The relationship between five factor model personality traits and social anxiety

Keila C. Brockveld

BPsych (Hons) MPsych Clin (Hons)

Department of Psychology

Macquarie University

Thesis submitted to the Faculty of Human Sciences, Department of Psychology, Macquarie University, in partial fulfilment of the requirements for the award of PhD of Psychology (Clinical).

February 2013

Table of Contents

List of Tables

CHAPTER 2

CHAPTER 3

CHAPTER 4

List of Figures

CHAPTER 2

CHAPTER 4

Abstract

The thesis investigates individual differences in the expression of social anxiety. Firstly, the impact of personality traits on cross-cultural expression of anxiety was examined. Structural equation modelling was used to examine whether samples would differ in the relationship between social anxiety and personality. Community sample from Australia (n = 374) and Brazil (n = 329) completed the measures of personality and social anxiety. Results suggest that the model of social anxiety and personality seems to be the same across both cultural groups; the Brazilian sample was found to have a significant, stronger relationship between social anxiety and neuroticism than the Australian sample; the dissimilarities might be attributed to individual differences within each culture. Secondly, the thesis investigated whether individual differences in personality were related to differences in severity of social fears in three types of social situations (interaction, performance, and public speaking). Hierarchical regression analyses were conducted to test whether the personality domains uniquely predict participants' ratings of fear for the three social fear domains, in two separate samples: community (n = 358) and clinical (n = 217). The results indicate that the five personality domains have different patterns of association with the social fear score depending on the type of situation and the sample (clinical vs. community). Lastly, the thesis explored whether differences in personality moderate treatment outcome in social anxiety disorder. Participants were a clinical sample (n =192) subjects who were referred or self-referred to 12-week group Cognitive-Behavioural treatment for social anxiety disorder. Hierarchical multiple regression analyses were conducted to explore the moderating effects of personality traits on social anxiety symptoms change with treatment. Results indicated that participants with high levels of agreeableness and extraversion and social anxiety at pre-treatment had more improvement in social anxiety than participants with low agreeableness and extraversion. As a whole, the results of the thesis suggest that personality characteristics are important in the expression of social anxiety.

Statement of Candidature

I certify that this thesis is my original work and that it has not been submitted for a higher degree to any other university or institution.

All work related to this study, including study design, data collection and analysis was carried out by myself under the supervision or Dr Lorna Peters and Dr Andrew Baillie under the auspices of the Department of Psychology, Macquarie University. The individual contributions of co-authors on the three papers presented in this thesis are clarified in the title page introducing each piece of work.

Macquarie University Ethic Committee approval was obtained for all aspects of the research presented Chapter 1 (Protocol Number: HE29MAY2009-D06562) and Chapter 2 and 3 (Protocol Number: 5201100907).

Keila Cristina Brockveld: _____

Date: _____

Acknowledgements

Carl Jung said, "one looks back with appreciation to the brilliant teachers, but with gratitude to those who touched our human feelings; the curriculum is so much necessary raw material, but warmth is the vital element for the growing plant and for the soul of the child". Apart from her brilliant and invaluable knowledge, my supervisor Dr Lorna Peters was always generous, warm, supportive, and encouraging. I truly appreciate your availability, opened mindedness, your utmost respect in my difficulties, patience, humour, and guidance, without which the completion of this PhD would not be possible.

I would like to thank Professor Ron Rapee for his precious recommendation of my supervisor, Lorna, without it I would not have met her.

I am thankful to Dr Alan Taylor and Associate Professor Andrew Baillie for their knowledge, support and guidance, which have been most valuable.

I am thankful to the Emotional Health Clinic team at Macquarie University for their amazing work. My sincere appreciation to all participants who took part in this study.

Special thanks to my dear friends and fellow explorers on the PhD journey: Kris, Lauren, Talia, Mikki, JoJo, Jacqui and Eileen for sharing the struggles and the laughter, for being such wonderful and supportive friends, and for keeping me sane! To Angela and Patricia, thank you for your support and generosity which have been extremely valuable.

