THE IMPACT OF BLUSHING PROPENSITY ON FUNCTIONAL IMPAIRMENT IN INDIVIDUALS WITH SOCIAL ANXIETY DISORDER

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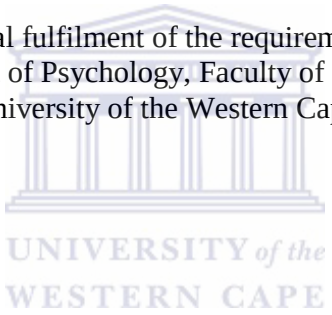

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Abstract

The propensity to blush is typical of many individuals with social anxiety disorder (SAD). SAD is also associated with significant disability or functional impairment. The relationship between SAD, blushing and functional impairment is still not completely understood however. This study has focused on the association between the propensity to blush and reported level of functional impairment due to SAD. Data from thirty-eight (n=38) individuals with SAD, were collected via a larger study conducted at the MRC Anxiety and Stress Disorders Unit. Assessment tools include the Structured Clinical Interview for Axis I disorders – Patient Version (SCID -I/P), Social Phobia Inventory (SPIN) and the Blushing Propensity Scale. Demographic and clinical data were gathered and reported on. Spearman rank order correlations were used to determine relationships between variables, including blushing propensity, disability and symptom severity. Results were reported on, and then discussed using the social attention theory. Limitations and recommendations were proposed in the final and concluding chapter. This study, as part of a larger study at the MRC Research Unit on Anxiety and Stress Disorders, has been approved by the Research Ethics Committee of the Faculty of Health Sciences of the University of Stellenbosch.

Keywords

social anxiety disorder

social phobia

severity

blushing propensity

disability

functional impairment

social attention theory

quantitative methodology

correlational analysis

mediation

DECLARATION

I declare that "*The Impact of Blushing Propensity on Functional Impairment in Individuals with Social Anxiety Disorder*" is my own work, that it has not been submitted before for any degree or examination in any other university, and that all the resources I have used or quoted have been indicate and acknowledged as complete references.

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Bryony Fell November 2011

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I would hereby like to thank all that provided me with support during this year.

I would like to dedicate this thesis to God, who is my pillar of strength no matter what - Matthew 19:26.

A huge thank you to my UWC supervisor, Umesh Bawa, for all his time, encouragement and his faith in me. Also a big thank you to my co-supervisor, Professor Christine Lochner, whose continual willingness to help at any time and critical writing skills were invaluable.

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Chapter 1: Introduction

Social anxiety disorder (SAD) is not only a common disorder (Stein & Stein, 2008; Schneier, Blanco, Antia & Liebowitz, 2002; Hidalgo, Barnett and Davidson, 2001), but it has been ranked as the third most common psychiatric disorder (Brunello, den Boer, Judd, Kasper, Kelsey, Lader, Lecrubier, Lepine, Lydiard, Medlewicz, Montgomery, Racagni, Stein & Wittchen, 2000) with a lifetime prevalence of up to 16% (Hidalgo et al 2001). Among all mental and physical conditions, SAD is ranked in the top ten chronic conditions (Stein & Stein, 2008).

Social Phobia or SAD is an excessive fear of one or more social or performance situations, such as meeting new people or speaking in public. The individual with SAD fears that under the scrutiny of others, they will act in an embarrassing or humiliating way (Sadock & Sadock, 2003). Symptoms of this disorder are often associated with excessive avoidance of social or possible scrutiny situations, including initiating a conversation, applying for a promotion at work or going on dates. These symptoms consequently cause significant impairment or disruption in daily functioning[1] (Schneier, Blanco, Antia & Liebowitz, 2002; Brunello et al., 2000), such as lower levels of educational achievement and school dropout (den Boer, 1995; Stein & Stein, 2008; Brunello et al., 2000; Hidalgo et al., 2001). There is also evidence for reduced occupational functioning (den Boer, 1995; Stein & Stein, 2008; Brunello et al., 2000;

[1] Impairment is defined by the Oxford Dictionary of Psychology (2006) as "any diminution in quality or strength; more specifically, any diminution in the quality or strength of physical or psychological functioning in some specified domain". The DSM-IV (APA, 2000) states the following, "…each of the mental disorders is…..associated with present distress (e.g., a painful symptom) or disability (i.e. impairment in one or more important areas of functioning) or with significantly increased risk of suffering death, pain, disability or important loss of freedom." Therefore, the terms "disability" and functional impairment" will be used interchangeably in this study.

Hidalgo et al., 2001), lower income (Schneier, Blanco, Antia & Liebowitz, 2002) and even unemployment (Brunello et al., 2000). Most notably, SAD sufferers struggle with personal relationships, (den Boer, 1997; Brunello et al., 2000) including family and partner relationships (Kessler, Berglund, Demler, Jin, Merikangas & Walters, 2005; Hidalgo et al., 2001), as the literature shows over half of individuals with SAD are single, divorced or separated (Brunello et al, 2000).

In addition to feeling extreme discomfort in social or performance situations and/or attempts at avoiding these, blushing is another of the key symptoms of SAD (Domschke, Stevens, Beck, Baffa, Hohoff, Beckert & Gerlach, 2009; Stein & Bouwer, 1997). Indeed, in comparing controls to SAD patients, the latter were found to be more prone to blushing (Domschke et al., 2009). Blushing can be defined as an involuntary or spontaneous reddening of the face, ears and neck (Domschke et al., 2009), caused by the dilation of small blood vessels which results in increased blood volumes to that particular area (Leary, Britt, Cutlip & Templeton, 1992). It is often accompanied by a feeling of warmth (Leary & Meadows, 1991; Stein & Bouwer, 1997) and is said to be caused by perceived social scrutiny or evaluation (Leary et al., 1992; Stein & Bouwer, 1997). In individuals with SAD, blushing may increase the extreme self-consciousness and the belief that he/she is being scrutinized, and may thus lead to further avoidance, withdrawal and impairment. Although much is known about SAD and its impact on people's lives today, there still is a paucity of data of the relationship between SAD, blushing and patients' disability.

1.1. Rationale

SAD only became an official disorder in the 1980s with the publication of the DSM-III (APA, 1980) and only a decade ago was still being termed "highly prevalent, [yet] neglected and trivialised for decades by society and science" (Hidalgo et al 2001) and more recently called a disorder "once largely neglected by the medical community, [coming] to the attention of the general medical community a decade ago, and…now garnering increased attention and recognition as a widespread, impairing, but treatable condition" (Brunello et al., 1996; Kessler et al., 2005; Stein & Stein, 2008). As noted previously, SAD is associated with significant disability in all, and blushing in some cases. The relationship between these variables remains incompletely understood however (Stein & Bouwer, 1997; Leary et al, 1992; Leary & Meadows, 1991).

1.2. Aims and Objectives

This study intends to provide further information on blushing in patients with SAD, by investigating the relationship between blushing propensity and functional impairment.

1.2.1. Objectives include:

i) determining blushing propensity in this sample of SAD sufferers

ii) investigating the association between blushing propensity and the level of reported functional impairment

1.3. Hypotheses

1. SAD sufferers have a propensity to blushing.
2. This propensity to blush is positively correlated with the functional impairment associated with SAD.

1.4. Significance of study

SAD is an important focus area in Psychiatry, due to its high prevalence, early age of onset, significant economic burden and associated functional impairment. The last decade or so has seen a steady increase in research focused on the clinical and other important aspects (genetics, brain imaging) of SAD. Until recently however, few studies have focused on blushing phenomenology in SAD specifically. Also, although much is known about the functional impairment associated with SAD in general, the relationship between blushing, functional impairment in particular, and SAD severity has not received much empirical attention. This study will add a valuable contribution to the current literature by elucidating the relationship between these aspects in patients with SAD.

1.5. Chapter Organisation

Chapter 1 is intended as a brief overview and introduction to the current study. It provides an introduction to the topic and the two focus areas with SAD, namely disability and blushing. Next, the rationale this study is presented and specific aims, objectives and hypotheses about the current study are set out. Lastly, the significance of the current study is presented.

Chapter 2 provides a review of the current literature consulted regarding SAD. Two specific relationships are discussed with regarded to this literature. First, literature linking SAD and the propensity to blush is reported on. Secondly, literature linking SAD and functional

impairment in the disorder is reported on. The aim of this review is to lead the reader to consider a third relationship, namely the connection between blushing and disability within SAD. Lastly, this chapter presents Halberstadt and Green's (1993) theory of social attention and will use this to frame the results.

Chapter 3 is a summary of the specific methodology employed with this study. The current study falls within a large study and therefore the design and a brief background of the larger study is presented. The specific research procedures, the analyses done and the ethical considerations are also discussed in this chapter.

Chapter 4 provides a report on the results of the analyses of the quantitative data obtained from the larger study. Data is organised into demographic variables, clinical variables, reliability analyses, correlational analyses and mediation analyses. Data is also presented in table format and the chapter is concluded with a brief summary of results.

Chapter 5 is the final chapter and aims to bring together the results and literature examined in an insightful discussion on the relationship between blushing and disability in SAD. The identified theory is used in an attempt to frame the results and add valuable information to the current understanding of SAD. Lastly, limitations of the study, as well as future directions for research, are presented.

Chapter 2: Literature Review

2.1 Introduction

This section will review the current understanding and conceptualisation of SAD in the literature, with a focus on two specific relationships. Firstly, this review will discuss the relationship between SAD and the propensity of individuals with SAD to blush. Secondly, the relationship between SAD and its associated functional impairment will be elucidated. This will provide the background to the present study aimed at addressing the possible relationship between blushing, functional impairment in particular, and SAD. Lastly, this review will frame a conceptualisation of SAD and its associated features within Halberstadt and Green's (1993) Social Attention Theory.

This review will lead towards the next section (results & discussion) and this study's current focus, namely a possible relationship between the propensity (of individuals with SAD) to blushing and the functional impairment associated with SAD.

2.2. SAD and the propensity to blush

SAD is primarily characterised by intense anxiety in social situations, which often manifests as a blush response (Stein & Bouwer, 1997). In addition to blushing, symptoms specific to SAD include sweating, stammering and twitching (Rapee & Heimberg, 1997), leading to much distress and impaired quality of life.

Certain individuals blush more than others, and of those, many intensely dislike their blushing. Individuals who suffer from SAD also frequently experience blushing, and often perceive their blushing as highly embarrassing and anxiety-provoking, especially in social

settings (Stein & Bouwer, 1997). As expected, blushing is thought to be a negative occurrence, especially as it is associated with negatively valenced emotions (Crozier, 2006). Even though those without SAD also hold the belief that blushing is a negative occurrence, individuals with SAD have a particularly negative perception of blushing, reportedly experiencing it as descriptive of their lack of worth and shame (Crozier, 2006). This increased negative perception of self in individuals with SAD who blush may arguably only serve to increase the already present functional impairment associated with SAD.

Of those that perceive blushing as a negative occurrence, some experience it as so aversive that they develop a phobia of blushing. Fear of blushing phobia is also an important concern in SAD, as individuals with SAD are vulnerable to developing this heightened awareness and a fear of blushing which may require specific treatment (Bögels, Alberts, & De Jong, 1996). Interestingly, an association has been found between a fear of blushing and the propensity to blushing (Mulkens, De Jong, & Bijgels, 1997).

Leary and Meadows (1991) developed the blushing propensity scale, a self-report tool measuring individual differences in the tendency to blush and the degree to which people blush in everyday social settings. To date, studies on blushing propensity have used self-report measures alone, implying subjective reporting rather than objectively observed propensity to blush (Mulkens, De Jong, & Bijgels, 1997). High self-reporting of blushing propensity may be understood in two ways. Firstly, it may be that individuals who report high blushing propensity do blush objectively more and may be vulnerable to developing blushing phobia. However, it may also be understood from a cognitive framework. Such a formulation would imply that those who report a high blushing propensity believe that their blushing is more intense, occurs more frequently and is more visible than in others, thereby experiencing

themselves as different and abnormal according to social standards. These types of beliefs or perceptions of the self as socially abnormal are typical of individuals with SAD (Voncken & Bögels, 2008). This may further increase the negative perception of blushing and create even more anxiety or distress for such individuals (Mulkens, De Jong, & Bijgels, 1997).

Blushing propensity appears to be highly correlated with fear or worry regarding how one is perceived or evaluated by other (Leary & Meadows, 1991). Those most concerned with how others' regard them are also those individuals most fearful of negative evaluation, most easily embarrassed and most often socially anxious (Edelmann. 1987; Leary, 1983c; Schlenker & Leary, 1982 in Leary & Meadows, 1991). Individuals with SAD are characterised by their social anxiety and fear of negative evaluation. Blushing has also been called the ''hallmark of embarrassment and a prominent symptom of social phobia'' (Gerlach, Wilhelm & Roth, 2003). Therefore, there is a strong case for a link between SAD and the propensity to blush. However, in caution, one must note that not all those who blush fulfil the diagnostic criteria for SAD.

In the last two decades, blushing has increasingly been studied and has been linked with SAD (Domschke et al., 2009; Stein & Bouwer, 1997). Further links have also been found between blushing and fear of negative evaluation, *embarrassability*, low self esteem, social avoidance and distress and heightened public self-consciousness or self-awareness (Leary & Meadows, 1991; Leary et al., 1992). Blushing has also been linked with awkwardness and shyness (Leary & Meadows, 1991), as well as acute sensitivity and shame regarding inadequacies in social situations (Crozier, 2001) – all of these associated features are also characteristic of SAD (APA, 2000). Interestingly, blushing also tends to occur in social situations and not

when these individuals are alone (Leary & Meadows, 1991) – a finding that again suggest a connection, or association between blushing and SAD.

