. There are limitations to this systematic review: the studies covered mainly Facebook and there were methodological variables between the studies making direct comparisons difficult i.e. different assessment tools were used and the age groups studied varied from teenagers to adults over 25, although most were 18-25 years old.

In summary, the findings of the impact of social media use on socially anxious individuals is mixed. What emerges from studies, however, seems to suggest that individuals high in social anxiety perceive the benefits of social media to be very significant to their well-being and believe that without online social connections they would be more isolated. Research looking at the impact of heavy social media use provides some evidence to suggest that an individual with social anxiety can become more isolated, have less satisfying face-to-face relationships and may be more vulnerable to other psychological problems such as depression and low self-esteem. It is important in this area of research to keep abreast of the rapid developments that are continuously taking place such as the popularity of online gaming and virtual reality, however, an examination of research in these areas is beyond the scope of this review.

1.7 Student mental health

As noted previously, 75% of mental health problems are established by age twenty-four (Kessler et al., 2005; McGorry, et al., 2007). Two-thirds of students are aged between 18-24 years (UniversitiesUK, 2018), therefore, individuals coming to university who are vulnerable to mental health problems, will most likely have experienced difficulties before they arrive or problems will emerge during their time as an undergraduate. As the Royal College of Psychiatry (RCP) (2011) point out, even mild mental health problems may have a negative impact on a student's academic performance. The report concludes that students are more vulnerable in terms of their mental health than other young people and highlight "First-year students have to adapt to new environments and ways of learning. Academic demands and workload increase and university courses require much more self-directed learning and the capacity to manage time and prioritise work" (RCP, 2011, p.21). International students have additional challenges, adapting to a new culture, possible language issues and less access to support from family. The number of students dropping out of university with mental health problems has more than trebled in recent years (UniversitiesUK, 2018).

A report published by the Institute for Public Policy Research (IPPR) (Thorley, 2017) points out that the proportion of students who disclose a mental health condition to their university where a medical diagnosis has been given, has increased by over five times over the last decade, with the figure for undergraduate students rising from 8,415 in 2007-08 to 49,265 in 2017-18. The report points out there has been an increase in the number of undergraduates in this period and there has been a rise in reported mental health problems in the young adult population (16-24 years) with an increase in the number of young women experiencing anxiety and depression from just over 20% in 2007 to approximately 27% in 2014. With a total student population (including

postgraduates) of 2.3 million in 2017-18 (UniversitiesUK, 2018) this suggests that many students with common mental health problem such as anxiety and depression, never present to mental health services.

A study of students (N = 4,699) measuring psychological well-being pre-university and at four points across the first year at university using the Clinical Outcomes in Routine Evaluation Measure (Evans et al., 2009) which is a general measure of psychological well-being, found a significant negative impact on mental well-being once students start university whether they arrive being vulnerable to such problems or not (Cooke, Bewick, Barkham, Bradley, & Audin, 2006). The study found that there was an increase in symptoms of mental health problems after students began their first year of study and that symptoms fluctuated in the course of the first year but remained above pre-university levels at the end of the year.

The move to university involves forming many new relationships in an unfamiliar environment and usually without family support systems readily available to them. Lowe and Cook (2003) examined prior perceptions of university life (n=569) and then perceptions and experiences after one term at a single university in the UK. Their findings highlight the lack of preparedness for university life, both academically and socially, and the resulting stress this involves for new students. While many come through the transition well, Lowe and Cook's findings suggest that approximately a quarter of students experience significant difficulties in this period both in their academic work and personally, making them vulnerable to drop out or underperform and to have a negative experience of university life. A report by Unite (2016) point out that 4 in 10 of students with poor mental health, consider or strongly consider dropping out from university.

For those particularly vulnerable to social anxiety, the transition to university will present many triggering situations: students are expected to walk into lecture theatres where they may be observed by others already seated, to speak up in seminars and often to work with peers in small group and share living accommodation with strangers. They are likely to have new social relationships to navigate on a scale they may never encounter again.

In the UK, universities differ in the organisation of counselling, well-being and specialist support services offered. With increasing student numbers and increasing disclosure of mental health problems there is a growing pressure on these services. Thorley (2017) highlights that 94% of universities in the UK reported an increase in demand for counselling services over the period 2011-2016, with 61% reporting an increase of more than 25% and in some institutions, a quarter of all students are using or waiting to access counselling services. These increases may be due to a number of reasons. They may reflect an increase in awareness of mental health issues, a decrease in the stigma attached to seeking help, an increase in awareness of the help available, a change in the demographics accessing university education and/or an increase in the stresses on students across financial, social and psychological factors.

It is not possible to determine from the current statistics how many students present to counselling services with social anxiety as they are included in an overall 'anxiety' or 'co-morbid' figure. However those with social anxiety are some of the least likely to seek help because of a lack of awareness of the condition by the student and/or the mental health professional and because the very nature of the problem tends to make the socially anxious individual avoidant of strangers and people in authority (NICE, 2013). Although social anxiety is the most common anxiety problem (Kessler et al.,

2005), the vast majority of university websites do not even mention social anxiety in their information to students.

1.8 Explanatory and treatment models

NICE guidelines (2013) for the treatment of social anxiety recommends cognitive behavioural therapy (CBT), more specifically the cognitive protocol developed by Clark and Wells (1995) and a more behavioural protocol developed by Rapee and Heimberg (1997). These models agree on the central role of negative interpretive biases and of self-focused attention in maintaining social anxiety. Both hypothesise that, in anticipation of a feared social situation or on entering the situation, a socially anxious individual has negative self-referential thoughts about themselves and how they will be perceived which is associated with symptoms of anxiety. Their attention is turned inwards resulting in several negative consequences. Firstly, the socially anxious individual becomes more aware of physiological changes happening in their body relating to their anxiety. These may include their heart racing, stomach churning and feeling hot and physically uncomfortable. This hyper-awareness of physiological symptoms of anxiety, particularly those seen as observable such as blushing, trembling or perspiring, exacerbates fear of negative evaluation. Figure 1.1 describes the Clark & Wells' model which is the main model referenced in this research.

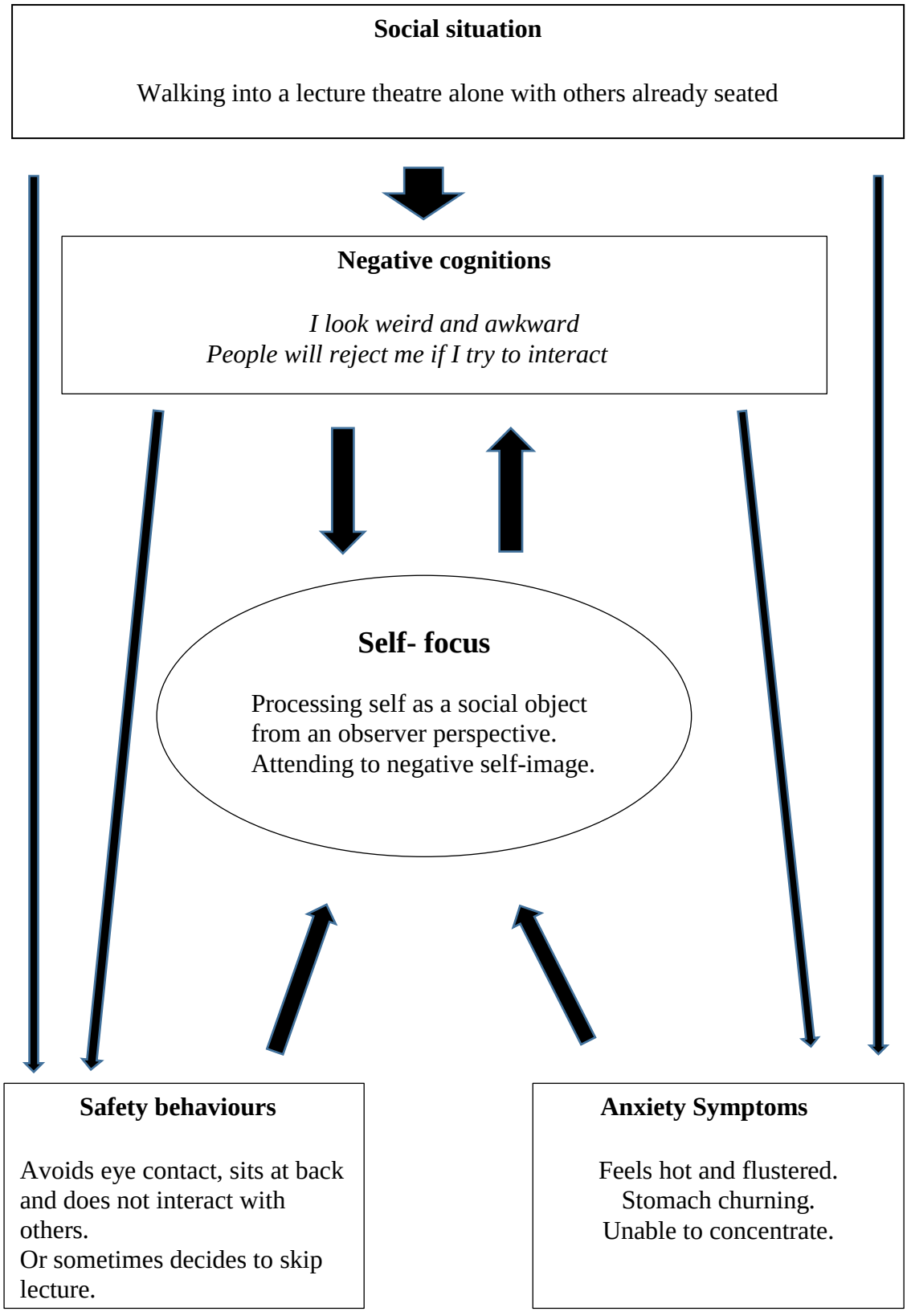

Figure 1.1 *Cognitive model of social anxiety (adapted from Clark & Wells, 1995*

Behaviours that are adopted in response to heightened fear, such as escape or trying not to be noticed, are termed safety behaviours (Salkovskis, 1996). The socially anxious individual is also inclined to attend to an internally-generated negative image of themselves representing the individual's fears of how they appear to others (see Figure 1). Typically this may be as an awkward red-faced and/or a trembling individual. This image is from an observer perspective i.e. how they are seen by others rather than from a field perspective i.e. through their own eyes. The anxiety symptoms experienced feed into this negative interpretation and the constructed negative image exacerbates the anxious arousal. The safety behaviours adopted by the socially anxious individual may result in negative appraisal by others. For example, as a result of being flustered and anxious to move quickly to sit down, the student entering the lecture theatre, might drop their folder or trip on the stairs as they look for a seat and thereby draw negative attention to themselves, fulfilling their anxious prediction.

The Clark and Wells' model (1995) and Rapee and Heimberg's model (1997) agree on the role of inward attention but they differ on the importance given to vigilance to external threat. Clark and Wells propose that, during a social interaction or performance, attention is diverted away from the external environment and towards the internal physiological response and internal self-image. Rapee and Heimberg suggest that attention is divided between the reaction of the audience and self-focused attention. They hypothesise that any perceived negative reactions or ambiguous responses from the audience leads to closer self-monitoring.

Socially anxious individuals often have a significant degree of anxiety before a socially encounter they know is about to take place and they are very prone to engage in rumination after the event (Clark & Wells, 1995). Anticipatory anxiety leads to rumination on negative predictions about social performance and rumination on

memories of past social encounters where the social anxious individual has concluded they have not performed well and have not made a positive impression. Anticipatory anxiety may lead the individual to avoid the event or to over-prepare in order to create a favourable impression. Post-event rumination which involves a detailed and critical review of how the socially anxious individual performed in the situation, is stored in memory and feeds into future anticipatory anxiety (Brozovich & Heimberg, 2013).

Both the Clark and Wells' cognitive model (1995) and Rapee and Heimberg's exposure–based model (1997) have led to the development of treatment protocols for SAD which have good clinical outcomes (NICE, 2013). The former appears to achieve superior results with clinically significant change in 84% of patients post-treatment and 78% at one year follow-up, compared to 42% post-treatment and 38% at one year follow up for the exposure-based protocol (Clark et al., 2006). The Rapee and Heimberg protocol focuses on graded exposure, with the dropping of safety behaviours so that the socially anxious individual habituates to the threatening situation and learns that a feared outcome does not occur. Reducing anxiety arising from phobias through the use of graded exposure, has a strong evidence base (Foa & Kozak, 1985; Marks, 1978). The cognitive protocol (Clark & Wells, 1995), however, seeks to address social anxiety as a more complex problem. It targets attentional bias through attention-training exercises and interpretive bias through viewing video feedback of the self in a social interaction so the individual develops an alternative more objective perspective on how they are seen by others. Behavioural experiments are also carried out to test the veracity of negative beliefs and to strengthen alternative more helpful cognitions.

Studies support the notion of attentional bias in social anxiety (Van Bockstaele et al., 2013) and attentional training exercises have been shown to result in a decrease in social anxiety symptoms (Amir, Beard, Burns, & Bomyea, 2009; Beard, Sawyer, &

Hofmann, 2012; Kuckertz et al., 2014). The use of video feedback has been shown to be effective in reducing symptoms in both clinical and sub-clinical samples in several studies (Harvey, Clark, Ehlers, & Rapee, 2000; Kim, Lundh, & Harvey, 2002; Orr & Moscovitch, 2010). Rodebaugh, Heimberg, Schultz, and Blackmore (2010) asked individuals with SAD to give a speech, then showed them a video playback of their performance before asking them to give a second speech. Rodebaugh et al. found that the video playback improved self-perception and decreased anticipatory anxiety for the second speech. Hofmann and Heinrichs (2003) looked at simultaneous feedback with the use of a mirror as the individual was asked to report on personal characteristics. They found that in the presence of a mirror, individuals with social anxiety reported fewer negative self-statements about socially relevant characteristics and more positive and negative self-statements about bodily appearance.

The treatment based on the cognitive model (Clark & Wells, 1995) typically involves up to 14 weekly treatment sessions of 90 minutes' duration face-to-face (21 hours in total). The Rapee and Heimberg protocol (1997) for SAD typically consists of 15 weekly sessions of 60 minutes duration, and one session of 90 minutes, all face-to-face. Both treatment protocols, particularly the cognitive approach, can involve relatively high number of therapist hours compared to treatment protocols for other common mental health disorders. The Clark and Wells protocol is resource intensive involving video recording and then playback of the client in a social interaction with a stranger (usually a clinical colleague recruited by the therapist).

As mentioned previously, the poor uptake of treatment for social anxiety is believed to be in part due to the very nature of the problem i.e. socially anxious individuals are likely to avoid seeking help for fear of being negatively evaluated by a healthcare professional (Andersson et al., 2014). It is also due to poor recognition of

social anxiety including among many health professionals. Addressing these challenges, along with the imperative of working more efficiently and cost effectively, has stimulated the development of alternative ways to deliver treatment.

1.9 Internet-delivered treatment for social anxiety

One particular approach which is gaining in popularity among treatment providers with limited resources to deal with the demands on their service, is internet-based delivery with various degrees of therapist support. There have been a range of studies of internet-based CBT treatments across disorders with promising results (Andrews, Cuijpers, Craske, McEvoy, & Titov, 2010; Carlbring et al., 2011; Johansson & Andersson, 2012). Delivery of treatment online has been shown to deliver more effective results if there is some therapist support (Palmqvist, Carlbring, & Andersson, 2007).

A number of internet treatments approaches for SAD have been developed (Berger, Hohl, & Caspar, 2009; Carlbring et al., 2007; Furmark et al., 2009; Titov, Andrews, Johnston, Robinson, & Spence, 2010). A meta-analysis of these internet treatments for SAD report medium to large effect sizes over no treatment at all (Andersson et al., 2014). Hedman et al. (2011) compared internet-delivered treatment (n=65) with face-to-face group CBT (n= 62) and found that improvements were broadly similar but that internet-based treatment was far more cost effective. Andrew, Davies, and Titov (2011) found similar results but with a smaller sample (n=24) as only two-thirds completed. The treatment comparison in these two studies was of CBT delivered in a group setting and not individual CBT as in the two evidence-based approaches referred to in the NICE guidelines (2013) and described above. Studies have shown that

individual cognitive therapy based on the Clark and Wells' model is superior to group-delivered CBT which is focused more on exposure therapy (Clark et al., 2006).

Stott et al. (2013) have developed an internet based version of the Clark and Wells cognitive protocol (iCT) which reduces the therapist involvement to 20% of the standard face-to-face protocol. Therapist contact is by weekly telephone calls and a secure messaging system is used in between these session. Their programme involves all the strategies of change included in the cognitive treatment including video feedback, which is seen as a key intervention of the protocol. Social interactions are recorded on a webcam and at a later stage the client is given guidance on how to review these in order to identify discrepancies between their negative perceptions and the video. This study was small scale and 9 out of 11 patients responded to treatment, with clinically significant change reported in 7 patients. The amount of time required by the patient to engage in the internet- delivered programme was 35 hours which is almost twice the number of hours of the face-to-face treatment protocol. These results are promising and there are programmes of further research.

1.10 Summary

Social anxiety is a debilitating problem which often goes untreated due to poor recognition by professionals and due to a reluctance by those affected to seek help (NICE, 2013). It is likely to emerge in adolescence and, in the move to university, those who experience high levels of social anxiety will be exposed to an environment which is likely to exacerbate symptoms. An association between the frequent use of digital technology and mental health, including social anxiety, is being suggested by some research studies, although the nature of the relationship is not yet clear. Digital technology also offers opportunities to deliver mental health information and treatment

to adolescents and young adults in ways that many may find more acceptable and also more accessible, given the high demand on university counselling services. A better understanding of the cognitive and behavioural processes involved in social anxiety may facilitate further improvements in online treatment programmes for social anxiety.

1.11 Aims and structure of the thesis

This research seeks to understand the extent of the problem of social anxiety among new university students. It also aims to understand more precisely the nature of the cognitive biases and behaviours associated with social anxiety in students so that support and treatment can be appropriately tailored, particularly where treatment may only be available online.

A student population was selected for a number of reasons:

- There is a paucity of research on the prevalence and nature of social anxiety among university students despite a growing awareness of unaddressed mental health issues in this population.
- There is a very high and growing demand for mental health treatment in tertiary educational settings which is not being met.
- Students' familiarity with the digital world provides opportunities to make mental health support more accessible.

For clarity of reporting this research is divided into 3 studies all conducted on the same cohort of first year undergraduate participants. The overall structure of the thesis is outlined below:

- **Chapter 2 will present Study 1** which examines the prevalence of social anxiety and related beliefs and behaviours.

- **Chapter 3 will present Study 2** which examines the association between levels of social anxiety and attentional bias during a social interaction.
- **Chapter 4 will present Study 3** which examines the association between cognitive processes involved in social anxiety.
- **Chapter 5** will synthesise and discuss all three studies and the clinical and educational implications, drawing overall conclusions and suggesting directions for further research.

Chapter 2

Study 1: The prevalence and nature of social anxiety in new undergraduates.

2.1 Introduction

This study examines the levels of social anxiety in undergraduate students in the first term of their first year and the associated beliefs and behaviours in this population. While there are no major studies of adult rates of social anxiety in the UK population, there are data from studies in other countries and a very small number of small scale studies from two universities in the UK.

This research examines the first two months of undergraduate study and the transition to university life. As discussed in Chapter 1, Cooke et al. (2006) have highlighted that the move to university life involves challenges that can trigger or exacerbate mental health problems. How individuals cope in the first few months may lead to conclusions and decisions about their suitability for undergraduate study and therefore influence their future career direction. Non–continuation rates for full-time undergraduate students in 2015-2016 (which is the year the data in this study was gathered) was 6.4% for the UK with the rates varying between universities from 1.1% to 17% (Higher Education Statistics Service, 2018). Although the reasons for not continuing are likely to be many and varied, some decisions may be influenced by anxiety problems in the transition to a new social and performance environment.

This chapter firstly describes methods of assessing the prevalence and nature of social anxiety and then provides an overview of epidemiological studies of social anxiety and studies of related cognitions and behaviours. Study 1 is then described and the results presented and discussed.

2.2 Clinical assessment of social anxiety

Clinical assessment of social anxiety can be done in several ways involving the use of interviews (structured or semi-structured) and/or a range of standardised questionnaires used for diagnostic purposes or to rate symptom severity. Unstructured interviews are most commonly used in clinical practice and structured interviews in research studies (Herbert, Brandsma, & Fischer, 2014). Zimmerman and Mattia (1999) found that the rates of diagnosing SAD were nine times higher using a structured rather than an unstructured interview.

A range of specific questionnaires for social anxiety have been developed. These can be clinician administered or delivered as self-report instruments and the latter are becoming more frequently used in research trials and in clinical settings. As the questionnaires used across studies may differ, this means that studies can be assessing a different spectrum of symptoms and/or using different cut-offs for defining SAD. This variability in the use of questionnaires and in the use of assessment method (interviews or questionnaires) gives rise to significant problems when making comparisons between studies.

In this research the Liebowitz Social Anxiety Scale (LSAS) (Liebowitz, 1987) will be used as it is the most popular social anxiety questionnaire used in research trials and has been used in studies that form the basis for comparison with this study (see Appendix B). It has two versions which have the same items and scales, a clinician administered and a self-report version, and the scores are highly correlated when used with a clinical or with a non-clinical population (Fresco et al., 2001). The self-report version is used in this research and details of the questionnaire and its psychometric properties are outlined in the Method sections (p.68).

In the UK another commonly used clinical questionnaire for social anxiety is the Social Phobia Inventory (SPIN) (Connor et al., 2000). It consists of 17 items rated on a 5-point Likert scale assessing symptoms of fear, avoidance behaviour and physiological arousal. It has good psychometric properties and correlates highly with the LSAS. A Mini-SPIN (Connor, Kobak, Churchill, Katzelnick, & Davidson, 2001) has also been developed which consists of only 3 questions relating to social embarrassment and is used as a brief screening tool. Like the full SPIN it has good sensitivity and specificity (Letamendi, Chavira, & Stein, 2009). Although not used in this study, these questionnaires are referred to in the Discussion section and in Chapter 5 as possible alternatives to the LSAS in future research.

2.3 Adult prevalence rates of social anxiety

NICE (2013) suggest the lifetime prevalence rate for social anxiety is 12% but highlights that there are no epidemiological surveys that have reported data specifically on social anxiety in adults in the UK. Based on the American National Comorbidity Survey (NCSR) carried out in 2001-2003, Ruscio et al. (2008) report yearly and lifetime prevalence rates for SAD of approximately 7% and 12% respectively. The lifetime prevalence estimates for other anxiety disorders in the same study are 6% for generalised anxiety disorder, 5% for panic disorder, 7% for post-traumatic stress disorder (PTSD) and 2% for obsessive-compulsive disorder (OCD). A structured interview was used for data gathering and based on DSM-IV criteria for social phobia, the name previously given to social anxiety (see p.24).

Furmark (2002) reviewed 43 epidemiological studies of social anxiety from 1980 – 2000 carried out across several countries including the US and Canada, along with several European and Asian countries. The estimates of lifetime prevalence rates

were mainly between 7-13% in Western countries but in non-Western countries there was considerable variation in prevalence rates from 0% (Seoul) to over 50% (Udmartia, Russia). Furmark suggests that the variability in prevalence rates may be explained by a number of factors many of which are methodological. For example most studies gathered lifetime prevalence rates but a significant number include a 12-month, six or one month prevalence rate or even point prevalence. Other methodological variables identified include using different diagnostic criteria due to changes over time as DSM has been revised (see p.24) and variations in the criteria referenced according to whether studies use the ICD system (WHO) or the DSM criteria (APA). Another consideration is that assessment tools for social anxiety have been developed in Europe and North America and may not take account of the cultural context (see p.34).

2.4 Prevalence rates for children and adolescents

The majority of new undergraduates are in the age range 18-19 years and transition to university straight from school. It is relevant, therefore, to consider the literature on social anxiety in relation to adolescents as well as the research on adults. DSM-5 (APA, 2013) describes rates of SAD in children and adolescents as similar to adults. Prevalence rates of around 10% have been found by the end of adolescence (Burstein et al., 2011; Merikangas et al., 2010). Beesdo et al., (2007) conclude from a review of several studies that the onset of SAD is usually in early adolescence and that it is very rare for onset to happen after 25. They highlight that understanding the prevalence rates in this younger age group is important in planning early intervention and avoiding the development of severe and more complex presentations for example co-morbid depression and substance misuse. Beesdo-Baum and Knappe (2012) found in a longitudinal study of over 3000 adolescents and young adults (aged 14- 24 years)

that 57% of those with social anxiety still had symptoms 10 years later and only 15% were free of symptoms.

2.5 Gender differences in social anxiety

In a review of studies of social anxiety, Furmark (2002) found prevalence rates (including 12-month and lifetime rates) are higher in females than males which aligns with findings from epidemiological studies across anxiety disorders (Bruce et al., 2005). McLean, Asnaani, Litz, and Hofmann (2011) argue that SAD may be an exception to the pattern of gender differences in anxiety disorders. They found no significant gender differences in the lifetime prevalence rates between men and women. In their study, however, the 12- month prevalence rates for SAD did show a significant difference indicating 6.5% for women and 4.8% for men. Kessler et al. (2005) suggest that women and men are equally likely to seek treatment for SAD although women are somewhat more likely to have the condition.

Turk, Heimberg, Orsillo, and Holt (1998) examined gender differences in those with clinical levels of social anxiety and found that men and women appear to differ in the degree of fear experienced in particular types of social situations. They found no gender difference in fear of informal social interactions such as going to a party or chatting in small groups however women reported more severe social anxiety than men when talking to authority, speaking up at a meeting and expressing disagreement or disapproval to people they do not know very well. Turk et al. (1998) suggest their findings possibly reflect aspects of gender roles and expectations in society.

2.6 Prevalence rates among university students

In studies of the prevalence of SAD among university students the 12-month prevalence rates found were broadly similar to the general population with rates among students emerging as 8% in the US (Kessler et al., 2005a), 9.4 % in New Zealand (Kessler et al., 2005b), 11.8 % in Brazil (Vorcaro, Rocha, Uchoa, & Lima-Costa, 2004), 9.6% in Turkey (Izgiç, Akyüz, Doğan, & Kuğu, 2004), and 7.8% in India (Honnekeri, Goel, Umate, Shah, & De Sousa, 2017). In a study of university students in Sweden, Tillfors and Furmark (2007) found rates of 17%. As mentioned previously, however, comparing between studies and countries is difficult due to different methodologies, assessment instruments and diagnostic criteria.

There are only four studies found that looked specifically at social anxiety in British universities and these were studies carried out across the same two universities. One of these studies gathered data in the academic year 2005-2006 (Russell & Shaw, 2009) and examined point prevalence rates among university students at one university, across seven faculties, across all years of undergraduate study using the LSAS. This study had a response rate of 86% (N=1007). They found 12% of students had symptoms of generalised social anxiety and 43% of students reported non-generalised social anxiety (performance anxiety) which is broadly in line with the general adult UK population figures. Russell and Shaw (2009) also found that women reported higher levels of social anxiety, both generalised and performance anxiety. In terms of subject areas, social anxiety appeared to be higher among Arts and technology students and scores increased rather than decreased with age.