My deepest appreciation to my beloved parents. I am thankful for my father's wisdom, he repeatedly told me that "knowledge will never be taken from you", unless amnesia strikes! And for my mother's amazing reading habits and nourishing encouragement - I am deeply thankful.

"Being deeply loved by someone gives you strength, while loving someone deeply gives you courage", Lao Tzu. I am grateful to my dear, loving husband Dalmir. Thank you for suggesting we come to this beautiful country; without your confidence and determination I probably would not have had this opportunity. Your respect, encouragement, and support are inspiring and provided me with strength to face this incredible journey. Your love is mighty. Thank you also for the endless cup of coffees!

"In this metallic age of barbarians,
only a relentless cultivation of our ability to dream,
to analyse and to captivate can prevent our personality
from degenerating into nothing or else
into a personality like all the rest."

Fernando Pessoa

Publications arising from this research

Brockveld, K. C., Taylor, A., & Peters, L. (2012) A preliminary examination of the relationship between social anxiety and personality: a comparison between Australia and Brazil. Paper prepared for submission to the *Journal of Cross-Cultural Psychology*.

Brockveld, K. C., & Peters, L. (2012). Predictors of performance and social fears in community and clinic samples. Paper prepared for submission to *Personality and Individual Differences.*

Brockveld, K. C., & Peters, L. (2012). Personality as a moderator of treatment outcome for social anxiety disorder. Paper prepared for submission to *Behaviour Research and Therapy.*

Research overview[1]

The thesis focuses on individual differences in the expression of, and treatment outcome for, social anxiety. In three studies, the thesis explores the relationship between personality traits and social anxiety by examining: firstly, the impact of personality traits on cross-cultural expression of anxiety; secondly, the relationship between personality traits and the expression of social anxiety in performance versus interaction situations; and lastly the impact of personality traits on cognitive-behavioural treatment outcome for social anxiety.

This thesis focuses on the five-factor model of personality (Costa & McCrae, 1992), which is a model of personality widely accepted among personality researchers. It explains personality adequately by scores on five broad domains; each one of the domains (extraversion, neuroticism, agreeableness, conscientiousness, and openness to experience) hosts six dimensional facets, or lower-order facets, correlating to each other, representing nuances of personality description.

Personality and social anxiety disorder are explored by means of discussing conceptual models proposed to explicate this relationship, reviewing selective empirical literature, and examining the relationship of social anxiety disorder and individual differences.

Thus, the thesis begins with a description of social anxiety features; then, a brief review of the personality trait approach is presented; followed by a review of selected literature on the relationship between social anxiety and personality.

[1] This thesis is presented in a non-traditional research thesis by publication format as outlined by the Macquarie University Higher Degree Research Unit. It consists of five chapters, being three articles, and an overall introduction and discussion. As a result, some repetition across chapters may be necessary.

CHAPTER 1:

General Introduction

Social Anxiety Disorder

Social anxiety disorder (SAD)[2] is defined in the *Diagnostic and statistical manual of mental disorder* (4th ed., text rev; *DSM-IV-TR;* American Psychiatric Association, 2000*)* as a marked and persistent fear of social or performance situations in which embarrassment may occur. Although most people fear evaluation, a socially anxious individual's fear is severe and pervasive, impacting on the person's ability to function in life. Diagnostic criteria for SAD require fears of being negatively evaluated by others or scrutinised; fears of being exposed in the presence of unfamiliar people; fears of behaving in a humiliating fashion; in which situations are endured with severe distress or avoided; and the fears cause significant impairment in the individual's life (*DSM-IV-TR,* 2000).

SAD phenomenology

The fears are present in most situations, such as: meeting new people, talking to acquaintances, strangers, or family members; talking on the telephone, to authority figures, in meetings, in classrooms, that is, in front of a group; going to parties; dating; expressing disagreement or controversial opinion; being assertive; being the centre of attention; eating or drinking in front of others; and writing in front of others (Antony & Rowa, 2008).

The socially anxious individual may experience somatic symptoms preceding or during these situations such as heart racing, short breath, stomach aches or tightness, blushing, sweating, shaking and dry mouth. The severe anxiety in social and performance situations may lead to cued panic attacks preceding or during the situation. Thoughts centre on fear of negative evaluation, humiliation, and embarrassment.