Due to the early age of onset, high prevalence rates, economic burden and associated functional impairment or disability, SAD remains an important concern on many levels – societal but also personal. In terms of the latter, blushing, with its known links to SAD (Domschke et al., 2009; Stein & Bouwer, 1997), coupled with the perception that it is a negative occurrence (Crozier, 2006), may heighten the level of disability in individuals with SAD. Thus, investigating the relationship between the propensity to blush in patients with SAD and disability and would increase our understanding of this condition.

2.3. SAD and functional impairment

SAD is characteristically associated with functional impairment, noted by the requirement in the DSM-IV-TR (APA 2000) that there be significant functional impairment or distress in order for the diagnosis to be made. In this section, the literature on functional impairment in individuals with SAD will be reviewed.

In the present study, a self-report measure, the Sheehan Disability Scale, was used to assess the level of functional impairment. Despite the known limitations of self-reporting, it is important to look at the perceived level of functioning that an individual with SAD reports. Subjective well-being is a vital area of investigation in any condition, including SAD, as it is associated with functioning impairment in many domains such as education, occupation and in social areas (Safren et al, 1996/1997). A high level of functional impairment is likely to affect subjective feelings of well-being in individuals with SAD, with the likely outcome that self-appraisals are more negative. The level of perceived functional impairment is important

given its role in treatment compliance and response, as patients may perceive treatment outcomes based of subjective feelings of well-being, rather than symptom reduction (Safren, Heimberg, Brown & Holle, 1996/1997). However, current treatment approaches prioritise symptom reduction with little regard for reported level of functional impairment (Safren et al, 1996/1997).

Overall, patients with SAD experience impairment in SAD at school, at work and socially, Lader (1998) found that at least moderate impairment was experienced by all individuals with SAD at one point during the disorder. Wittchen and Beloch (1996) suggested that SAD symptom severity was found to generally peak in early adulthood, an important time when life decisions regarding education, career/occupation, friendships and partners (social) are made. Decisions made during this important stage of life may therefore be based on fear and anxiety, disabling the individual's ability to make the best choices based on their circumstances. Impaired decision making ability may lead to negative consequences later on, where the individual with SAD may experience lower quality of life and perhaps miss out on opportunities those without SAD may experience due to better decision making during early adulthood. The implication therefore is that subsequently associated functional impairment is higher, due to the impact of symptom severity peaking in early adulthood. This also has further implications, as poor choices may lead to negative consequences, lower quality of life and missed opportunities, therefore also increasing functional impairment. It may be that this has an impact of functional impairment across the lifespan of an individual with SAD.

Social impairment is most commonly noted in SAD. Lader (1998) reported that social impairment is a predictable feature of SAD, particularly because of the characteristic devaluation of their own abilities and performance in social settings. Most individuals

experience social interactions as positive events, an experience that is reinforced over time. However, in SAD, everyday social interactions are mostly experienced as aversive, which in turn is reinforced. This often leads to increased avoidance, whereby level of impairment may be subsequently increased (Safren et al, 1996/1997). Social impairment includes arenas such as dating, marriage and recreation (Lader, 1998), although individuals with SAD seem to report less impairment in family settings. Wittchen and Beloch (1996) also found that individuals with SAD had associated impairment in relationships, as there were less likely to be married and of those married, high rates of divorce existed. Interestingly, a study by Safren et al (1996/1997), marital status was found to be significantly related to quality of life (i.e. decreased functional impairment). The authors hypothesized that a spouse may be a source of support in social interactions, similar to a ‘’safe person’’ for an individual suffering from agoraphobia.

Educational impairment is often present, with difficulties such as truancy, lying, stealing and fighting during school years associated with individuals with SAD (Lader, 1998). Wittchen and Beloch (1996) also report high levels of school drop-out in individuals with SAD. Wittchen and Beloch (1996) found occupational impairment in individuals with SAD to be due to decreased work productivity and high rates of absenteeism. Individuals with SAD also commonly experience higher rates of unemployment (Wittchen & Beloch, 1996) and financial dependence (Safren et al, 1996/1997). Interestingly, of the economic burden of anxiety disorders, Wittchen and Beloch (1996) report that these costs were actually due to decreased or lack of productivity, rather than treatment costs.

Individuals with SAD not only experience functional impairment in educational, occupation and social arenas, but also experience impairment on a cognitive level. Anxiety disorders,

such as SAD, are thought to be maintained by specific cognitive biases. In SAD, distortions are specific to social settings and are thought not to occur in non-social settings. Interestingly though, a study by Voncken, Bögels & Peeters (2007) reports that similar cognitive biases seem to manifest in depression, a disorder often comorbid with SAD. These biases include self-blaming, negative self-perception, negative expectations of others' evaluations and self-criticism. However, these cognitive biases are not specific to social settings in depressive patients. Psychiatric comorbidity is typical of SAD. Lader (1998) reports that high levels of functional impairment tended to result in increased risk of comorbidity, often alcoholism or depression. Literature also shows increased rates of suicidal ideation (Safren et al, 1996/1997), although not significantly higher rates of attempted suicide in comparison to controls. Wittchen and Beloch (1996) report that of individuals with SAD, only one third received treatment. Treatment received consisted of predominantly pharmacological interventions, with psychologists being consulted by only 13.8% of those individuals who sought treatment. Despite the impairment in functioning, individuals with SAD were shown to respond well to cognitive-behavioural treatment (Safren et al, 1996/1997), which did lead to increased positive reports of well-being.

Individuals with SAD often worry about how they are perceived in social settings, for example, that they would appear nervous or behave in an inappropriate or awkward way. Individuals with SAD also struggle with distorted perceptions of how others evaluate them in social settings. Voncken and Bögels (2008) report on a study that found that and incongruence between how individuals with SAD perceive themselves and their beliefs about what others expect of them is part of the core of SAD. This implies that individuals with SAD believe that they are unable to meet others' expectations of them due to their distorted perception of how others are appraising them. In a study by Voncken and Bögels (2008),

they attempted to shed light on whether actual performance deficits existed in SAD, or whether SAD was due to cognitive distortions of social performance. Research has shown that SAD suffers do perceive their social performance in a distorted way (Voncken & Bögels, 2008). Coupled with these findings, however, is research showing that individuals with SAD do in fact perform more poorly in social settings than individuals without SAD (Voncken & Bögels, 2008).

Interestingly, Voncken and Bögels (2008) suggested that individuals with SAD may display actual performance deficits in terms of their social skills, for example during a conversation, due to the complex interpersonal behaviours required. These are the behaviours that individuals with SAD often struggle with (such as listening, responding, showing interest). Interpersonal deficits may result from poorer social knowledge due to avoidance and consequent less social experience. Individuals with SAD in general seem to have difficulty interacting with others and show impairment in terms of the social skills required for developing friendships, often leading to lack of close relationships and consequent social exposure, overall (Voncken, Bögels & Peeters, 2007).

2.4 Theoretical framework

The next section conceptualises SAD and its associated features within the Social Attention Theory of Halberstadt and Green (1993).

2.4.1 Social Attention Theory

Halberstadt and Green (1993) propose that in order for blushing to occur, some form of attention and affective state must be present prior to the blush response. Therefore, social attention theory highlights specific elements in social situations that elicit blushing, namely:

attention, often undesired, that one receives from others in a social situation (Halberstadt & Green, 1993), the resulting perceived focus on the individual, their behaviour, performance or identity (Leary et al., 1992) and lastly, the affective state the individual then experiences (Halberstadt & Green, 1993). This theory hypothesises that individuals who experience more social anxiety are more prone to blushing (Halberstadt & Green, 1993).

Evidence for social attention theory was found in a study (Halberstadt and Green, 1993), where blushing was found to correlate highly with *embarrassability* and interaction anxiousness. This is consistent with previous research (Leary et al, 1992; Leary & Meadows, 1991). Furthermore, Leary et al (1992) speculated that the finding that blushing only occurs in the presence of others, and is almost always accompanied by gaze aversion, supports the undesired social attention hypothesis. Gaze aversion is thought to be a way of 'disengaging' and providing the individual with some concealment. Halberstadt and Green (1993) continue on to say that 'the present relationship between blushing and concern about social attention was so large in magnitude', with the implication that blushing and SAD are clearly linked.

Social attention theory posits four elicitors of blushing. Firstly, blushing is elicited by threats to public identity. This is explained via the human need to maintain positive social standing; i.e. any perceived threats of negative evaluation are then said to cause a blush response (Leary et al, 1992). Secondly, praise or positive attention may also elicit blushing due to the realisation that one is actually being evaluated or a fear that the praise if unwarranted (Stein & Bouwer, 1997). Thirdly, scrutiny may cause blushing. This is thought to be due to simply being paid attention without any preceding negative event (Leary & Meadows, 1991). Lastly, blushing is also elicited by simply telling someone that they are blushing (Leary et al, 1992).

a. Threats to public identity

Human beings are said to have an inherent desire for social interaction (Leary & Meadows, 1991) and a need to maintain positive social standing. Therefore it is thought that much attention is directed towards how one is being evaluated or perceived (Leary et al, 1992), and negative evaluation is thus cause for concern to the individual (Stein & Bouwer, 1997). Any perceived 'threats' of negative evaluation are then said to cause a blush response to the felt anxiety (Leary & Meadows, 1991). Blushing indicates to others that the individual believes that he/she has behaved in an inappropriate, immoral incompetent or shameful way and has lost poise, which is thought to cause embarrassment. The embarrassing event, and resulting perceived threat to social identity, elicits blushing in a subconscious attempt to reduce the expected negative evaluation (Leary et al, 1992). In SAD, monitoring one's social standing or public identity is imperative. However, this process is distorted due to an individual with SAD's negative bias (Rapee & Heimberg, 1997), and it can therefore be speculated that individuals with SAD are more prone to blushing in circumstances where their social standing or public identity is perceived to be threatened.

b. Praise and other forms of positive attention

Blushing may occur when one is praised, complimented, honoured or even when being sung 'happy birthday' (Leary & Meadows, 1991). Various reasons have been offered for why positive attention cause blushing. These include a realization that one is actually being noticed, and perhaps evaluated, feeling self-conscious due to being elevated in status, fear of seeming arrogant or immodest, fear of responding ungraciously or without appreciation or even that the praise is unwarranted (Stein & Bouwer, 1997). Nevertheless, although blushing then occurs in a "positive" environment, the perception of the individual with SAD is still negative, i.e. one of being scrutinized or being "put on the spot".

c. Scrutiny

Indeed, simply being paid attention, without any preceding negative event, may cause blushing. This attention may cause anxiety to patients with SAD due to their concern about how they are being evaluated and fears about being found inadequate (Stein & Bouwer, 1997). Other explanations may be discomfort with authority figures (feeling evaluated by the "boss" or superiors) or audiences (Leary & Meadows, 1991). Staring from others may also cause blushing, as it is often understood to be threatening or scrutinising, causing the individual to experience negative affect and desire escape (Leary et al, 1992).

A portion of the population (non-SAD as well) blush simply when exposed to routine experiences. These people may be very sensitive and chronically fear evaluation or rejection, to the point where they avoid social situations (Leary & Meadows, 1991). Compared to patients with other mental disorders and healthy controls, SAD patients typically report these cognitions and emotions, and reports fearing negative evaluation the most of all (Rapee & Heimberg, 1997).

d. Accusations of blushing

Blushing is also elicited by simply telling someone that they are blushing. This may be because the individual with SAD then realizes that he/she has been noticed, and subsequently experiences the fear of scrutiny or negative evaluation, and an inability to "conceal" their perceived inadequacies. This may *feed* into their high *embarrassability* (see above sections) and may lead to actual blushing or increased blushing. This is consistent with the theory that when blushing is pointed out, perceived undesired social attention – and thus anxiety or even social avoidance behaviours - increases (Leary et al, 1992).

2.5 Conclusion

In summary, this section focused on the current conceptualisation of SAD in the literature. Firstly, the characteristics of SAD, a disorder characterised by intense anxiety in social situations, was discussed. Blushing was highlighted as one of the many distressing physical manifestations of this condition. The positive correlation between SAD severity and blushing was noted. The significant link between SAD and blushing was explained using the Social Attention Theory (Halberstadt and Green, 1993) and supporting studies done over the last 2 decades.

Secondly, the functional impairment associated with SAD (and blushing) was reviewed. The extreme functional impairment experienced at school, at work and socially - often associated with poor self-esteem, excessive avoidance and distress, and increased psychiatric comorbidity, in individuals with social anxiety – were highlighted.

The present study will attempt to further elucidate the associations between blushing, functional impairment in particular, and illness severity, in a sample of patients with a primary diagnosis of SAD.

Chapter 3: Methodology

This study is quantitative in nature, with a focus on examining a possible association between blushing propensity and functional impairment in patients with SAD. Study results are intended to be the beginnings of exploration into the relationship between SAD, blushing/blushing propensity and functional impairment.