2.7 Impact of social anxiety among students

Purdon et al. (2001) in a small scale study of 81 undergraduate students found that most described experiencing symptoms of anxiety at some time in social situations which is consistent with findings in the general population (Hofmann & Roth, 1996; Stein, Walker, & Forde, 1994). Visible symptoms such as blushing, sweating, smiling inappropriately and having difficulty expressing oneself were described most frequently. The perception of social anxiety symptoms if noticed in others, was also explored in the study. Their findings suggest that it would not impact on the appraisal of individuals in terms of their intelligence, ambition, reliability or mental health but it would in terms of their leadership abilities and their strength of character which would be perceived more negatively. Those students higher in social anxiety were likely to view those who showed signs of anxiety as less attractive and as having less strength of character, albeit as more compassionate. This suggests that among students there is a degree of negative evaluation of exhibiting symptoms of social anxiety and that those who are socially anxious have overly negative beliefs about how those low in social anxiety view them. There have been no further studies to support these conclusions as there is a dearth of qualitative studies looking at the experience of individuals with social anxiety or as an observer of anxiety symptoms in others.

Russell and Topham (2012) looked at the impact of social anxiety among students across all years of study, mainly undergraduates, at two British universities with one of these being the same university as used in the Russell and Shaw (2009) study. Students were screened initially to identify high levels of social anxiety utilising the mini-SPIN questionnaire (Connor et al., 2001) followed by a tailored questionnaire using Likert scales with some free text responses (N=787). Approximately 80% of students reported frequent social anxiety in presentations, approximately half of

students in relation to seminars and a quarter of students in relation to group work. Reported social anxiety in lectures varied between the two universities more than for other academic settings (26% and 14%). Over a third students reported avoidance of learning activities with two thirds reporting that they have adopted specific strategies to try to manage their social anxiety such as rehearing, or trying to avoid being conspicuous. Students generally described such responses to their anxiety as likely to be unhelpful to their academic progression. Approximately half of the socially anxious students reported frequent stress, anxiety and depression, and just under a quarter reported anger and panic. Approximately a third of socially anxious students also reported frequent loneliness and frequent discomfort in social settings.

These findings are generally in line with the findings of another study looking at social anxiety and the impact on students' experience (Russell, 2008) which gathered data at the same university used by Russell and Shaw (2009). This study used an online Likert scale questionnaire with free text responses and gathered data on students' experiences of social anxiety in learning activities, how they coped with these demands and where they looked for support (n = 478). The study's findings highlighted that social relationships were often a source of problems among students either through discomfort (28%), inhibition (29%) or loneliness (31%). In terms of their academic life the majority of students (83%) reported frequent anxiety, embarrassment and inhibition whilst participating in presentations with frequent distress linked to anxiety about speaking out in seminars (45%), lectures (26%), and problem-based learning (25%). Students described typically seeking help from friends and family rather than from university staff or the counselling service. The participants in this study included all years of study with no differentiation in reporting by year-based cohort or by subject studied and social anxiety was not assessed using validated measures.

Topham and Moller (2011) in a small scale study (N = 117) at a single British university, looked at whether there is a link between well-being and academic achievement in the first year of undergraduate study. For the purposes of the study they defined well-being as relating to issues with self-esteem and social anxiety, as well as to personal concerns. Data were gathered online from a self-selecting sample before arrival at university using three questionnaires: the LSAS, the Clinical Outcomes in Routine Evaluation Measure – General Population (Evans, Connell, Audin, Sinclair, & Barkham, 2005) which is a general measure of psychological well-being in a non-clinical population, and the Rosenberg Self-esteem scale (Rosenberg, 1989). At the end of the first year academic achievements for each participant were obtained from the university records. The findings of this study suggest that there is no significant correlation between well-being measures at the start of the first year and academic achievement at the end of the year. Higher levels of self-esteem however were correlated with lower levels of social anxiety. The conclusions drawn from this study are very limited as it was small scale and it only looked at well-being measures prior to arrival at university but not again in the early months after arrival.

2.8 Heterogeneity of social anxiety

Several writers have highlighted the importance of understanding the detail of how social anxiety is experienced rather than just identifying triggering situations and the degree of avoidance (Clark, 2005; McNeil & Randall, 2014). Spokas and Cardaciotto (2014) point out that "failing to consider such heterogeneity may lead to inaccurate assumptions among clinicians and may potentially influence treatment efficacy. Furthermore, a better understanding of the dimensions of heterogeneity may shed light on the numerous etiological pathways to SAD" (p. 247).

As described previously (p. 42), clinical models of social anxiety give a central role to negative self-referential cognitions in the face of perceived social threat. Several studies among clinical and non-clinical socially anxious individuals found a negative interpretive bias in relation to social situations (Amir, Beard, & Bower, 2005; Brendle & Wenzel, 2004). Self-referential information is more readily remembered and more easily accessed than other types of information (Kihlstrom, Beer, & Klein, 2003; Klein & Loftus, 1988) and self-focused processing in those who are socially anxious, increases negatively-biased judgements such as the likelihood and impact of negative social outcomes (Voncken, Bogels, & de Vries, 2003).

Differences in the nature of the negative self-referential beliefs in social anxiety have been identified. Turner, Johnson, Beidel, Heiser, and Lydiard, (2003) suggest there are two main themes: a social comparison theme i.e. that others are more socially competent, and a social ineptness theme i.e. that the socially anxious individual would display signs of nerves and appear awkward in social situations. Rodebaugh (2009) suggests that the negative beliefs in SAD relate to themes of self-concealment and fear of rejection if they disclosed their true self. Wells, Stopa, & Clark **(**1993) developed a questionnaire, the Social Cognitions Questionnaire (SCQ) (see Appendix C), with items derived from clinical interviews with individuals with social anxiety which is used to assess clinically significant change in interpretive bias. It has two subscales: frequency of occurrence of beliefs and strength of belief. A factor analysis based on a non-clinical sample suggests three themes which Wells (1997) describes as negative self-beliefs, fear of performance failure, and fear of negative evaluation and attracting attention. Wong and Moulds (2010) found that all three types of belief were associated with social anxiety and that impending social threat increased the strength of these beliefs with strength of belief declining after a triggering social interaction.

The SCQ has been used in a number of studies and it has been shown to discriminate between individuals with high and low social anxiety (e.g. Hodson et al., 2008; Schreiber, Hoefling, Stangier, Bohn, & Steil, 2012). The SCQ is unpublished but permission was granted to use it in this research by Professor David Clark. A factor structure is shown in Table 2.1 below. Visual inspection of the three factors reveals that Factor 1 cognitions are negative self-worth statements and both Factor 2 and Factor 3 statements are negative expectancies or anticipatory beliefs when in a social situation. Negative expectancies are mainly beliefs relating to concerns about showing, or being judged for showing, signs of nervousness in a social situation.

Table 2.1

Social Cognitions questionnaire (Wells, Stopa, & Clark, 1993)

Factor 1 Negative self-worth beliefs	**Factor 2 Negative expectancies**	**Factor 3 Negative expectancies**
I am unlikeable	I will be unable to speak	People will stare at me
I am foolish	I am going to tremble	I will be sweat/perspire
People will reject me	I will be paralysed with fear	I am going red
I am inadequate	I will drop or spill things	People will see I am nervous
I am inferior	I am going to be sick	
People are not interested in me	I will babble or talk funny	
People won't like me	I will be unable to concentrate	
I am weird/different	I will be unable to write properly	
People think I am boring	I am vulnerable	

Socially anxious individuals appear to have a desire for social contact but also a fear of negative evaluation which can motivate avoidance (Meleshko & Alden, 1993).

Theoretical models of social anxiety highlight the use of self-protective behaviours or safety behaviours and their role in the maintenance of social anxiety (Clark & Wells, 1995; Rapee & Heimberg, 1997). When faced with social threat, individuals with SAD employ a greater use of safety behaviours compared to controls (e.g. Cuming, et al., 2009; McManus, Scadura, & Clark, 2008;) and a reduction in the use of such behaviours is associated with clinically significant change (McManus et al., 2009) and a reduction in fear-related beliefs (Kim, 2005; Wells et al., 1995).

Two types of safety behaviours have been identified in socially anxious individuals: avoidance behaviours such as avoiding eye contact or being noticed, and impression-management behaviours such as rehearsing what you will say or monitoring how you are coming across (Hirsch, Meynen, & Clark, 200; Plasencia, Alden, & Taylor, 2011). Avoidance behaviours are common across anxiety disorders (Salkovskis, 1991) and are conceptualised in CBT models as maintaining anxiety by preventing or restricting access to information that challenges anxious predictions. Impression-management behaviours are pro-social behaviours which in social anxiety may be used excessively or inappropriately (Plasencia et al., 2011). Avoidance behaviours appear to be perceived by others more negatively than impression-management strategies (Plasencia et al., 2011; Hirsch et al., 2004) and are more detrimental to emotional closeness (Vonken, Alden, Bogels, & Roelofs, 2008). Studies suggest that both avoidance and impression-management behaviours lead the socially anxious individual to perceive themselves as inauthentic and as hiding a damaging truth about themselves (Plasencia et al., 201l; Rodebaugh, 2009).

The Social Behaviours Questionnaire (SBQ) (Clark et al., 1995) (see Appendix D) includes 28 items describing commonly occurring safety behaviours associated with social anxiety. A factor analysis identified two factor groups (Clark, 2005) reflecting

avoidance behaviours and impression-management behaviours (see Table 2.2). The SBQ is unpublished but has been used in a number of studies and it has been shown to discriminate between individuals with high and low social anxiety (e.g. Hodson et al., 2008; Plasencia et al., 2011; Schreiber, Hoefling, Stangier, Bohn, & Steil, 2012). The SBQ is used in Study 1.

Table 2.2

Social Behaviours questionnaire (Clark et al., 1995)

Factor 1 Impression-management	**Factor 2 Avoidance**
Make an effort to come across well	Try not to attract attention
Check that you are coming across well	Avoid eye contact
Try to picture how you appear to others	Talk less
Grip cups or glasses tightly	Avoid asking questions
Prepare sentences in your mind	Position yourself not to be noticed
Censor what you are going to say	Choose clothes that will prevent or conceal sweating
Blank out or switch off mentally	Avoid talking about yourself
Try to act normal	Keep still
Try to keep tight control of your behaviour	Stay on the edge of groups
	Hide your face

The conceptualisation of social anxiety has changed considerably over the last 25 years from being presented as a simple phobia to one which reflects a more complex problem. Current assessment tools that measure levels of social anxiety along a continuum do not provide an understanding of the nature of an individual's fear and an appreciation of the range of coping strategies that the individual tries to deploy in feared social encounters. The SCQ and the SBQ have been developed to understand the experience of social anxiety in more detail.

2. 9 Summary and rationale for Study 1

The literature suggests that studies of social anxiety in both adults and children vary in the prevalence rates reported but are fairly conclusive in indicating that social anxiety is one of the most prevalent mental health problems. The use of different assessment tools, different cut-off levels with the same questionnaires, different diagnostic criteria and data gathering methodologies have all resulted in a variability in findings. The impact of social and cultural norms also needs to be considered when reviewing and comparing studies. There is little data available on social anxiety in the UK and only one small scale study examined prevalence rates of social anxiety among students along a continuum of severity (Russell and Shaw, 2009).

Studies on the mental health of young people have highlighted the transition to university as a particularly stressful period (Cooke et al., 2006; Thorley, 2017; UnivesitiesUK, 2018). CBT models (Clark & Wells, 1995; Rapee & Heimberg, 1997) suggest that for those who are socially anxious, exposure to challenging social and performance situations such as those likely to be encountered in a university setting, will activate negative self-referential beliefs and be associated with the use of unhelpful behaviours to manage the perceived threat of negative evaluation. Questionnaires have been developed that seek to examine the distinctive nature of these beliefs and behaviours associated with social anxiety. A deeper understanding of the nature of social anxiety among students would be beneficial in planning appropriate interventions from an educational and clinical perspective.

2.10 Research questions

In relation to new undergraduate students:

1. Are the levels of social anxiety experienced by undergraduates at the start of their studies higher than for the general population?
2. Which self-referential beliefs are most problematic in social situations?
3. Which behaviours are most likely to be adopted when socially anxious?

2.11 Method

Design.

This study is a cross-sectional survey design using three questionnaires delivered online:

- Liebowitz Social Anxiety Scale (LSAS) which measures social anxiety levels in specific social situations.
- The Social Cognitions questionnaire (SCQ) which measures frequency of specific cognitions and strength of belief in the cognitions.
- The Social Behaviours Questionnaire (SBQ) which measures behaviours commonly adopted when socially anxious.

Participants.

First year undergraduate students (80 women, 21 men, M_{age} = 24.21 years, *SD* = 9.08, age range 18 -57 years) were recruited at a single British university. Students were approached directly as a cohort before or after lectures. Recruitment was carried out in the following academic departments: psychology (*n* = 75), computer science (*n* = 22) and humanities (English and history) (*n* = 4). Of the 105 students who initially volunteered, 4 did not complete the online questionnaires. There were no exclusion criteria. Psychology students received research credits for participating. Participants

were recruited within 2-5 weeks of starting at university in order to measure social anxiety levels as early as possible in their studies.

Materials.

As mentioned above and described on pp.61-64, three psychological measures were used in this study which are described in detail below: the LSAS, the SCQ and the SBQ. Permission was granted to use the LSAS by Dr Liebowitz. The SCQ and SBQ are unpublished measures which were developed to monitor change during clinical treatment but have also been used in previous research studies (see pp. 62-64). These questionnaires explore participants' experiences in social situations with reference to a cognitive behavioural model of social anxiety. They were made available to the researcher by Professor David Clark along with permission to use them in the study. A paper detailing the psychometric properties of the questionnaires was also made available and this includes data on the reliability and discriminative validity of the questionnaires based on a sample of 120 patients who met DSM-IV diagnostic criteria for social anxiety (details below).

Leibowitz Social Anxiety Scale (Liebowitz, 1987) (see Appendix B). This is a well-established measure of social anxiety in clinical and research trials with a 24-item scale that measures both fear and avoidance of specific situations over the past week on two 4-point Likert scales as follows: the fear measure from 0 (no fear) to 3 (severe fear); the avoidance measure from 0 (never avoids) to 3 (usually avoids). Within the 24 items, 11 items are described relating to general social situations e.g. *Talking to people you don't know very well* and *Going to a party*, and 13 items relating to performance situations e.g. *Speaking up at a meeting*, and *Giving a talk to an audience.* For each item the respondent has to report how much they fear and how much they avoid each

situation. By summing the responses to both these questions for all 24 items, a total LSAS score is obtained.

Subscales for fear and avoidance and for general social and performance situations can be computed (see Appendix B). In this study only the total LSAS score and the fear and avoidance subscales was used. The subscales for general social and performance situations have been criticised for a poor distinction between items within the subscales and for a high correlation between the two subscales (Heimberg et al., 1999; Herbert, Brandsma, & Fischer, 2014). Heimberg et al. (1999) point out that these subscales were not derived from empirical data and question the allocation of items to subscales. For example, the items *Walking into a room where others are seated* and *Giving a report to a group,* are both classified as a performance situation. Items such as *Talking to people in authority* and *Meeting strangers* are classified as a social interaction but arguably are little different to *Walking into a room where others are seated,* which is defined as a performance item.

Liebowitz (1987) suggests interpretation of scores as follows:

55 - 64 - moderate social anxiety

65 - 79 - marked social anxiety

80 - 94 - severe social anxiety

95 + - very severe social anxiety

Mennin et al. (2002) and Rytwinski et al. (2009) conclude that the LSAS is effective in identifying individuals who meet criteria for SAD. They propose the following cut-off scores reflecting a balance between specificity and sensitivity:

30 – performance-only

60 - generalised social anxiety

***Social Cognitions Questionnaire* (SCQ)** (Wells, Stopa, & Clark**,** 1993) (See pp. 62-64 and Appendix C)**.** This a 22-item questionnaire which gathers data on the strength and frequency of negative automatic thoughts experienced in anxiety provoking social situations in the last week e.g. *I am unlikeable*, *I am going red.* Each thought is rated twice: firstly for the frequency with which the thought occurred in the last week on a Likert scale from 1 = "Thought never occurs" to 5 = "Thought always occurs when I am anxious"; secondly, for the extent to which the thought was considered to be true. The belief rating scale runs from 0 = "I do not believe this thought" to 100 = "I am completely convinced this thought is true". In normal clinical practice, the total of each scale is used to monitor progress. For statistical analysis, the mean is more commonly used to deal with occasional missing items.

Tanner, Stopa, and De Houwer (2006) report that the SCQ has good test-retest reliability over 4-6 weeks ($r = .79$, $p < .001$). Clark (2005) reports that internal consistency is high for both scales (SCQ frequency: Cronbach $\alpha = 0.89$; SCQ belief: Cronbach $\alpha = 0.89$) and there is good discriminant validity ($p < .001$) with both PTSD and a non-clinical sample. Clark (2005) presents a factor analysis on the SCQ with 3 factors emerging (see p. 62) which are considered in this study. Some items are not included as their correlations were low and did not load strongly enough to one particular factor.

Social Behaviours Questionnaire (SBQ) (Clark et al., 1995) (See Appendix D and pp. 64-66)**.** This is a 28-item scale that gathers data on behaviours adopted when anxious in, or before, social or performance situations e.g. *Avoid eye contact*; *Stay on the edge of groups.* Each behaviour is rated on a 4-point scale ranging from 0 = "Never" to 3 = "Always". In normal clinical practice, the total of each scale is used to monitor progress. For statistical analysis, the mean of each scale is more commonly

used. The reported internal consistency is high (Cronbach $\alpha = 0.80$) and there is good discriminant validity ($p < .001$) with both PTSD and a non-clinical sample. Clark (2005) presents a factor analysis on the SBQ with two factors which are considered in this study (see p. 64). Some items are not included as their correlations were low and did not load strongly enough on to one particular factor.

Procedure.

Ethical approval was obtained from City University, Psychology Department Research Ethics Committee. Ethical approval was also obtained from the University of South Wales Life Sciences and Education Research Committee as the research participants were students at this university. The method and design is in accordance with the Code of Human Research Ethics (British Psychological Society [BPS], 2014) and the Data Protection Act 1998 (Information Commissioner's Office [ICO], 2015), which was in force when the data was gathered.

Recruitment was carried out by approaching cohorts of students either before or after lectures within 5 weeks of starting at the university. Information on the study was provided to the cohort (see Appendix E) and, those who agreed to take part in the study, signed a consent form (see Appendix F) and provided an email address. Within two days of providing consent, participants were sent an email with a link where they were presented with a summary reminding them of the details of the study, an explanation of what their participation would involve and issues relating to confidentiality and withdrawal from the study as outlined on the information sheet.

Participants were then asked for the following demographic details: age, gender and subject studied. The next page presented the three questionnaires for completion, the LSAS, SCQ and SBQ, which take approximately 10-15 minutes to complete in total. On completing all questionnaires, participants were presented with a message thanking

them for their participation and asking for their email address again so that they could be contacted for a further stage of the research (i.e. Study 2 and Study 3).

2.12 Results

Data preparation and analysis.

Data screening was carried out to identify missing values, errors and outliers through visual inspection and by producing descriptive statistics and graphical methods. Data from 101 participants were available for the LSAS questionnaire and for the SCQ frequency of cognition subscale. For the SCQ strength of belief subscale, 91 participants submitted completed data and for the SBQ, 95 data sets were available.

Preliminary analyses examined the demographics of the participants involving frequencies, means, medians, range and standard deviations. The Kolmogorov-Smirnov test (KS) was conducted to check the distribution of the data as samples were over 50 (Field, 2009). Normality tests revealed that the social anxiety scores were not normally distributed D (101) = .10, p = .02. The SCQ frequency subscale was normally distributed D (96) = .07, p = .20, as was the strength of belief subscale D (91) = .08, p = .20 and the SBQ data, D (95) = .08, p = .20. As the social anxiety data were non-normal, non-parametric tests were used to examine the relationship between social anxiety and key constructs and variables, and parametric tests were used to examine relationships within and between the data from the SCQ and SBQ. Where appropriate, Levene's test of equal variance was run for each analysis and, where significant results were found, equal variance not assumed statistics were reported instead. An alpha level of .05 was used for all statistical tests except for tests examining relationships at factor levels where an alpha level of .01 was used.

Descriptive statistics

Table 2.3

Social anxiety score (*N* = 101)

LSAS score	***M***	***SD***
Total fear subscale (out of 72)	30.31	13.42
Total avoidance subscale (out of 72)	24.73	13.69
Total score (out of 144)	55.04	26.32

Social anxiety score by age is given in Table 2.4 below and compared to data from the Russell and Shaw (2009) study. As the majority of students are 18-20 years old when transitioning to university, a further breakdown is given by age for this group in the current study, although no comparison data are available.

Table 2.4

Social anxiety score by age

	This study			**Russell and Shaw (2009)**		
Age (years)	***n***	***Mdn* (range)**	***M (SD)***	**n**	***Mdn* (range)**	***M (SD)***
18	29	45 (4-97)	48.1 (21.8)	n/a	n/a	n/a
19	16	52 (16-111)	58.8 (28.6)	n/a	n/a	n/a
20	13	70 (20-95)	65.9 (25.7)	n/a	n/a	n/a
Total Under 21	**58**	**53 (4-111)**	**55.0 (25.4)**	**404**	**30 (0-92)**	**32.4 (18.0)**
21-29	21	39 (20-121)	50.0 (24.4)	311	33 (1-109)	36.6 (21.5)
30-39	11	58 (23-140)	62.1 (35.4)	87	34 (2-114)	38 (23.1)
40-49	8	49 (17-84)	50.6 (26.0)	47	27 (1-104)	32.4 (23.4)
50 and over	3	68 (63-100)	77.0 (20.1)	7	56 (47-81)	60.9 (11.6)

Research question 1. Are the levels of social anxiety experienced by undergraduates at the start of their studies higher than for the general population?

The results for this question are divided into two sections: firstly examining overall social anxiety levels and then examining levels of social anxiety in more detail.

Comparison of overall social anxiety levels.

Two different frameworks in terms of cut-off scores and labelling are used in presenting the data as both have been used in previous studies using the LSAS:

- Table 2.5 uses the five levels of social anxiety established by Leibowitz (1987)
- Table 2.6 uses cut-offs defined by Mennin (2002).

In both tables a comparison is made with the study by Russell and Shaw (2009) although their data cover all years of study. No other published data in this form could be found to make a comparison.

Table 2.5

Percentage prevalence of social anxiety by levels (levels defined by Leibowitz, 1987)

Social anxiety level	Present study (*N* = 101)	Russell & Shaw (2009)* (*N* = 1007)
None (≤ 54)	54.46	83.6
Moderate (55-64)	12.87	6.5
Marked (65-79)	11.88	6.7
Severe (80-95)	13.86	2.5
Very severe (96 ≤)	6.93	0.7

* data from this study is only available to one decimal place.

In this present study, the total percentage across the levels of severity of Marked, Severe and Very severe (which includes levels most closely related to a diagnosis of SAD) is 32.7% compared to 9.9% in the Russell & Shaw study (2009). NICE (2013) reports a prevalence of 12% in the general population.

Table 2.6 below compares scores against cut-offs defined by Mennin (2002) i.e. SAD is delineated in the category labelled 'Marked (60+) Generalised social anxiety'.

Table 2.6

Percentage prevalence of social anxiety by levels (defined by Mennin, 2002)

Social anxiety level	% of participants	
	This study (*N* = 101)	**Russell and Shaw (2009)* (*N* = 1007)**
Mild (≤ 29) No social anxiety	15.84	44.8
Moderate (30-59) Performance anxiety	45.54	43.2
Marked (60+) Generalised social anxiety	38.61	12.0

* Data from this study is only available to one decimal place.

The data from this study is compared to Fresco et al. (2001) by high social anxiety group (anxious group or clinical) and low social anxiety group (non-anxious or sub-clinical) (see Table 2.7). The raw scores for the Fresco (2001) study are not available.

Table 2.7

*Comparison of mean LSAS scores between a clinical and non-clinical group**

Anxious group						**Non-anxious group**					
This study			**Fresco et al (2001)**			**This study**			**Fresco et al (2001)**		
n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
46	78.80	18.11	99	74.53	23.31	55	35.16	11.25	53	13.49	12.70

*Liebowitz cut-off scores used

A Kruskal-Wallis Test was conducted to examine the differences between the five main age groups shown in Table 2.4. No significant differences were found across these age groups, $\chi^2(4) = 3.97$, $p = .41$.

Differences were found in social anxiety levels in relation to subject-studied using a Kruskal-Wallis test, $\chi^2(2) = 7.75$, $p = .02$. Further analysis using Mann-Whitney U tests revealed that computer science students ($Mdn = 70.50$) reported greater social anxiety than psychology students ($Mdn = 46.00$), $U = 565.00$, $p = .03$, $r = .26$, suggesting a medium effect size, and greater than humanities students ($Mdn = 37.50$), $U = 14.00$, $p = .03$, $r = .42$, suggesting a medium effect size. No difference emerged between psychology students and humanities students $U = 83.50$, $p = .14$.

Gender differences in social anxiety were examined using a Mann-Whitney U test. No significant difference in social anxiety was found between men ($Mdn = 70.00$) and women ($Mdn = 46.00$), $U = 635.00$, $p = .09$.

Comparison of social anxiety levels at item level.

A Spearman Rho correlation test revealed a positive correlation between the two LSAS subscales, fear and avoidance, $r_s(101) = 0.88$, $p < .001$. In relation to specific social situations most relevant to a university setting, Table 2.8 presents the percentage of students reporting situations as highly feared and frequently avoided in this study compared to Russell and Shaw (2009) (See Appendix G for data for all items).

Table 2.8

Percentage of participants reporting fear and avoidance by LSAS items

	Percentage of participants			
	Fear moderate/severe		Avoidance often/usually	
LSAS item	**This study**	**Russell & Shaw**	**This study**	**Russell & Shaw**
Talking to a large audience	79.2	67.0	64.3	32.2
Being centre of attention	59.4	22.3	51.5	12.8
Speaking up in a meeting	56.4	29.2	46.5	22.7
Doing a written test	49.5	34.0	18.8	5.9
Giving a report to a group	48.5	32.2	39.7	14.9
Meeting strangers	47.6	16.3	25.8	7.5
Entering room where others Are seated	44.5	16.6	25.8	8.6
Working whilst observed	43.6	23.7	21.8	8.8
Looking strangers in the eye	37.7	12.6	30.7	11.4
Talking to someone you don't know well	36.6	13.9	24.8	10.9
Talking to someone in authority	32.7	17.3	20.8	7.4
Participating in small groups	24.8	14.3	16.8	5.1

Note Russell and Shaw (2009) data is only available to one decimal point.

On all items in Table 2.8, the percentage participants reporting high levels of fear and avoidance is greater in this study than reported by Russell and Shaw (2009). The proportion of participants avoiding as a percentage of those fearing, is also higher, except for two items: *Looking strangers in the eye,* and, *Talking to someone you don't know well.* For these items, however, the percentage of students reporting high scores on fear and avoidance is greater in this study by approximately a factor of 3 times for fear and approximately 2.5 times for avoidance. Inferential statistics cannot be applied

as the raw data for the Russell and Shaw study are not available.

Research question 2. Which self-referential beliefs are most problematic in social situations?