SAD epidemiology and comorbidity

The onset of SAD occurs early in life (Ost, 1987). SAD is most prevalent among unmarried individuals (Lipsitz & Schneier, 2000) and women (5.7%) (Bekker & van Mens-

[2] The terms social phobia and social anxiety disorder are used interchangeably in the present thesis.

Verhulst, 2007; Slade, Johnston, Oakley Browne, Andrews, & Whiteford, 2009), however, men seem to be more likely to seek treatment (Hoffman & Barlow, 2002).

SAD has a chronic course, persists when untreated (Reich, Goldenberg, Vasile, Goisman, & Keller, 1994), impairs work productivity, social, and intimate relationships (Rapee, 1995; Rapee & Sanderson, 1998), and is often antecedent to the development of other mental health problems, such as depression and substance abuse (Stein, Chartier, Lizak, & Jang, 2001).

Anxiety, mood disorders, and personality disorders (especially avoidant personality disorder) (Rapee, 1995; Rapee & Sanderson, 1998; Widiger, 1992) are known to be comorbid with SAD. Among individuals with SAD, 46% were found to meet current criteria for other disorders and 72% were found to meet lifetime criteria for other disorders (Brown, Di Nardo, Lehman, & Campbell, 2001).

Psychological models of SAD

Models of social phobia have been described (Clark & Wells, 1995; Rapee & Heimberg, 1997; Schlenker & Leary, 1982) in order to elucidate how social phobic individuals process and perceive information about a possible evaluative situation.

Clark and Wells' (1995) cognitive model proposes that the socially anxious individual wants to make a positive impression on other people; however they feel uncertain about their capability to do so. The uncertainty seems to be the result of three distinct but related items. The socially anxious individual (1) holds distorted beliefs about the self (e.g., I'm incompetent), (2) makes assumptions about self and others (e.g., If I make a mistake, they'll think I'm a failure), and (3) sets inflexible rules about how one is expected to behave in social settings (e.g., I should always do everything right). These beliefs, assumptions and rules are applied by the individual not only during the situation, but also preceding the situation, which is called "anticipatory processing"; and after the anxious situation has passed, a "*post-*

mortem" examination is conducted, that is, the individual ruminates about the negative things that have happened, disregarding the positives, feeding back the negative beliefs about self.

According to the Clark and Wells' (1995) model, the individual's attention is self-focused, instead of being focused on the task at hand (a conversation, for instance). The self-focus is promoted by the physiological symptoms (heart racing or blushing) and its final result is feeling conspicuous. Socially anxious individuals try to prevent feared catastrophes or feeling distress in social situations through the use of safety behaviours (e.g., having a friend or spouse accompany them when going to a social gathering or drinking alcohol before going to a party). Avoidance is also used to prevent distress. Although safety behaviours and avoidance prevent intense distress, they maintain anxiety by preventing the individual from learning that the negative outcome is unlikely to happen.

The Rapee and Heimberg (1997) model shares some features described in the Clark and Wells' (1995) model but also holds some unique features. Both models suggest that the socially anxious individual holds negative self-beliefs, predicts negative outcomes, and uses avoidance and safety behaviours. The unique contribution made by Rapee and Heimberg's model is that the audience's reaction is perceived as a threat by the socially anxious. Also, there are two relevant assumptions of this model; it makes no distinction between shyness, avoidant personality disorder and social phobia, in fact, SAD is estimated to be on a continuum, from the middle to an upper level of the disorder; secondly, although *DSM-IV-TR* refers to subtypes of social phobia as generalized and not, the model considers that the cornerstone of social phobia is essentially alike.