3.1 Research Design

This study made use of secondary data from a larger study run by the MRC Unit on Anxiety & Stress disorders at Stellenbosch University. The larger study is entitled "Genetics of Anxiety Disorders" and focuses on the clinical characteristics and genetic underpinnings of the obsessive-compulsive spectrum and anxiety disorders. This study includes the following disorders: obsessive-compulsive disorder (OCD), Tourette's disorder and trichotillomania (i.e. some obsessive-compulsive spectrum disorders), as well as panic disorder with/out agoraphobia, SAD and posttraumatic stress disorder.

The larger study primarily aims to determine whether anxiety disorders are familial, and to examine heritability by identifying specific genes involved in the development of each of the abovementioned disorders. It also aims to shed light on specific neurobiological mechanisms that play a role in the aetiology of these disorders, in order to inform prevention and treatment approaches. On a secondary level, this larger genetics study is also investigating the contribution of specific demographic and clinical variables to the heterogeneity of these disorders. Investigated variables include age of onset of the main or primary disorder, treatment response (to both pharmacotherapy and cognitive-behavioural therapy), psychiatric

comorbidity, personality features, medical conditions and family psychiatric history. Furthermore, the larger study intends to study the associations between etiological factors (clinical and genetic), phenomenology and outcome of these disorders.

Since initiation of the project, numerous publications have emerged on clinical and genetic correlates of the above-mentioned anxiety and OCD spectrum disorders. Specifically with regard to SAD, two important articles have been published from this study in recent years, one regarding genetic and personality traits in patients with SAD (Lochner, Hemmings, Seedat, Kinnear, Schoeman, Annerbrink, Olson, Eriksson, Moolman-Smook, Allgulander & Stein, 2007) and another on a comparison on quality of life in obsessive-compulsive disorder (OCD), panic disorder and SAD (Lochner, Mogotsi, du Toit, Kaminer, Niehaus & Stein, 2003). Findings from the first collaborative paper, between researchers from the MRC Unit on Anxiety and Stress Disorders in South Africa and the Karolinska Institute in Sweden, suggested increased harm avoidance and decreased novelty seeking and self-directedness in SAD patients compared to controls. Study findings also suggested a possible role for the *5-HT_{2A} T102C* polymorphism in the development of SAD. They concluded that to date genetic findings in SAD have been inconsistent but that serotonergic variants, and their associations with temperament traits (e.g. reward dependence) deserve further exploration, in the hope that endophenotypes relevant to SAD can ultimately be delineated. The latter article, another study done as part of the collaborative project between South Africa and Sweden focusing on genetic and environmental factors contributing to anxiety disorders, focused on rates of childhood trauma in SAD and panic disorder patients. Findings suggested that the SA patients showed higher levels of childhood trauma than their Swedish counterparts. When data from both countries were combined, SAD patients reported higher rates of childhood emotional abuse compared to those with PD. Interestingly, emotional abuse in childhood was

found to play a predictive role in SAD/PD in adulthood in the Swedish and the combined samples, and the same trend was found in the SA sample. Both these papers contributed to the relative paucity of literature on the etiology of SAD (and PD).

The current study has drawn data from the above-mentioned larger genetics study. More specifically, clinical data from SAD patients (irrespective of type, i.e. both generalized and specific SAD)) were extracted for use in the proposed analyses. Data pertaining to SAD severity, functional impairment due to SAD and blushing propensity in SAD were investigated. This data has allowed the researcher to investigate SAD separately, as contrasted with the primary aim of the larger genetics study, which focused on the clinical variables and neurobiological mechanisms involved in the aetiology of a whole group of anxiety and OCD spectrum disorders. The current study is motivated by the paucity of knowledge regarding the seemingly intricate relationship between blushing, illness severity and functional impairment in individuals with SAD.

3.2 Participants

Adult patients (older than 18 years) with a primary diagnosis of SAD (both the generalised and specific type), were included in this study (n=38). Demographic data will be presented in the following chapter regarding results.

3.3 Procedures

3.3.1 Participant selection:

Participants were recruited countrywide by advertisements in the media and recruitment calls to psychiatrists and psychologists, primary care practitioners, and advocacy groups like the

South African Depression and Anxiety Group (SADAG). Advertisements requested potential participants to contact study personnel if they had a primary diagnosis of SAD or suspected that they may be suffering from SAD. A confidential telephonic screening interview was then administered by the incumbent and previous research assistants to Professor Lochner to determine whether an individual could be included in the larger study based on a set of specific inclusion and exclusion criteria. These were as follows:

a) Criteria for inclusion:

- participants younger than 18 years were included only if they gave assent and their parents or caregivers gave written consent for their participation
- participants with a primary DSM-IV diagnosis of SAD (generalised or specific type)
- participants should sign the informed consent form
- participants voluntarily comply with study procedures

b) Criteria requiring exclusion from the study:

- presence of another primary Axis I disorder (assessed with SCID-I/P)
- presence of psychosis
- if individuals did not sufficiently understand the study aims and procedures
- if individuals did not sign the informed consent form

3.3.2. Interview:

If individuals were included in the study after the above-mentioned initial selection procedure, they were invited to participate in the study. Participation involved a once-off assessment at the MRC Unit on Anxiety & Stress Disorders, or other temporary offices in

Gauteng, Bloemfontein and Kwazulu-Natal rented for these purposes. An experienced clinical psychologist or other clinician with relevant expertise (employed by the MRC Unit on Anxiety & Stress Disorders) administered a once-off semi structured interview, lasting approximately 3-5 hours. Data collected included demographic information such as gender, age, ethnicity, highest educational level and current employment status. Further clinical information collected were age of onset (of their SAD), psychiatric comorbidity, family psychiatric history, medical history and treatment history were also gathered. Rating scales, including those specific to the current study, were administered both during the interview and in self-report format and are described in 3.3.3 below. Self-report questionnaires are given to the participant after the interview and are completed at home. Questionnaires are returned to the MRC Unit on Anxiety & Stress Disorders once completed.

3.3.3. Rating Scales

For the purposes of this current study, data from specific rating scales were extracted from the original data set of the larger genetics study. There are data from four scales that were included in the current data set. Data pertaining to the study included diagnostic information (Axis I and II), the severity of the primary disorder (SAD in particular), the degree of blushing propensity and the degree of functional impairment experienced by the individual, due to SAD specifically.

The Structured Clinical Interview for Axis I – Patient Version (SCID-I/P) provided information regarding the participants' primary diagnosis (in this study's sample – SAD) and their specific symptoms. The Social Phobia Inventory (SPIN) provided information regarding the severity of the disorder (SAD). The Blushing Propensity Scale (BPS) provided information on each SAD sufferer's (in this sample) propensity to blush. Lastly, the Sheehan

Disability Scale (SDS) provided information regarding functional impairment associated with the participant's SAD. These questionnaires will be discussed in more detail below.

a) SCID-I/P

The SCID-I/P was used to assess participants' primary DSM-IV diagnosis. Selected parts of the Structured Clinical Interview for Axis II Disorders – Patient Version (SCID-II/P) were used to assess for psychiatric comorbidity (First, Gibbon, Spitzer, Williams & Benjamin, 1994). Both of these diagnostic tools (SCID-I/P and SCIP-II/P) have a high degree of validity (First et al, 1994; First, Spitzer, Gibbon & Williams, 1995) and are used frequently in the research field of psychiatry.

b) SPIN

The severity of the participants' SAD symptomatology was assessed using the Social Phobia Inventory (SPIN) (reference here). The SPIN is a self-report measure with 17 items, requiring the individual to rate each item on a scale from 0 to 4 (4 being the highest level of distress), with a maximum score of 68 (minimum 0). Questions cover three dimensions, which include fear, avoidance and physiological discomfort. This scale was originally developed by Connor, Davidson, Churchill, Sherwood, Weisler and Foa (2000). The reliability was found to be good, with strong internal consistency ranging between 0.87 - 0.94. Good construct validity was shown, with a diagnostic accuracy of 79%, as well as good convergent ($P < 0.0001$) and divergent ($P < 0.03$) validity (reference here).

c) BPS

A second self-report measure, the BPS, was used to assess blushing propensity and provided information vital to the current study. This self-rating questionnaire was developed by Leary

and Meadows (1991) and sets out fourteen different social situations in which the participant is asked to rate their propensity to blush (measured on a five point Likert scale: 0 – never, 5 – always). Leary and Meadows (1991) developed this scale as there was no existing scale measuring blushing propensity at the time. They aimed to develop a scale that could assist in investigating predictors of blushing propensity. They also intended for the scale to be able to provide information about the blushing experience. These scale developers suggested that blushing propensity is associated with social relationships and the importance placed on them; therefore, the BPS seem particularly appropriate for use in a sample of SAD patients.

Regarding psychometric properties, high internal consistency was found for all 14 items and Cronbach's alpha coefficient was 0.86. Strong evidence was also found for construct validity (Leary & Meadows, 1991).

d) SDS

The third self-report measure, the SDS, was used to assess the level of functional impairment due to SAD in individuals presenting with a primary diagnosis of SAD. Three levels of current functional impairment or disability are assessed, namely work, social and family life, via a self-rating scale from 0 to 10. A study by Hambrick, Turk, Heimberg, Scheier & Liebowitz (2004) reports reliability of the measure to be reasonable (Cronbach's alpha = 0.55). Hambrick et al (2004) found good validity as evidenced by strong relationships between the SDS and two other well-known disability measures, i.e. Liebowitz Self-Rated Disability Scale and the clinician-rated Disability Profile.

3.4. Statistical Analysis

Descriptive statistical analyses were carried out in order to provide information on demographic (i.e. age, gender) and clinical (including age of onset of SAD, SAD severity, blushing propensity, functional impairment) variables. Spearman correlations were used to determine the existence (and direction) of significant associations between SAD severity and functional impairment in SAD, blushing propensity and SAD severity, and blushing propensity and functional impairment. Regression analyses were then carried out to determine the contribution of blushing propensity (independent variable) to functional impairment associated with SAD (the dependent variable). A Sobel test was performed to investigate the potential mediating role of SAD severity.

Cronbach's alpha, a coefficient of reliability, was also calculated for the items of each of the 3 self-report rating scales. Cronbach's alpha will generally increase as the intercorrelations among scale items increase. Because intercorrelations among scale items are maximized when all items measure the same construct, Cronbach's alpha is widely believed to indirectly indicate the degree to which a set of items measures a single unidimensional latent construct (such as functional impairment or propensity to blush) (Cronbach, 1951). Adequate Cronbach alphas for questionnaire items would thus be important in drawing conclusions from data obtained with these questionnaires,

p-values smaller than 0.05 were considered to be significant with *p*-values between 0.05 and 0.085 considered as trends towards significance.

The statistical packages SPSS and Statistica were used to perform the analyses.

3.5. Ethical Considerations

All potential participants were presented with a complete written description of the study. In addition, study procedures were also verbally explained to each participant by the interviewer, with the opportunity to ask questions. Once everything was clear to participants, they were required to sign the informed consent from. Participants were informed of the confidentiality of data, notwithstanding any publications, and that all identifying information would be anonymised. Only relevant personnel, including the incumbent, are permitted to access this data. Participants were also informed that they would not be disadvantaged in any way should they withdraw from the study. If it was requested, participants were reimbursed for travel expenses. Treatment options were also discussed with participants and referrals were made if necessary. The Research Ethics Committee of the Faculty of Health Sciences of the University of Stellenbosch has approved the study protocol and patient information on consent forms on an annual basis. The guidelines of the International Conference on Harmonisation Good Clinical Practice Guidelines (ICH/GCP, 1996), The Declaration of Helsinki (Edinburgh, 2000) and the Medical Research Council of South Africa's guidelines (2002) on the ethical conduct of research in humans have all been adhered to in this study.

3.6. Conclusion

In conclusion, this chapter has demonstrated the research methodology of this study. The following chapter will provide a report of the results generated in this study.

Chapter 4: Results

4.1 Introduction

This section will present the results of the data analyses in the following order. First, demographic variables and clinical variables of the sample will be reported. Secondly, reliability analyses performed will be reported on for all three rating scales (BPS, SDS, and SPIN) used in this study. Thirdly, all correlational analyses performed between all three variables (blushing propensity, disability in SAD, SAD severity) in this study will be reported on. Lastly, the mediation analyses (done by means of a Sobel test) will be reported on.

4.2 Demographic Variables

This sample consisted of 38 adult participants, all with a primary DSM-IV diagnosis of SAD. Demographically, the sample was made up of 24 males and 14 females. The mean age of onset of SAD was 15 (SD: 9), ranging from age 3 to 41. According to population groups, 19 participants were white South African Afrikaans speaking, 12 were white South African English speaking, 5 were coloured South African and 2 were from other population groups. Further demographics of this sample include the mean age at the time of the interview, which was 36 (SD: 12), ranging from age 18 to 62. Educationally, 14 participants' highest qualification was grade 11-12, for another 13 it was university, with another 8 having been at college (3 other). Occupationally, 10 reported professional employment, 8 reported being employed in sales, admin or clerical position and 6 reported being a student (10 other). 10.5% of the sample (4 participants) was unemployed at the time of the interview.

4.3 Clinical Variables

Figure 1 (see below) provides a summary of the clinical variables in the current study. Results for all three ratings scales are reported in the table. The first scale, the Social Phobia Inventory (SPIN), has a maximum score of 68 and was used to assess symptom severity in the sample. The second scale, the Blushing Propensity Scale (BPS), has a maximum score of 70 and was used to assess the propensity to blush in this sample of SAD sufferers. The third scale, the Sheehan Disability Scale (SDS), is an instrument that measures functional impairment. It provides four scores – a total (maximum score is 30) and three subscale totals (maximum score on each is 10). Each subscale assesses a different area of impairment – namely ‘’work’’, ‘’social life’’ and ‘’family life/home responsibilities’’.