The SCQ (Wells et al., 1993) was developed to monitor changes in the frequency and strength of belief in negative cognitions commonly occurring in social anxiety as treatment progresses based on an expectation that SCQ scores would fall on both scales as social anxiety levels reduce from clinical to subclinical levels. A Pearson correlation test revealed that the frequency and strength of belief measures were positively correlated, $r(95) = 0.57$, $p < .001$. An independent-samples t-test indicated that those high in social anxiety had a greater frequency of negative cognitions (M = 69.64, SD = 12.50) than those low in social anxiety (M = 47.35, SD =12.64, t(96) = 8.52, p < .001, $r = .66$ indicating a large effect size. The strength of belief in negative social cognitions was also greater for those high in social anxiety (M = 1411.62, SD = 386.01) than those low in social anxiety (M = 905.74, SD = 607.97), $t(91) = 4.48$, $p < .001$, $r = .44$ indicating a medium effect size. This significant difference between high and low social anxiety groups was also indicated across all SCQ factors at $p < .01$ (see Table 2.9).

Table 2.9

Comparison of high and low social anxiety groups by SCQ factor groupings
(see p.62)

	Frequency of belief			**Strength of belief**		
	n	***t***	***sig***	***n***	***t***	***sig***
Factor 1*	94	-7.60	.001	92	- 4.37	.001
Factor 2**	93	-6.13	.001	90	-2.97	.004
Factor 3**	94	-.631	.001	94	-3.14	.002

*Factor 1= Negative self–worth beliefs **Factor 2 and 3 = Negative expectancies

Table 2.10 presents the top ten SCQ items ranked by the percentage of students reporting negative cognitions in social situations. (See Appendix H for all items).

Table 2.10
Frequency and strength of belief in SCQ cognitions

Cognition	Factor*	Usually/always occurs	Strength of belief (0 - 100%)	
		% participants	*M*	*SD*
I am weird /different	1	39.7	53.96	35.41
People will see I am nervous	3	38.7	63.02	32.16
People won't like me	1	34.7	60.21	31.49
People are not interested in me	1	33.7	61.77	30.64
People will reject me	1	33.7	56.53	33.64
People think I am boring	1	32.6	58.13	33.32
People will stare at me	3	30.7	56.98	30.51
I will babble or talk funny	2	30.7	58.53	43.42
I am inferior	1	30.7	49.68	38.63
I am going red	3	30.7	50.21	38.39

*****Factor 1=Negative self –worth beliefs Factor 2 and 3 =Negative expectancies
(see p.62)

Research question 3. Which behaviours are most likely to be adopted when socially anxious?

The SBQ (Clark et al., 1995) monitors changes in the frequency of problematic social behaviours as treatment progresses with an expectation that scores would fall as social anxiety levels reduce from clinical to sub-clinical levels. As there are 28 items, only the top ten ranked in terms of percentage participants reporting high frequency of use of these behaviours are shown in Table 2.11 below (see Appendix I for all items).

Table 2.11

Reported frequency of SBQ behaviours

Social behaviours	Factor*	% participants reporting used often/always
Make effort to come across well	1	70.3
Make effort to get words right	1	65.4
Try not to attract attention	2	55.4
Avoid talking about yourself	2	51.5
Check you are coming across well	1	50.5
Talk less	2	48.5
Prepare sentences in your mind	1	44.6
Try to picture how you appear to others	1	44.6
Censor what you're going to say	1	43.6
Avoid asking questions	2	43.6

*Factor 1= Impression-management Factor 2=Avoidance (see pp.62 - 64)

The frequency of behaviours was analysed by high and low social anxiety groups using an independent t-test. The high anxiety group (M = 46.28, SD = 9.61) had a greater frequency of social anxiety related behaviours than the low anxiety group (M = 29.61, SD = 10.75), t(95) = 7.76, $p < .001$, r = .63 indicating a large effect size. This was reflected across both SBQ factors: For Factor 1 (Impression- management), the high anxiety group (M = 19.13, SD = 4.94) had a greater frequency of occurrence of these behaviours compared to the low anxiety group (M = 12.62, SD = 5.71), t(93) = 5.71, $p < .001$, r = .52 indicating a large effect size and likewise for Factor 2 (Avoidance), with the high anxiety group (M = 18.32, SD = 9.87) having a greater frequency of these behaviours than the low anxiety group (M = 9.87, SD = 4.72), t(91) = 8.69, $p < .001$, r = .48 indicating a large effect size.

Additional analyses.

Pearson correlation test revealed that SBQ scores are positively correlated with the SCQ frequency of cognitions, r (95) = .73, p < .001 and with SCQ belief rating, r (90) = .39, p < .001 broadly in line with the data produced by Clark (2005).

2.13 Discussion

A number of studies and reports have highlighted the issue of poor mental health among university students and the challenges in transitioning to university (Office of National Statistics, 2018; Thorley, 2017). The aim of this study was to examine the question of whether levels of social anxiety experienced by undergraduates as they start university are higher than for the general population and to examine the specific nature of the anxiety in terms of cognitions and behaviours. The levels of social anxiety found among new undergraduates in this study exceeded levels found in the general population and 45% had levels equivalent to that seen in a clinical population (Fresco et al., 2001). In studies of student populations the figures vary but are generally between 8 - 17% for 12 month prevalence rates, with the only UK student survey (Russell & Shaw, 2009), finding prevalence rates of 12% which was across all years of study. The prevalence of marked to severe social anxiety found in this study are therefore exceptionally high.

In this study, the prevalence of non-clinical levels of social anxiety was also higher than that found in a general adult population (Fresco, 2001). Other studies have found that starting university appears to have a significant negative impact on students' well–being whether they arrive being vulnerable to such problems or not (Cooke et al., 2006). This current study did not have a baseline measure of social anxiety prior to arrival at university so no such conclusion can be drawn from the findings.

No significant difference in social anxiety was found across age groups in this study, although the low numbers in the older age groups makes drawing clear conclusions difficult. Social anxiety has been found to be chronic and unremitting (Bruce et al., 2005; Beesdo-Baum & Knappe, 2012) and with an age of onset typically between early and late adolescence and rarely after 25 years old (Kessler et al., 2005; Beesdo et al., 2007; Wittchen & Fehm, 2003), no differences would be expected. Furmark (2002) in a review of studies of prevalence rates, however, notes higher lifetime prevalence among the young rather than among older adults in some studies.

No gender difference was found in prevalence rates of social anxiety in this study which is in line with the findings of McLean, Asnaani, Litz, and Hofmann (2011) although other studies have found that women had higher prevalence rates than men (Furmark, 2002; Bruce et al., 2005). Turk et al. (1998) found that women differed from men in having higher levels of fear in formal social situations but found no gender difference in fear of informal social interactions. The findings from this study may reflect recent changes of roles for women in society particularly within a younger population. The findings, however, may be distorted by the confounding variable of the subject studied which is discussed further below.

Computer science students had significantly higher rates of social anxiety than psychology or humanities students in this study, although the number in the latter was very low *(n* = 4). The psychology students were predominantly female (96%) and the computer science students predominantly male (82%). In this study, observation at recruitment indicated that there were overseas students among the computer science participants and this may have been a factor in the higher levels of social anxiety reported. Unfortunately, relevant data was not obtained to identify whether ethnicity or country of origin was a factor affecting scores. An alternative explanation for the higher

level of social anxiety for computer science students may be that digital technology is more attractive to those who are socially anxious as suggested by Weidman et al. (2012).

No empirical studies could be found that have examined social anxiety levels by subject studied, although a report by the Royal College of Psychiatry (2003) suggests that there are higher levels reported in Arts students. Russell and Shaw (2009) found higher levels of social anxiety among technology and Arts students in their study and the lowest levels among medical students. A number of studies have shown a relationship between Performing Arts subjects, particularly music, and levels of performance anxiety. The issues of anxiety in formal performance situations is beyond the scope of this research, however, the issue of whether students in particular areas of study have significant higher levels of social anxiety warrants further study and this is discussed in Chapter 5.

Avoidance and safety behaviours are seen as central to the maintenance of social anxiety as the individual monitors and manages themselves in response to their fear of negative evaluation (Clark & Wells, 1995; Heimberg et al., 1999; Rapee & Heimberg, 1997). The results of this study provide support for these findings with LSAS fear and avoidance subscales positively correlated. Looking at the feared situations that make up the LSAS, the situation that was reported as most feared and most avoided was talking to a large audience which is in line with previous research among a general population (Dwyer & Davidson, 2012). The percentage of students in this study reporting this situation as giving rise to high levels of fear (79%) was somewhat higher than for Russell and Shaw (2009) but not to the same degree proportionally as for the other items. In this study, avoidance of highly feared situations was reported as more likely

than not for all items, except for sitting a test or working whilst being observed which may be because it is very difficult to avoid these situations in an academic setting.

The findings of this study raise the question of whether the high levels of social anxiety among first year undergraduates are a short-term elevation related to the transition to university or a more chronic problem. Several factors need to be considered in relation to this question. There is some disagreement about the stability of social anxiety particularly in younger age groups. Wittchen, Lieb, Pfister, and Schuster (2000) examined the stability of anxiety and other disorders among 15-17 year olds and found that there is a clear tendency for symptoms to wax and wane over time in this age group. Hovenkamp-Hermelink et al. (2016) carried out a longitudinal study over six years of individuals with a mean age of 41 years who were diagnosed with a pure anxiety disorder. They found that anxiety disorders are not stable over time and can transition between disorders, with social anxiety having one of the highest rates of instability.

This finding conflicts with the conclusion from several studies that SAD is chronic and unremitting (Bruce et al., 2005; Beesdo-Baum & Knappe, 2012). One possible explanation for this discrepancy in findings is that social anxiety unlike depression arises in triggering situations (Clark & Wells, 1995). An adult with SAD may manage their exposure to challenging social situations by limiting their life and may report a lower level of social anxiety when they can control their environment. However, if there is a forced change in their exposure to triggers, such as a change of work role where the individual is engaged with more people who are critical, social anxiety may increase and impact on functioning. Hovenkamp-Hermelink et al. do not report clearly how diagnoses were made and as noted previously, assessment methods

can give rise to significant variability in results. There can also be issues of differential diagnoses according to the assessment method used (Furmark, 2002).

If the prevalence of high levels of social anxiety found in this study are not short-term increases resulting from adapting to university life, then what can explain this finding? For new students from deprived backgrounds in particular, university may be very daunting. Fumark (2002) in a review of 43 community epidemiological studies of social anxiety from 1980 - 2000 found that it was more common among those from lower income families and those lacking in social support. Karlsen, Clench-Aas, Van Roy, and Raanaas (2014) point out that performance anxiety situations, like speaking to a group, is more anxiety provoking for those from disadvantaged backgrounds. Brook and Schmidt (2008) note that parental socio-economic status as a potential risk factor for social anxiety is an under-researched area. The participants in this study are at a university in a relatively deprived area of the UK although the socio-economic data on undergraduate students of the university in this study and the Russell and Shaw (2009) study were not available to make comparisons.

The higher levels of social anxiety may also be influenced by emerging social trends. Heimberg, Stein, Hiripi, and Kessler (2000) note in a review of data obtained from the National Comorbidity study (Kessler et al., 1994), that the higher prevalence rates of social anxiety emerging were affecting those with social and economic advantage and consider whether this relates in part to changing social pressures to have social networking skills to progress in employment and in society generally. The data in this study was collected in autumn 2015 almost 10 years after the data was gathered for the Russell and Shaw study. There have been a number of significant changes over this decade particularly in the use of social media (Frith, 2017). The increased use of the digital world to engage in social interactions gives rise to more frequent social

pressures, comparisons and threats which may contribute to elevated levels of social anxiety (Vannucci et al., 2017).

A further aim of Study 1 was to examine the nature of social anxiety among new undergraduate students i.e. the frequency and strength of beliefs and the behaviours that are most prominent when socially anxious. There was a strong correlation between the frequency of occurrence of negative self-referential cognitions and the strength of belief in these cognitions. A positive correlation was also found both between negative social cognitions and problematic social behaviours, between negative social cognitions and social anxiety levels and between problematic social behaviours and social anxiety levels. Both the SCQ and SBQ questionnaires differentiated between high and low social anxiety groups across all factor groupings. These findings are all predicted by the cognitive model (Clark & Wells, 1995) and in line with the related psychometric data produced by Clark (2005) for these questionnaires and with the findings of previous studies (Hodson et al., 2008; Plasencia et al., 2011; Schreiber et al., 2012)

In relation to the most problematic SCQ beliefs, of the 6 highest ranking in terms of the percentage students reporting frequency of occurrence, 5 were negative self-worth statements and in terms of strength of belief, there was an equal mix of negative self-worth beliefs (e.g. I am weird/different) and negative expectancies, with the highest ranking of this type being the item *People will see I am nervous*. A high percentage of participants reported concern that they will disclose nerves and this will be noticed by others, which supports the finding that socially anxious individuals display lower levels of explicit self-esteem than non-anxious controls (de Jong, 2002; Ramussen & Pidgeon, 2010). Findings in relation to implicit self-esteem are mixed and require further study. Tanner, Stopa, and de Houwer, (2006) did not find that implicit self–esteem was lower in those who are socially anxious (N= 29) compared to a

low anxiety control group (N=29). This aligns with the conclusion of de Jong (2002) that explicit self-esteem reflects self-presentation concerns rather than a genuine sense of low self-worth. Glashouwer, Vroling, de Jong, Lange, and de Keijser (2013) however did find that those with SAD (N= 45) had lower implicit self-esteem compared a non-clinical control group (n=45) and compared to a group with Panic Disorder (N= 22). As Alden et al. (2014) point ou,t there are few studies examining implicit self-esteem and SAD. The mixed findings described above may reflect differences between a SAD group, as used by Glashouwer et al., and using a group high in social anxiety as in the studies by Tanner et al. and de Jong. These differences may, however, also reflect the heterogeneity of social anxiety.

Displaying somatic symptoms of anxiety in a social situation (Factors 2 and 3) could be seen as relevant to an individual's position in the social hierarchy i.e. not disclosing behaviours that may lead others to see one as weak. Purdon et al. (2001) found that symptoms of nervousness are perceived negatively by fellow students in relation to an individual's leadership abilities and their strength of character but would have no impact on whether an individual would be seen as intelligent or likeable (i.e. Factor 1 beliefs relating to self-worth). Some writers have suggested that social anxiety is adaptive, focusing attention on social acceptance and inclusion in groups and on strategies that may improve social status (Herman & van Honk, 2006; Sapolsky, 2004; Silk, 2007).

In relation to the most problematic behaviours, of the 6 highest ranking in terms of percentage of students reporting high frequency of use, these were mixed between effortful strategies to convey a good impression and avoidance of drawing attention to oneself. No evidence was found in this study to support the findings from previous studies (Plasencia et al, 2011; Hirsch et al., 2004) that avoidance behaviours (SBQ

Factor 2) rather than impression management behaviours (SBQ Factor 1) were associated with higher levels of social anxiety. These previous studies were on clinical populations with chronic SAD and this study was on a student population in which high levels of anxiety may be transient. As Plasencia et al. (2011) highlight, avoidance behaviours such as averting gaze or not talking about oneself can be damaging to social relationships with others perceiving the social anxious individual as not reciprocating in social interactions. Faced with many new people at university, some degree of openness and authenticity, along with expressing engagement in social interactions would be beneficial in settling in to new social groups (Hirsch et al., 2004; Vonken et al., 2008). Socially anxious individuals fear negative evaluation and rejection and as theoretical models of social anxiety emphasise, avoidance strategies often make feared consequences more likely to occur (Clark & Wells, 1995; Rapee & Heimberg, 1997).

In considering whether there is a clinically relevant distinction to be made between impression-management and avoidance behaviours (SBQ Factors 1 and 2), consideration needs to be given to the fast-expanding virtual world of social interaction in addition to face-to-face encounters. Social media as well as texting can make up a significant percentage of daily social interactions particularly for young people (Frith, 2017; Royal Society for Public Health, 2018). Participants in this study may have responded to items in the SBQ with one or both social worlds in mind. The norms and common practices of these two social worlds are different and evolving, particularly in the case of the digital world where there also seems to be a particular focus on, and opportunities for, impression-management (Herring & Kapidzic, 2015). As the nature of impression-management and avoidance are also very different in these two parallel social worlds, research into whether and how social anxiety is maintained by online behaviours and related social cognitions should be examined further and integrated into

assessment tools, particularly for adolescents and young adults. Treatment could then be adapted to target unhelpful behaviours that include online social behaviours, identified in the process of a clinical assessment and a tailored formulation.

The item in the SBQ, *Use alcohol to reduce anxiety*, was not reported as a strategy used much or at all for either the low anxiety group or high anxiety group and it did not load on to the factors identified by Clark (2005). As discussed previously, while some studies have found high rates of alcohol use among those with a diagnosis of SAD (Schneier et al., 2010), studies of students with sub-clinical levels of social anxiety produced mixed results with some studies finding that those with high levels of social anxiety may drink less (Eggleston, Woolaway-Bickel, & Schmidt, 2003; Ham, Bonin, & Hope, 2006).

It is interesting to note that the findings of this study give support to the notion of social anxiety as a continuum (e.g. Mc Neill & Randall, 2014; Rapee & Heimberg, 1997) in that similar beliefs and behaviours were reported by those high and low in social anxiety, but the latter reporting a lower level of frequency of negative cognitions and problematic behaviours and reporting a lower level of belief in negative cognitions. Whether there are significant differences in the types of cognitions and behaviours across presentations of social anxiety in relation to levels of severity, variations in etiology or co-morbidity, warrants further research.

2.14 Strengths and limitations of the study

This study examined an under-researched mental health issue among university students and one that is little discussed and poorly identified in university support services. By highlighting the high prevalence and problematic nature of social anxiety in a university setting, particularly at a very vulnerable time in the transition to undergraduate studies, this research provides support for the need to pay attention to

student mental health in the early months at university. The potential relevance of this research to university settings and to mental health services in general, is discussed in Chapter 5.

This was an exploratory study and in terms of limitations the number of participants recruited did not permit conclusions to be drawn on social anxiety across the categories of age and subject studied. It is also not possible to draw conclusions about gender as it is strongly linked to subject studied. Data were not available on ethnicity.

The three questionnaires used in this study were completed online and therefore participants were unable to ask for any clarification as would be possible in a face-to-face clinical setting. As initially designed, the LSAS was clinician administered, although the use of the self -report version has been supported by previous research (Fresco et al., 2001) and is used regularly in research studies. The handbook for the LSAS (Liebowitz, 1987) suggests prompts for clarifying each item. These prompts were not used in this present study for two reasons: firstly some of the prompts are not consistent with contemporary life particularly for a student e.g. reference to ‘a line of public phones’. Secondly an introduction for each item may have extended the completion time unacceptably for some participants.

Although widely used, the LSAS arguably has potential weaknesses in addition to the gender issues that have been discussed previously. Some of the questions could appear dated. For example, one of the questions asks about fear and avoidance in relation to the use of a phone in a public place and in the contemporary world mobile phones allow messaging rather than speaking. Likewise a question that relates to asking someone on a date was developed in a pre-internet and social media era. Future studies might consider the use of alternative questionnaires, for example, the Social Phobia

Inventory (SPIN) (Connor et al., 2000). The SPIN is commonly used in the UK in clinical settings and assesses fear, avoidance and physiological symptoms relating to social anxiety across 17 items using a 5-point Likert scale. It has good test-retest reliability and internal consistency and correlates well with other measures of social anxiety, including the LSAS. The advantage of using the SPIN over the LSAS is that it is briefer and assesses physiological symptoms in addition to fear and avoidance, however, the LSAS was used in this study to allow comparison to historical data on social anxiety

No screening was carried out for other mental health problems in this study. Although co-morbidity is very often present with social anxiety, such problems as depression are usually secondary to the social anxiety (Wenzel & Jager-Hyman, 2014). Screening for other mental health problems would have required a number of questionnaires, increasing the task completion time for participants and possibly impacting on numbers recruited.

2.15 Conclusion

This study found higher levels of social anxiety among first term undergraduate students compared to that found in a general population or found in previous studies of students. As this study was focussed on the period of transition to a new social environment, higher levels of social anxiety compared to the general population might have been predicted, however, the high levels of social anxiety that were found were unexpected. The frequency of occurrence and strength of belief in negative self-referential statements both in relation to self-worth and to displaying somatic symptoms suggest a significant level of distress relating to social anxiety among many new undergraduates. Impression-management and subtle avoidance behaviours suggest that

social interactions are effortful and behaviours may convey unhelpful messages in social interactions which do not promote acceptance and inclusion and increase the likelihood of the feared consequence of negative evaluation. Future studies should consider refinement and adaptations of the questionnaires used in this study to reflect the significant development in online social interaction.

This study is exploratory and should these levels be confirmed in further studies, it must raise concerns about the well-being of new undergraduates and their ability to function effectively in a university environment. A longitudinal study of social anxiety across years of study examining differences in what is feared and avoided by gender, age, cultural background along with assessing whether some students may arrive very vulnerable to developing levels that are disruptive to their functioning, would enable universities to address these issues more effectively in the planning and design of support services. This is discussed further in Chapter 5.

Study 1 is part of three studies which together aim to understand social anxiety from different perspectives. Study 1 has included an examination of the nature of interpretive bias in social anxiety and Study 2 and Study 3 will examine cognitive bias in social anxiety further in the same participant group as Study 1. By developing greater clarity on the processes that maintain social anxiety, treatment programmes, both face-to-face and online, could be tailored more effectively and efficiently to a student population.

Chapter 3

Study 2: Attentional bias in social anxiety

3.1 Introduction

With the development of clinically-based research on selective attention alongside research from cognitive psychology, a link has emerged between certain mental health disorders and a persistent pattern of deploying attention, often outside conscious awareness (e.g. De Raedt & Koster, 2010; Ellenbogen et al., 2002). Cognitive behavioural treatment approaches include assessing and shifting these attentional biases particular in anxiety disorders where they appear to be particularly prominent (Koster et al., 2005). In social anxiety, self-focused attention is understood to play a significant role in maintaining anxiety with attention being directed inwards towards physiological cues and also towards a cognitively constructed self-image (Clark & Wells, 1995).

While there is a large body of research on attentional bias in social anxiety there are still areas of uncertainty and controversy. Harvey, Watkins, Mansell, and Shafran (2004) in reviewing studies of attentional bias, note that research paradigms that are currently used lead to ambiguous interpretations and are not carried out in a context that is ecologically relevant to clinicians. The aim of Study 2 is to examine self-focused attention in social anxiety using a new research method to increase ecological validity.

This chapter firstly examines the formulation of attentional processes in models of social anxiety along with the evidence relating to how attention is deployed in relation to threat and reviews current research paradigms in this field. The role of negative self-imagery is then examined and finally Study 2 is described and the results outlined and discussed.

3.2 Attentional bias in social anxiety

As discussed in Chapter 1, theoretical models of social anxiety agree on the important role of self-conscious attention, including a focus on physiological symptoms of anxiety and on a negative constructed self-image (Clark & Wells, 1995; Rapee & Heimberg, 1997). CBT models of health anxiety and panic disorder, as well as of social anxiety, are based on a formulation of internal stimuli provoking concern and a sense of threat (Wells, 1997). Socially anxious individuals report higher levels of self-focused attention than those with low levels of social anxiety (Bogells & Mansell, 2004; Mellings & Alden, 2000). Studies manipulating internal stimuli also support this formulation. When in a socially threatening situation, individuals with greater anxiety in public speaking, noticed internal physiological stimuli of finger pulses quicker than external stimuli of faces (Mansell, Clark, & Ehlers, 2003). Pineles and Mineka (2005), using feedback on heart-rate (internal cues) and threatening faces (external cues), found that socially anxious individuals had an attentional bias to threatening internal rather than threatening external cues.

The two main CBT models of social anxiety differ on whether, when in a triggering situation, attention is mainly self-focused (Clark & Wells, 1995) or divided between the self and the audience (Rapee & Heimberg, 1997). The difference of whether attention is drawn towards or away from threat (with the audience being defined as the threat) has been the focus of much research. Musa, Lupine, Clark, Mansell, and Ehlers (2003) found that socially anxious individuals were faster to respond to probes that replaced a threat word suggesting attention towards threat. Similar results were found using threat faces (Mogg & Bradley, 2002; Mogg, Philippot, & Bradley, 2004; Sposari & Rapee, 2007). Mogg et al. (2004) point out that attention towards social threat fits with several general models of anxiety (e.g. Mogg & Bradley,

1998; Williams, Watts, MacLeod, & Matthews, 1997). However Amir, Freshman and Foa (2002) found a slower response rate by socially anxious individuals to threat words rather than neutral words which was also found in other studies (e.g. Mattia, Heimberg, & Hope, 1993; Spector, Pecknold, & Libman, 2003). In summary, there has been an ongoing debate over whether attention is drawn towards or away from threat when anxiety is triggered. A growing body of evidence, however, suggests patterns of responding in attentional bias are more complex and dynamic than previously conceived (Van Boekstaele et al., 2013). Ellenbogen and Schwartzman (2009) highlight that implicit within avoidance is that firstly the threat must be recognized and that the avoidance follows. This vigilance-avoidance hypothesis is supported by several studies (e.g. Garner, Mogg, & Bradley, 2006; Vassilopoulos, 2005) that conclude that anxious individuals first demonstrate attention to threat and then direct attention away from threat. Studies have indicated that anxious people show a slowed response in disengaging attention from threat-related stimuli relative to non-anxious people (Amir, Elias, Klumpp, & Przeworski, 2003; Buckner, Maner, & Schmidt, 2010; Fox, Russo, & Dutton, 2002). Koster, Crombez, Verschuere, Van Damme, and Wiersema (2007) describe this process as a complex chain of engagement of attention, impaired disengagement, followed by avoidance.

More recent studies provide evidence for a more individually tailored model of attentional processes in anxiety than previously proposed (Fiske & Taylor, 2017). Koster et al. (2006) suggest that there are individual differences in deployment of attention and that it is possible to distinguish between anxious individuals who have a general tendency to attend toward threat from those who avoid threat. An individual who demonstrates attentional bias towards one category of threat has the potential to exhibit an alternative attentional response to other categories of threatening stimuli (e.g.

angry faces). The issue of the dynamic nature of attention and differential responding which shifts over time may explain conflicting results from research studies where stimuli are presented and attention is measured over time periods that are not consistent. The methods of studying attentional bias to external cues will now be reviewed.

3.3. Approaches to researching attentional bias

The diversity of methodological approaches used in studies of attentional processes in social anxiety and in anxiety more generally make it difficult to draw clear inferences about the deployment of attention. Studies have mainly used one or more of the following indirect approaches which are briefly described and evaluated below:

a. **A modified Stroop effect test.** This test requires participants to respond as fast as possible, for example, to the colour of a word, while ignoring the meaning of a word, which is socially threatening. Biased attention for threat is inferred from the reaction time or accuracy for threatening words than for non-threatening words and point out that this test leaves unanswered questions about the underlying mechanisms involved (Amir, Freshman, & Foa, 2002; Spector, Pecknold, & Libman, 2003). Williams, Mathews, & MacLeod (1996) suggest, for example, that slower response times for more anxious individuals may provide evidence of slower cognitive processing when under threat of being judged negatively by others, rather than of vigilance to threat.

b. **A dot probe test.** This measures the time taken to respond to a probe following exposure to a threatening or non-threatening stimulus, with longer response times inferring avoidance and shorter response times inferring vigilance to threat relating to the prior stimulus. Studies using the dot probe paradigm can use threat words (e.g. Asmundson & Stein, 1994; Musa, Lupine, Clark, Mansell, &

Ehlers, 2003) or threat faces (e.g. Mogg, Philippot, & Bradley, 2004; Sposari & Rapee, 2007). Koster et al. (2004) suggest that differences found with dot probe studies may be due to the degree to which the stimulus captures the attention and creates a difficulty disengaging from threat and that this period to disengage is longer for socially anxious individuals.

c. **A visual search task. This** measures the time taken for participants to find and respond to a target. Shorter response times, for example to angry faces, would infer an attentional bias to angry faces as a threat. In a review of studies using the visual search paradigm to faces (either real or schematic), Becker, Anderson, Mortenson, Neufiled, and Neel (2011) point out that some of the effects found in these studies are misleading due to confounding factors and that these must be considered in any translation of the findings to the real world. In the visual search task in the laboratory, speed of detection may be a function not only of the target over all, for example an angry face, but to a particular detail of the face or background (e.g. whether teeth are exposed), giving rise to inappropriate conclusions.