According to Rapee and Heimberg (1995), when the socially anxious individual is about to face a situation they consider to be an evaluative situation, a mental representation of how they appear to the audience is recollected. The mental representation is composed of prior knowledge of one's general appearance together with momentary adjustments. This image is not an actual accurate portrayal of oneself, but a distorted image related to the most salient

aspects of one's appearance. This image changes from moment to moment in a situation based on both feedback from outside (audience cues) and feedback from inside (physical symptoms, thoughts, behaviours). The individual has an imprecise initial image of one's appearance and receives feedback that is distorted and exaggerated. Given that a large amount of attention is allocated in two directions – (1) the focus is largely on the mental representation of how one appears to others; and then, (2) one looks for any possible negative cue from the audience – the individual attributes the lack of attention to a bad memory or lack of social skills. Frequently, socially anxious individuals tend to distort neutral information interpreting it negatively, and, as a consequence, external feedback to the mental representation of appearance is strongly negatively biased. In addition, the socially anxious individual may develop an anticipation of the performance standard that the audience expects, assuming that any audience holds a high expectation of performance.

In agreement with the Clark & Wells model, the Rapee and Heimberg model notes that the anxious moment also encompasses increased physiological arousal (as described earlier), negative thoughts, and withdrawal, avoidance, and safety behaviours. Social phobia occurrence is maintained as a result of the anxiety in the situation that feeds back to the mental representation of the self. In addition, one of the feedback sources comes from the individual engaging in avoidance so that the individual is not able to confirm whether they lack social skills. The avoidance behaviour results in reduced engagement with the task to be processed.

The two models consider how the socially anxious individual processes information and relates to the others, that is, the process by which social anxiety is maintained.

Prevalence of social anxiety cross-culturally

One of the aims of this thesis is to examine individual differences in the expression of SAD. One context in which individual differences in SAD are observed is across cultures. Prevalence variability of social anxiety has been observed across countries. For example, in

Australia, 4.7% of adults have experienced social anxiety within the past 12 months (Slade, Johnston, Oakley Browne, Andrews, & Whiteford, 2009); and an Australian estimation of the impact of social anxiety indicates that it is one of the 30 worst diseases in terms of disability adjusted life years lost (Mathers, Vos, Stevenson, & Begg, 2000). Twelve-month prevalence has been found to be 2.8% in the USA (Kessler et al., 2005), 2.3% in the European countries (Wittchen & Jacobi, 2005), 4.5% in Israel (Iancu et al., 2006), 0.8% in Japan (Kawakami et al., 2005), 0.2% in South Korea (Cho et al., 2007), 0.2% in China (Shen et al., 2006), 1.7% in Mexico (Medina-Mora et al., 2005), and 0.8% in Nigeria (Gureje, Lasebikan, Kola, & Makanjuola, 2006). Compared to Western countries, lower prevalence rates were found in non-Western countries. In Brazil, while a representative sample has not been studied, the one-year prevalence of SAD was estimated to be 3.9% (Andrade et al., 2012) and 9.1% (Vorcaro, Rocha, Uchoa, & Lima-Costa, 2004), in the Sao Paulo state and one city of the Minas Gerais state, respectively.

A few explanations can be offered to explain the differences in social anxiety prevalence across countries. While some researchers have used the *DSM-III-R* (Kessler et al., 1994) criteria to assess SAD, others have used the *DSM-IV* (Kessler et al., 2005). The newer version, *DSM-IV-TR*, proposed a greater number of feared situations for individuals, which in turn may have increased the prevalence rates. The variability could also be explained by measurement problems. Since the *DSM-IV* was developed by researchers of English-speaking countries, it may be culturally biased due to culture and language, failing to embrace the cultural expressions of the disorder. Alternatively, the variability can also be accounted for by the authentic reflection of prevalence differences across the countries. Rapee and Spence (2004) suggested that SAD seems to be alike across culture in which, however, precipitating factors potentially vary cross-culturally. Other studies have demonstrated a variability of SAD symptoms across cultures (Kirmayer, 1991; Kleinknecht, Dinnel, Kleinknecht, Hiruma, & Harada, 1997).