Figure 1: Clinical Variables

	SPIN Total	**BPS Total**	**SDS Work**	**SDS Social**	**SDS Family**	**SDS Total**
Mean	43.8947	49.1316	4.4474	7.0526	4.2105	15.7105
Std. Deviation	10.06409	11.34036	2.84460	2.58841	2.96062	6.62472
Minimum	17.00	25.00	.00	1.00	.00	3.00
Maximum	68.00	66.00	10.00	10.00	9.00	28.00

4.4. Reliability

Data analyses in this study began with the testing of the reliability of each of the three rating scales (Social Phobia Inventory – SPIN, Blushing Propensity Scale – BPS and Sheehan

Disability Scale – SDS). The rationale for reliability[1] testing of each of these scales was to ensure that each of these instruments had provided accurate information from this sample. For this purpose, Cronbach's Alpha was used to calculate the internal consistency of each item of a particular scale, in order to determine whether all items where relevant within a scale.

The reliability analyses of the Blushing Propensity scale (BPS) are shown in figure 2 (see table below). These results indicate that the reliability of the Blushing Propensity scale is good, and that data gathered from this sample regarding blushing propensity is accurate.

Figure 2 - Blushing Propensity Scale (BPS)

variable	Summary for scale: Mean=49.1316 Std.Dv.=11.3404 Vali Cronbach alpha: .913619 Standardized alpha: .914773 Average inter-item corr.: .443000				
	Mean if deleted	Var. if deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
bps_1	45.39474	108.7126	10.42653	0.611123	0.908109
bps_2	46.00000	107.3158	10.35933	0.664894	0.906087
bps_3	44.86842	110.2721	10.50105	0.670480	0.906451
bps_4	46.28947	107.6267	10.37433	0.675659	0.905728
bps_5	44.86842	107.8511	10.38514	0.695218	0.905123
bps_6	44.86842	112.4827	10.60579	0.618065	0.908406
bps_7	45.21053	112.1136	10.58837	0.448656	0.914288
bps_8	46.05263	105.1025	10.25195	0.700747	0.904638
bps_9	46.13158	105.5353	10.27304	0.701281	0.904625
bps_10	45.05263	107.7341	10.37950	0.630299	0.907416
bps_11	46.57895	106.7701	10.33296	0.680988	0.905462
bps_12	46.34211	107.4882	10.36765	0.643726	0.906895
bps_13	44.94737	112.2604	10.59530	0.534275	0.910686
bps_14	46.10526	110.3573	10.50511	0.519427	0.911652

[1] Reliability assesses the consistency with which the instrument measures a construct (Foxcroft & Roodt, 2005)

Regarding the Sheehan Disability Scale (SDS), results of the reliability analysis are shown in figure 3 (see table below). These results also indicate that the reliability of the Sheehan Disability Scale is good, and that data gathered from this sample regarding disability is accurate.

Figure 3 - Sheehan Disability Scale (SDS)

variable	Summary for scale: Mean=15.7105 Std.Dv.=6.62472 Vali Cronbach alpha: .694855 Standardized alpha: .693922 Average inter-item corr.: .434979				
	Mean if deleted	Var. if deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
sh_w	11.26316	22.82548	4.777602	0.448448	0.680582
sh_s	8.65789	24.17244	4.916547	0.479237	0.641971
sh_f	11.50000	18.67105	4.321002	0.614981	0.457253

The Social Phobia Inventory (SPIN) was also analysed for reliability, although results were dissimilar to the first two rating scales. The results are summarised in figure 4 (see table below). The scale was found to be less reliable and less able to report accurately on symptom severity (social phobia/social anxiety disorder symptoms). In particular, item 17, which asks participants to rate the severity of their distress regarding trembling or shaking, was not found to be a reliable item of this rating scale and did not correlate highly with other items within this scale.

Figure 4 - Social Phobia Inventory (SPIN)

variable	Summary for scale: Mean=43.8947 Std.Dv.=10.0641 Vali Cronbach alpha: .819183 Standardized alpha: .820963 Average inter-item corr.: .220891 Mean if deleted	Var. if deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
spin1	41.71053	88.36358	9.400190	0.427295	0.809198
spin2	41.65789	88.38297	9.401221	0.354900	0.814068
spin3	41.07895	84.49377	9.192049	0.609627	0.798070
spin4	41.60526	88.02840	9.382345	0.410908	0.810164
spin5	40.92105	88.59902	9.412705	0.457497	0.807747
spin6	40.65789	94.75139	9.734033	0.230120	0.818603
spin7	42.00000	84.21052	9.176629	0.471651	0.806456
spin8	41.44737	88.03671	9.382788	0.393427	0.811330
spin9	40.65789	91.75139	9.578694	0.301742	0.815999
spin10	41.86842	86.64058	9.308092	0.481612	0.805783
spin11	40.44737	91.77354	9.579851	0.319909	0.814997
spin12	41.26316	87.03602	9.329309	0.463301	0.806925
spin13	42.00000	84.63158	9.199542	0.562942	0.800454
spin14	41.05263	87.47092	9.352589	0.452290	0.807643
spin15	40.76316	87.97021	9.379244	0.511671	0.805057
spin16	41.81579	85.41343	9.241939	0.542623	0.801965
spin17	41.36842	94.33794	9.712772	0.093440	0.831979

4.5. Correlational Analyses

4.5.1 Relationship between blushing propensity and disability

The data from the Blushing Propensity Scale (BPS) and the Sheehan Disability Scale (SDS) were used in correlational analyses in order to investigate the relationship between blushing propensity and disability in social anxiety disorder. Four correlational analyses were done, namely; 1) between the total score of the BPS and the total score of the SDS (see figure 5), 2) between the total score of the BPS and the ‘’work subscale’’ of the SDS (see figure 6), 3) between the total score of the BPS and the ‘’social life subscale’’ of the SDS (see figure 7), and 4) between the total score of the BPS and the ‘’family life/home responsibilities subscale’’ of the SDS (see figure 8).

Figure 5 - BPS & SDS (Total)

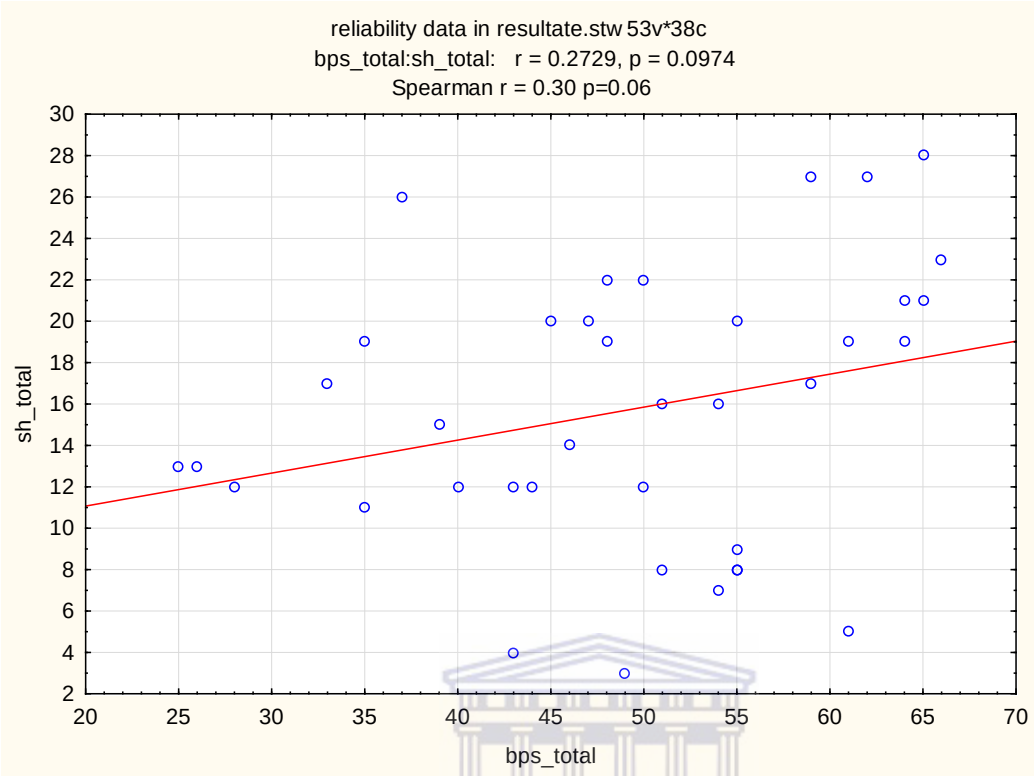


Figure 6 - BPS & SDS (Work)

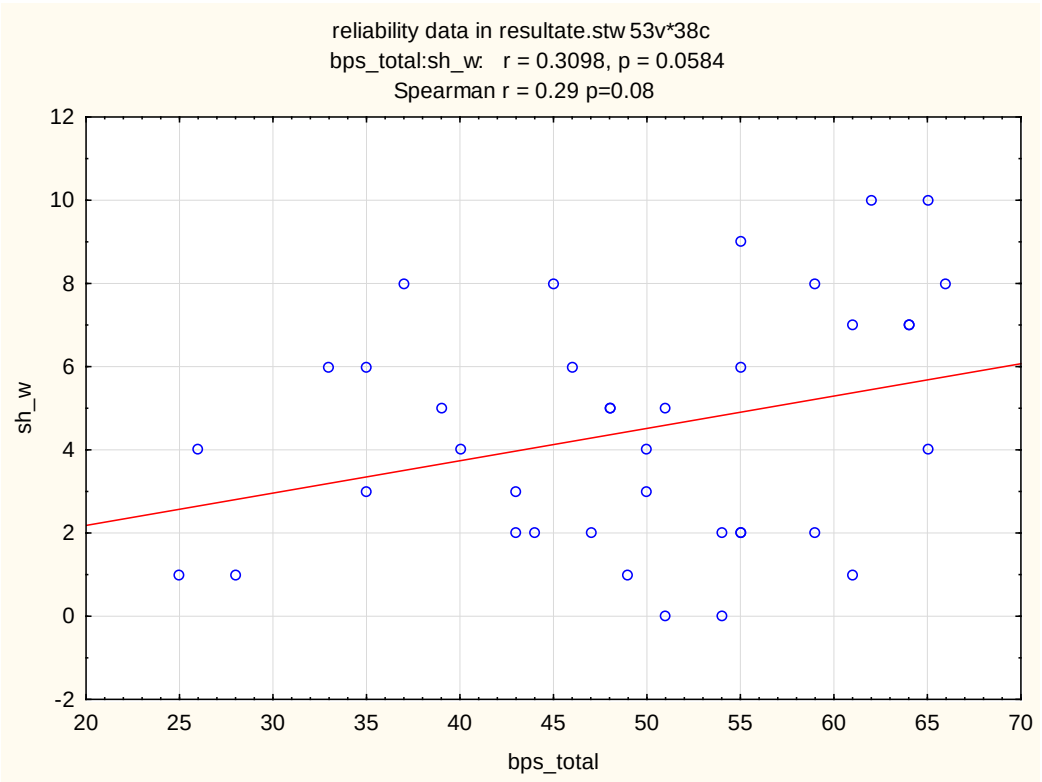


Figure 7 - BPS & SDS (Social)