Conclusions from such studies can be overly simplistic in describing attentional processes (Van Bockstaele et al., 2013) and it has been argued that attentional bias in social anxiety requires more direct investigation (Schultz & Heimberg, 2008). An eye-tracker paradigm records eye gaze through tracking the stimuli that are in the centre of the retina. It can capture the dynamic nature of attention over the course of time which several researchers suggest is essential to really understanding how attention is deployed. Staugaard (2010) and Armstrong and Olatunji (2009) conclude that an eye-tracker paradigm is likely to yield more reliable evidence in measuring visual attention than dot probe as it monitors multiple fixations in various locations across a longer time

course. Many of the studies where an eye-tracker is used, however, are in an environment far removed from everyday social interactions. From a clinical perspective, a major concern with such studies are their ecological validity (Barry, Vervliet, & Hermans, 2015; Schultz & Heimberg, 2008). As Alden et al. (2014) point out "the paradigms used to examine this issue have been highly artificial … which compromises our ability to draw definitive conclusions" (p.537). The use of eye-tracker equipment is developing fast and no longer requires a stationary position in front of a screen but can be done through special glasses that are worn. When studying social anxiety, however, such visible equipment would undermine the aim of creating a naturalistic setting.

3.4 Attention to negative self-imagery

Theoretical models of social anxiety hypothesise that self-focused attention is not just towards internal physiological cues but importantly attention is absorbed with a negative self-image. Several studies support the notion of the role of negative imagery in social anxiety. Using semi-structured interviews, Hackmann, Surawy, and Clark (1998) found that individuals with high levels of social anxiety were more likely than controls to report experiencing spontaneous images when anxious in social situations and that their images were significantly more negative. Holding negative images in mind when in a social situation has been shown to increase anxiety and disrupt performance (Hirsch, Mathews, Clark, Williams, & Morrison, 2006; Stopa & Jenkins, 2007). Compared to verbal cognitions, images are associated with greater emotional arousal as it is suggested they are similar to direct experiencing (Holmes & Matthews, 2010).

Intrusive imagery can be linked to past highly distressing events with studies reporting rates varying from 13% (Harvey, Ehlers, & Clark, 2005) to 100% (Hackmann et al., 2000). It can also relate to prospective imagery which encapsulates feared outcomes which are perceived to be true (Hackmann et al., 2000). Negative self-images constructed by socially anxious individuals are likely to encapsulate negative beliefs about the self (Hackmann et al., 1998) and reflect a negative interpretive bias which increases physiological symptoms of anxiety. Studies suggest that socially anxious individuals are more likely to take an observer perspective in social situations, seeing themselves as they think others do. Coles, Turk, Heimberg, & Fresco (2001) found that socially anxious individuals took more of an observer perspective than non-anxious controls when recalling social situations that provoke high anxiety but a field perspective if recalling low or medium anxiety situations.

Moscovitch (2008) makes the argument that the negative appraisal of the self (reflected in the constructed self-image) should be formulated as the feared stimulus rather than negative appraisal by the audience. He suggests that the negative appraisal by others is the feared consequence. In this context the difference between the two models discussed above, could be seen as differing in whether they formulate attention as absorbed with the feared stimulus i.e. a focus on the self-image alone (Clark & Wells, 1995) or divided between the feared stimulus and the feared consequence i.e. divided between the self -image and the audience (Rapee & Heimberg, 1997).

In summary, negative imagery can play a central role in a number of mental health problems being associated with stronger emotional reactions than verbal cognitions. In the cognitive model it is central to the maintenance of the problem and the visual image appears to encapsulate a threat to the self that may relate to very distressing interpersonal memories.

3.5 Summary and rationale for Study 2

The two main models of social anxiety agree that attention is directed towards internal cues and a constructed negative self-image although they differ on attentional bias to the audience. Recent advances in our understanding of attention suggest that it is more complex than previously formulated and investigations of attentional bias in social anxiety may therefore benefit from greater use of eye-tracker technology as a way of capturing the dynamic nature of attention over time. A challenge in all studies on social anxiety is how to examine the association between attentional bias and social anxiety in an environment that is ecologically valid so that findings can be more clearly linked to clinical settings.

Study 2 investigates the association between social anxiety levels and attentional deployment in a naturalistic social situation using an innovative design. As attention to an internal image cannot be measured directly, an external self-image is presented through live video feedback and attention to the image is measured in relation to levels of social anxiety. Based on the two main models of social anxiety (Clark & Wells model, 1995; Rapee & Heimberg, 1997) it is hypothesised that, when in a social interaction, this external image will be of greater interest to those high in social anxiety than those with lower levels of anxiety.

A further consideration in research in this field is that measures of social anxiety are often gathered from self-report questionnaires requiring memory recall of feelings of fear or of behaviours adopted a few days previously (offline reporting) and are not being experienced in the moment of reporting (online). When trying to understand associations between social anxiety and cognitive processes it is useful to have online reporting i.e. when the individual is still experiencing the arousal and the

behavioural urges are still activated that relate to the social encounter. A repeat measure of social anxiety is obtained in this study immediately after the interaction on Skype to capture 'online' levels of social anxiety.

3.6 Research hypotheses:

1. There will be a positive correlation between levels of social anxiety and attention to an external live self-image during a social interaction.
2. There will be no correlation between levels of social anxiety and attention to an external live self-image in the time period before the social interaction.
3. Social anxiety levels will be higher measured online in Study 2 than offline in Study 1.

3.7 Method

Design

This study is a within-subject correlational design examining the association between social anxiety using the Liebowitz Social Anxiety Scale (LSAS), a social anxiety measure, and attentional bias using eye-tracker. To create a naturalistic setting, an innovative design was used which allows attention to be tracked unobtrusively during a live social interaction.

Participants

First year undergraduate students (53 women, 9 men, M_{age} = 25.92 years, *SD* = 10.14, age range 18-57 years) were recruited at a single university in the UK following on from their participation in Study 1. Of the 101 participants in Study 1, 62 students (61%) volunteered to continue to Study 2 and Study 3, of which 54 (87%) were psychology students and 8 computer science students (13%). There were no individuals

excluded (the only criterion for exclusion was suffering from epilepsy). As in Study 1, psychology students received research credits for participating. Participants were recruited within 2-4 weeks of completing the online questionnaires which was within 4-9 weeks of starting at university.

Materials and resources

Skype with eye-tracker software.

Skype is an internet telephony network allowing voice and video communication between two computers on the internet. When using Skype, the user sees not only the person they are talking to on the screen but also a small inset screen located towards the periphery of the main screen giving the viewer live feedback of themselves. In this study the size of this small screen was enlarged as far as possible to 8 cms x 5 cms. It was positioned on the upper right hand side of the screen as this is the usual location that users of Skype would expect.

Tobii Studio Professional eye-tracker.

The eye-tracker was connected to a desk-top computer which had Skype downloaded. Eye-tracker software makes it possible to quantify visual attention by monitoring what people focus on over time. The eye-tracker measures gaze points using light reflected from the pupil centre. A number of different measurements can be gathered for any area of interest (AOI). When a series of eye gazes that occur close in time are closely located, this is described as a fixation i.e. a period when attention is engaged with a specific area. Eye movements between fixations are referred to as saccades. The standard settings were retained on the Tobii eye-tracker as follows:

- I-VT classifier was set at 30 degrees/second. This defines whether an eye movement is a fixation or not depending on whether the velocity is above or below this setting.

- Adjacent fixations were merged if below 75ms.
- Short fixations were discarded if fixation duration was below 60ms.

A number of different measurements can be gathered for any areas of interest (AOI) which are drawn up.

LSAS as a measure of social anxiety levels.

The LSAS self-report questionnaire was completed in hard copy.

A stranger to engage in a social chat on Skype.

The 'stranger' was one of two volunteer postgraduate psychotherapy students. They were unknown to all the participants and located on another campus over 20 miles away. A timetable was drawn up so that for each participant one of them took the role of the stranger based on availability. Both strangers were female, one aged in their late 20s and the other in their early 30s.

Research assistant.

An assistant was required to ensure that participants were appropriately set-up with the equipment and that contemporaneously the stranger was set-up for the Skype conversation. One of two doctoral students took this role, based on their availability.

Procedure

Ethical approval for this study was part of a joint submission for Study 1, Study 2 and Study 3. Approval was obtained from City University London Psychology Department Research Ethics Committee and in addition the University of South Wale Life Sciences and Education Research Committee as the research participants were students. The method and design is in accordance with the Code of Human Research Ethics (British Psychological Society, 2014) and the Data Protection Act 1998 (ICO, 2015). Informed consent was obtained from all participants (see Appendix E and Appendix F).

After the completion of Study 1, participants who agreed to take part in Study 2 gave their email address so they could be contacted about the next stage of the research. The email address was used to link their data from Study 1 to Study 2 and 3. Once they came to the laboratory, the identifying number on the timetable could be used to link all their data together and their email address was kept in a separate secure file to protect their identity but retained in case the participant wanted to make contact and withdraw from the study at a later stage. A known or suspected vulnerability to epileptic seizures was the only exclusion criterion. When calibrating the eye-tracker (see below) there is a very small risk of a seizure being triggered. This was explained on the information sheet provided before volunteering and on notices posted by the computer screen in the laboratory.

The participants in Study 2 (N = 62) were contacted to arrange an individual time slot to come to a psychology laboratory on campus. The information sent to participants (see Appendix E) explained that this visit would involve a social interaction on Skype with someone they had never met and following this, the completion of questionnaires. On arrival at the laboratory the participant was met by a research assistant and briefed again on what would happen and asked if they have any questions or concerns. They were then asked to report their level of anxiety with the following guidelines: *If 100 is the most anxious you have ever felt and 0 is absolutely calm and relaxed, where would you rate your anxiety now?* They were also asked if they have ever used Skype before. Both these pieces of information were noted.

Participants were then asked to sit in front of a computer screen linked to Tobii eye- tracker software and to look at a moving dot on the screen so that the eye-tracker could be calibrated. This took less than a minute. Skype was turned on so the participant could see the pre-connection screen where there was no visible sign of an eye-tracker

operating. Participants could initially see only live feedback of themselves on a small insert on the screen for a short period until the connection with the other party was made (pre-connect period). Participants were informed that shortly a Skype connection would be made with someone they did not know and they would have a brief chat together. Contemporaneously, a Skype connection was being set up for the stranger. The briefing to the 'stranger' was to keep out of view for the first 30 seconds after the connection was made and then to enter and sit on a chair so their face and upper body were visible on the screen. They were briefed to then start chatting in a relaxed and naturalistic manner talking about such issues as leisure interests and what the participant did over the summer, with no deliberate attempt to make the participants socially anxious in their questioning. When the connection was made therefore, there was a period of approximately 30 seconds before the stranger appeared on the screen. During this time (pre-chat period) the instructions to the participant was to keep looking at the screen as the stranger would appear very shortly and the participant could see an empty chair on the main screen and live feedback of themselves on the inset screen.

After approximately 30 seconds the stranger came into view, sat down and initiated a social discussion (chat period) which lasted approximately four and half minutes. Timings were monitored covertly by the stranger and at 30 seconds prior to the end of the chat period, a prompt was given by the research assistant allowing the stranger to bring the conversation to a natural close. During the chat, live feedback of the participant was available for them to view on the small screen in the upper half of the screen on the right hand side. The participant was given privacy during the conversation once the equipment and connection was set up.

A recording of the screen from the participant's perspective was captured by the Tobii software throughout the whole period i.e. starting from when the connection was

made but before the stranger appeared. The pre-chat period offered a baseline measure of attention to the live self-image when there was no stranger present.

At the end of the Skype session participants were asked to report their level of anxiety as described previously: *if 100 is the most anxious you have ever felt and 0 is absolutely calm and relaxed, where would you rate your anxiety now?* Participants were then asked to complete a hard copy of the LSAS to measure their social anxiety level immediately after the social interaction. They were also asked to complete two further questionnaires which, together with the LSAS in this study, formed their participation in Study 3 (see Chapter 4). The total time taken for each participant to complete all these activities in the laboratory was approximately 25 minutes. Participants were then debriefed (see Appendix J) and reminded of the confidentiality of the data and their right to withdraw. Guidance about what to do if they had any concerns following the study was given following the points outlined in the debrief sheet.

To prepare the recordings for analysis and extract the data, for each participant, two main areas of interest (AOIs) were defined: the face of the stranger on the large screen and the face of the participant in the video feedback. Any additional time within the period of recording not accounted for by eye gaze on these areas, was classified as '*Elsewhere'.* Each recording was marked up so that, as the stranger or participant shifted position, the AOI which defined the face area was adjusted accordingly. The following data was then extracted for two defined periods of time:

- **Pre-chat period** i.e. after the Skype connection but before the stranger came into view. Gaze could be directed at either feedback of the self or elsewhere. The target time period *was* 30 seconds but actual time period $M = 34.3$ (Range 27 – 72 seconds)

- **Chat period** i.e. when the stranger was in place and conversation was happening. Gaze could be directed at either at the stranger, feedback of the self or elsewhere. Target time period was 4 minutes and 30 seconds but actual time period *M* = 4.45 (Range 4.27 - 5.15).

There was unintentional variation in the planned time periods due to human error and the difficulty of rounding off a conversation naturally within a set time period. In order to address these small variations between participants, all gaze timings were worked out as a percentage of the total time period as the data of interest in this study was relative time periods and not absolute time. Although sound was recorded, there was no intention to listen to and analyse the auditory recording. The total fixation duration was extracted from recordings using the Tobii Studio software. A fixation is when the velocity of the eye movement is below a threshold speed that allows the information taken in to be processed. This threshold is set by the I-VT filter (see p.105).

As described above, a total chat period of five minutes was selected for the time in front of the screen with live feedback, made up of four and a half minutes talking to the stranger and a 30 second period before the stranger appeared. The decision to use these timings was arrived at by considering and balancing a number of factors: firstly, to schedule a sufficient length of time to mirror potential every-day social encounters with a stranger. For example, an interaction in a queue or on public transport where there might be a brief social exchange with some personal information disclosed about leisure activities and experiences. The adequacy of the length of time was tested by piloting some interactions prior to this study.

The time period set for the chat was also determined by the time required at the data analysis stage to analyse the video footage and extract appropriate eye-tracker data i.e. AOIs had to be drawn up on by the researcher tailored to each individual recording

and redrawn throughout the recording if, and when, the stranger or participant moved the position of their head. This process was very time consuming when multiplied by the number of participants as the stranger in the interaction was not briefed to keep their head still and moved naturalistically. Any increase to the length of the chat period would have increased the total time required to extract the data. Finally, the length of the social interaction was determined by consideration of the total time required of participants in the context of potential barriers to recruitment to Study 2 and Study 3 i.e. the time required in the laboratory was set at no more than half an hour in total. This had to include completing questionnaires, calibration and briefing and debriefing, along with time for the Skype interaction.

3.8 Results

Data analysis

Data screening was carried out to identify missing values, errors and outliers through visual inspection and by producing descriptive statistics and graphical methods. Of the 62 participants there was complete data available from 61 participants for the LSAS and from 58 participants for the eye-tracker. No extreme outliers were found i.e. ≥ 3.29 standard deviations from the mean of the group to which the case belonged (Field, 2009).

Preliminary analyses examined the demographics of the participants involving frequencies, means, medians, range and standard deviations. The Kolmogorov-Smirnov test (KS) was conducted to check the distribution of the data as samples were over 50 (Field, 2009). Normality tests revealed that the LSAS data were normally distributed $D(61) = .09$, $p = .20$. The eye-tracker data for fixation on the stranger was normally distributed $D(58) = .09$, $p = .20$ but for fixation on the self was non-normal $D(58) =$

.39, $p = .001$ as was eye-tracker data during the pre-chat period D (58) = .16, $p < .001$. Tests of normality were carried on the data collected for additional analysis i.e. subjective measures of anxiety pre-and post- the chat on Skype using a one item self-report score which was non-normal: pre-score D (62) = .12, $p = .04$ and post-score D (62) = .17, $p < .001$. An alpha level of .05 was used for all tests.

Descriptive statistics

Of the 62 participants 35 (57%) had used Skype before and 25 (41%) said they had not. This information was not obtained from two participants due to administrative errors.

Table 3.1

Social anxiety scores

LSAS scores	***M***	***SD***
Total fear subscale (out of 72)	34.32	14.56
Total avoidance subscale (out of 72)	27.85	14.53
Total score (out of 144)	62.18	27.85

Table 3.2

Comparison of percentage of students in levels of social anxiety across studies*

Categorisation of LSAS	**Study 1 (*N*=101)**	**Study 2 (*N* = 61)**
None (≤ 54)	54.46	40.99
Moderate (55-64)	12.87	11.48
Marked (65-79)	11.88	14.75
Severe (80-95)	13.86	24.59
Very severe (96 ≤)	6.93	8.19

*Levels defined by Liebowitz, 1987

Table 3.3

Eye-tracker data: Percentage fixation time on AOIs (N = 58)

Area of focus	% fixation time during chat			% fixation time pre-chat		
	M	***SD***	**Range**	***M***	***SD***	**Range**
On stranger	52.33	19.91	1.41 - 80.81	N/A	N/A	N/A
On self	1.66	5.50	0.00 - 37.49	8.58	7.87	0.00 - 34.88
Elsewhere	N/A	N/A	N/A	N/A	N/A	N/A

Eye-tracker data analysed as proportional data due to differences in the total exposure time.

Hypothesis 1. There will be a positive correlation between levels of social anxiety and attention to a live self-image during a social interaction.

A positive correlation was found between social anxiety and fixation time on the live self-image using a Spearman Rho test, $r_s(58) = .29$, $p = .02$. Further examination indicated that a positive correlation between the fear subscale score and the percentage fixation time on the live self-image, $r_s(58) = .36$, $p = .01$ accounted for the overall effect of social anxiety and fixation time as there was no significant correlation with the avoidance subscale score, $r_s(58) = .23$, $p = .09$.

Hypothesis 2 There will be no association between levels of social anxiety and attention to a live self-image in the time period before the social interaction.

No correlation was found between social anxiety score and the percentage fixation time on the live self-image pre-chat using a Spearman Rho test, $r_s(58) = .01$, $p = .92$.

Hypothesis 3. Social anxiety level will be higher measured online in Study 2, than offline in Study 1.

A Wilcoxon matched pairs test to examine differences in social anxiety levels between Study 1 and Study 2 revealed that levels were significantly higher when

reported immediately after a social interaction in Study 2 (N = 61) (M = 62.18, SD 27.65) than when completed offline in Study 1 (N = 101) (M = 55.04, SD 26.32), Z = 3.14, p = .002, r = .40 suggesting a medium effect size. There was an increase in both the fear subscale from Study 1 (M = 30.31, SD = 13.42) to Study 2 (M = 34.32, SD = 14.56), Z = 3.32; p = .001, r = .43 showing a medium effect size and in the avoidance subscale from Study 1 (M = 24.73, SD = 13.69) to Study 2 (M = 27.85, SD = 14.53), Z = 2.62; p = .009 r = .34, showing a medium effect size.

Additional analyses.

Pre and post-Skype chat self-report measures of anxiety.

A Wilcoxon matched pairs test was applied to examine differences in self-report anxiety levels and revealed that anxiety pre-chat (M = 39.38, SD = 25.39) was significantly greater than post-chat (M = 23.38, SD = 22.61) Z = 4.730, p < .001, r = .61 indicating a large effect size. When differences were examined pre-chat by high social anxiety group (n = 25) (Mdn = 60.00) and low social anxiety group (n = 37) (Mdn = 25.00) using a Mann –Whitney U test, there was a significant difference reported, U = 240.50, p < .001, r = .41 indicating a medium effect size. When measured again post-chat, there was also a significant difference between the high social anxiety group (M = 35.00) and the low social anxiety group (M = 10.00), U = 260.00, p = .003, r = .37 indicating a medium effect size.

Analyses to examine potential confounding variables.

An independent sample t-test indicated that there was no difference in social anxiety levels between participants interacting with Stranger A (n = 46) (M = 61.74; SD = 29.19) and those interacting with Stranger B (n = 11) (M = 56.73; SD = 25.31), t(55) = .54, p = .74 and no difference in social anxiety levels between participants who had used Skype before (M = 68.26; SD = 28.04) and those who had not (M = 57.00; SD =

26.42), $t(57) = 1.56$; $p = .12$.

Further examination for differences between those who had used Skype before and those who had not using Mann-Whitney U tests, revealed no difference in the percentage fixation on the self-image, $U = 276.00$, $p < .07$, or in the self-report anxiety scores pre–chat ($U = 410.50$, $p < .68$) and post chat, $U = 406.50$ $p < .64$.

A Mann-Whitney U test revealed no difference between the level of social anxiety for participants who did continue from Study 1 to Study 2 ($n = 59$) ($Mdn = 54.00$) and those who withdrew after Study 1 ($n = 41$) ($Mdn = 45.00$), $U = 1121.00$, $p < .47$.

Correlation between levels of social anxiety and attention to the stranger.

A negative association was found between social anxiety and the percentage fixation time on the stranger using a Pearson correlation test, $r(58) = -.36$, $p = .005$. This is the case for the fear subscale, $r(58) = -.34$, $p = .01$ and the avoidance subscale, $r(58) = -.37$, $p = .004$.

3.9 Discussion

The aim of this study was to examine the association between attentional bias and social anxiety both before, and in, a triggering social situation. Self-focused attention is understood to be a central problem in social anxiety and explanatory models propose that, when engaged in a social encounter, the socially anxious individual turns their attention inwards focusing on a negative constructed image of the self which is from an observer perspective (Clark & Wells, 1995; Rapee & Heimberg, 1997). In this study, a live external image of the self was presented to the individual to operationalise this self-focus and self-monitoring. As predicted, those who had higher levels of social anxiety did attend more to this external self-image when the stranger was present.

Before the social interaction there was no correlation between social anxiety levels and attention to the external self-image although it was available to view. The findings of this study are in line with CBT models of social anxiety which propose that self-focused attention is situationally triggered (Clark & Wells). These findings suggest that self-focus is specific to being in the presence of the stranger and not when anticipating the social encounter.

As well as providing empirical support for the notion of self-conscious attention in social anxiety (Clark & Well, 1995), this study also offers a new research design for examining self-focused attention in more detail, which is discussed further below. It may also offer opportunities to deliver treatment interventions online in a more efficient and effective manner. In current treatment protocols playback of video recordings to challenge the constructed negative self-image happens after the social interaction. In this design, feedback could be offered simultaneously with the social interaction. This is discussed further in Chapter 5.

In should be noted that the total fixation time to the live feedback of the self was a very small proportion of the total chat time. The stranger on screen was positioned in close-up so that head and shoulders only could be seen, giving the interaction a fairly intimate nature. In order to maintain appropriate eye contact with the stranger opportunities for glances at the live self-image were likely to be very limited. Future studies should examine attentional focus in a less intimate social setting such as a presentation to an audience or during an online Skype chat to a group. Such situations would more closely align with those social or performance situations which emerged as most feared and avoided in Study 1 i.e. speaking to a group or in a meeting or giving a presentation.

Rapee and Heimberg's model (1997) differs from the Clark and Wells' model (1995) of social anxiety in describing attention as divided between a focus on the self and attention to external threat i.e. the stranger in this study. The eye-tracker data in Study 2 suggest that socially anxious individuals looked at the stranger less than those who were low in social anxiety. This finding needs to be considered in relation to the pattern of focusing elsewhere i.e. on the self-image and on neutral space and the temporal pattern of saccades and fixation counts. Eye-tracker data was not gathered in sufficient detail in this study to identify the dynamic pattern of eye movement therefore no conclusions can be drawn about whether and how attention moved between the stranger and the self. This is discussed later in Section 3.10 below and in Chapter 5.

The positive association between social anxiety and attention to the live self-image found in this study was underpinned by a positive correlation with the fear subscale not with the avoidance subscale. This finding aligns with the cognitive model of social anxiety (Clark & Wells, 1995) which suggests that when fear is activated in social situations the strongest influence on attentional bias is towards self-monitoring and self-focus.

Social anxiety was measured in Study 2 immediately after the social interaction based on the assumption that social anxiety would be activated (an online measure). As predicted social anxiety was significantly higher than reported in Study 1 (between 2-4 weeks earlier). In Study 1, social anxiety was reported through an internet-based survey and therefore was likely to be gathered offline. The difference found, however, may also be explained by the time difference in repeating the questionnaire in terms of the experiences in participants' academic and social life. A longitudinal study gathering social anxiety levels over time and relating this to parallel data on key experiences academically or socially would help to clarify whether social anxiety levels reported are

potentially chronic or short-term. A further confounding factor in interpreting this difference is that the questionnaire was digitally completed in Study 1 but completed in hard copy in Study 2. Future studies gathering repeat measures should use consistent modes of completion.

Anticipatory anxiety prior to a social event is very common among socially anxious individuals (Boehme et al., 2014). Taking a baseline measure of social anxiety prior to the social interaction on Skype would have been a way of assessing this and comparing it to the measure that was taken after the chat. This was not done in this study due to a concern about a priming effect on attentional bias. (Hermans, Houwer, & Felen, 1994). A one-item self-report measure of anxiety, however, was obtained pre- and post-chat as it was less disruptive than completing a questionnaire. This showed significant differences in high and low social anxiety groups in terms of anxiety before and after the social chat which is in line with several studies which show that socially anxious individuals experience high levels of anticipatory anxiety (pre-event rumination) and also have a tendency to worry and ruminate after the event (post-event rumination) as they analyse their performance (Brozovich & Heimberg, 2013; Wong & Moulds, 2011). This is examined and discussed further in Study 3.

The technical design of this study brings a new method to the field of investigating attentional deployment in social interactions which improves ecological validity. The main methodological approaches investigating attentional bias have been in the field of cognitive psychology which have traditionally used indirect methods such as dot probe, Stoop tests and visual search. While eye-tracker has been used more recently, it has not been in a naturalistic setting. The design in this study would appear to offer many opportunities to investigate social anxiety and attentional bias in the real world with direct translation to clinical practice. Gathering qualitative data on the

degree to which participants experienced the chat as relatively naturalistic in the context of it being online, would be helpful in evaluating and refining this method.

There are a number of ways future studies could apply this approach: the impact on eye gaze could be monitored against such variables as size and demographics of the audience, degree of friendliness in the audience and subject matter of the communication. Longer exposure or chat times would improve the reliability of the data and in future studies the size and position of the feedback could be adjusted to look at the impact of these variables on how attention is deployed. This would allow investigation into the controversy around what happens to attention when social threat is detected i.e. whether, and how over time, attention is drawn towards or moves away from threat and such hypotheses as vigilance-avoidance patterns of attention (e.g. Garner et al., 2006; Vassilopoulos. 2005;).