Cross-cultural variation of social anxiety expression

Perhaps, the most known cultural variation of social anxiety is *taijin kyofusho (TKS)* (Kirmayer, 1991), found in Japan and South Korea. In *TKS*, fears are centred on offending others, due to inappropriate behaviours or offending appearance. This disorder has two subtypes, the neurotic and the offensive types (Iwase et al., 2000). The neurotic subtype features another two subtypes: one relating to embarrassment and shame characterised by fears of being negatively evaluated due to physical symptoms of anxiety and shame due to anxiety and avoidance and the other relating to avoidance characterised by low self-esteem, fears of interpersonal interactions, fears of inadequacy, fears of being negatively judged by others, and fears of rejection. The offensive subtype of *TKS* features negative beliefs about the self being flawed, offensive, or inapproapriate, and thus the individual has fears of offending others. The offensive subtype focuses mainly on the thoughts and feelings of others, distinguishing it from the neurotic subtype that focuses on one's own thoughts and feelings and which is similar to the description of SAD in the *DSM-IV* (Russell, 1989). In the offensive subtype, the individual has fears of making eye contact, fears of body odours or intestinal gas, fears of deformed body, or fears of blushing (Choy, Schneier, Heimberg, Oh, & Liebowitz, 2008). Based on the *DSM-IV-TR*, individuals meeting criteria for the offensive subtype often present symptoms that are common in delusional and somatoform disorders. According to studies, compared to individualistic cultures, the fears of the *TKS* offensive type derives from the collectivistic culture. *TKS* is mostly found in specific cultures such as Japan and South Korea which may be described as collectivistic rather than individualistic (Dinnel, Kleinknecht, & Tanaka-Matsumi, 2002; Kleinknecht et al., 1997). *TKS* is an example that reflects how social anxiety maintaining factors may be impacted by cultural context.

The variation of expression of social anxieties cross-culturally can also be seen in individualistic and collectivistic societies. Differences between individualism and collectivism have been examined and while the division between countries in terms of

whether they are collectivistic or individualistic is not always clear, evidence has shown that individualistic and collectivistic cultures vary in their communication styles and social interactions (Oyserman, Coon, & Kemmelmeier, 2002). Specifically, individualism encourages interpersonal interaction and straightforward communication style, and collectivism encourages in-group interactions and face-saving. According to Oyserman et al. (2002), latent individualism and collectivism are not always underlying variability between cultures; nevertheless individualism and collectivism do impact in some psychological processes. In the context of social anxiety, one living in a collectivistic culture would be more attentive to norms for social behaviours in which discrepancies would easily be spotted (Hofmann, Anu Asnaani, & Hinton, 2010); social norms may be less observable in individualistic cultures as accommodating into society is rather less valued (Heinrichs et al., 2006).

This thesis explores whether the cross-cultural differences - where individualistic versus collectivistic cultures are compared - in the expression of SAD may be related to differences in personality traits.

SAD subtypes

Another context in which individual differences in SAD are explored in this thesis is by examining subtypes of SAD. In the *DSM-IV-TR*, subjects with a diagnosis of social anxiety disorder who report marked and persistent fear of most social or performance situations are given the diagnosis of social phobia - generalised subtype (*DSM-IV-TR, 2000*).

Generally, compared to those with non-generalised social phobia, however defined, those with generalised social phobia are more likely to have an earlier onset of social anxiety, to be unmarried, less educated, and unemployed (Brown, Heimberg, & Juster, 1995; Heimberg, Hope, Dodge, & Becker, 1990; Holt, Heimberg, & Hope, 1992; Mannuzza et al., 1995). Also, those with generalised social phobia are more likely than those with non-generalised social phobia to have more severe social anxiety, to be more fearful of negative

evaluation, to have comorbid disorders, to be more impaired, to have lower positive affect, and to have poorer treatment outcome (Brown et al., 1995; Heimberg et al., 1990; Herbert, Hope, & Bellack, 1992; Holt et al., 1992; Hope, Herbert, & White, 1995; Hughes et al., 2006; Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992; Turner, Beidel, & Townsley, 1992). However, some studies have not found the same results regarding the relationship between generalised social phobia and socioeconomic status and age (Herbert et al., 1992; Hofmann, Ehlers, & Roth, 1995; Mannuzza et al., 1995). Nevertheless, generalised social phobia and non-generalised social phobia differ in most of its predictors, the magnitude and pervasiveness of fears, comorbidity, treatment outcome, and symptoms.