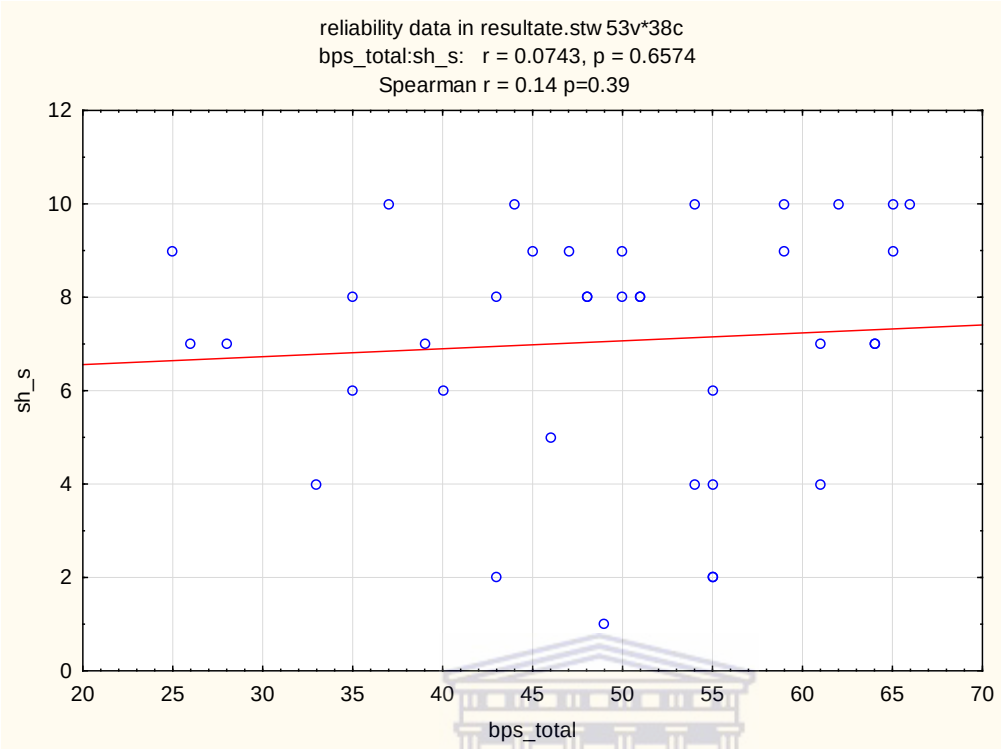
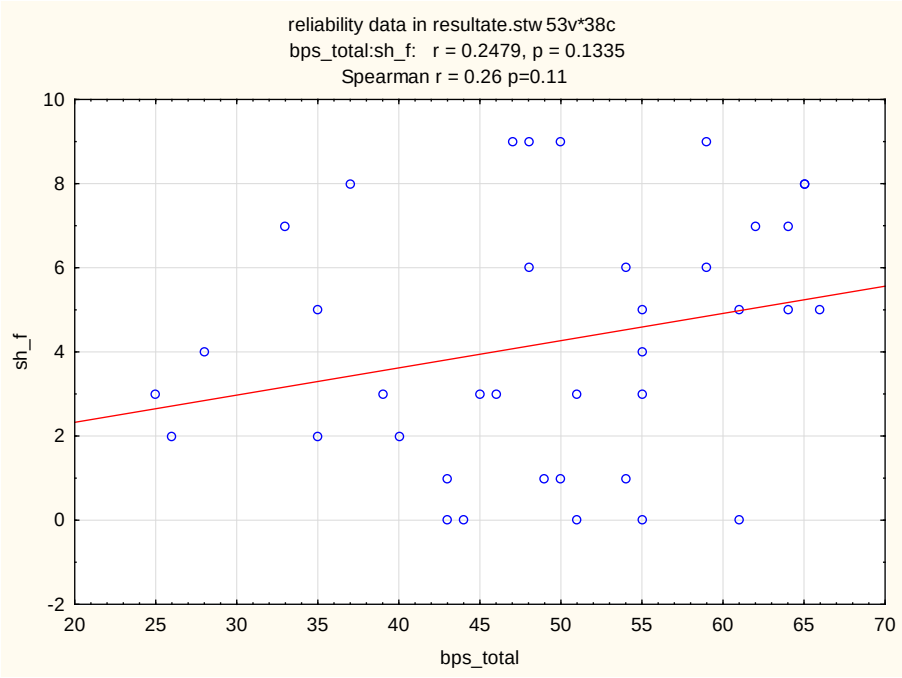


Figure 8 - BPS & SDS (Family)



In summary, the Blushing Propensity Scale total is not significant correlated with the subscales of the Sheehan Disability Scale. However, there is a tendency towards a significant correlation between the Blushing Propensity Scale Total score and the Sheehan Disability Scale Total score (r=0.3, p=0.06).

4.5.2 Relationship between severity of social anxiety disorder and disability

The data from the Social Phobia Inventory (SPIN) and the Sheehan Disability Scale (SDS) were used in correlational analyses in order to investigate the relationship between severity and disability in social anxiety disorder. Four correlational analyses were done, namely; 1) between the total score of the SPIN and the total score of the SDS (see figure 9), 2) between the total score of the SPIN and the ‘’work subscale’’ of the SDS (see figure 10), 3) between the total score of the SPIN and the ‘’social life subscale’’ of the SDS (see figure 11), and 4) between the total score of the SPIN and the ‘’family life/home responsibilities subscale’’ of the SDS (see figure 12).

Figure 9 - SPIN & SDS (Total)

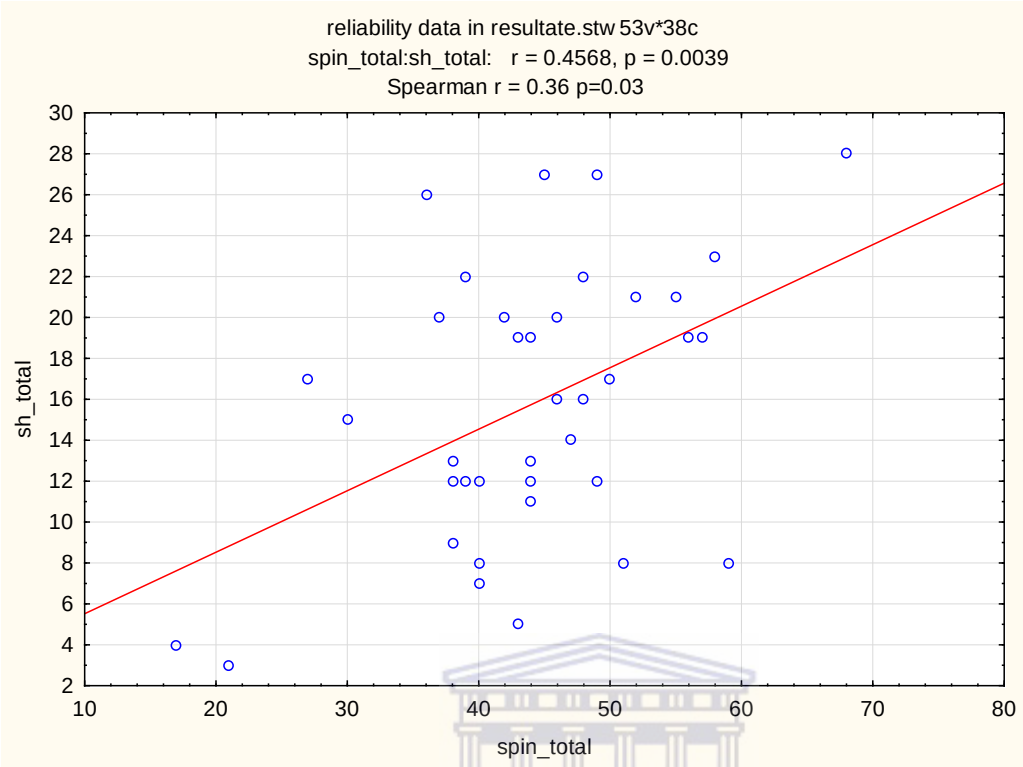


Figure 10 - SPIN & SDS (Work)

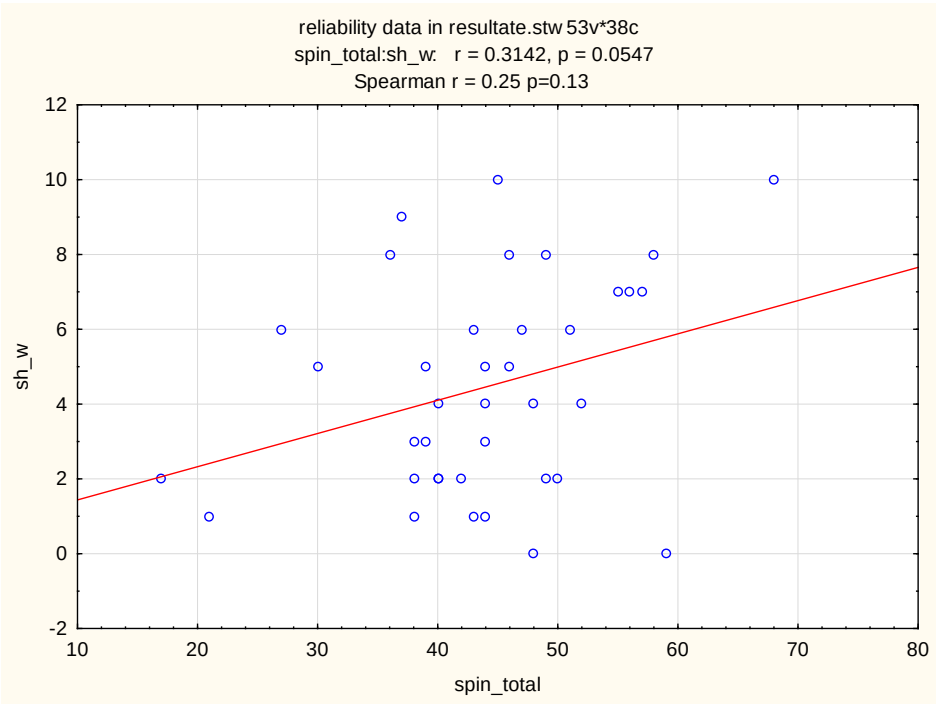


Figure 11 - SPIN & SDS (Social)

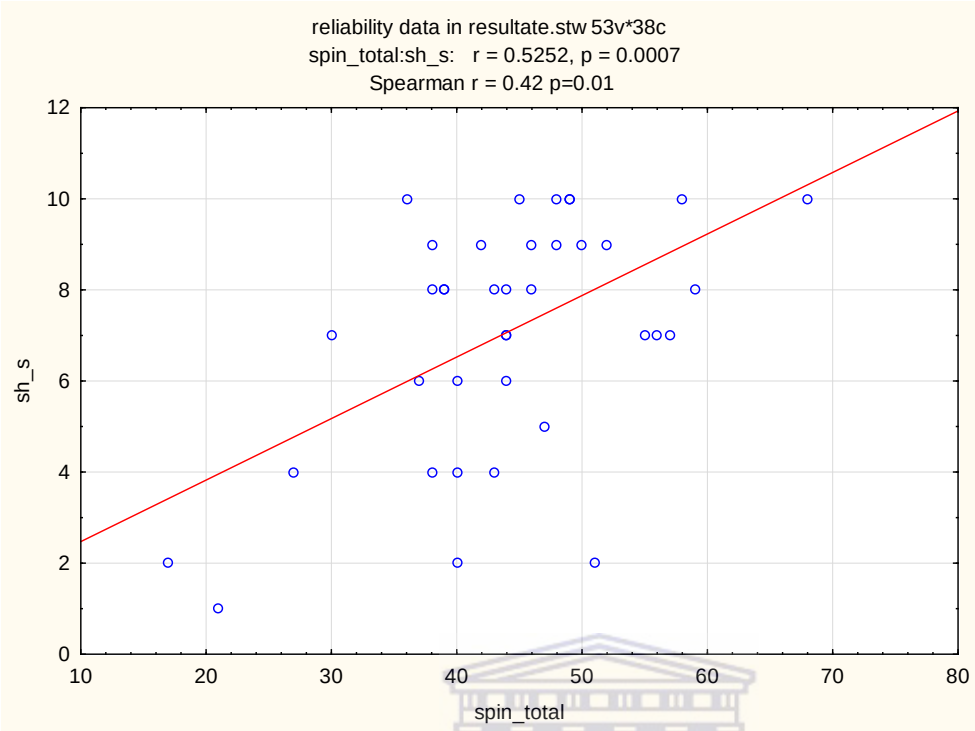
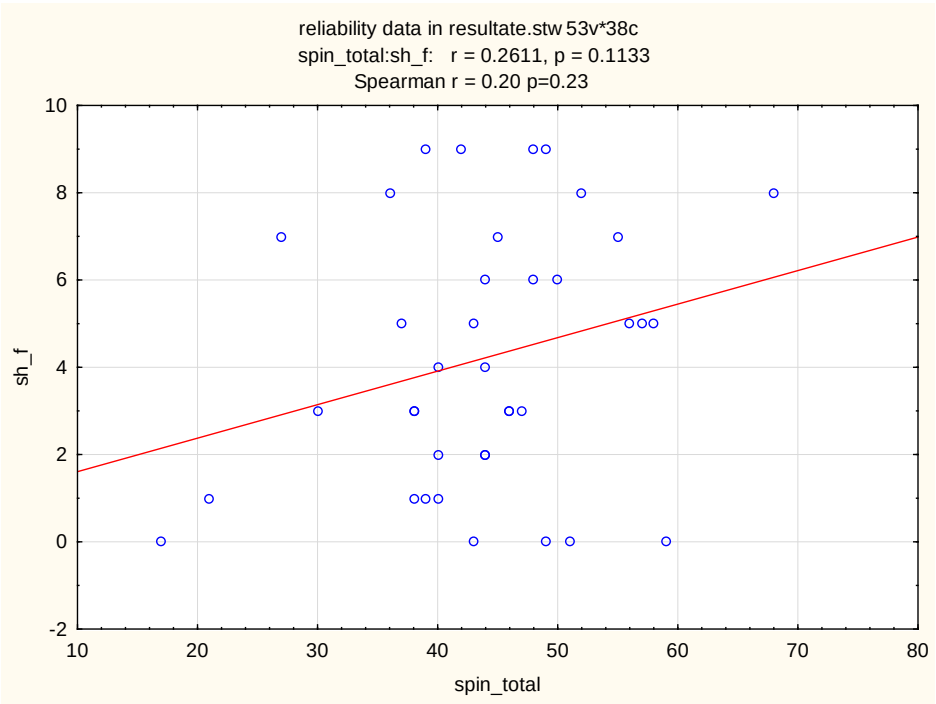


Figure 12 - SPIN & SDS (Family)