This design could also be used in a variety of settings such as tracking attentional processes when giving a presentation or speaking to a group. These scenarios could be offered with a live audience, using pre-recordings or using virtual reality. The possibility of using Skype with live feedback of the self (without the eye-tracker) as part of a treatment programme is also an important consideration particularly as the current method of record and playback of videos of social interactions in the cognitive treatment protocol is time and resource intensive and requires a therapist to be present. This will be discussed further in Chapter 5.

The possibility that a number of extraneous variables may have had an impact on the results was examined. Firstly, it was considered whether those who did not continued to Study 2 from Study 1 may have done so because they were more socially anxious and therefore the results obtained in Study 2 would not reflect the high prevalence of social anxiety found in Study 1. This was not the case and in fact the

prevalence of marked to very severe social anxiety was higher in Study 2 than in Study 1. Consideration was also given to whether the use of two different strangers, or whether or not the participant had previously used Skype, might impact on the results obtained. The findings suggest that these variables did not have a significant effect on the percentage fixation time or on anxiety levels reported.

3.10 Strengths and limitations of the study

As discussed above, collecting eye-tracker data within a naturalistic social setting is a strength of this study. While fixation time on AOIs was captured, due to technical problems, data on fixation count (the number of times the participant fixates on an AOI), time to first fixation and the duration of the first fixation were not available for analysis[1]. Such data would have assisted in developing a better understanding of the dynamic nature of attention in a social interaction. For example, a shorter period of time to make a first fixation on a target suggests a greater salience of that feature. If this measure is in relation to the live self-image and correlates negatively with levels of social anxiety, it would provide additional support for the positive link between social anxiety levels and self-focussed attention. Likewise a greater average fixation duration on the live self-image by individuals high in social anxiety would also suggest that this is of greater interest than to those low in social anxiety.

It is important to consider that several assumptions are made in this study. Firstly, that eye-tracker measures of fixation capturing time spent looking at an AOI

[1] A laptop with Tobii eye-tracker software which was used to draw up AOIs in this study, was unfortunately connected to a server which was shut down without warning due to the closure and relocation of a campus where the researcher was based. The laboratory was on a different campus. All the data on the laptop relating to the AOIs was wiped clean although the raw data was backed up. Some data had been extracted from the AOIs when this happened including the key variable of fixation time, but the opportunity to extract additional data was lost.

indicates a level of interest and therefore conscious attention to that area. As Tatler and Land (2011) highlight, gaze-direction indicates overt visual attention but it may not necessarily be an indicator of what is being given attention in terms of encoding and significant cognitive processing. Related to this assumption is that in measuring direct eye gaze, covert attention can be overlooked. What is central to the retina may not be all that is being noticed and processed. In future studies it would be useful to include qualitative data about participants' experience of the interaction on Skype e.g. what their attention was drawn to during the conversation, what they tried to avoid looking at, what their thoughts and feelings were during the chat and what triggered these thoughts including appearance, comments or behaviour of the stranger or aspects of the technology or setting.

Two strangers were used in this study as it was not possible for the same person to chat with all the participants due to their availability. The strangers were given the same brief so that the topics covered in each chat were broadly similar and the strangers were selected to be the same gender and in a similar age range. In future studies it would be useful to have an independent rating of the strangers' characteristics in terms of friendly demeanour, calm voice and attractiveness which have been shown to influence social interactions (Reis, Nezlek, & Wheeler, 1980).

An important objective in the design of this study was to create a naturalistic environment for a social interaction whilst being able to monitor eye gaze. Having the equipment in a psychology laboratory and having to calibrate the eye-tracker equipment with the participant prior to the conversation may have added unintentionally to anxiety. The participant was given privacy for the chat, however, and was not in a row of computer screens. Nobody else was present except the research assistant who kept at a distance. Social interactions for many people, especially young adults in contemporary

society, are frequently through computer or phone screens (Frith, 2017). In this study 57% had used Skype previously and there was no evidence in the data of a difference in social anxiety levels relating to prior use of Skype. Data on the use of other similar platforms such as FaceTime was not obtained but would have provided additional useful information.

3.11 Conclusion

This study provides support for the cognitive model of social anxiety which formulates self-focused attention as central to the maintenance of social anxiety (Clark & Wells, 1995). In using a new design to gather data on attentional bias and to present live feedback in a naturalistic social setting, this study opens up areas of opportunity for both research into, and treatment of, social anxiety. Using an eye-tracker linked to Skype provides opportunities to examine the dynamic nature of attentional bias in a real world environment in a way that improves upon previous indirect methods such as Stroop test and dot probe methods. A further opportunity arising from this study is that of providing simultaneous feedback whilst in a social or performance situation through the use of Skype or similar technology.

Koster et al. (2006) suggest that cognitive processes such as attention are complex and argue for a more individually tailored model of attentional processes in anxiety. Understanding the wider system of cognitive processing may contribute to an explanation of the variability in results emerging when attentional bias is looked at in isolation. Study 3 now looks at the association between key cognitive processes involved in social anxiety.

Chapter 4

Study 3: The association between cognitive processes in social anxiety

4.1 Introduction

Cognitive processes are central to the CBT formulation of a wide range of mental health problems and are seen as key to the maintenance of such problems along with associated emotions and behaviours. These processes include attention, interpretation, imagery and rumination. Whilst cognitive processes have been extensively researched, studies have usually focused on investigating them individually and not in dynamic interaction as hypothesised in cognitive behavioural formulations (e.g. Clark & Wells, 1995). There is a growing interest in understanding these interactions (Evaeraert, Koster & Derakshan, 2012; Hirsch et al., 2006) and Study 3 examines the association between interpretive bias and attentional bias and interpretive bias and pre- and post-event rumination in social anxiety.

This chapter firstly examines the literature on interpretative bias and rumination in social anxiety (attention and imagery were described in Chapter 3) and the literature on the interaction of cognitive processes. Study 3 will then be described and the results presented and discussed.

4.2 Interpretive bias

Personal meaning determines how an individual responds to threatening stimuli (Zvielli et al., 2014). In cognitive behavioural formulations of social anxiety, critical meaning-making or interpretations are negative and self-referential (Clark & Wells, 1995; Hofmann, 2007; Rapee & Heimberg 1997). Such cognitions can have an unconditional nature such as ‘I am different’ or ‘People don’t like me, and a conditional

nature which is defined by 'If…then' assumptions. Typical conditional cognitions in social anxiety are often about showing anxiety in social situations for example, 'If I feel nervous, others will notice". In the Clark and Wells' cognitive model of social anxiety, negative beliefs are activated in anticipation of, or when in, a social situation. Clark and Wells point out that, in comparison to depression, where unconditional beliefs are global and stable, beliefs in social anxiety are unstable and are activated in response to social interactions.

There is sound empirical evidence for interpretive bias in social anxiety. Studies indicate that socially anxious individuals tend to interpret mildly negative social events as catastrophic (Beard & Amir, 2009; Stopa & Clark, 2000; Vassilopoulos, 2006) and tend to interpret ambiguous social cues negatively when they are self-relevant (Amir, Foa, & Coles, 2000; Brendle & Wenzel, 2004). Stopa and Clark (2000) compared the interpretation of a mildly negative and an ambiguous social event across three groups of individuals: a SAD group, a group with equivalent levels of anxiety with another anxiety disorder and one which had no anxiety problem. Individuals with SAD were more likely than the other two control groups to interpret ambiguous social events in a negative fashion and have a more catastrophic interpretation of mildly negative social events, suggesting a negative interpretative bias is strongly activated in social anxiety.

This negative bias appears to be related specifically to social situations and not found in non-social scenarios. It also appears to be related to the behaviour of the socially anxious individual but not to that of others in the social situation (Clark & Wells, 1995; Taylor & Alden, 2005). Several cognitive theorist have proposed that self-knowledge (i.e. a collection of cognitive self-referential schema) is organized in multiple, inter-connected, context-specific structures in memory that are activated by situationally specific cues (McConnell, Shoda, & Skulborastad, 2012). The self-schema

activated in social anxiety reflect a sense of the self in relation to others rather than an independent sense of self (Alden, Auyeung, & Plasencia, 2014). A negative interpretive bias is also associated with depression and several studies have examined whether the interpretative bias in social anxiety may be due to co-morbid low mood but found that it was specifically related to social anxiety (Alden, Taylor, Mellings & Laposa, 2008; Amir, Beard, & Bower, 2005; Huppert, Foa, Furr, Filip, & Mathews. 2003).

Over-estimation of threat and under-estimation of the ability to cope is common across anxiety disorders (Salkovskis, 1996). Linked to interpretative bias is a specific judgement bias in which socially anxious individuals over-estimate the probability and consequence of negative evaluation in social situations (McManus, Clark, & Hackmann, 2000; Voncken, Bogels, & de Vries, 2003). For example, a marked negative interpretive bias applies to evaluations of bodily sensations in social anxiety such as going red and sweating and with a bias to judging physiological signs of anxiety as being readily visible to others and likely to result in a negative appraisal (Kanai et al., 2009; Roth, Antony, & Swinson, 2001)

Studies have shown that modifying interpretative bias decreases social anxiety symptoms (e.g. Amir & Taylor, 2013; Beard & Amir, 2008). Ways of modifying interpretative bias across disorders have been developed into computer programmes. Cognitive bias modification (CBM-I) has had some success in laboratory settings (Beard, 2011) and involves training individuals to interpret ambiguous cues benignly or positively rather than negatively. Mobini, Reynolds, and MacKintosh (2012) point out that these studies have mainly used non-clinical samples and further work needs to be done to identify whether it is effective with clinical populations. They also point out that such programmes currently do not differentiate and target the specific interpretive biases that a social anxious person may hold.

Cognitive behavioural treatment for social anxiety addresses interpretative bias in several ways: using video feedback to evaluate the veracity of the negative image that the socially anxious individual holds, reappraisal of beliefs and perceived standards through gathering and evaluating evidence and through behavioural experiments to test beliefs, assumptions and predictions so that alternative interpretations and judgements can be strengthened and made more accessible. Several studies have found that CBT for SAD reduces the strength of negative beliefs (Boden et al., 2012; Bögels & Mansell, 2004; Rapee, Schniering, & Hudson, 2009) and that changes in negative belief ratings predicts a reduction in levels of social anxiety symptoms (e.g. Koerner et al., 2013). In face-to-face therapy, individual formulations are drawn up and problematic cognitions that have been specifically identified collaboratively with the client, are targeted. With the development of treatment programmes for internet delivery, differentiation of types of interpretive bias in social anxiety may be helpful to the process of guiding clients to select appropriate interventions.

As discussed in Study 1, the SCQ (Wells et al., 1993) (see Appendix C) was developed as a clinical tool for measuring change in interpretive bias in treatment and is composed of beliefs that are commonly activated in social anxiety. It has been shown to discriminate between high and low social anxiety groups (e.g. Schreiber et al., 2012), and measures both the frequency of occurrence of negative social cognitions and the strength of belief in these thoughts as two separate subscales. As described previously, there are factor groupings that have been identified by Clark (2005): Factor 1 are negative unconditional self-worth cognitions and Factor 2 and 3 are negative expectancies in the social situation which generally take the form of worry about displaying physiological symptoms of anxiety (see p.64). The SCQ is used as one of several measures of change in clinical setting by tracking the mean of each subscale.

In summary there is very good evidence that interpretive bias is central to the maintenance of social anxiety and therefore a key target in treatment. As discussed previously, there are types of negative self-referential cognitions that appear to be common in social anxiety and appreciation of these differences could be valuable in improving clinical outcomes particularly when treatment is delivered online.

4.3 Pre-event and post-event rumination

Anticipatory anxiety can be triggered before entering a social situation (Clark & Wells, 1995). Heimberg, Brozovich, and Rapee (2014) note that this pre-event rumination includes worrying about possible negative outcomes and planning to avoid or address such consequences. Several studies have shown a positive relationship between social anxiety and pre-event rumination (e.g. Vassilopulos, 2004; Wong & Moulds, 2011) and that CBT treatment for social anxiety reduces pre-event processing (Hedman et al., 2013; Modini, Rapee, Costa, & Abbott, 2018). In treatment protocols, however, there is no specific emphasis in monitoring levels of anticipatory anxiety, although it is a key characteristic of SAD and higher levels of pre-event rumination at pre-treatment are associated with a slower rate of improvement in social anxiety symptoms (Wong et al., 2017). Treatment interventions targeting pre-event rumination are based on those used to address generic worry i.e. appraising the pros and cons of anticipatory worry and behavioural experiments to find ways to stop rumination.

Several studies have highlighted a positive relationship between social anxiety and post-event rumination as described in the Clark and Wells model (1995). Rachmann, Gruter-Andrews, and Shafran (2000) found that in post-event rumination, recollections of recent social events tend to be intrusive and recurrent. As social anxiety can involve excessively high standards, when a socially anxious individual reviews their

social performance, the conclusion that they are deficient in some way is inevitable (Field & Morgan, 2002). Brozovich and Heimberg (2013) note that post-event rumination can also occur when a socially anxious individual anticipates and ruminates on an upcoming challenging social encounter, resulting in past negative experiences influencing preparation for future performance.

Post-event rumination found in social anxiety does not appear to be a generic trait-like tendency in individuals but a situation-specific process based on social interactions and there is evidence that both self-focused attention and negative interpretive bias are predictors of post-event processing (Gaydukevych & Kocovski, 2012; Laposa & Rector, 2011; Makkar & Grisham, 2011). Studies have found that after CBT treatment for SAD, individuals engaged in less negative post-event processing (Abbott & Rapee, 2004; McEvoy, Mahoney, Perini, & Kingsep, 2009). Cognitive treatment interventions for post-event processing are similar to those for pre-event processing described above.

In summary, the heightened concern socially anxious individuals have about their social performance and how it is perceived by others, results in ruminative processes both before and after a social event and these appear to be important maintaining factors in social anxiety. Pre- and post-event rumination appear to be linked not just to each other, but also to other cognitive processes that are central to social anxiety and this will now be examined.

4.4 Interaction of cognitive processes

Models of social anxiety highlight that cognitive biases interact and that this interaction is central to the maintenance of fear and avoidance in social situations (Clark & Wells, 1995; Everaert et al., 2012; Rapee & Heimberg, 1997). Until recently however,

much of the research on cognitive biases have looked at processes in isolation. Attentional bias toward threat is believed to have the same causal association to anxiety as interpretive bias (Clark & Wells, 1995; Eldar, Ricon, & Bar-Haim, 2008; MacLeod, Rutherford, Campbell, Ebsworthy, & Holker, 2002) therefore both shape an individual's vulnerability to social anxiety. Understanding the relationship between cognitive processes will help in the development of more efficient treatments as targeting one mechanisms may influence the other processes.

Studies have looked at the relationship between cognitive processes in social anxiety in a variety of combinations. Amir, Bomyea, and Beard (2010) found that individuals that received successful modification of interpretative bias were better able to disengage attention from a threat stimulus than a control group which suggests a common mechanism that may contribute to the maintenance of anxiety. Hirsch, Clark, and Mathews (2007) found that manipulating interpretative bias changed the negative imagery experienced. Makhar and Grisham (2011) identified that negative self-imagery appears to increase post-event processing and Brozovich and Heimberg (2011) found that post-event processing can lead to more negative self-evaluations over time and that it influences future pre-event processing.

Several studies have looked at pathways mediating the experience of social anxiety in order to develop a framework of how processes interconnect in social anxiety. Modini, Rapee and Abbott (2018) looked at pre-event and post-event rumination with the same participant group, undergraduates with SAD. University students (N=239) with a diagnosis of SAD were told that they would be asked to give a speech in one week's time which would be recorded and evaluated. Measures of social anxiety and of pre-event and post-event rumination along with other cognitive appraisal measures were taken one week before, immediately after the speech task and one week after the speech task. They found that path analyses supported the cognitive model

(Clark & Wells, 1995) of several inter-related processes. For example, negative self-evaluation of the speech performance mediated the relationship between social anxiety and negative post-event rumination. Modini et al. suggest that there are various pathways that can be followed and that the processes activated can be idiosyncratic. Others studies have also shown that attentional bias and interpretive bias mediate the associations between trait social anxiety and post-event processing (Chen, Rapee, & Abbott, 2013; Kiko et al., 2012; Perini et al., 2006).

Modini and Abbott (2016) note that there are many aspects of how cognitive processes interact that are not yet understood or researched rigorously. In a review of the empirical literature on interacting cognitive processes in social anxiety, Norton and Abbott (2018) highlight the limitation of many of these studies is the lack of ecological validity and the use of indirect measures through self-report rather than using eye-tracker or measures of physiological arousal.

Studies looking at the association of cognitive processes in relation to types of negative self-referential beliefs could not be found except for two studies by Wong and Moulds (2009; 2010). These studies looked at the association between pre- and post-event rumination and types of negative self-referential beliefs in individuals high in social anxiety in an experimental paradigm manipulating rumination. They developed and used a self –report questionnaire, Self-Beliefs Related to Social Anxiety (SBSA), which is closely aligned to negative self-referential cognitions described by Clark and Wells (1995) in their cognitive model and includes some similar beliefs to the SCQ (Wells et al., 1993). They found that conditional beliefs (e.g. if people see I am nervous, they will think I am weak) and high standard beliefs (I must come across well) were stronger before a social event (Wong & Moulds, 2010) and unconditional beliefs (e.g. I am unlikeable) were stronger after the event (Wong & Moulds, 2009). The first

two types of belief which are associated with pre-event rumination have an anticipatory aspect and relate to being in a social situation as reflected in Factor 2 and Factor 3 beliefs in the SCQ. Unconditional beliefs which are more stable beliefs about the self and are similar to SCQ Factor 1 beliefs, appear to be activated during rumination after the interaction as the process of drawing negative conclusions occurs.

4.5 Summary and rationale for Study 3

CBT models of social anxiety are predicated on the interaction of a number of cognitive processes and there is evidence for an interacting system of cognitive biases. While the current cognitive treatment protocol (Clark & Wells, 1995) targets attentional bias, interpretive bias and ruminative processes, a greater understanding of the idiosyncratic nature of how these interact may help to refine treatment processes. In order to make research studies more applicable to clinical practice, greater ecological validity is required in the design of studies of cognitive processes along with a more detailed understanding of the differential impact of cognitive biases in their interaction.

Study 3 examined the relationship between cognitive processes in social anxiety specifically between interpretive and attentional bias and between interpretive bias and rumination. Based on the cognitive model of social anxiety (Clark & Wells, 1995), a positive correlation would be expected between interpretive bias and both self-focused attention and rumination. This study also examined whether types of negative self-referential cognitions have a differential association with attentional bias and with the activation of ruminative processes.

4.6 Research questions

1. Which negative self-referential cognitions are most strongly associated with attention to the self in a social interaction?
2. Which negative self-referential beliefs are most strongly associated with pre-event rumination?
3. Which negative self-referential beliefs are most strongly associated with post-event rumination?

4.7 Method

Design

This study was a within-subject correlational design and draws on the data on attentional bias and on social anxiety levels gathered in Study 2 along with questionnaire data completed as part of Study 3.

Participants

First year undergraduate students (M_{age} = 25.92 years, *SD*= 10.14, age range 18-57 years) were recruited at a single university in the UK following on from their participation in Study 1 and Study 2. Of the 101 participants in Study 1, 62 students (61%) volunteered to continue to participate in Study 2 and Study 3. Of these 62 students, 54 (87%) were psychology students and 8 computer science students (13%). There were no exclusion criteria and all volunteers from Study 2 continued to Study 3. As in Study 1 and Study 2, psychology students received research credits for participating. Participants were recruited within 2-4 weeks of completing the online questionnaires which was within 4-9 weeks of starting at university.

Materials

Social Cognitions Questionnaire (SCQ) (Wells et al., 1993). This is a 22-item questionnaire which gathers data on the frequency and strength of negative automatic

thoughts experienced in anxiety-provoking social situations. It was used in its original form in Study 1 (See Appendix C) but in Study 3 it was adapted so that data could be gathered on the cognitions during the period of the social interaction (an online measure) as well as over the last week (see Appendix K). Data on the frequency of occurrence of cognitions was omitted as it was not central to the research question and while interesting, it would increase the task burden for participants. The SCQ was therefore adapted in two ways: the column on the frequency of occurrence of a belief over the last week was removed and an additional column was inserted so that a response is required in relation to strength of belief in social threat statements both for the last week and for the social interaction on Skype. The factor groupings in the SCQ (Clark, 2005) used in this study are listed on (p. 62).

Social summary rating scale (SSRS) (Clark et al., 2003) (See Apendix L). This is a self-report measure designed to assess social anxiety and related constructs using one item questions. The scale is unpublished but is used as a routine outcome measure in the South London and Maudsley NHS Trust. Permission was granted by Professor David Clark, the author, for it to be used in the study. Two of the questions are relevant to this study: Question 5 is about pre-event rumination and Question 6 is about post-event rumination. The other questions ask about aspects of social anxiety i.e. self-focused versus external attention and anxiety-related distress and impairment, but these are not of central relevance to the research questions. All items are rated on a nine-point scale ranging from 0-8, with higher scores indicating greater social anxiety symptoms.

Data from Study 2. Eye-tracker and LSAS data from Study 2 were used in Study 3 to look at the relationship between interpretive and attentional bias and between interpretive bias and rumination. Although Study 3 followed straight on from Study 2

and used two common sources of data, they were kept separate as they investigate different aspects of cognitive processes.

Procedure

Ethical approval for Study 3 was part of a joint submission for Study 1 and Study 2. Approval was obtained from City University London Psychology Department Research Ethics Committee and also from the University of South Wale Life Sciences and Education Research Committee where the research participants were students. Informed consent was obtained from all participants (See Appendix E & Appendix F).

At the end of Study 2, after completion of the Skype session and completion of the LSAS, participants completed hard copies of questionnaires that were solely for Study 3 i.e. the SCQ and SSRS. The total time to complete these questionnaires was approximately five minutes. Once all data had been gathered, participants were debriefed following the points outlined in the debrief sheet which they were given to take away (see Appendix J).

4.8 Results

Data cleaning, screening and analysis

Data screening was carried out to identify missing values, errors and outliers through visual inspection and by producing descriptive statistics and graphical methods. In this study 61 participants completed the modified SCQ. For the two questions of the SSRS that are specifically relevant to the research questions, the pre-event rumination question had 61 completed responses and the post event-rumination question had 59 responses. Data from Study 2 were used to explore associations i.e. LSAS data on social anxiety (available from 61 participants) and eye-tracker data available from 58 participants). No extreme outliers were found using the z-value threshold of 3.29

standard deviations from the mean of the group to which the case belonged (Field, 2009).

Preliminary analyses examined the demographics of the participants involving frequencies, means, medians, range and standard deviations. The Kolmogorov-Smirnov test (KS) was conducted to check the distribution of the data as samples were over 50 (Field, 2009). Tests of normality revealed that the SCQ data reporting strength of beliefs over the last week were non-normal D (59) = .12, p = .03 as were the SCQ belief data for during the chat on Skype, D (59) = .16, p = .001. Pre-event rumination data was also non-normal D (59) = .13, p = .02 as was post-event rumination data D (59) = .14, p = .007. Non-parametric tests were therefore used for inferential analysis. An alpha level of .05 was used for all statistical tests except for tests examining relationships at factor levels where an alpha level of .01 was used.

Descriptive statistics

Table 4.1 compares SCQ strength of belief ratings across Study 1 and Study 3. Items are presented with the highest mean ratings in rank order for strength of belief based on results from Study 3.

Table 4.1

SCQ Strength of belief ratings

Social cognitions	Factor	Strength of belief in cognition					
		Study 3 Last week		Study 3 On Skype		Study 1	
		M	***SD***	***M***	***SD***	***M***	***SD***
People will see I am nervous	3	50.41	36.13	48.36	33.63	61.77	30.64
I will babble or talk funny	2	45.00	35.26	40.66	34.26	58.53	43.42
People won't like me	1	43.61	36.61	25.30	32.47	60.21	31.49
People think I am boring	1	41.72	37.34	33.28	34.96	58.13	33.32
People are not interested in me	1	40.98	34.59	22.39	30.73	61.77	30.64
I will be unable to concentrate	2	39.92	33.50	22.38	28.66	53.05	31.99
I am weird/ different	1	39.10	37.77	26.77	36.00	50.21	38.39
I am going red	3	38.69	33.25	34.26	35.47	50.21	38.39
I am unlikeable	1	35.85	32.36	24.77	28.47	55.42	33.62
People will reject me	1	34.34	34.22	15.66	26.51	56.53	33.64

Factor 1=Negative self–worth beliefs Factor 2 and 3 =Negative expectancies (see p.62)

Table 4.2

SCQ Strength of belief by factor groupings

SCQ Factors	Study 3				Study 1	
	Previous week (N = 61)		During chat on Skype (N = 61)		Previous week (N = 91)	
	M	***SD***	***M***	***SD***	***M***	***SD***
Factor 1	298.10	257.02	214.79	247.35	487.34	259.97
Factor 2	244.43	209.89	167.44	185.27	402.17	255.94
Factor 3	159.02	114.59	133.20	104.30	218.96	110.48

Factor 1=Negative self–worth beliefs Factor 2 and 3 =Negative expectancies (see p.6

Table 4.3

Pre-event and post-event rumination over the last week

Frequency	Pre-event rumination		Post-event rumination	
	n	**Percentage participants**	***n***	**Percentage participants**
Not at all or Rarely	14	24%	8	13%
Sometimes	21	35%	21	34%
Often or Always	24	41%	32	53%

Research question 1. Which negative self-referential cognitions are most strongly associated with attention to the self in a social interaction?

There was a positive correlation between the percentage fixation time on the live self-image and the total strength of belief in SCQ cognitions reported during the Skype chat $r_s(57) = .31$, $p = .02$ and over the last week $r_s(57) = .26$, $p = .05$.

Table 4.4

Correlations of attentional bias and SCQ beliefs (N=57)

	Attention to the self-image			
	Strength of beliefs previous week		**Strength of beliefs during chat**	
	r_s	sig	r_s	sig
Factor 1	.21	.11	.27	.04
Factor 2	.29	.03	.23	.09
Factor 3	.26	.06	.29	.03

Factor 1=Negative self –worth beliefs Factor 2 and 3 =Negative expectancies

Examination of the association between the percentage fixation time on the live self-image and SCQ beliefs at factor level for the last week and during the chat on Skype using the Spearman Rho, showed there was no significant correlation at alpha level $p = .01$.

Research question 2. Which negative self-referential beliefs are most strongly associated with pre-event rumination?

Examining the association between pre-event rumination and strength of belief in cognitions using the Spearman Rho, revealed a positive correlation $r_s(59) = .74$, $p < .001$ and this was reflected across all factors of the SCQ: Factor 1 $r_s(59) = .72$, $p < .001$, Factor 2 $r_s(59) = .71$, $p < .001$, Factor 3 $r_s(59) = .64$, $p < .001$.

Research question 3. Which negative self-referential beliefs are most strongly associated with post-event rumination?

Examining the association between post-event rumination and strength of belief in cognitions using the Spearman Rho revealed a positive correlation $r_s(61) = .52$, $p < .001$ and this was reflected across all factors: Factor 1, $r_s(61) = .57$, $p < .001$, Factor 2, $r_s(61) = .44$, $p < .001$, Factor 3 $r_s(61) = .47$, $p < .001$.

Additional analysis

The total social anxiety score (LSAS) was positively correlated with the SCQ score for last week, $r_s(61) = .79$, $p < .001$, and with the SCQ score during the Skype chat, $r_s(58) = .68$, $p < .001$. The social anxiety score was also positively correlated with pre-event rumination, $r_s(58) = .68$, $p < .001$ and post-event rumination $r_s(60) = .48$, $p < .001$. .