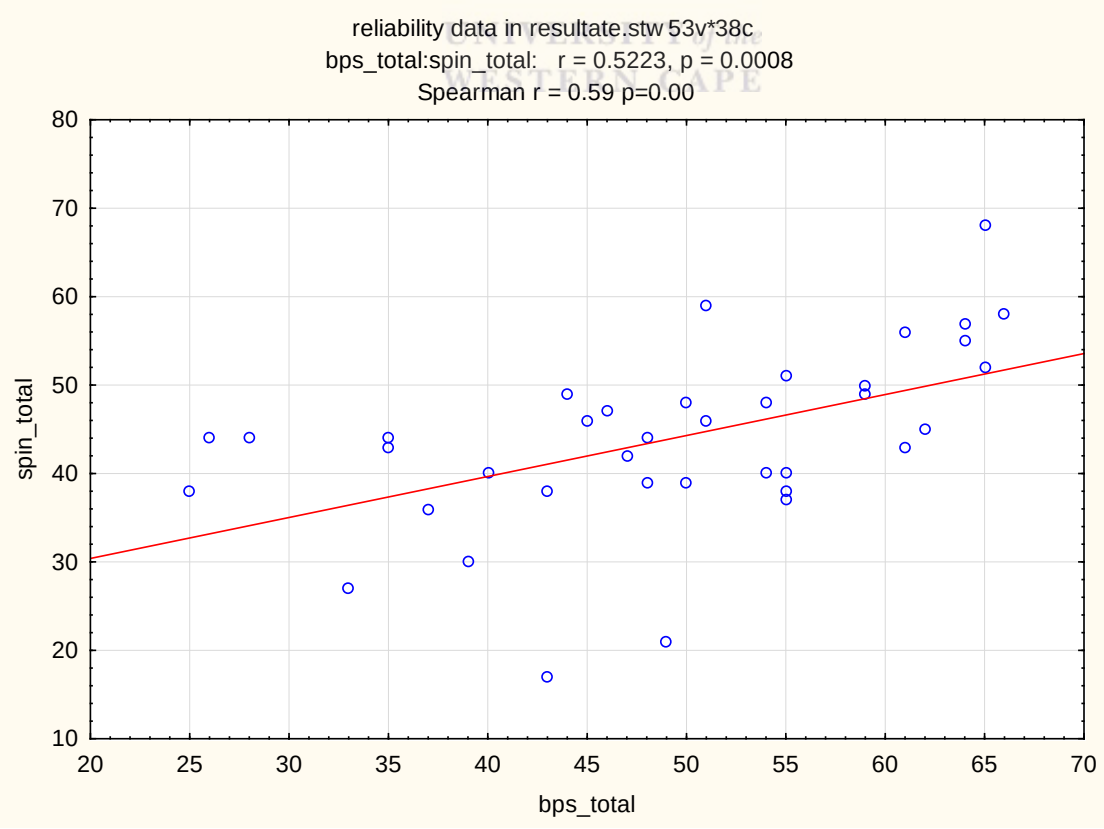


In summary, two positive and significant correlations were found. Firstly, between the severity of SAD (SPIN total) and the social subscale of the SDS (social disability) (r=0.43, p=0.01). Secondly, between the severity of SAD (SPIN total) and the SDS total (overall disability) (r=0.36, p=0.03).

4.5.3 Relationship between blushing propensity and severity of social anxiety disorder

The data from the Blushing Propensity Scale (BPS) and the Social Phobia Inventory (SPIN) were used in correlational analyses in order to investigate the relationship between blushing propensity and severity in social anxiety disorder (see figure 13).

Figure 13 - BPS & SPIN



This indicates a significant positive correlation between blushing propensity and severity of SAD ($r=0.59$, $p=<0.001$).

4.6. Conclusions of correlational analyses

In summary, a significant positive correlation was found between blushing propensity and SAD severity. Two significant positive correlations were found between SAD severity and disability (both the total of the scale and the social subscale score). Lastly, a tendency towards a significant correlation was found between blushing propensity and disability (total score). As expected, this indicates existing relationships between blushing propensity, SAD severity and disability of SAD in this sample.

4.7. Mediation Analyses

Despite correlational analyses revealing relationships between all three variables investigated, as expected, no inferences can be made about the causality of these relationships. This information is useful in that it appears that these variable are interlinked, but the exact nature, direction and hierarchy these variables influence each other is unclear. The hypothesis at the beginning of this study was that a positive correlation would be found between blushing propensity and disability (i.e. the more blushing, the more disability). However, in the course of the correlational analyses, the severity variable appeared to also be involved to some degree in this relationship. As reported previously, severity is positively correlated with both blushing propensity and disability in SAD (both the total of the SDS scale and the social subscale of the SDS scale). In order to provide more clarity about the exact role blushing, severity and disability play in their relationship with SAD, the Sobel test of mediation was

performed. Thereby the degree of influence severity has in the blushing-disability relationship could be more clearly elucidated.

In the Sobel analysis, blushing propensity (BPS) was the predictor, with disability (SDS total score) as the dependent variable and severity of SAD (SPIN) as the mediator (see figure 14). Severity was indeed found to be a mediating agent in the relationship between blushing propensity and disability in SAD (p=0.04).

Figure 14 - Sobel Mediation Analysis

	Independent variable=bps_total mediator=spin_total Depe				
	1 Indirect effect	2 z-value	3 p-value	4 Bootstrap 95% CI lower	5 Bootstrap 95% CI upper
1	0.1319	2.0405	0.04	-0.0071	0.2834

The following chapter will discuss these results in more detail.

Chapter 5: Discussion

5.1. Introduction

This section consists of a discussion of the results in terms of the study hypotheses and existing literature.

5.2. Clinical Variables

The SAD severity score suggests moderately severe SAD in the study sample. The study sample also reported a moderate propensity to blush. SAD symptoms and blushing propensity appear to have been reported at similar levels of severity. Regarding the SDS, there are four scores – the total score and three subscale totals. Each subscale assesses a different area of impairment – namely ‘’work’’, ‘’social life’’ and ‘’family life/home responsibilities’’. Compared to the mean scores for the ‘’work’’ and ‘’family life/home responsibilities’’ items (the levels of disability in these domains being similar), the ‘’social life’’ disability mean score was significantly higher. Disability in this domain of life can be expected as an excessive or irrational fear of scrutiny or rejection in social situations, with significant distress and/or avoidance of these social circumstances. This is at the core of a SAD diagnosis (APA, 2000).

Halberstadt and Green (1993) proposed that blushing may be linked specifically to the social setting, and may therefore also be fundamental to SAD. Blushing appears to be intrinsically a social device; a way for the body to manifest anxiety and fears about the presence of others (Halberstadt & Green, 1993, perhaps moreso in SAD. The findings

suggest that blushing is also significantly associated with disability in terms of social functioning, and even more so with SAD severity. This provides strong support for the study hypotheses.

5.3. Hypothesis 1: Individuals with SAD have the propensity to blush

The first hypothesis of the current study was "Individuals with SAD have a propensity to blush''-thus the study objective was to determine blushing propensity in the selected sample of SAD patients.

All participants presented with clinically significant SAD. Participants in the study reported a ''moderate'' propensity to blush. The first hypothesis explores how blushing fits with the social nature of SAD. A correlational analysis using results from the BPS and the SPIN was undertaken. The results indicated a significant positive correlation between propensity to blush and SAD symptom severity. This correlation thus suggests that blushing is increased when SAD severity is increased, and vice versa. Causality or direction of this relationship cannot however be inferred from the analyses.

Evidence suggests that blushing is a somatic response to anxiety (Stein & Bouwer, 1997). At the core of SAD is anxiety, and specifically so in social situations. A link with blushing in these circumstances is thus expected. The significant positive correlation between totals on the SPIN and BPS thus makes good clinical sense – i.e. the more severe the SAD, the more the likelihood of blushing. Literature also showed that individuals with SAD that report a high blushing propensity experience the blushing as both embarrassing and anxiety-provoking (Stein & Bower, 1997). Based on this theory, one can expect blushing to lead to further increases of SAD severity which may in turn spark further blushing – thus one may

argue that there is a cyclical relationship between blushing and illness severity in SAD. Furthermore, blushing is experienced as a negative occurrence, with some individuals describing it as descriptive of their shame and lack of worth (Crozier, 2007). Halberstadt and Green (1993) in their Social Attention Theory, described how blushing is proposed to be elicited by four factors, among them ‘’threats to public identity’’ and ‘’scrutiny’’. According to DSM-IV-TR (APA, 2000), SAD is defined as a disorder where the individual when exposed to possible scrutiny will show symptoms of anxiety (e.g. shaking, trembling, sweating) that they may find embarrassing. Blushing may also be noted. It has also been shown that *thoughts about* these symptoms (e.g. that they are visible to other people, and that they will think less of him/her because of it) cause these individuals embarrassment, humiliation and distress – as accurately described by Crozier (2007). Halberstadt and Green (1993) also expressed that simply any form of attention from others may cause individuals with SAD to believe they are being threatened or scrutinised-thus causing symptoms (such as blushing) and distress. Individuals with SAD thus fear rejection or negative evaluation more than others (Stein & Bouwer, 1997; Leary & Meadows, 1991; Rapee & Heimbeig, 1997). Halberstadt and Green (1993) also proposed that *threats to public identity* are a possible elicitor of blushing.

In conclusion, the findings support the hypothesis of an important link between SAD and blushing that can be framed within the Social Attention Theory (Halberstadt & Green, 1993). This provides support for the hypothesis that individuals with SAD have an increased propensity to blush. Blushing therefore appears to be intricately linked to SAD, as blushing is intrinsically a social device; a way for the body to manifest anxiety and, specifically in SAD, fear about the presence of others (Halberstadt & Green, 1993).

Moreover, there is also evidence to suggest that as SAD symptoms increase, so does the propensity to blushing. However, no further inferences can be made from this data about causality however.

5.4. Hypothesis 2: The propensity to blush is positively correlated with functional impairment associated with SAD

The second objective of this study was to investigate the association between blushing propensity and the level of reported functional impairment in SAD patients. This relates to the second hypothesis of the current study, i.e. that the propensity to blush is positively correlated with the disability associated with SAD. The discussion of the aspect will proceed in two parts:

5.4.1. SAD symptom Severity and Disability

Firstly, in order to ascertain where disability is positioned, a correlational analysis was done on two variables – SAD symptom severity and disability (or, as above, functional impairment). A significant positive correlation was found between the SAD severity and disability in general.

The second significant positive correlation found was between SAD severity and the ‘’social’’ subscale of the SDS specifically. This is consistent with the fact that SAD is a disorder characterised primarily by a fear (and avoidance) of social situations (*DSM-IV-TR*, 2000). This also provides some understanding as to why in SAD the more socially impaired the person is, the more disabled they will feel in general. The literature also suggests that

social impairment is most commonly and predictably seen in SAD (Lader, 1998). Negative perceptions of social situations and individuals' performance in them are reinforced over time, leading to increased fear of social settings and subsequent avoidance behaviour (Safren, et al, 1997).

This discussion asserts that for individuals with SAD that blushing is perceived as a negative occurrence, both shameful and incompetent, and would lead to rejection or negative evaluation in social situations. These cognitive distortions are explored. Voncken and Bögels (2008) reported on the core incongruence of individuals in terms of how they as opposed to others perceive them. According to that study, individuals with SAD tended to perform worse in social settings in comparison to individuals without SAD (Voncken and Bögels, 2008). It seems that these two factors are linked – the issue of a self-fulfilling prophecy may be relevant. I.e. when SAD is already present, the person is acutely aware of and fears social scrutiny and expects to be worse off than others. This increased self-consciousness and lack of confidence may then lead to half-hearted attempts at being *successful* socially. This in turn contributes to an objectively worse *performance*, which subsequently reinforces their anxiety and avoidance behaviours in the social context. The finding that individuals are mostly impaired in the social domain is dominant.

5.4.2. Blushing Propensity and Disability

Given that blushing propensity correlated with SAD severity, and that SAD severity was correlated with disability, it was hypothesised correctly that blushing propensity would also be significantly linked with disability in SAD. However, the findings suggested a *tendency*

towards a significant correlation between blushing propensity and general disability only. This seems to suggest that the relationship between the three variables in the current study is more complex and that there may be other variables influencing the relationship.

Despite correlational analyses revealing relationships between all three variables investigated, no inferences can be made about the causality of these relationships. Indeed, the exact nature, direction and hierarchy of how these variables influence each other are unclear. Nevertheless, the findings are useful in showing that these concepts are interlinked in SAD. The initial study hypothesis was that an association may be found between blushing propensity and disability (i.e. increased blushing associated with increased disability). However, following the correlational analysis, the SAD severity variable appeared to also be involved to some degree in this relationship. Indeed, it was found that SAD severity was positively correlated with both blushing propensity and disability in SAD.

The mediation analysis was thus undertaken. Using the Sobel test, blushing propensity was inserted as the predictor variable, with disability as the dependent variable and severity as the mediator. The output confirmed a significant mediation role for SAD severity in terms of the association between blushing and disability in SAD. This finding provides partial support for hypothesis 2, i.e. that disability does increase as blushing propensity increases, but that the association depends on the influence of SAD severity. Thus SAD severity can be seen as the mediator; for as social anxiety symptoms increase, so does the blushing propensity and the disability. It appears that the three are significantly interlinked and that each variable influences one another.