A Wilcoxon related samples test indicated that SCQ strength of beliefs was higher when reported for the last week than when reported for the social interaction on Skype, $Z = 4.58$, $p < 001$, $r = .56$, indicating a large effect size but SCQ belief ratings were lower in Study 2 than reported in Study 1 $Z = 4.66$, $p = 001$, $r = .60$, also indicating a large size effect.

4.9 Discussion

The aim of this study was to look at the association between cognitive processes, specifically the association between interpretative bias and attentional bias and between interpretative bias and pre-event and post-event rumination. We attend to, and worry about, what we interpret as of most concern (Fiske & Taylor, 2017). This study found that the stronger the level of belief in negative self-referential statements the more the individual self-monitored and engaged in pre-event and post-event rumination. These findings are in line with both the theoretical models of social anxiety (Clark & Wells, 1995; Rapee & Heimberg, 1997) and with the evidence from a number of studies (e.g. Brozovich & Heimberg, 2011).

Neither attentional bias nor rumination before, or after, a social encounter, was found to be differentially associated with types of SCQ beliefs i.e. negative self-worth cognitions (Factor 1) e.g. *I am unlikeable. People are not interested in me* and negative expectancies cognitions (Factor 2 and 3) e.g. *I will sweat, People will stare.* Wong and Moulds (2009; 2010), however, did find a differential association with a stronger activation of unconditional negative self-beliefs (self-worth beliefs) with post–event rumination and a stronger activation of situationally specific beliefs with pre-event rumination. These findings appear to align with the nature of ruminative processes as described in the cognitive model of social anxiety (Clark & Wells, 1995). There have been no similar studies of association between types of SCQ beliefs and self-focused attention. It might be assumed that negative expectancies would be more strongly activated than negative self-worth beliefs during self-focused attention in that self-monitoring provides more direct feedback on whether one is revealing symptoms of nervousness than about aspects of self-worth. It appears, however, that the processes activated in social anxiety are complex and if negative imagery from past distressing

experiences are activated (Hackmann et al., 2000) then negative self-worth beliefs may be very salient.

While there was a lack of evidence for a differential association of types of beliefs with rumination and self-focused attention, this line of investigation may warrant further research addressing some of the limitations of this study. Firstly, the overall strength of belief in negative self-referential cognitions during the social chat on Skype was significantly lower than over the last week and for Study 1, suggesting that participants may not have been sufficiently challenged by the social encounter. Further research repeating this design with larger numbers and a more challenging social encounter is required. Secondly, and critical to investigating the interaction between and within cognitive processes, future studies should use an experimental design rather than a correlational study. For example, Wong and Mould (2009; 2010) manipulated post-event rumination to examine the impact on types of negative self-referential cognitions.

Looking at the findings of this study at a more detailed level, the highest ranking SCQ cognitions in terms strength of belief (see Table 4.1) were a mixture of negative expectancies in a social situation and unconditional negative self-worth beliefs, as was the case in Study 1. In this study the highest ranking item, *People will see I am nervous* describes a generic prediction that anxiety symptoms will be revealed and more specific related cognitions also ranked high in terms of strength of belief i.e. I *will babble or talk funny and I will go red* and confirms the findings of Study 1.

It is interesting to note the high percentage of participants reporting that pre- and post-event ruminations occurred frequently or always over the last week. It appears that this was particularly the case for post-event rumination with over half the participants reporting that they ruminated frequently or always after a social situation that triggered a degree of social anxiety. A possible explanation of this finding is that pre-event

rumination requires that upcoming social interactions are known whereas post-event rumination can happen after any potentially anxiety-provoking social situation. However, as Brozovich and Heimberg, (2011) point out, post-event rumination can feed into pre-event rumination through encoding in memory the negative interpretive bias that shaped the conclusions from such analysis and rumination.

An unexpected finding was that although social anxiety levels were higher when reported after the Skype chat (Study 3) than when measured in Study 1 (2-4 weeks earlier), the strength of belief in negative cognitions reported had decreased from Study 1 to Study 3. Social anxiety levels and strength of belief in negative social cognitions were measured immediately after a relative unchallenging social interaction and further research is required to examine whether the responses to the SCQ are mood and context dependent to a greater extent than for the LSAS. If so, it is possible that interpretive bias was influenced by the friendliness of the strangers during the chat and this affected the strength of negative beliefs reported on the SCQ for the social chat and also for the last week. The LSAS asks about fear and avoidance in a range of specific social situations over the last week and may not be affected by bias recall to the same degree as the SCQ. The latter asks questions about strength of beliefs without specific scenario prompts and therefore responses may be influenced to a greater extent by current mood state.

4.10 Limitations

The findings on social anxiety levels during the chat on Skype suggests that this encounter may not have proved sufficiently challenging to participants in terms of activating anxiety to reveal a possible differential impact between types of negative cognitions on attentional and ruminative processes. As described in Study 2, future studies should explore different dyadic and group interactions to activate social anxiety

and negative interpretive bias to levels that reflect challenging encounters in every-day life. The use of independent assessors to evaluate the degree of challenge posed should also be considered.

Accurate measures of cognitive processes are also required. In the case of pre- and post-event rumination, a one item self-report scale questionnaire was used and future studies should consider using specific questionnaires such as the *Post-event Processing Questionnaire* (PEPQ) (Rachman, Gruter-Andrew, & Shafran, 2000) which has 13 items related to anxiety and thoughts about a specific social event on a scale ranging from 0 (*none*) to 100 (*very much*). The one item self-report questions were used in this study to ease the task requirements on participants who were involved in all three studies. In the case of interpretive bias, the psychometric data on the SCQ comes from unpublished data from a preliminary analysis (Clark, 2005) and no other psychometric data has been found on the SCQ. Further investigation of the underlying structure of the SCQ is required to confirm the factor structure and inclusion of items.

4.11 Conclusion

The findings of this study supported previous research and CBT models of social anxiety in demonstrating a positive association between interpretive and attentional bias and between interpretive bias and ruminative processes. No evidence was found, however, to suggest that there was a differential association between processes based on types of interpretive bias i.e. situation specific negative expectancies and negative self-worth cognitions. Theoretically this line of research appears to warrant further research addressing the limitations of this study. Everaert et al. (2012) suggest there are three types of questions that require empirical investigation in relation to the interaction of cognitive processes. They suggest that association questions, as

carried out in in this current research, can provide a broad idea about links between cognitive processes. There are, however, causal relationships that need to be explored and whether processes interact in one direction or whether interaction is bidirectional and whether they are additive as Hirsch, Matthews and Clark (2006) propose in their Combined Cognitive hypothesis. If types of negative cognitions were found to have a differential impact on attentional or ruminative processes, this would assist in tailoring and refining treatment interventions for social anxiety.

Chapter 5

General Discussion

5.1 Introduction

The three studies making up this research have been wide-ranging: Study 1 examined social anxiety in a specific population (new undergraduate students) at a life transition that has become of growing concern over recent years (UniversitiesUK, 2018). Study 2 examined attentional bias using an innovative design that addresses previous concerns about the lack of ecological validity in studies of attentional bias in social anxiety (Barry et al., 2016) and Study 3 examined associations between cognitive processes in line with the growing body of research that supports a Combined Cognitive Hypothesis (Hirsch et al., 2006), not only in social anxiety but across other anxiety and mood disorders (Everaert et al., 2012).

This chapter summarises the overall findings across the three studies under the two main themes i.e. the prevalence of social anxiety among new undergraduates and the nature of social anxiety both in new undergraduates but also using this same participant group as a cross-sectional sample to research cognitive processes in social anxiety. This chapter summarises the main strengths and limitations of the research and examines the implications of the findings proposing future research directions. The ethical considerations involved in this research are also considered.

5.2 The main findings

The prevalence of social anxiety.

High levels of social anxiety are prevalent amongst first year undergraduate students with approximately a third of students reporting levels equivalent to a clinical

population when measured within 5 weeks of starting university (Study 1). The levels were even higher when measured between two and four weeks later (Study 2). The prevalence of social anxiety found in this study is far higher than the prevalence rate of 12% reported for SAD in the general population (NICE, 2013). No conclusions can be drawn on whether these levels are a short-term phenomenon reflecting a particularly stressful period of social interaction when starting university or whether they indicate a more chronic problem. A further longitudinal study is required tracking social and performance anxiety through all years of study noting the impact of key annual events such as exams and the start of the academic year.

Students with sub-clinical levels of social anxiety in this research (Study 1) had higher levels than a non-clinical general population (Fresco, 2001). This may provide support for the findings of Cooke et al. (2006) that starting university can result in an escalation of mental health problems or the development of problems even if there is no underlying vulnerability. Clear conclusions, however, cannot be drawn as this study did not include a baseline measure of social anxiety before starting university. The levels of social anxiety in students reported in this study are far higher than levels reported for students by Russell and Shaw (2009). Their findings were approximately in line with the general population at 12% and in a Swedish study of second year students the prevalence rate for students was equivalent to the general population at 17% (Tillfors & Furmark, 2007).

Students in this study had higher levels of fear and avoidance against the whole range of social and performance situations. The study by Russell and Shaw (2009) covered all years of study and this may explain the different results. Other possible explanations or contributing factors may relate to the socio-demographic profiles of

students between the two universities or changes in student mental health over the period of time between the two studies.

No significant age difference was found in prevalence rates in this research and previous studies have reported mixed results in terms of age and social anxiety (Furmark, 2002). No gender differences were found either in this study although most studies have found a higher prevalence in women than men. Computer science students, nearly all men, had higher levels of social anxiety than psychology and humanities students. There were confounding variables between gender and subject studied therefore no clear conclusions can be drawn on either of these variables. Several writers stress that social anxiety may reflect social roles and expectations (Turk et al., 1998) but further research is required to confirm whether gender differences in social anxiety are decreasing.

The nature of social anxiety.

Those high in social anxiety reported frequent use of avoidance and safety behaviours and reported experiencing negative self-referential social cognitions more frequently and believing them more strongly than those low in social anxiety. These findings support previous research and theoretical perspectives on the processes and behaviours that maintain social anxiety (Heimberg, Brozovich, & Rapee, 2014). No significant difference, however, was found in the prominence of types of social cognitions (negative self-worth beliefs and negative expectancies) and types of social behaviours (impression-management and avoidance behaviours) when socially anxiety is activated.

The findings on attentional bias are in line with the findings of Clark and Wells (1995) who argue that when social anxiety is triggered, the individual becomes self-conscious and attention is engaged with a constructed negative self-image. Although

this is impossible to measure directly, a live self-image was made available to view during a social interaction (Study 2) to operationalise self-focussed attention. As predicted, those who had high levels of social anxiety paid attention to the image more than those with lower levels, which appears to be related to levels of fear rather than frequency of avoidance behaviours. While these finding provide tentative support for the notion that self-monitoring is an anxiety-driven deployment of attention (Clark & Wells) future research should examine fixation time with longer periods of social interaction and with varied social scenarios where levels of fear are manipulated (see below). Higher levels of social anxiety (both fear and avoidance subscales) were related to less attention to the stranger.

An examination of the association between cognitive processes (Study 3) found a positive association between interpretive bias and self-focused attention and between interpretive bias and pre- and post–event rumination. These findings would be predicted by the cognitive model of social anxiety (Clark & Wells, 1995) and are in line with growing body of evidence relating to the interaction of cognitive processes (Hirsch, 2006; Modini et al., 2018; Norton & Abbott, 2016). No evidence was found to suggest a differential association between types of self-referential beliefs in relation to attentional bias or in relation to pre- or post-event rumination. One possible conclusion is that the nature of the social interaction experienced with the stranger in this study was not sufficiently challenging as indicated by the overall measure of belief in negative self-referential cognitions.

5.3 Main strengths and limitations of the research

In terms of strengths, Study 2 adopted a new method of investigating social anxiety in a more naturalistic setting and explored a way of operationalising self-

focused attention by having a live external self-image. As discussed above, this overcomes a key limitation of previous research studies in the field of attentional bias. Focusing the research in Study 1 on a specific time period as well as on a specific population is a further strength, facilitating the translation of these findings to educational settings as well as to clinical treatment.

Sampling from only one university restricts generalisation from the findings of this research in terms of prevalence rates. A sample of new undergraduates was used to understand the prevalence and nature of social anxiety but also as a cross-sectional or analogue sample to examine processes in social anxiety with the aim of informing treatment more generally.

In researching processes such as attentional and interpretive bias and pre- and post-event rumination, the use of an analogue rather than a clinical sample is controversial in drawing conclusions about treatment of social anxiety (Penney & Abbott, 2014). Abramowitz et al (2014) argue that analogue research has several benefits, offering a more convenient way to recruit greater number of participants as well as being more appropriate for longitudinal studies as participants are not likely to be in treatment and are less likely to have co-morbid problems. They propose, however, that cross-sectional studies in mental health have to meet certain assumptions to make the research of value: social anxiety symptoms must be dimensional and sufficiently prevalent so that correlational studies can translate to a clinical population and that underlying processes must be the same in both populations such that symptoms between clinical and subclinical populations differ only in frequency and intensity. Social anxiety is well recognised in the literature as dimensional not categorical (e.g. Stopa & Clark, 2001) and this is evidenced in the levels of social anxiety found in this research. Symptoms such as fear of negative evaluation and the use of safety behaviours safety

behaviours along with underlying processes such as negative interpretive bias, self-focussed attention and ruminations were found to be evident in the sub-clinical levels of social anxiety in this study in line with previous studies and theoretical models (Rapee & Heimberg, 1997; Szafranski, Alexander, Talkovsky, Farris, & Norton, 2014). In summary, the criteria proposed by Abramowitz et al. to justify the use of a cross-sectional design are met by this research.

Examination of relationships between variables in this research were correlational rather than causal and, along with many other studies, a number of self-report measures were used. The limitations and potential problems associated with their use need to be considered (Stone, Shiffman, Atienza, & Nebeling, 2007). For example questionnaires are susceptible to extraneous factors and recall bias (Fernandez, Piccirillo, & Rodebaugh, 2014). In this study it was noted that when two assessment tools, the LSAS and the SCQ, were repeated within 4 weeks, the results were significantly different. While the scores of the LSAS had increased, those of the SCQ had decreased, although previous research suggests that these two questionnaires have a positive association. The SCQ may be more susceptible to bias recall as it asks for recall of thoughts and is less specific than the LSAS which asks about fear and avoidance in specific situations across the week. In addition the second completion of the questionnaires was in a different contexts (a hard copy in a laboratory versus online) which may be a confounding factor. These issues would be addressed in future research by a longitudinal study with several measurement time points and with questionnaires completed in a consistent context.

Three single-item measures were used in this research to ensure participants were not fatigued by completing questionnaires. While results obtained were in line with theory and previous studies, they lack the reliability and validity of full assessment

measures of the constructs and therefore full measures should be considered for pre- and post-event rumination in future studies.

5.4 Ethical considerations in this research

Individuals who are very socially anxious are disinclined to volunteer for a study that involves exposing themselves to meeting strangers. Study 1 involved completing online questionnaires but Study 2 and Study 3 required a visit to a laboratory on campus which involved a social interaction with a stranger. For those who do have a vulnerability to high levels of social anxiety, this would create discomfort. The BPS Code of Human Research Ethics in relation to recruitment to research studies highlights the importance of clearly stating all those aspects of the study that are relevant to a participant deciding whether to agree to participate. In this study, following the completion of questionnaires for Study 1, information was sent out electronically to participants for a second time and they were asked to consent separately to take part in the rest of the research which would involve a social interaction. There was no attempt to deceive and participants were told that eye-tracker data would be collected.

The BPS Code of Human Research Ethics (2014) also points out that any potential risks for participants involved in a research study should not be greater than those encountered in everyday life. In planning the nature of the social interaction for the study, it was decided to make the social interaction brief having the tone friendly and the content on safe subjects as far as could be anticipated. For those high in social anxiety, any discomfort was likely to be broadly similar to experiences of meeting new people in their everyday life on campus. None of the participants reported any discomfort after the interaction and their self-report measure of social anxiety during the social interaction was lower than during the previous week. To address any possible

emotional all participants had a debriefing at the end of their visit and were given information to signpost them to help or support if they should need it (see Appendix J).

5.5 Implications and future directions

Educational.

The very high prevalence rate of social anxiety found in this research raises concerns about the mental well-being of new undergraduate students. The consequences of social anxiety in terms of avoidance behaviours are clearly indicated by the data from this study which supports a body of evidence gathered over the last 30 years. There are other issues in relation to social anxiety in educational settings that require further research. This section will examine what action should be considered in tackling social anxiety among students based on the evidence we have to date and where future research is required.

Addressing social anxiety among university students.

The level of avoidance behaviours reported in this research suggests that many students are not able to engage sufficiently in learning activities to reap the full benefits of attending university. A very high percentage of students feared talking to a large audience, speaking up in a meeting or giving a report to a group and frequently avoided these situations. What is more surprising is the high level of fear and avoidance reported by a significant number of participants in relation to day-to-day social encounters that are part of university life and of employment. For example, over a quarter reported that they frequently avoided meeting strangers and entering a room where others are seated.

The cognitive formulation of social anxiety identifies a central role for negative self-referential beliefs and expectancies which are positively associated with avoidance behaviours (e.g. Clark & Wells, 1995) and this was supported by the findings of this

study. As with all anxiety problems, avoidance brings short-term relief from anxiety, however, it prevents the testing of negative beliefs and thus avoidance is reinforced. The early months may be a critical period for a new undergraduate in deciding whether they have made the right choice in pursuing a university degree. If avoidance is deployed and negative predictions cannot be challenged, they may decide to leave university or engage in levels of social withdrawal that give rise to co-morbid clinical depression (Wenzel & Jager-Hyman, 2014; Wittchen, Stein & Kessler, 1999).

What measures should universities consider to address social anxiety (clinical or sub-clinical) where it is having an impact on their studies and their general functioning. There is a very strong evidence base for the success of simple behavioural interventions which are designed to engage socially anxious individuals in facing their fears in a graded manner leading to a decline in fear through a process of habituation (e.g. Foa & Kozak, 1986). However, as described in the NICE guidelines (NICE, 2013), the problem of social anxiety is under-recognised and poorly understood. This suggests that, before new students arrive, it may be beneficial for universities to provide them with information on well-being that includes an understanding and normalisation of social anxiety (including performance anxiety), differentiating it clearly as a specific problem. Rather than just describing the symptoms and signposting ways of accessing help, evidence suggests that it is important to highlight the success of appropriate interventions to build hope and expectancy of improvement (Safran, Segal, Vallis, Shaw, & Samstag, 1993; Lambert, 1992). Alongside this information to motivate new students to engage in seeking help, it would be helpful also to highlight the problems that can arise from adopting unhelpful coping behaviours such as avoidance.

A brief self-assessment for social anxiety could be included in psychoeducation material provided to students. The mini-SPIN (Connor et al., 2001) has three questions

and has been shown to have strong sensitivity and specificity (Weekes, Spokas, & Heimberg, 2007). Having an early awareness that social anxiety is a recognised problem may encourage individuals to discuss their difficulties with mental health services and possibly their tutor or at least to access self-help resources. Early awareness and intervention would help to mitigate against further potential difficulties, particularly with depression (Wittchen, Stein & Kessler, 1999).

University staff involved in supporting students with social anxiety would need to have training and work with university or local NHS professional to support students with implementing graded exposure in academic social settings. This support need not be time-consuming as the exposure could be planned within normal teaching activities. For example, at a personal tutorial the tutor and student might agree that the student will ask a brief question in front of their peers at a forthcoming lecture or seminar. Such an exercise would be repeated and developed as graded exposure so that the student engages in lengthier interventions in public leading up to finally giving a short presentation to a group, possibly practising this firstly online using virtual reality (see Clinical section below).

It is very likely that some individuals affected by high levels of social anxiety, will need more intense support and psychological interventions so a stepped-care model, as used in mental health services, is required. It is important to identify those who may have co-morbid clinical depression or substance misuse and may be at risk. To implement an appropriate evidenced-based treatment plan requires having staff available who are sufficiently trained to differentiate types of mental health problems and assess those where online treatment resources or graded exposure may be sufficient and where these may not be adequate. While many universities now have effective collaboration with specialist local mental health and GP services (RCP, 2011) , given

the general rise in the demand for mental health interventions, it would be beneficial to find ways of addressing milder difficulties effectively and before they escalate, in ways that are less demanding on these limited resources. Online treatment for social anxiety with therapist support is a relatively new option that may work effectively for many students giving them faster access and present an alternative mode of support that may be more attractive to those with social anxiety. This is discussed further in the clinical section below. More emphasis on a recovery-based approach in communication and support in relation to mild to moderate mental health problems would have many benefits for the university as well as for students, easing the financial cost and burden of time for university staff in supporting many students to just manage around their mental health problems. In the case of social anxiety, the overall goal should be that, by the end of their studies, avoidance behaviours have been addressed and individuals are sufficiently prepared to secure appropriate employment. This suggest that career services at universities should also have similar training to academic staff as discussed above.

Looking at university academic processes at a wider level, new undergraduates who have an inclination to avoid what they fear may be facilitated in so doing by a number of environmental factors including curriculum design and pedagogic approaches. There are financial and resource pressures as well as pedagogic considerations that underpin decisions about staff contact hours, resulting in a significant number of students having very limited requirements to access academic teaching or learning facilities. Information technology has enabled course materials and even lectures to be accessed remotely and most students are likely to have personal devices to access the internet and do not need to go to libraries.

Looking across all universities in the UK, there is a marked difference in the degree and nature of the contact students have with staff particularly between the sciences and humanities. The Higher Education Policy Institute (2009) found the time timetabled for direct contact ranged from 8 hours in the humanities to over 20 hours in medical/clinical subjects. Therefore, for some subject disciplines even where there is no active avoidance, a socially anxious student could spend little time with others in academic activities. This in turns increases the fear of speaking up in front of fellow students in seminars, lectures or presentations. Russell and Shaw (2009) found that Arts and technology students had the highest levels of social anxiety and medical students the lowest. This may reflect the attraction of certain careers for those less socially anxious, however, it may also be associated with more frequent group teaching.

Technology and other modern day pressures have eroded face-to-face social interaction in many aspects of our lives including in families, in the workplace and also in university life. Research suggests that a significant percentage of students fear and avoid small group working (Russell & Shaw, 2009) which was supported by this study. Given the lack of staff contact hours for many students, it may be helpful to build into the curriculum design of courses particularly in the first year, additional learning activities over and above timetabled formal teaching to bring students into face-to-face social networks for learning. It would be helpful to support such initiatives by teaching students good practice in facilitating constructive group processes so all students learn how to integrate effectively in groups, as well as providing graded exposure for those who are socially anxious.

Further research in educational settings.

Understanding when and where the problems of social anxiety emerge in the educational system would help in planning and targeting interventions more effectively.

Is it the adjustment to university that activates social anxiety or have emerging environmental and cultural factors, particularly social media and expectations in relation to academic achievement increased rates of problematic social anxiety amongst adolescents at school? In looking at these issues it would be important to compare university students to young people who enter employment from school to try to identify factors that are specific to university life.

A report by the RCP (2011) on general mental health among students recommends longitudinal research looking at prevalence rates over time for those with pre-existing conditions, considering risk factors for students including academic pressures and availability of support. The findings of this research suggests such a longitudinal study should extend beyond those with pre-existing vulnerability to those who may not have had a mental health problem previously but may find navigating the challenges of transitioning to university very difficult. Establishing baseline measures prior to university would need to be included in understanding the part played by the transition to higher education and possible differences between those who continue to live at home and those who are residential. The majority of students come from school (sometimes having taken a year out from education) and therefore assessing social anxiety among Year 13 students at school would also be helpful.

A future longitudinal study of levels of social anxiety across all years of study carried out in several universities would improve our understanding and it would be helpful to include data on academic achievement and the development of other mental health problems. Tillfors and Furmark (2007) suggest that more research is required to examine whether suffering from high levels of social anxiety leads students to underachieve or to withdraw from their studies. It would also be helpful to repeat the research by Lowe and Cook (2003) comparing prior expectations of university and the

reality after one term. This study highlights the importance of a more thorough preparation of students both academically and personally however a lot has changed in the last 16 years at universities and with online communication so it would be beneficial to re-examine to what extent students feel prepared for the transition and what further preparation, if any, could realistically be provided by schools or universities.

Future studies examining whether particular faculties have higher prevalence rates of generalised social anxiety and/or performance anxiety would also provide valuable information along with whether there are specific differences in the nature of social anxiety across subject areas. If such differences emerged then universities would need to consider tailoring induction programmes and support services accordingly.

Clinical.

The CBT treatment of social anxiety addresses several cognitive processes which maintains the problem: self-conscious attention, interpretive bias and rumination. These processes were examined in this research and a positive association found, supporting the theoretical model of an interacting system (Hirsch et al., 2006).

A key intervention in the cognitive treatment of social anxiety involves reviewing with the client a video playback of a recording of a social interaction that has been arranged with a stranger to challenge negative interpretive bias (Clark, 2005). This research presented a live self-image during a social interaction and those who were higher in social anxiety attended more to the self-image than those lower in social anxiety. The use of Skype with live video feedback as used in this research, may provide a potential adaptation of this protocol that could be investigated further in future research studies. Consideration would need to be given to including preparatory work and briefing of the individual as to how to look at the live self- image before the social encounter, as cognitive preparation before viewing is an important part of the current

protocol (Harvey et al., 2000; Kim et al., 2002). This involves identifying the problematic negative cognitions encapsulated in the negative self-image and briefing the individual to take a neutral stance in viewing the live image. Use of Skype with different audiences, and possibly in combination with virtual reality offer additional possibilities for extending clinical treatment by presenting different social situations such as presentations to an audience or entering a room when others are seated. The behaviour of such audiences could be manipulated to give more ambiguous cues which may increase fear of negative evaluation.

The partial migration of mental health interventions to the digital world reflects the reality that the prevalence and potential demand for support with mental health problems greatly outstrips supply, particularly in a university setting. It also recognises that the online world is for many young adults a major part of their lives and that internet-delivered treatment will also make it more likely that help will reach those who need it, particularly those who are extremely avoidant of social interaction with strangers. A small study of iCBT based on the cognitive model suggests it can achieve good clinical outcomes (Stott et al., 2013) however it appears to involve a lengthy protocol. This study suggests possible refinements to this protocol which may result in greater efficiency in the video-feedback intervention.

Research

The field of attentional bias research in social anxiety has been limited by methodological difficulties in studying attention in naturalistic settings. In Study 2, an ecologically valid method was successfully used to investigate attentional bias using eye-tracker technology linked to Skype. Video and audio communication via the internet is now in common use and in this research 57% of students reported using Skype previously and those that had not, may have used Facetime (this data was not

gathered). The use of Skype combined with eye-tracker opens up opportunities to monitor attention unobtrusively in a social interaction and to improve the quality of clinically relevant research. Fixation time on live video feedback of the self and attention to the stranger in a dyadic interaction were captured in Study 2 but this could be applied to a number of social situations varying the number of people present, the formality of the setting and manipulating variables such as facial expressions to look at attentional bias in detail. Gathering more detailed eye-tracker measures in future studies would provide data to contribute to debates about the dynamic nature of attention and the complexity of attentional bias (Van Boekstaele et al., 2013).

A further important consideration in social anxiety research is the new dimension of social interaction taking place on social media sites and through indirect electronic interactions such as text communication. Many of these methods have no near equivalent in face-to-face interaction and in some cases individuals are passive recipients of social information such as reading posts from others. When investigating the social interactions of young people including their fears, cognitions and safety behaviours, it is becoming increasingly important to develop or adapt current self-report questionnaires and methods of research to consider the digital social world that has become an important part of their everyday life.

5.6 Conclusion and final comments

The research examined social anxiety from multiple perspectives and was positioned as exploratory to determine whether the lines of investigation are potentially fruitful. The findings on the prevalence and experience of social anxiety in terms of beliefs and behaviours raise concerns about the well-being of new undergraduates and the potential impact on their performance at university. A clear picture emerged of the

frequent use of avoidance behaviours in relation to key academic activities that involved social interaction. Longitudinal research across several universities, investigating social and performance anxiety across all years of study is suggested so that the persistence and impact of high levels of social anxiety can be examined.

Research looking at the relationship between social anxiety and social media would also be helpful in clarifying if and how it plays a part in the high levels of social anxiety found in this research. This might include an examination of the association between high social media use and problematic social cognitions and behaviours. Given the increasing use of social media, future studies will need to consider this parallel social world and develop appropriate ways of assessing and formulating social anxiety which takes this dimension into account.

Examination of the association between cognitive processes (interpretative and attentional bias and interpretive bias and rumination processes) provided support for the cognitive model of social anxiety although further analysis in relation to types of cognitions did not prove fruitful. Research in this field is now developing and future studies that can address causal questions in relation to how cognitive processes interact will be important clinically, not only to the formulation and treatment of social anxiety but across anxiety and mood disorders. Current research suggest that the interaction of cognitive processes contribute in different ways to the maintenance of many mental health problems.

A new methodology, using Skype connected to an eye-tracker to study attentional bias in social interactions naturalistically, proved successful in this research. Combined with live video feedback during a social encounter, it offers several pathways for investigating attentional bias in a real-world setting and may also have applications in the emerging area of online treatment of social anxiety.

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APPENDIX A
DSM-5 Diagnostic criteria for Social Anxiety (Abridged) (APA, 2013)

A. A marked fear or anxiety about one or more social situations in which the individual is exposed to possible scrutiny by others.

B. The individual fears that he or she will act in a way or show anxiety symptoms that will be negatively evaluated (i.e. will be humiliating or embarrassing; will lead to rejection or offend or others).

C. The social situations most always provoke fear or anxiety.

D. The social situations are avoided or endured with intense fear or anxiety

E. The fear or anxiety is out of proportion to the actual threat posed by social situation.

F. The fear, anxiety, or avoidance is persistent, typically lasting for 6 months or more.

G. The fear, anxiety, or avoidance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

H. The fear, anxiety, or avoidance is not attributable to te physiological effects of a substance (e.g., a drug of abuse, a medication) or another medical condition.

I. The fear, anxiety, or avoidance is not better explained by the symptoms or another mental disorder, such as panic disorder, body dysmorphic disorder, or autism spectrum disorder.

J. If another medical condition (e.g., Parkinson's disease, obesity, disfigurement from burns or injury) is present, the fear, anxiety or avoidance is clearly unrelated or is excessive.

APPENDIX B:

Liebowitz Social Anxiety Scale (LSAS) (1987)

Rater	Date

Liebowitz Social Anxiety Scale (LSAS)

	Fear or Anxiety 0 = None 1 = Mild 2 = Moderate 3 = Severe		Avoidance 0 = Never (0%) 1 = Occasionally (1-33%) 2 = Often (34-66%) 3 = Usually (67-100%)	
Items	**Anxiety (S)**	**Anxiety (P)**	**Avoid (S)**	**Avoid (P)**
1. Telephoning in public. (P)				
2. Participating in small groups. (P)				
3. Eating in public places. (P)				
4. Drinking with others in public places. (P)				
5. Talking to people in authority. (S)				
6. Acting, performing or giving a talk in front of an audience. (P)				
7. Going to a party. (S)				
8. Working while being observed. (P)				
9. Writing while being observed. (P)				
10. Calling someone you don't know very well. (S)				
11. Talking with people you don't know very well. (S)				
12. Meeting strangers. (S)				
13. Urinating in a public bathroom. (P)				
14. Entering a room when others are already seated. (P)				
15. Being the center of attention. (S)				
16. Speaking up at a meeting. (P)				
17. Taking a test. (P)				
18. Expressing disagreement or disapproval to people you don't know very well. (S)				
19. Looking at people you don't know very well in the eyes. (S)				
20. Giving a report to a group. (P)				
21. Trying to pick up someone. (P)				
22. Returning goods to a store. (S)				
23. Giving a party. (S)				
24. Resisting a high pressure sales person. (S)				
Total Performance (P) Subscore				
Total Social (S) Subscore				
Total Anxiety & Avoidance Subscore				
Total LSAS Score				

Permission granted to use the LSAS by Dr Liebowitz.

APPENDIX C

Social Cognitions Questionnaire

Listed below are some thoughts that go through people's minds when they are nervous or frightened.

Firstly indicate, on the **LEFT** hand side of the form by each thought, how often **in the last week** each thought has occurred; rate each thought from 1-5 using the following scale:

1. Thought never occurs
2. Thought rarely occurs
3. Thought occurs during half of the times when I am nervous
4. Thought usually occurs
5. Thought always occurs when I am nervous

When you feel anxious how much do you believe each thought to be true. Please rate each thought by choosing a number from the scale below, and put the number which applies on the dotted line on the **RIGHT** of the form.

0 10 20 30 40 50 60 70 80 90 100

HOW OFTEN		**BELIEVE**
___	I will be unable to speak	___
___	I am unlikeable	___
___	I am going to tremble or shake uncontrollably	___
___	People will stare at me	___
___	I am foolish	___
___	People will reject me	___
___	I will be paralysed with fear	___
___	I will drop or spill things	___
___	I am going to be sick	___
___	I am inadequate	___
___	I will babble or talk funny	___
___	I am inferior	___
___	I will be unable to concentrate	___
___	I will be unable to write properly	___
___	People are not interested in me	___
___	People won't like me	___
___	I am vulnerable	___
___	I will sweat/perspire	___
___	I am going red	___
___	I am weird/different	___
___	People will see I am nervous	___
___	People think I am boring	___
	Other thoughts not listed (please specify):	
	_____	___
		___

Developed by Adrian Wells, Lucia Stopa and David M Clark (1993)

Permission granted to use the SCQ by Professor David Clark

APPENDIX D:

Social Behaviours Questionnaire (Clark et al., 1995)

Name: ..... Date: .....

SOCIAL BEHAVIOUR QUESTIONNAIRE

Please circle the word which best describes how often you do the following things when you are anxious in or before a social situation.

Use alcohol to manage anxiety	Always	Often	Sometimes	Never
Try not to attract attention	Never	Sometimes	Often	Always
Make an effort to get your words right	Never	Sometimes	Often	Always
Check that you are coming across well	Always	Often	Sometimes	Never
Avoid eye contact	Never	Sometimes	Often	Always
Talk less	Always	Often	Sometimes	Never
Avoid asking questions	Always	Often	Sometimes	Never
Try to picture how you appear to others	Never	Sometimes	Often	Always
Grip cups or glasses tightly	Never	Sometimes	Often	Always
Position yourself so as not to be noticed	Always	Often	Sometimes	Never
Try to control shaking	Always	Often	Sometimes	Never
Choose clothes that will prevent or conceal sweating	Never	Sometimes	Often	Always
Wear clothes or makeup to hide blushing	Never	Sometimes	Often	Always
Rehearse sentences in your mind	Always	Often	Sometimes	Never
Censor what you are going to say	Always	Often	Sometimes	Never
Blank out or switch off mentally	Never	Sometimes	Often	Always
Avoid talking about yourself	Never	Sometimes	Often	Always
Keep still	Always	Often	Sometimes	Never
Ask lots of questions	Always	Often	Sometimes	Never
Think positive	Never	Sometimes	Often	Always
Stay on the edge of groups	Never	Sometimes	Often	Always
Avoid pauses in speech	Always	Often	Sometimes	Never
Hide your face	Never	Sometimes	Often	Always
Try to think about other things	Always	Often	Sometimes	Never
Talk more	Always	Often	Sometimes	Never
Try to act normal	Always	Often	Sometimes	Never
Try to keep tight control of your behaviour	Never	Sometimes	Often	Always
Make an effort to come across well	Always	Often	Sometimes	Never

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Permission granted to use the SBQ by Professor David Clark

APPENDIX E: Information Sheet

Title of study: An investigation of social anxiety in university students: prevalence and processes.

We would like to invite you to take part in a research study. Before you decide whether you would like to take part it is important that you understand why the research is being done and what it would involve for you. Please take time to read the following information carefully and discuss it with others if you wish. Ask if there is anything that is not clear or if you would like more information.

What is the purpose of the study?

The study is looking at anxiety and cognitive processes (attention and interpretation) in social interactions. It is research being carried out in completion of a professional doctorate at City University, London.

Why have I been invited?

We are looking for students who are interested in taking part in this research having been fully informed of what is involved.

Do I have to take part?

Participation in the project is voluntary, and you can choose to withdraw at any stage of the project without being disadvantaged in any way. It is up to you to decide whether or not to take part. If you do decide to take part you will be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time without giving a reason up to at least a week after you have participated, when the data will be aggregated.

What will happen if I take part?

Data gathering will be done in two separate stages.

The first stage involves the completion of questionnaires online. For the second stage you will be asked to come to the psychology laboratory at the Treforest campus at the University of South Wales and have a 5 minute social chat on Skype (a software application that allows live voice and video communication) with someone you have not met before. The complete interaction will be video recorded from your perspective i.e. a recording will be made of what you can see on the screen. Linked to the Skype screen is an eye-tracker so that data on where you are paying attention on the screen can be gathered throughout the conversation. Before the conversation the eye-tracker will be calibrated so it is positioned correctly for you. This will take up to 60 seconds. After this you be viewing only the Skype screen and will not see the eye-tracker monitoring. The content of your discussion will not be analysed however numerical data will be extracted on how your attention was divided and shifted. You will also be asked to complete three short questionnaires at the end of this activity and rate your anxiety pre and post the Skype chat.

What do I have to do? You will be asked to provide your email address in order to be contacted. You will be sent an electronic copy of this information sheet and a consent form. If

you are happy to proceed and have signed the consent form you would proceed to complete questionnaires online for stage 1. Following this you will be contacted again to arrange a time to come to the psychology laboratory at Treforest Campus to have a 5 minute social chat with someone on Skype and complete short questionnaires.

What are the possible disadvantages and risks of taking part?
The research involves eye-tracker equipment which is fairly standard equipment used in psychological research. Some people with photosensitive epilepsy (estimated at 3.5% of the population) are susceptible to epileptic seizures or loss of consciousness when exposed to certain flashing lights or light patterns in everyday life**.** When the eye-tracker is in use during the chat there is no such exposure and you are just looking at a Skype screen. So we can set up the eye-tracker however you will need to look at a flashing dot for 30-60 seconds to calibrate the machine and this may be a problem for people that are susceptible to photosensitive epilepsy. If you are aware of having this problem or believe it might be the case despite having had no experience of a seizure, you should not participate.

Some participants may experience anxiety interacting socially with a stranger and being asked about their anxiety in social situations in the questionnaires. This is likely to be transient discomfort and within the level of anxiety experienced in everyday social situations. You will have a debriefing at the end of the session and will have an opportunity to discuss any support you may want to access if you are distressed as a result of participating in this research

What are the possible benefits of taking part?
The research study aims to contribute to knowledge of cognitive processes that could facilitate improvement in the delivery of well-being and support services in educational settings.

What will happen when the research study stops?
When the research study stops all the raw data gathered will be destroyed and this will include the video footage which contains the eye-tracker data. This will be five years after publication of the research findings.

Will my taking part in the study be kept confidential?
Each participant will be assigned a unique code so data cannot be linked to identifiers. Email addresses needed to arrange participation will be kept securely and separately from the data and linked by the code. When all the data has been gathered from participants email addresses will be destroyed.

Data and video recordings of the social interactions will be kept securely on a password protected PC. You have the choice whether to give your name when chatting on Skype. As mentioned above, when the study has been completed video recordings will be destroyed. Data will be presented in an aggregated form and data will be managed so it is impossible to identify the individual to whom the sample of information relates for example if numbers are low in a particular category e.g. gender in a subject area.

What will happen to the results of the research study?
The results of the study will be included in a thesis submitted to City University, London as part of a professional doctorate in counselling psychology. In addition it is proposed that papers based on this research project will be submitted for publication. Submission of papers are likely

to be to psychology and psychotherapy journals. As mentioned above all data from participants will be anonymised.

We would also like to use the data from this study to contribute towards a report to the Centre for Excellence in Learning and Teaching at the University of South Wales and as described above the data would be anonymised and presented in a summary form.

If you would like to receive a summary of the results of this study when they are available please contact Sheila Brennan at the email address below.

What will happen if I don't want to carry on with the study?
You are free to withdraw from the study at any point up to the time that the data is aggregated which will be a week after you have taken part in the study. You can withdraw from the study without an explanation or penalty.

What if there is a problem?
If you have any problems, concerns or questions about this study, you should ask to speak to a member of the research team. If you remain unhappy and wish to complain formally, you can do this through the University complaints procedure. To complain about the study, you need to phone 020 7040 3040. You can then ask to speak to the Secretary to Senate Research Ethics Committee and inform them that the name of the project is: **An investigation of social anxiety in university students: prevalence and processes.**

You could also write to the Secretary Anna Ramberg, Secretary to Senate Research Ethics Committee Research Office, E214, City University London, Northampton Square, London EC1V 0HB Email: [redacted]

City University London holds insurance policies which apply to this study. If you feel you have been harmed or injured by taking part in this study you may be eligible to claim compensation. This does not affect your legal rights to seek compensation. If you are harmed due to someone's negligence, then you may have grounds for legal action.

Who has reviewed the study? This study has been approved by City University London Psychology Research Ethics Committee
Research Ethics Committee approval code, (P/L) 14/15 241
<u>This study also has ethics approval from the University of South Wales.</u>
Further information and contact details
Researcher: [redacted]

Supervisor: [redacted]

Thank you for taking the time to read this information sheet.

APPENDIX F: Consent form

CITY UNIVERSITY LONDON

Title of Study: **An investigation of social anxiety in university students: prevalence and processes.** Ethics approval code: (P/L) 14/15 241 Please initial box

1.	I agree to take part in the above City University London research project. I have had the project explained to me, and I have read the participant information sheet, which I may keep for my records. I understand this will involve: • being briefed and debriefed by the researcher • completing questionnaires asking me about my thoughts and experiences in social situations • having a social discussion on Skype which will be recorded • having my eye gaze monitored and recorded Your involvement will involve a 6 minute activity using eye-tracker equipment. To calibrate equipment, we will ask you to look at a flashing dot for 30-60 seconds. This may be a problem for people susceptible to photosensitive epilepsy. **If you know you have photosensitive epilepsy or suspect this might be the case you should not consent to take part in this study.** Please see the information sheet for more detail.	
2.	This information will be held and processed for the following purpose(s): - For a doctoral research project. - For research papers that will be published in academic journals. - For conference papers, reports or presentations to organisations interested in mental health and well-being. - A report for the University of South wales Centre for Excellence in Learning and Teaching (CELT). I understand that any information I provide is confidential, and that no information that could lead to the identification of any individual will be disclosed in any reports on the project, or to any other party. No identifiable personal data will be published.	
3.	I understand that my participation is voluntary, that I can choose not to participate in the project, and that I can ask for my data to be withdrawn at any stage to the aggregation of the data. I will have a minimum of a week after the data is gathered to withdraw data. I understand I can withdraw without being penalized or disadvantaged in any way.	
4.	I agree to City University recording and processing this information about me. I understand that this information will be used only for the purpose(s) set out in this statement and my consent is conditional on the University complying with its duties and obligations under the Data Protection Act 1998.	
5.	I agree to take part in the above study.	

_____	_____	_____
Name of Participant	Signature	Date
_____	_____	_____
Name of Researcher	Signature	Date

Further information and contact details
Researcher: [redacted]

APPENDIX G

Percentage reporting fear and avoidance by LSAS items (rank order)

LSAS	Moderate/severe fear	Often/usually avoids
Talking to a large audience	79.2	64.3
Being centre of attention	59.4	51.5
Speaking up in a meeting	56.4	46.5
Doing a written test	49.5	18.8
Giving a report to a group	48.5	39.7
Meeting strangers	47.6	25.8
Telephoning someone you don't know well	47.5	35.6
Giving a party	46.5	39.6
Entering room where others are seated	44.5	25.8
Working whilst observed	43.6	21.8
Expressing disagreement to people you don't know well	40.6	27.7
Looking strangers in the eye	37.7	30.7
Talking to someone you don't know well	36.6	24.8
Writing whilst being observed	36.6	18.8
Talking to someone in authority	32.7	20.8
Going to a party	32.7	21.8
Resisting a high pressure salesman	32.7	33.7
Participating in small groups	24.8	16.8
Telephoning in public	22.8	19.9
Returning goods to a store	22.8	30.8
Urinating in a public toilet	17.8	20.8
Drinking with others in public place	10.9	9.9

APPENDIX H

Percentage reporting high frequency and belief by SCQ item (rank order)

SCQ Cognition	Usually or always occurs	Strength of belief (0 - 100%)	
	% participants	*M*	*SD*
I am weird /different	39.7	53.96	35.41
People will see I'm nervous	38.7	63.02	32.16
People won't like me	34.7	60.21	31.49
People are not interested in me	33.7	61.77	30.64
People will reject me	33.7	56.53	33.64
People think I am boring	32.6	58.13	33.32
People will stare at me	30.7	56.98	30.51
I will babble or talk funny	30.7	58.53	43.42
I am inferior	30.7	49.68	38.63
I am going red	30.7	50.21	38.39
I am unlikeable	28.7	55.42	33.62
I will sweat or perspire	25.8	48.87	37.45
I am inadequate	21.8	51.98	34.78
I am foolish	18.8	42.40	35.36
I will drop or spill things	17.8	47.26	33.53
I am vulnerable	17.8	46.87	34.74
I am going to tremble or shake uncontrollably	13.8	43.12	36.53
I am going to be sick	11.9	37.68	38.27
I will be unable to speak	7.9	38.74	33.81
I will be paralysed with fear	7.0	34.11	36.22

APPENDIX I

Percentage reporting high frequency by SBQ items (rank order)

Social behaviours	% participants reporting used often or always
Make effort to come across well	70.3
Make effort to get words right	65.4
Try not to attract attention	55.4
Avoid talking about yourself	51.5
Check you are coming across well	50.5
Talk less	48.5
Prepare sentences in your mind	44.6
Try to picture how you appear to others	44.6
Censor what you're going to say	43.6
Avoid asking questions	43.6
Stay on the edge of group	43.6
Position yourself so as not to be noticed	38.7
Blank out or switch off mentally	38.6
Think positive	37.6
Censor what you are going to say	33.6
Avoid eye contact	31.7
Grip cups or glasses tightly	31.7
Try to control shaking	30.7
Choose clothes that will prevent/conceal sweating	29.7
Wear clothes or makeup to hide blushing	26.8
Use alcohol to manage anxiety	14.9
Ask lots of questions	12.9

APPENDIX J

CITY UNIVERSITY LONDON

An investigation of social anxiety in university students: prevalence and processes.

DEBRIEF INFORMATION

Thank you for taking part in this study. Now that it's finished we would like to explain the rationale behind this research, remind you of your right to withdraw and how you can get more information or access support if you believe it would be helpful.

This study firstly seeks to understand more about the levels of social anxiety among first year university students, how they experience that anxiety and the situations that most commonly trigger that anxiety. The questionnaires you were given help to assess overall levels of social anxiety and how much situations are feared and avoided. The other questionnaires look at thoughts, behaviours and cognitive processes that you experience in social situations. Together they build a picture of the experience of social anxiety and in what situations social anxiety it is triggered.

Models of social anxiety suggest that when you are very socially anxious your attention is affected and also you are biased in your interpretation of how others see you, believing you are not conveying a good impression. These models also suggest that if these unhelpful attentional and interpretive biases can be shifted by looking at how you are actually appearing to others rather than believing the worse because you feel anxious, then levels of social anxiety would reduce. The second part of the study therefore seeks to understand how anxiety levels were related to how much the participant looked at themselves during the encounter, and how time spent looking at live feedback of themselves related to other dimensions of social anxiety such as avoidance behaviours and beliefs reported in the questionnaires. In order to determine how much time participants spend looking at particular areas of interest in this study i.e. themselves, the stranger or elsewhere on the screen, an eye-tracker is linked with Skype so your eye gaze can be monitored. The content of your discussion is not analysed. What has been gathered is the numerical data on where you were paying attention during the Skype chat which is done through the software identifying particular areas where your gaze fell throughout the recording.

The researchers confirm their responsibility to ensure that your data is kept confidential and anonymous. The data is kept in a password protected computer. Email

addresses and video recordings will be destroyed when data gathering is complete. Please take note that you now have one week to withdraw before your data is aggregated.

Please note that no part of this research is intended to diagnose or treat any type of mental health problem which you may believe that you have. If this study has affected you in any way and you feel you need further information or support there are a number of ways you can access help that are listed below. If you do not make progress with self-help material we would encourage you to contact your GP or the University Health and Wellbeing Service.

NHS publication with further signposting and reading material:

http://www.ntw.nhs.uk/pic/selfhelp/

MIND has information and some self-help materials on:

http://www.mind.org.uk/information-support/types-of-mental-health-problems/anxiety-and-panic-attacks/#.VU6D55OXq0V

Wellbeing and counselling service at USW – information and contact details are available at:

http://thewellbeingservice.southwales.ac.uk/

We hope you found the study interesting. If you have any other questions or need further guidance on accessing support please do not hesitate to make contact:

Researcher: sheila.brennan@southwales.ac.uk

City University Supervisor: [redacted]

USW Supervisors: [redacted]

Ethics approval code: (P/L) 14/15 241

APPENDIX K

Social cognitions questionnaire adapted (for Study 3)

Listed below are some thoughts that go through people's minds when they are nervous or frightened.

When you <u>feel anxious</u> how strongly do you believe each thought to be true. Please rate each thought by choosing a number from the scale below, and put the number which applies on the dotted line on the **RIGHT** hand side of the form firstly for during the last week and then for during the Skype chat .

0 10 20 30 40 50 60 70 80 90 100

Strength of belief

	Skype chat	**Last week**
I will be unable to speak		
I am unlikeable		
I am going to tremble or shake uncontrollably		
People will stare at me		
I am foolish		
People will reject me		
I will be paralysed with fear		
I will drop or spill things		
I am going to be sick		
I am inadequate		
I will babble or talk funny		
I am inferior		
I will be unable to concentrate		
I will be unable to write properly		
People are not interested in me		
People won't like me		
I am vulnerable		
I will sweat/perspire		
I am going red		
I am weird/different		
People will see I am nervous		
People think I am boring		
Other thoughts not listed (please specify):		
		___
		___

Developed by Adrian Wells, Lucia Stopa and David M Clark (1993)
Typed Jan 2001

Permission granted to use the SCQ adapted by Professor David Clark

APPENDIX L

Social Summary Rating Scale

1) Please circle a number from the scale below that best describes how severe your social anxiety has been in the last week:

0	1	2	3	4	5	6	7	8
Not at all disturbing and/or disabling		Slightly disturbing and/or disabling		Definitely disturbing and/or disabling		Markedly disturbing and/or disabling		Severely disturbing and/or disabling

2) Please circle a number from the scale below to show how often in the last week you have avoided difficult social situations or aspects of those situations.

0	1	2	3	4	5	6	7	8
Not at all		Rarely		Sometimes		Often		Always

3) For social situations *in general*, please choose a number from the scale below to show the extent to which your attention was focused on yourself or on the external situation in the last week.

0	1	2	3	4	5	6	7	8
Entirely externally focused				Both equally				Entirely self - focused

4) For social situations *that you found difficult,* please choose a number from the scale below to show the extent to which your attention was focused on yourself or on the external situation in the last week.

0	1	2	3	4	5	6	7	8
Entirely externally focused				Both equally				Entirely Self-focused

5) Over the past week how often have you gone over in your mind things that you think might go wrong in a social situation *before* entering the situation.

0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Not at all		**Rarely**		**Sometimes**		**Often**		**Always**

6) Over the past week how often have you gone over social interactions in your mind *after* they have finished.

0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Not at all		**Rarely**		**Sometimes**		**Often**		**Always**

Permission granted to use the SSRS by Professor David Clark

PART C: CRITICAL LITERATURE REVIEW

Is shame a central emotion in social anxiety?

6.1 Introduction

The diagnostic criteria for social anxiety disorder (SAD) includes a fear that one may "act in a way or show anxiety symptoms that will, be negatively evaluated (i.e. will be humiliating or embarrassing; will lead to rejection or offend others) (American Psychiatric Association, 2013, p.202). The pre-eminent models of social anxiety i.e. Clark and Wells (1995) and Rapee and Heimberg (2007), however, do not make reference to emotions other than anxiety. The aim of this review is to draw conclusions on whether there is sufficient evidence to position shame as central to the formulation and treatment of social anxiety.

The relevant literature was searched using PsycINFO, PsycArticles and Academic Search Complete from 1993 to 2018. Cognitive behavioural protocols for social anxiety which are recommended by the National Institute for Care and Health Excellence (NICE) (2013) were developed over 20 years ago so the literature search was extended to include related papers. Due to the word count limitations of this review, cultural diversity in social anxiety and the relationship to shame is not examined, and the review covers mainly Western-based studies although participants in these studies may be from a variety of ethnic groups. Co-morbidity is also not covered and neither are any studies that include shame in other anxiety or mood disorders. Therapeutic approaches other than cognitive behavioural psychotherapy are excluded in discussions relating to the formulation and treatment of social anxiety. The key constructs used in the search were social anxiety, social phobia, shame, embarrassment, humiliation, social affiliation, social status and CBT. Relevant references were followed up from studies, articles and books in order to examine the diverse themes within the literature.

6.2 Defining terms

Terms for social emotions such as guilt, shame, embarrassment and humiliation are used in the literature in an inconsistent and confusing manner although there is a consensus that they all belong to a family of socio-evaluative emotions (Tomkins, 1996; Scheff, 2000). There is also general agreement that guilt and shame can be differentiated. Guilt arises when we appraise our own specific behaviours or lack of action to have had a negative impact on others. It is largely independent of whether others come to similar conclusions and guilt tends to lead to remorse or actions to repair the perceived damage (Tangney & Dearing, 2002). Shame relates to a negative, more global appraisal of the self (Tangney, Miller, Flicker, & Barlow, 1996; Gilbert, 2000). Gilbert (2007) distinguishes external and internal shame: the former being the perception an individual has of how others view them and internal shame a self-awareness and evaluation of the self as unacceptable and defective leading to self-criticism. Allan, Gilbert, and Goss (1994) highlight that external and internal shame cognitions are highly correlated i.e. how one appraises the self is how one will expect others to do so. Gilbert (2007), however, postulates that you can have external shame that does not mirror internal shame. This differentiation is discussed below in order to propose a relationship between the terms shame, humiliation and embarrassment and a rationale for grouping these emotions under a family of shame experiences that will be used in this review.