5.5 Conclusion

In conclusion, this thesis shed some light on the associations between blushing, disability, and illness severity - in a sample of patients with a primary diagnosis of SAD. SAD still lacks recognition and acknowledgement as a serious disorder with associated disability. Despite more recent awareness of SAD as a mental health condition, disability is underestimated. This stigma has lead to paucity in research around specific aspects of SAD e.g. blushing. SAD is associated with significant disability in all, and blushing in some cases. The relationship between these variables remains incompletely understood (Stein & Bouwer, 1997; Leary et al, 1992; Leary & Meadows, 1991) and this research contributes to existing knowledge on the impact of blushing on disability in SAD. This contribution may enable clinicians to better diagnose and address in treatment various aspects of SAD such as blushing or disability that may be crucial. This research has shown how these elements are important in SAD. Nevertheless, further research is required on the perceptions, beliefs and associated cognitive distortions individuals with SAD experience in relation to their blushing or their disability.

Chapter 6: Conclusion

The current study focussed on SAD and two specific elements of SAD viz. blushing and disability. The study aimed to study the individual relationships between SAD and blushing, SAD and disability, and blushing and disability in this psychiatric disorder.

The literature showed that blushing is common in SAD and an experience of anxiety for individuals with SAD (Stein & Bouwer, 1997). Individuals with SAD are reported to find blushing embarrassing, anxiety-provoking and a negative occurrence (Crozier, 2006), which may indicate a lack of worth and shame. Blushing has also been shown to be associated with negative evaluation in those easily embarrassed and socially anxious (Leary & Meadows, 1991), which provides some evidence of a link between blushing and SAD. The known disability associated with SAD (Stein & Bower, 1997) may only increase when considering the addition of the negative perception and experience of blushing in individuals with SAD.

A link between SAD and disability is clearly demonstrated in the literature (APA, 2000). Disability in SAD is reportedly experienced on numerous levels, including occupational, educational and social spheres (Lader, 1998). Cognitive biases are also reportedly involved in SAD (Voncken, Bögels & Peeters, 2007), with a focus on self-blaming, negative self-perception, negative expectations of others' evaluations and self-criticism. SAD is also associated with increased psychiatric comorbidity (Safren et al, 1997).

As regards the relationship between blushing and SAD, and disability and SAD, the study findings provide some support for the hypothesis that there may be a significant relationship

between blushing propensity, SAD severity and disability in SAD. A significant positive correlation was found between blushing propensity and SAD severity. In addition, a tendency towards a significant correlation was found between blushing propensity and disability in general. SAD severity was also positively correlated with some aspects of disability.

These results did not however provide any information on causality. A further analysis (Sobel test) was performed to investigate this issue. SAD severity was found to be a mediator in the relationship between blushing and disability in SAD. Therefore, no direct relationship was found between blushing and disability in SAD, although severity mediated the impact of blushing of disability.

6.1. Limitations of the current study

This study was limited in a number of areas;

1. The sample size was relatively small and therefore little generalisation could be made from this sample. Unfortunately, given the population, a larger sample size may be difficult to obtain due to the very nature of the disorder (i.e. the study requires social interaction, the very thing individuals with SAD fear).
2. The instruments used were self-report measures, which may not have provided the most reliable data. Participants may lie or report inaccurately and this may mean the data is not necessary as accurate.

Nevertheless the study findings contribute to existing knowledge on SAD and should lead to further investigation in larger samples.

6.2. Recommendations

Future work on the relationship between blushing and disability is recommended in order to further inform the treatment of this disorder. Work is currently being done at the University of Cape Town on the neural correlates of blushing. This study will provide information on the elicitors of blushing during imaging, in order to better inform treatment protocols of blushing. More similar work is required in the field, as blushing in an important area of focus, particularly in the social realm and that of SAD. Future work would enable better conceptualisation and treatment of the disorder, and hopefully reduce the stigmatisation of those who experience SAD.

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MRC UNIT ON ANXIETY AND STRESS DISORDERS

PATIENT INFORMATION AND INFORMED CONSENT
Genetics of Anxiety Disorders

PURPOSE:

This study is part of a research project we are conducting to learn more about the genetic causes and symptoms of anxiety disorders (including obsessive-compulsive and spectrum disorders such as trichotillomania (TTM), panic or social anxiety disorder). We would like to discuss your life experiences and those of your other family members with you. Doctors and scientists at the MRC Unit on Anxiety and Stress Disorders and the University of Stellenbosch, in collaboration with qualified researchers from other research institutions worldwide, hope to identify the genes that may increase susceptibility to these disorders.
This is not a treatment study. Information is being collected for research purposes only.

STUDY PROCEDURE:

If you decide to participate, we shall ask you to attend an interview (which may be videotaped) with a researcher. This interview will include neuropsychological tasks and a number of questions related to your current illness, comorbid conditions like depression, family functioning, quality of life, your prior history of treatment for psychiatric conditions, and particular symptoms you may have experienced as part of your illness. In addition, we may ask to take photographs of your face and hands. This whole procedure will last about 4-5 hours (two 2-hour sessions with a break in-between).

You will also be asked to have your blood drawn. Approximately 48 ml (3 tablespoons) of blood will be drawn from your arm. We may need to contact you again to get another blood sample should we fail to get a DNA sample from your blood. The blood sample you give may be used to create a cell line. This is done by changing some of your blood cells so that they can grow forever. The cell line is living tissue and it can be used to make more of your DNA at any time in the future. This process will take place at the MRC Centre for Molecular and Cellular Biology and the Division of Medical Biochemistry, Faculty of Health Sciences, at the University of Stellenbosch. The DNA will then be taken from the cell line and saved for scientific analyses which will be performed now, and possibly in the future.

We may contact you later for further information, or request you to complete another interview at a later date, in order to obtain follow-up information that may be of use in our genetic analyses. This may involve an assessment similar to the current assessment, including a series of interviews and/or another blood sample. Your current participation is in no way binding to your future participation.

We would like your permission to contact your relatives in order to get more information about any family history of mental illness, if need be.

If you have been diagnosed with TTM, we hope to also interview one of your close (first-degree) relatives. You can still participate in the study even if your relatives do not. If you are a relative (e.g. a parent) of a person diagnosed with TTM who have participated in this project, we will ask you to complete a number of self-report scales. These scales will ask questions about your current psychiatric symptoms if any, depression, anxiety, family functioning and quality of life. These scales will also ask you whether your child has tics, OCD and other problems. They will also ask about your child's psychiatric condition and how you respond to it. It can take up to 4 hours to complete these self-report scales – either at home or at our Unit.

Personal information that could be used to identify you (such as your name, contact information, etc.) will not be given out. Your data and DNA is likely to be made available to qualified scientists around the world to study your particular disorder. Your cell line and DNA will be maintained permanently, unless you request to have it removed. If at any time in the future you wish to have your DNA, cell lines or clinical data removed from the storage site, you may do so by contacting the researchers conducting this

study (Christine Lochner at 021 - 938 9179).

The researchers who will have access to your DNA include those who work with private and/or for profit companies. These researchers may be interested in eventually developing commercial medical products using the DNA from you and other participants. They may sell or patent discoveries based on this research and thus benefit financially. Please note that you or your heirs will not receive any compensation if this occurs.

We do not expect to discover any information of direct benefit to your condition, or your treatment, during the next few years. If later on, diagnostic tests or new ways to treat your condition are discovered, this information will have to be obtained from properly licensed clinical labs, clinics, or your physician, and will not be available from the research team.

If you are hospitalized at a psychiatry facility or have received any treatment from a mental health professional, we would like your permission to review your treatment records, which will be obtained from your doctor.

RISKS:

There are no more than minimal medical or psychological risks associated with this study. If you feel fatigued, tired, uncomfortable, or in any way upset during any part of the session(s), you may ask to stop for a rest break or have the interview discontinued. The research interview does not take the place of a full psychiatric evaluation. You may experience some emotional discomfort when answering some questions. If any particular question makes you feel uncomfortable, you may discuss its importance with the specially trained interviewer. You may choose not to answer any question which you are still uncomfortable with.

You may feel some pain associated with having blood withdrawn from a vein. You may experience discomfort, bruising and/or other bleeding at the site where the needle is inserted. Occasionally, some people experience fleeting dizziness or feel faint when their blood is drawn.

Some insurance companies may mistakenly assume that your participation in this study is an indication that you are at higher risk of a genetic disease, and this could hurt your access to health or other insurance. We will not share any information about you, or your family, with an insurance company. However, if you discuss your participation in this study with your doctor, and he or she records it in your medical record, it is possible that an insurance company may access the information as part of a medical record review. It is the opinion of the investigators that participation in this study does not constitute genetic testing. Although one long-term goal of this research is the development of a genetic test for the anxiety disorders, at the current time, no information from your DNA sample that would be useful in the treatment of your disorder will be obtained. Therefore, participation in this study should not be reported as genetic testing.

Your unidentified DNA and cell line will be available to qualified researchers permanently.

BENEFITS:

There are no direct benefits to you. However, individuals who might develop one or more of these anxiety disorders in the future, their family members, and future generations may benefit if we can locate the genes that lead to such disorders. That knowledge could then lead to the development of methods for prevention and new treatments for curing these diseases.

CONFIDENTIALITY:

If you consent to participate in this study, your identity will be kept confidential. Your answers will not be shared with other family members or anyone else except for staff members involved in this study. All data will be kept in locked file cabinets accessible only to the research staff. All research information obtained will not be associated with your name; research staff will use only a coded number and/or your initials.

Blood samples will be safely stored and identified by code number and access will be limited to authorized scientific investigators. Copies of treatment records from hospitals or mental health professionals are kept in locked files and are reviewed by members of the research team only. Any publications resulting from this study will not identify you by name.

VOLUNTARY PARTICIPATION:

Your participation in this study is voluntary and you may refuse to participate or withdraw from the study at any time without any loss of benefits to which you are otherwise entitled. Some members of the team of investigators conducting this study may be responsible for your clinical care. Refusal to participate in this study will not change your clinical care.

RESEARCH QUESTIONS AND CONTACTS:

If you are interested in genetic counseling, you will be given information about where you can receive such counseling and a new blood sample may be required at that time. DNA information about a relative will be released only if the genetic counsellor confirms that the relative in question is deceased or cannot be found and that the information is essential for clinical counseling.

The researchers will answer any questions you might have about the procedures described above, or about the results of the study. If you have any questions, you may call Dr Christine Lochner at (021) 938 9179.

The University of Stellenbosch Committee for Human Research has approved recruitment and participation of individuals for this study.

You have been given a copy of this consent form to keep.

INFORMED CONSENT/ASSENT TO TAKE PART AND AUTHORIZATION TO USE OR SHARE HEALTH INFORMATION FOR RESEARCH:

I have read the above patient information, the research study has been explained to me, including risks and benefits (if any), all my questions have been answered, and I consent voluntarily to participate in this study.

Print name: _____ Signature: _____
(Adults or Minors younger than 18 years)

Date: _____

OR

I understand the information that was given to me, and would like to give permission for my child/the person I am authorized to represent, to take part in this research study, and also agree to allow his/her health information to be used and shared as described above.

Print name: _____ Signature: _____
(Parent / Guardian of Minor)

Date: _____

OR

Print name: _____ Signature: _____
(Family member / next of kin)

Date: _____
Relationship to patient: _____

I have discussed the proposed research with this subject and, in my opinion, this patient understands the benefits, risks, and alternatives (including non-participation) and is capable of consenting to voluntary participation.

Print name: _____ Signature: _____
(Study Investigator or Designee)

Date: _____

Print name: _____ Signature: _____
(Witness (if applicable))

Date: _____

MNR EENHEID VIR ANGS- EN STRESSTEURINGS

PASIëNTINLIGTING EN INGELIGTE TOESTEMMING
Genetika van Angssteurings

DOELWIT:

Hierdie projek is deel van 'n navorsingsprojek wat tans onderneem word om meer uit te vind oor die genetiese oorsake en simptome van angssteurings (insluitend obsessief-kompulsiewe- en spektrumversteurings soos trichotillomanie (TTM), paniek-, of sosiale angssteuring). Ons wil graag oor u lewenservarings en dié van u gesinslede met u gesels. Dokters en wetenskaplikes by die MNR Eenheid vir Angs- en Stressteurings en die Universiteit van Stellenbosch, in samewerking met gekwalifiseerde navorsers van ander navorsingsinstellings wêreldwyd, hoop om die gene wat vatbaarheid vir hierdie angssteurings laat toeneem, te identifiseer.
Dit is nie 'n behandelingstudie nie. Inligting word alleenlik vir navorsingsdoeleindes versamel.

PROJEKPROSEDURE:

Indien u besluit om deel te neem, sal ons u vra om 'n onderhoud (wat moontlik op videoband vasgelê kan word,) met 'n navorser te voer. Hierdie onderhoud sluit neurosielkundige take en 'n aantal vrae in wat met die volgende aspekte verband kan hou: u huidige siekte, komorbiede toestande soos depressie, gesinsfunksionering, lewenskwaliteit, u geskiedenis van behandeling vir psigiatriese steurings, en spesifieke simptome wat u dalk kon ervaar as deel van u siekte. Daarmee saam, kan ons u vra om foto's van u hande en gesig te neem. Hierdie hele prosedure sal ongeveer 4-5 ure duur (twee 2-uur sessies met 'n pouse tussen-in).