Humiliation is defined as the emotional experience that accompanies a loss of social status which is perpetrated with strategic negative intent towards the self and involves a public audience (Otten & Jonas, 2013; Klein, 1991).The experience is likely to give rise to anger from a sense of unfairness. Considering this description in the context of the types of shame described above by Gilbert (2007), then humiliation could

be seen as arising when an individual has external shame activated by negative intent towards the self but there is no matching internal shame and the individual perceives it as unjustified and has feelings of anger.

The relationship between shame and embarrassment is debated in the literature with some writers using these terms interchangeably and others identifying overlap but also some differences (Keltner & Buswell, 1997). Crozier (2014) highlights that embarrassment results from some deviation from social conventions. For example, embarrassment might arise when wearing clothes to a social function that differ in formality to other guests due to a lack of prior knowledge on the dress code. Probyn (2005) proposes that embarrassment is just a milder form of shame. Using the external and internal shame distinction, embarrassment could be understood as arising when there is external shame without internal shame but unlike with humiliation the individual is not publicly attacked. While the Diagnostic and Statistical Manual Fifth Edition (DSM-5) (APA, 2013) uses the term humiliation and embarrassment, shame is the emotion that is most commonly used in the literature and will be the term used in this review.

Before examining the literature on the link between social anxiety and shame, a brief summary will be given of the literature on social anxiety and on shame, including a growing body of biopsychological research.

6.3 Social anxiety

Individuals with social anxiety have an excessive fear of being appraised negatively in a range of social situations which may include meeting strangers, talking to people in authority or walking into a room when other people are already seated (Clark, 2005). Common concerns include the fear of appearing nervous, for example

sweating or shaking, and of being unacceptable or unlikeable. The individual will seek to manage or avoid their feared outcome by adopting certain behaviours or even avoiding the situation altogether. When not in a triggering social situation or with people they know well, the individual can usually be relaxed and unaffected by these problems.

The two main evidenced-based models of social anxiety agree that socially anxious individuals are overly self-conscious and have a negative interpretive bias driven by unhelpful schema about themselves and about evaluation by others (Clark & Wells, 1995; Rapee & Heimberg, 1997). The two models differ, however, in how they formulate vigilance to the external environment when social anxiety is triggered. The Clark and Wells' model (1995) hypothesises that attention to external cues is significantly depleted by self-consciousness and describes a focus on a negative self-image constructed from an observer perspective. Treatment therefore includes developing a more positive perspective of the self through video recording and playback with interventions to promote cognitive restructuring, attentional shifting and to address safety behaviours. The Rapee and Heimberg model (1997) also hypothesises that an internal self-representation draws attention but differs in proposing that attention is divided between the self and monitoring the external environment. Graded exposure to external threat cues is a key strategy in this treatment protocol with the addition of cognitive restructuring.

The argument has been put forward that social anxiety is adaptive in that sensitivity to negative evaluation drives both the monitoring of social interactions and the careful management of social behaviour to safeguard social connection and status (Silk, 2007; Baumeister & Leary 1995; Sapolsky, 2004). As Alden (2005, p.186) highlights, socially anxious individuals are not just motivated by the avoidance of social

threat but also seek connection with others, although they fear this will not be achieved. Empirical research supports the notion that affiliation and rank are important drives and are underpinned by identifiable biological and neurological systems and processes. Ruptures in social affiliations are associated with neural reactivity in limbic and cortical regions of the brain and studies suggest that the experiential impact of such ruptures overlaps with those of physical pain (Cristorfori et al., 2012; DeWall et al., 2012; Eisenberg, 2012). Neuroimaging studies also suggest that these regions are involved in the processing of social rank (Beaseley, Sabatinelli, & Obasi, 2012; Chiao et al., 2009). There is evidence for the role of the endocrine systems in monitoring and reacting to our social status (Archer, 2006; Sellers, Mehl, & Josephs, 2007). For example, baseline measures of oxytocin positively correlate with affiliation measured with self-report questionnaires (Feldman, 2012).

6.4 Shame

Anxiety and depression have monopolised cognitive behavioural research and clinical training for many years although, over the last two decades particularly, there has been a growing interest in the socio-evaluative emotions including shame. In a typical cognitive behavioural formulation, the focus on anxiety (fear), depression (sadness) and anger as problematic emotions may in part be attributed to their position as three of the six emotions traditionally labelled as basic emotions, the other three being commonly identified as happiness, disgust and surprise (Ekman, 1992). From a psychological perspective, a basic emotion is one that does not contain another emotion and is a fundamental building block for emotional experiences. In contrast, for example, contempt might be considered as a combination of anger and disgust.

Levenson, Eckman, and Friesen (1990) argue that basic emotions have distinct subjective experiences, cognitions and universal signals (e.g. such as facial expressions) that correlate with specific physiological states and also propose that these emotions are hard-wired with a distinct physiological and neurological profile. Gilbert (2007) and Tangney and Fischer (1995) see shame as a blend of basic emotions such as anxiety, anger and disgust with the self. So is shame a complex emotion or can it be viewed as a basic emotion that has been under-emphasised in our clinical understanding of some mental health problems?

To understand whether the concept of a basic emotion with a distinct neurobiological profile is valid, Celeghin, Diano, Bagnis, Viola, and Tamietto (2017) carried out a meta-analysis of studies examining the neurological and biological correlates of basic emotions. They found evidence for the general concept of basic emotions, particularly in examining studies of brain injury as these can indicate causation and not just correlation. Celeghin et al. conclude that the association between emotion and neurobiological response is complex with some overlap in the networks activated across emotions and suggest that neural structures can fulfil multiple functions.

There have been several studies that have looked at whether shame has a distinct neurobiological profile. Biondi and Picardi (1999) conclude from a review of research studies that the association between psychological stressors and activation of the hypothalamic-pituitary-adrenocortical (HPA) pathway which regulates the release of cortisol and manages the stress response, is inconclusive. Dickerson, Gruenwewald, and Kemeney (2004) point out that most of these studies failed to differentiate specific types of stressors and emotions with specific psychobiological responses. In a meta-analysis of 208 studies, Dickerson and Kemeney (2004) found that stressors involving

social evaluation and/or uncontrollable stressors elicited the largest cortisol activation and the longest recovery time. When social threat and uncontrollability are present together the largest effect is elicited. They argue that the experience of shame, with its associated bio-physiological response, is integral to a co-ordinated response to threats to the social self, just as fear and its physiological correlates are to threats to the physical self.

To examine levels of shame and anxiety in conditions of being evaluated, Dickerson Gruenwald, and Kemeney (2004) measured cortisol levels in saliva samples and measured shame using two self-report measures. Participants (N=81) were all undergraduate students and were randomly assigned to either give a speech or do a maths task, either unobserved or in front of an audience. There were no differences in the reported levels of difficulty or of anxiety measured by self-report questionnaires between the condition with the audience present and the one with no audience present. Significant higher levels of shame, however, were reported when there was an audience present which was also associated with significant increases in cortisol from pre- to post-task. The results of this study suggests that there is a specific biological response to the psychological stressor of having an audience present although the generalisability of the results are limited by the sample size and demographics of the participants.

Gruenwald, Kemeney, and Aziz (2006) examined subjective social status (SSS) among college students (N = 81) in small dormitory groups using a self-report social status questionnaire and looked at the association with cortisol reactivity when asked to perform stressor tasks of a speech and mental arithmetic in a laboratory. The hypothesis of the researchers was that under conditions of evaluation (audience condition), those reporting low SSS would have higher levels of cortisol and shame. No significant difference was found however between high and low SSS groups in cortisol response,

although both groups did have higher cortisol response when an audience was present. Both high and low SSS groups gave similar ratings for task difficulty and, had similar increase in anxiety in both conditions and both groups reported a greater increase in shame in the audience condition. This finding does provide support for an association between shame and cortisol release but not for a positive correlation between perceived social status and levels of shame and cortisol reactivity in conditions of socio-evaluative threat. There are some significant limitations to this study. A likely critical factor influencing the result is the situational nature of social status. In this study, status was measured in relation to a small stable social dormitory group but the tasks were performed with a different audience. The tasks may also not have been sufficiently stressful to differentiate between high and low groups across the measures and the laboratory conditions do not provide a naturalistic setting. Gruenwald et al. (2006) also point out that previous studies of social status have shown mixed results reflecting the complexity of this concept. For example, the perception of status among employed middle-aged adults may relate to a socio-economic grouping whilst among college students perceptions of status may be made with reference to more complex dimensions.

Dickerson, Kemeny, Aziz, Kim, and Fahey, (2004) investigated whether shame has a specific immunological response. Participants were recruited from undergraduate students and those with diagnosed medical or psychological issues were excluded. Participants were randomly assigned to either write about stressful social experiences involving self-blame over three separate days, the shame induction group (N = 31), or to write about neutral topics, the control group (N = 18). Shame, guilt, anxiety, depression and anger were measured by self-report questionnaires. The self-blame writing group reported greater increases in shame and guilt but not the control group The levels of shame reported in the self-blame group correlated positively with pro-inflammatory

cytokine activity which is an immunological response involved in the inflammatory reaction in response to trauma and pain. No such correlation was found for guilt or other emotions such as anxiety, anger or sadness suggesting there is a specific relationship between the physiological response and the experience of shame in response to a social stressor.

Several studies found that the experience of shame elicited by threats to social identity impacts on pro-inflammatory cytokine activity. Cole, Kemeny, and Taylor (1997) found that individuals who were particularly sensitive to rejection based on their homosexual identity showed a higher rate of HIV progression and faster times to AIDS diagnosis and death compared to those lower on this trait. A similar association was found between perceptions of rejection and immunological decline in a sample of HIV-positive women (Lewis, Kemeny, Myers, & Wyatt, 2004). Gruenewald et al. (2006) suggest that a heightened sensitivity to negative social evaluation is associated with physiological states that may have profound consequences for disease progression and mortality.

In addition to physiological correlates of shame there are also related behavioural responses. Gilbert (2000) highlights the association between shame and a strong urge to adopt a submissive profile which may involve averting eye gaze, a lowering posture and positioning oneself so as not to be noticed. Gilbert suggests that behaviours relating to feelings of shame are trying to limit damage in interpersonal relationships and not challenge dominant individual (Gilbert & McGuire, 1998; Keltner & Harker, 1998). Tangney, Wagner, Hill-Barlow, Marschall, and Gramzow (1996) found that, when recalling events linked to experiencing shame, individuals reported the urge to escape or avoid such as wanting to hide, disappear, and shrink.

Submissive behaviours are also characteristic of social anxiety. The social behaviours questionnaire (Clark et al., 1995), a psychometrically validated measure of responses related to social anxiety and developed to monitor change in clinical settings, includes many submissive behaviours e.g. A*void eye contact, Hide your face, Try not to attract attention, Talk less, Keep still, Stay on the edge of groups.* Several studies have found support for the view that the need to be accepted by the group, alongside the fear of competition, leads socially anxious individuals to adopt submissive behaviours (e.g. Aderka, Weismann, Shahar, & Gilboa-Schectmann, 2009; Weeks, Heimberg, & Heuer, 2011).

In summary, the findings presented so far suggest that shame can be seen as a basic emotion and as strongly related to socio-evaluative threat. Empirical studies also indicate that negative evaluation by others, i.e. a threat to the social self, has bio-behavioural correlates. These involve neuro-biological reactivity and behaviours similar to that relating to physical threat and anxiety, but also distinct in terms of aspects of the behavioural and psychobiological response.

6.5 The relationship between shame and social anxiety

Given that social anxiety is described as the excessive fear of negative evaluation and that submissive behaviours appear to be common to both social anxiety and shame, is there a role for shame in the formulation of social anxiety? Gilbert (2014, p.41) highlights that "the abilities to monitor and evaluate how we think we exist in the minds of others and to monitor and evaluate our own behaviours …are key to the experience of shame". As these processes are central to social anxiety, Gilbert comments that "it is surprising that these literatures have not been better linked together".

Before examining research into the relationship between shame and social anxiety it is important to note the difficulties that are common to these studies. The main studies are cross-sectional in design and use self-report questionnaires to assess participants on levels of social anxiety and shame and in some cases other variables such as submissive behaviours or other emotions. Cross-sectional studies can only identify correlations and not causal relationships. There is also some variability in the concepts being measured. Some measure external or internal shame, some measure both and some measure shame-proneness. The use of different questionnaires to measure the same concept also makes comparisons difficult.

There are only a small number of major studies that have looked at the relationship between shame and social anxiety. Gilbert (2000) in a study of a 109 psychology students found a positive correlation between shame and social anxiety. Fergus, Valentiner, McGrath, and Jencius (2010) found a positive correlation between internal shame and social anxiety but there was also a correlation with generalised anxiety disorder although not with other anxiety disorders. The authors also looked at guilt in relation to anxiety disorders and found no similar correlation. In any future study it would be informative if an external shame measure was used (i.e. perceptions relating to being judged negatively by others) as it would examine whether external shame differentiates between GAD and social anxiety, the expectation being that external shame would be strongly and differentially associated with social anxiety.

In a cross-sectional study, Zimmerman, Morrison, and Heimberg (2015) looked at whether shame was correlated with SAD and whether there was a mediating role for submissive behaviours (N = 88). Zimmerman et al. found a positive correlation for both men and women between social anxiety and shame and social anxiety and submissive behaviours. They found, however, a mediating role for submissive behaviours between

internal shame and social anxiety in men (N= 48) but not in women (40). Zimmerman et al. conclude that the stronger association between submissive behaviours and social anxiety in men reflects societal norms of such behaviours being perceived as less acceptable in men.

It is interesting to note that the behaviours included in the questionnaire used in the study (Submissive Behaviours Scale, Buss & Craik, 1985) includes verbal behaviours e.g. *I apologise repeatedly for minor mistakes* and *I agreed I was wrong even though I knew I wasn't*, as well as physical behaviours such as averting eye gaze and body posture or positioning. Further examination of whether there is a gender difference between the frequency of use of these two types of submissive behaviour (verbal and physical) would be helpful in evaluating whether the questionnaire is balanced appropriately in relation to gender. The limitations of this study includes the small sample size (N = 88), the generalisability of the results as all participants had clinical levels of social anxiety and only a measure of internal shame was used. The study included several ethnic groups with almost 40 % identifying as non-white or not Caucasian. Social norms may therefore vary significantly in this participant group in relation to socioeconomic profiles as well as ethnicity and culture.

In a small scale experimental design study with a clinical group with SAD (N= 67), Hedman Stom, Stunkel, and Mortberg (2013) found an association between social anxiety and internal shame. They found that a group successfully treated for social anxiety disorder (SAD) based on the Clark and Wells model (1995) had lower levels of internal shame pre- to post-treatment. A group with SAD when compared at pre-treatment to two control groups, had elevated levels of internal shame compared to only one of the non-clinical control groups. The difference in findings may be explained by the fact that the control group that showed no difference were practising psychologists

in training to be psychotherapists (no difference in shame measure) whilst the other group were students studying psychology (difference in shame measure). The trainee psychotherapists may have a greater awareness or sensitivity to negative self-evaluative thoughts than the group that were younger and had no clinical training. In addition this was a small study and internal shame only was measured so overall the results need to be viewed with caution.

In summary, there is little research examining the association between social anxiety and shame although studies that have been carried out suggest a positive association. Due to a variability in the measures used and the types of shame being assessed, there is a need for further research to both substantiate these finding and clarify the relationship between external and internal shame and social anxiety across clinical and non-clinical samples.

6.6 The role of trauma memories in social anxiety

Traumatic early experiences have been linked to social anxiety (Hackmann, Surawy, & Clark, 1998). Clark and Wells' model of social anxiety (1995) hypothesises that when social anxiety is triggered in social situations attention is turned inwards to engage with a constructed negative self-image which is seen from an observer perspective. Hackmann, Clark, and McManus (2000) in a qualitative study exploring the nature of these negative images, found that they are often recurrent images and link back to memories of distressing interpersonal experiences such as bullying or public criticism. The original cognitive therapy treatment developed in 1995 was updated in the light of the emerging evidence about the link between memories and current intrusive imagery in social anxiety. Wild, Hackmann, and Clark (2007) speculate that the better clinical outcomes for cognitive therapy over exposure therapy that were found

by Clark et al. (2006) were partly due to the adaptation to the protocol to incorporate appropriate interventions to address these memories when other core interventions did not achieve clinical change. In a randomised controlled trial (N = 62) cognitive therapy (CT) was compared to exposure-based treatment (EXP) with clients with social anxiety disorder (SAD). Post-treatment there was clinically significant change in 84% of CT clients and 78% at one year follow-up, and with the EXP clients, 42% post-treatment and 38% at one year follow up (Clark et al., 2006).

In summary, studies suggest there is sound evidence for the role of intrusive memories in the maintenance of social anxiety but what is meant by trauma memories and what is the link with shame? Trauma has been defined as "any experience that by its occurrence has threatened the health or well-being of the individual" (Brewin, 1996, p.675). As described previously, shame experiences can elicit a strong physiological reaction (Dickerson & Kemeny, 2004; Dickerson, Gruenewald, & Kemeny, 2004). The experience of fear is a reaction to physical threat and, in a similar way, shame is a reaction to a threat to the sense of self and one's status in a group. From an evolutionary psychology perspective, therefore, it is seen as important to survival (Gilbert, 2000).

Experiences that elicit a very high emotional reaction are stored in memory differently to normal autobiographical memories which are under conscious control (Brewin, Dalgleish, & Joseph, 1996). Highly distressing memories are situationally accessed and involve strong sensory images and emotional responses activated as part of the memory network. Their activation gives a sense of current threat, particularly when exposed to cues that match the original trauma (Ehlers & Clark, 2004). Memories involving shame can have the properties of traumatic memories resulting in hypervigilance, intrusive negative cognitions, avoidance and flashbacks (Matos & Pinto-Gouveia, 2009). Pinto-Gouveia and Matos (2011) looked at shame memories in a

general population (N = 811) and found that they were associated with current feelings of both internal and external shame in adulthood.

Early experiences such as bullying, emotional and physical abuse have been shown to play a role in the prediction of problematic levels of social anxiety. Kaipur and Rai (2013) in a study in India found that individuals with social anxiety reported greater experience of shame and reported more adverse childhood experiences within the family in terms of being rejected and criticised compared to a group with non-clinical levels of social anxiety. Shahar, Doron and Szepsenwol (2015) in a cross-sectional study among a non-clinical sample of 219 adults found that emotional abuse predicted shame-proneness, which in turn predicted self-criticism, which in turn predicted social anxiety symptoms. They note that shame-proneness alone also mediates between emotional abuse and social anxiety, and this is also the case for self-criticism. There are some limitations to these studies as they require the recall of events many years ago and there are problems in inferring causal links from cross-sectional design studies with self-report questionnaires.

Shahar et al. (2015) conclude that treatment for social anxiety, particularly for those individuals with a history of abuse, should include interventions specifically targeting shame and self-criticism. In treating social anxiety, Gilbert (2000; 2014) highlights the need to incorporate compassion techniques which were first developed for addressing shame and guilt arising from early traumatic experiences. There is evidence of the effectiveness of imagery rescripting of traumatic social memories in the cognitive treatment of social anxiety and it could be argued that these interventions are addressing shame implicitly but not explicitly. Traumatic events violate critical beliefs and assumptions (Ehlers & Clark, 2004) and these are hypothesised to include a range

of beliefs which may include beliefs about one's status in a social hierarchy (Brewin et al., 1996).

Imagery rescripting starts with identifying problematic beliefs that go with the distressing memory and how these might be restructured. The memory is then brought to mind as clearly and vividly as possible and the therapist guides the client through a process of looking at the memory from different perspectives that process the emotions arising and facilitate compassion. This involves developing understanding and support for the younger self in the image and linking more helpful beliefs to the image and memory (Wild & Clark, 2011). Social anxiety levels are reduced by processing the memory emotionally and developing a more adaptive perspective on the experience so that safety behaviours are dropped and functioning improves. Studies have highlighted the effectiveness of developing positive self-imagery (e.g. Stopa, Brown, & Hirsch, 2012; Wild, Hackmann & Clark, 2007; Meevissen, Peters, & Alberts, 2011).

The treatment protocol for social anxiety (Clark, 2005), however, does not refer to addressing shame-based memories. The list of problem–specific competences involved in the treatment only refers to addressing socially traumatic events and does not refer to these being memories involving shame (British Psychological Societies' Centre for Outcome Research and Effectiveness, 2007). Re-scripting of early memories are only recommended if core interventions in the protocol do not achieve clinically significant change. These core interventions include attentional shifting, cognitive restructuring of negative self-referential beliefs, including the viewing of a video playback of the client in a social interaction to restructure a negative image and also a series of behavioural experiments. The question of whether including shame explicitly in the current cognitive model would provide opportunities to improve the efficiency or effectiveness of treatment, will now be examined.

6.7 Clinical implications

Moscovitch (2009) and Shahar et al. (2015), in considering the formulation of social anxiety from a behavioural functional analysis perspective as adopted in the Rapee & Heimberg model (1997), argues that the excessive fear of negative evaluation in social anxiety, is not the feared stimulus but the feared consequence. Moscovitch suggests that the feared stimulus is the perceived negative aspects of the self and that shame is the emotion most strongly linked to this self-perception. He argues that anxiety is the dominant emotion in anticipation of a triggering social encounter, however, shame is the primary activated emotion when in the social encounter. Moscovitch also concludes that shame is dominant after the encounter where the socially anxious individual ruminates on, and analyses, their social performance leading to self-criticism.

How do these conclusions match with the Clark and Wells cognitive model (1995) and treatment approach? The cognitive model has a strong focus on the beliefs and assumptions through which the socially anxious individual makes sense of their experiences. These cognitions include negative self-referential unconditional beliefs such as I am inferior, along with assumptions and expectancies about the negative judgement and reaction of others e.g., *People will reject me,* and *I will babble or talk funny* (Clark, 2005*).* The construction of the self-image is understood as encapsulating these negative beliefs and it could be formulated as the key threat to the socially anxious individual. Moscovitch argues that a diminished sense of self elicits feelings of shame and triggers fears that personal deficiencies will be observed by others resulting in negative judgement. This is also reflected in the treatment protocol with the main interventions being to challenge the negative self–image and to restructure negative self-referential beliefs. Based on this analysis the difference in formulation and treatment approach between the Clark and Wells (1995) and Rapee and Heimberg

(1997) treatment approaches could be understood and summarised as one of targeting shame-related beliefs more directly in the cognitive model along with targeting anxiety, in comparison to an exposure-based treatment approach which addresses anxiety.

Acknowledging a role for shame in clinical treatment would start at assessment. The main social anxiety questionnaires used in the UK i.e. the Social Phobia Inventory (SPIN) (Connor et al., 2001) and the Leibowitz Social Anxiety Scale (LSAS) (Liebowitz, 1987) are made up of items relating to situational fear and avoidance, except for two out of 17 items in the SPIN which are phrased as fear of embarrassment. This appears to reflect the historical positioning of social anxiety as a phobia in diagnostic classifications and does not reflect research that indicates social anxiety is more complex. Current shame measures used in clinical practice have not been developed specifically for shame in social anxiety and have a number of limitations (Tangney, 1996; Gilbert, 1998). The Social Cognitions Questionnaire (SCQ) and the Social Behaviours Questionnaire (SBQ) (Clark, 2005) were developed to align with the cognitive model (Clark & Wells, 1995) and include cognitions and behaviours relating to the emotion of shame although this is not made explicit. The SCQ includes negative unconditional beliefs about the self which equates to internal shame e.g. *I am unlikeable*, and also items that are negative assumptions about the appraisal by others e.g. *People think I am boring* which relates to external shame. The SBQ includes behaviours which could be described as submissive with items such as *Try not to attract attention*, *Try to come across well* and *Avoid eye contact*.

As mentioned previously, cognitive therapy interventions are not labelled as addressing problematic shame however they do address shame-related cognitions and behaviours and the emotional experience of shame, both external and internal shame. Identifying shame and possibly other emotions such as humiliation and anger may be

important in helping the client understand what they are experiencing and refining interventions to improve treatment outcomes. Stopa, Brown, & Hirsch (2006) explain the effectiveness of imagery rescripting as reducing anxiety, however shifting attention from negative self-attributes is also likely to reduce levels of shame and further research on this as a measure of effectiveness would be beneficial in the development of treatment.

Gilbert (2010) highlights the importance of the therapist helping the client develop compassion towards the self in order to address problems with shame. Gilbert (2003) cautions that cognitive restructuring alone can be difficult in highly self-critical individuals who may have been exposed to heavy criticism as a child and find this attitude towards the self very difficult to give up. Gilbert (2003) highlights the importance in therapy of addressing the underling narrative of why the individual has such difficulties i.e. developing more helpful explanatory beliefs to facilitate a shift from shame to compassion. Wild et al. (2011) describe the rescripting approach adopted in their protocol as having several components including cognitive restructuring, repeated exposure to the traumatic memory and compassionate imagery. They hypothesise that all of these components are effective but suggest this needs to be established empirically with a component analysis study. If such a study included a validated measure of shame relevant to social anxiety this would also present an opportunity to look at whether imagery rescripting is targeting shame using a pre- and post-measure. It would also be helpful to differentiate between external and internal shame so that clinical interventions could be selected accordingly: external shame is likely to include behavioural experiments and exposure work to address the perceptions of other people, whereas internal shame may require a more complex approach to address self-identity and self–esteem.

6.8 Shame in the therapeutic relationship

A final but most important consideration is the impact of shame on the therapeutic relationship when working with social anxiety. It has been recognised that socially anxious individuals are reluctant to seek treatment (Clark et al., 2013, p.21). This has been attributed to both the nature of the difficulty i.e. a fear of negative evaluation particularly when meeting a stranger and also to a lack of awareness of social anxiety as a recognised mental health problem as opposed to a personality trait i.e. shyness. Understanding that a client with social anxiety is likely to experience shame is an important factor for a therapist to consider (Lee, Scragg & Turner, 2001). For example, in the assessment interview the therapist will be seeking information to develop the formulation with the client. This process of seeking disclosure of information is likely to activate strong feelings of shame in the client and such feelings may lead to a tendency to conceal and avoid (Gilbert, 2000).

Wilson, Drozdek, & Turkovic (2006) suggest shame may remain unidentified in an unconscious collusion with the patient as it is a discomforting emotion to observe. Lansky (2005) suggests that, as shame emphasizes weakness and suggests possible rejection, its acknowledgment can give rise to more shame. It may also fail to be addressed even if it is recognised in therapy (Lewis, 1971). Along with conveying positive regard and empathic understanding, a therapist acknowledging the difficulty of coming for psychological therapy and normalising the feelings of shame in the formulation of the problem, may be particularly helpful.

6.9 Conclusion

This review examined whether the evidence is sufficient to position shame as a central emotion in social anxiety. The conclusion from the analysis of the literature is

that shame, along with fear, has a central role in the phenomenology of social anxiety and that it should be regarded as a basic emotion with a distinct physiological profile.

In relation to the impact for clinical practice, the superior clinical outcomes for Clark and Wells' cognitive model (1995) over that of Rapee and Heimberg's model of exposure (1997) may be explained by its implicit focus on targeting shame as well as fear. Explicit recognition of the importance of shame, in at least some cases of social anxiety, may provide opportunities to improve clinical outcomes particularly if past traumatic events are identified. Addressing shame-based experiences and rescripting negative unconditional beliefs if indicated in the formulation, would ensure that the negative interpretive bias that maintains social anxiety is addressed comprehensively. The explicit acknowledgement and formulation of shame as well as anxiety may also enhance the client's sense of being understood and guide the therapist in the relationship with the client and in the planning of treatment.

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PART D: PROFESSIONAL PRACTICE

The assessment and formulation of a case of social anxiety