U sal ook gevra word om toe te laat dat u bloed getrek word. Ons kan dalk weer met u in verbinding moet tree om nog 'n bloedmonster te trek in geval ons nie daarin kon slaag om 'n DNA monster van u bloed te verkry nie. Die bloedmonster wat u gee, kan gebruik word om 'n sellyn te skep. Dit word gedoen deur sommige van u bloedselle te verander sodat dit vir altyd kan groei. Die sellyn is lewende weefsel en dit kan gebruik word om meer van u DNA in die toekoms te maak. Hierdie proses sal plaasvind by die MNR Sentrum vir Molekulêre en Sellulêre Biologie en die Afdeling Geneeskundige Biochemie, Fakulteit Gesondheidswetenskappe, Universiteit van Stellenbosch. Die DNA sal dan van die sellyn geneem en gehou word vir wetenskaplike analise wat nou, en moontlik in die toekoms gedoen sal word.

Ons kan met u in aanraking kom vir verdere inligting, of u vra om nog 'n onderhoud te voltooi op 'n latere stadium, ten einde opvolg-inligting te bekom wat gebruik kan word in ons genetika-analise. Dit kan 'n soortgelyke assessering as die huidige wees, insluitend 'n reeks van onderhoude en/of ander bloedmonsters behels. U huidige deelname verbind u onder geen omstandighede tot toekomstige deelname nie.

Ons wil graag u toestemming hê om met u familielede in aanraking te kom ten einde meer inligting oor enige familiegeskiedenis van geestessiekte te bekom, indien nodig.

Indien u met TTM gediagnoseer is, hoop ons om ’n onderhoud met een van u nabye familielede te voer. U kan steeds deelneem aan die projek selfs al is u familielede nie betrokke nie. Indien u ’n familielid (bv. ’n ouer) is van ’n persoon met TTM wat aan die projek deelgeneem het, sal ons u vra om ’n aantal selfrapporteringsvraelyste te voltooi. Hierdie vraelyste sal vrae vra oor u huidige psigiatriese simptome (indien enige), depressie, angs, gesinsfunksionering en lewenskwaliteit. Hierdie vraelyste sal ook vra oor u familielid met TTM se psigiatriese toestand en hoe u daarop reageer. Dit kan tot 4 ure duur om hierdie selfrapporteringsvarelyste te voltooi – òf tuis òf hier by ons Eenheid.

Persoonlike inligting wat gebruik kan word om u te identifiseer (soos u naam, kontakbesonderhede, ens.), sal nie uitgegee word nie. U data en DNA sal moontlik aan gekwalifiseerde wetenskaplikes regoor die wêreld beskikbaar gestel word om u betrokke angssteuring te bestudeer. U sellyn en DNA sal permanent

gehou word, behalwe wanneer u vereis dat dit verwyder word. Indien u op enige stadium in die toekoms besluit om u DNA, sellyne of kliniese inligting uit die bergingsplek te laat verwyder, kan u dit doen deur die navorsers wat hierdie projek behartig, te vra om dit te doen (Christine Lochner by 021 - 938 9179).

Die navorsers wat tot u DNA toegang het, sluit diegene in wat werk met private en/of winsgeoriënteerde maatskappye. Hierdie navorsers kan ook daarin geïnteresseerd wees om uiteindelik kommersiële mediese produkte te ontwikkel deur van u en die ander deelnemers se DNA gebruik te maak. Hulle kan hierdie uitvindings, wat op hierdie navorsing gebaseer is, verkoop of patenteer en sodoende finansieel daaruit voordeel trek. Let asseblief daarop dat u of u erfgename nie enige kompensasie hiervoor sal ontvang indien dit wel gebeur nie.

Ons verwag nie om enige inligting te bekom wat van direkte nut vir u toestand of u behandeling gedurende die volgende paar jare sal wees nie. Indien daar in die toekoms diagnostiese toetse of nuwe wyses om u toestand te behandel, ontdek word, sal hierdie inligting van behoorlik gelisensieërde kliniese laboratoria, klinieke, of u mediese dokter verkry moet word, en dus nie van die navorsingspan nie.

Indien u by 'n psigiatrie fasiliteit gehospitaliseer word, of behandeling van 'n geestesgesondheidswerker ontvang, wil ons graag u toestemming hê om u behandelingsrekords, wat van u dokter verkry sal word, na te gaan.

RISIKO'S:

Daar is nie meer as die minimum mediese en sielkudige risiko's geassosieer met hierdie projek nie. Indien u uitgeput, ongemaklik, of ontsteld raak tydens enige gedeelte van die sessie(-s), kan u vra om te onderbreek vir 'n ruskansie of om die onderhoud te beëindig. Die onderhoud wat met u gevoer word, neem nie die plek van 'n deeglike psigiatriese evaluasie nie. U kan dalk 'n mate van emosionele ongemak verduur wanneer u sommige van die vrae beantwoord. Indien enige vraag u ongemaklik laat voel, kan u die belang daarvan met die spesiaal opgeleide onderhoudvoerder bespreek. U kan verkies om enige vraag waarmee u steeds ongemaklik voel, nie te beantwoord nie.

U kan moontlik 'n mate van pyn ervaar wanneer die bloed getrek word. U kan ongemak, kneusing en/of bloeding by die plek waar die naald ingesteek word, ervaar. Soms ervaar sommige persone verbygaande duiseligheid of 'n flou gevoel wanneer hulle bloed getrek word.

Sommige versekeringsmaatskappye kan verkeerdelik aanneem dat u deelname aan hierdie projek 'n aanduiding is dat u 'n verhoogde risiko het vir 'n genetiese siekte, en dit kan u toegang tot gesondheid- of ander versekering skaad. Ons sal nie enige inligting oor u, of u familie aan 'n versekeringsmaatskappy bekendmaak nie. Indien u egter u deelname met u dokter bepreek, en hy/sy maak 'n nota daarvan in u mediese rekord, is dit moontlik dat 'n versekeringsmaatskappy hierdie inligting as deel van 'n hersiening van mediese rekords kan bekom. Dit is die mening van die navorsers dat deelname aan hierdie studie nie genetiese toetsing is nie. Alhoewel een langtermyn-doelwit van hierdie navorsing die ontwikkeling van 'n genetiese toets vir die angssteurings is, sal geen inligting van u DNA-monster wat nuttig kan wees in die behandeling van u toestand, tans verkry word nie. Daarom behoort deelname aan hierdie studie nie as genetiese toetsing beskryf te word nie.

U ongeïdentifiseerde DNA en sellyn sal permanent aan gekwalifiseerde navorsers beskikbaar wees.

VOORDELE:

Daar is geen direkte voordele vir u nie. Individue wat egter in die toekoms een of meer van hierdie angssteurings ontwikkel, hulle familielede, en toekomstige generasies, kan voordeel daaruit put as ons die gene wat tot sulke versteurings aanleiding kan gee, kan identifiseer. Hierdie kennis kan dan lei tot die ontwikkeling van metodes vir voorkoming en nuwe behandelingswyses vir genesing van die siektes.

VERTROULIKHEID:

Indien u toestem tot deelname aan die projek, sal u identiteit vertroulik gehou word. U antwoorde sal nie met u familielede of enige iemand anders behalwe die personeellede wat gemoeid is met hierdie projek, gedeel word nie. Alle inligting sal in geslote liasseringskabinette wat slegs vir navorsingspersoneel toeganklik is, gehou word. Alle navorsingsinligting wat verkry word, sal nie met u naam verbind kan word nie; navorsingspersoneel sal bloot 'n kodenommer en/of u voorletters gebruik. Bloedmonsters sal veilig gestoor en geïdentifiseer word deur die kodenommer, en toegang sal tot die gemagtigde wetenskaplike navorsers beperk wees. Kopieë van behandelingsrekords van hospitale of geestesgesondheidswerkers word in geslote lêers gehou en word slegs deur lede van die navorsingspan deurgegaan. Enige publikasie wat uit hierdie projek voorspruit, sal u nie by name identifiseer nie.

VRYWILLIGE DEELNAME:

U deelname aan hierdie projek is vrywillig en u kan deelname weier of u op enige stadium van die projek onttrek sonder verlies van enige voordele waartoe u andersins geregtig is. Sommige lede van die span navorsers wat hierdie projek uitvoer, kan moontlik verantwoordelik wees vir u kliniese versorging. Weiering om deel te neem aan hierdie studie sal nie u kliniese versorging verander nie.

VRAE OOR DIE NAVORSING EN KONTAKBESONDERHEDE:

Indien u wel in genetiese berading geïnteresseerd is, sal u inligting oor waar sodanige berading beskikbaar is, ontvang en 'n nuwe bloedmonster kan op daardie stadium vereis word. DNA-inligting van 'n familielid sal slegs beskikbaar gestel word indien die genetiese berader bevestig dat die familielid oorlede is of nie opgespoor kan word nie en dat die inligting noodsaaklik is vir kliniese berading.

Die navorsers sal enige vrae wat u mag hê oor bogenoemde prosedures of oor die resultate van die projek, beantwoord. Indien u enige navrae het, kan u Dr. Christine Lochner by 021 - 938 9179 skakel.

Die Komitee vir Mensnavorsing van die Universiteit van Stellenbosch het die werwing en deelname van individue aan hierdie projek goedgekeur.

U het 'n afskrif van hierdie toestemmingsvorm ontvang om te bewaar.

INGELIGTE TOESTEMMING TOT DEELNAME EN TOESTEMMING OM GESONDHEIDSINLIGTING VIR NAVORSING TE GEBRUIK EN TE DEEL:

Ek het die bostaande pasiëntinligting gelees, die navorsingstudie is aan my verduidelik, insluitend die risiko's en voordele (indien enige), al my vrae is beantwoord, en ek stem vrywillig in om aan hierdie projek deel te neem.

Naam: _____ Handtekening: _____
(Volwassenes of Minderjariges jonger as 18 jaar)

Datum: _____

OF

Ek verstaan die inligting wat aan my gegee is, en gee toestemming aan my kind/die persoon wat ek wetlik verteenwoordig, om deel te neem aan hierdie navorsingstudie, en stem toe dat sy/haar gesondheidsinligting gebruik en gedeel kan word soos hierbo beskryf.

Naam: _____ Handtekening: _____
(Ouer / Voog van Minderjarige)

Datum: _____

OF

Naam: _____ Handtekening: _____
(Familielid / naasbestaande)

Datum: _____
Verwantskap aan pasiënt: _____

Ek het die voorgestelde projek met die deelnemer bespreek en, na my mening, verstaan die deelnemer die voordele, risiko's, en alternatiewe (inlsuitend nie-deelname) en is in staat om toestemming te gee vir vrywillige deelname.

Naam: _____ Handtekening: _____
Navorser of Gemagtigde

Datum: _____

Naam: _____ Handtekening: _____
Getuie (indien van toepassing)

Datum: _____

Social Phobia Inventory (SPIN)

Please check how much the following problems have bothered you during the past week. Mark only one box for each item and be sure to answer all items.

ITEM	*DESCRIPTION*	**Not at all**	A little bit	Some what	Very much	Extremely
1.	I am afraid of people in authority.	0	1	2	3	4
2.	I am bothered by blushing in front of people.	0	1	2	3	4
3.	Parties and social events scare me.	0	1	2	3	4
4.	I avoid talking to people I don't know.	0	1	2	3	4
5.	Being criticized scares me a lot.	0	1	2	3	4
6.	Fear of embarrassment causes me to avoid doing things or speaking to people.	0	1	2	3	4
7.	Sweating in front of people causes me distress.	0	1	2	3	4
8.	I avoid going to parties.	0	1	2	3	4
9.	I avoid activities where I am the centre of attention.	0	1	2	3	4
10.	Talking to strangers scares me.	0	1	2	3	4
11.	I avoid having to give speeches.	0	1	2	3	4
12.	I would do anything to avoid being criticized.	0	1	2	3	4
13.	Heart palpitations bother me when I am around people.	0	1	2	3	4
14.	I am afraid of doing things when people might be watching.	0	1	2	3	4
15.	Being embarrassed or looking stupid are my worst fears.	0	1	2	3	4
16.	I avoid speaking to anyone in authority.	0	1	2	3	4
17.	Trembling or shaking in front of others is distressing to me.	0	1	2	3	4

Blushing Propensity Scale

(Leary & Meadows, 1991)

Indicate how often you feel yourself blush in each of the following situations using the scale below:

1 = I NEVER feel myself blush in this situation.
2 = I RARELY feel myself blush in this situation.
3 = I OCCASIONALLY feel myself blush in this situation.
4 = I OFTEN feel myself blush in this situation.
5 = I ALWAYS feel myself blush in this situation.

____ 1. When a teacher calls on me in class

____ 2. When talking to someone about a personal topic

____ 3. When I'm embarrassed

____ 4. When I'm introduced to someone I don't know

____ 5. When I've been caught doing something improper or shameful

____ 6. When I'm the center of attention

____ 7. When a group of people sings "Happy Birthday" to me

____ 8. When I'm around someone I want to impress

____ 9. When talking to a teacher or boss

____ 10. When speaking in front of a group of people

____ 11. When someone looks me right in the eye

____ 12. When someone pays me a compliment

____ 13. When I've looked stupid or incompetent in front of others

____ 14. When I'm talking to a member of the other sex

Sheehan Disability Scale (SDS)

Please circle the number that best describes the way you have felt over the **past week.**

Work

These symptoms have disrupted your work

Not at all Mildly Moderately Markedly Extremely

0 1 2 3 4 5 6 7 8 9 10

Social Life

These symptoms have disrupted your social life

Not at all Mildly Moderately Markedly Extremely

0 1 2 3 4 5 6 7 8 9 10

Family life/Home responsibilities

Not at all Mildly Moderately Markedly Extremely

0 1 2 3 4 5 6 7 8 9 10