While there tends to be consistency in research studies in what constitutes generalised social phobia, the other subtype, the non-generalised subtype, has been variously defined by researchers. Some researchers have defined the non-generalised subtype based on the number of feared situations (e.g., Safren et al., 1999) while others have defined non-generalised social phobia based on the type of situation feared (e.g., Heimberg, Holt, Schneier, Spitzer, & Liebowitz, 1993). It could be argued that conceptualisation of subtypes of social fears based on the number of situations feared does nothing more than defining groups of people based on the severity of the fear, with those fearing more situations having a more severe fear than those fearing less situations. A number of researchers have used conceptual (e.g., Norton, Buhr, Cox, Norton, & Walker, 2000; Norton, Cox, Hewitt, & McLeod, 1997) or empirical methods (e.g., Eng, Heimberg, Coles, Schneier, & Liebowitz, 2000; Furmark, Tillfors, Stattin, Ekselius, & Fredrikson, 2000; Safren et al., 1999b; Safren, Turk, & Heimberg, 1998) to examine the presence of subtypes of social phobia based on the types of situations feared, rather than basing the subtype distinction on the number of fears endorsed. In particular, subtypes of social phobia have been defined conceptually in terms of those who fear performance situations as compared to those who fear social interaction situations.

Some of the studies examining the validity of this distinction between generalised social phobia and non-generalised social phobia based on type of situation feared have used as the non-generalised social phobia subjects who exclusively fear public speaking (Heimberg et al., 1990), or groups where the majority of subjects fear public speaking (e.g., Levin et al., 1993). It is not surprising that public speaking concerns are the ones chosen in research studies to define circumscribed social phobia given their prevalence in the general population is higher than concerns about other social phobic situations. For example, Furmark et al. (1999) found 24% of their sample endorsed public speaking fears while only 4.8% endorsed fear of eating or drinking in public, and 8% endorsed writing in front of others. Stein, Torgrud and Walker (2000) found 15.1% of their sample endorsed fears of speaking in public compared to 4.2% endorsing eating in front of others. There is some research suggesting that those who have fears of only public-speaking situations differ from those who fear other performance situations. For example, an epidemiological study that examined the demographic and clinical correlates of those who endorsed public-speaking fears only compared to those who endorsed other social fears (Kessler, Stein, & Berglund, 1998) found that those social phobics with public-speaking fears only had less persistent fears that were less impairing and they had less comorbid disorders than those social phobics with other social fears. Thus, it seems that there may be a further distinction to be made between performance fears (public-speaking vs. other performance situations like writing, eating, or drinking in front of others) in addition to a distinction between interaction and performance fears.

Several researchers have defined non-generalised social phobia going beyond just public-speaking fear. For example, Heimberg et al. (1993) proposed a situational quantitative model in which, generalised social phobia encompassed fears of most social interactions; non-generalised social phobia encompassed fears of social interactions but demonstrated at least one domain in which clinical anxiety is not experienced, and circumscribed social phobia encompassed fears of one or two specific situations like public speaking. In Heimberg et al.'s

model, social anxiety subtypes are on a continuum of severity and at the most severe end is generalised social phobia with avoidant personality disorder. Safren et al.'s (1999) investigation, using the Liebowitz Social Anxiety Scale (LSAS; Liebowitz, 1987) proposed a four-factor solution for social phobics including clusters of social interactions and performance fears group. One factor of social interaction was yielded and three performance anxiety factors (public speaking, observation by others, and eating and drinking in front of others), supporting public speaking as a subtype of fear separate from social and other performance fears in a clinical sample (Safren et al., 1999). Similar results were found in a clinical sample (Eng et al., 2000) and in a nationally representative sample (Cox, Clara, Sareen, & Stein, 2008) suggesting that public speaking is an independent type of performance fear. However, one study did not support Safren et al.'s findings (Baker, Heinrichs, Kim, & Hofmann, 2002) showing instead that fears clustered as social interaction, nonverbal performance, eating and drinking, public performance, and assertiveness. Overall, however, empirical evidence suggests that there is variation in the context of expression of social anxiety, such that individual differences can be seen in the situations feared. In particular, there appear to be three groupings of situations feared in social anxiety: social interaction fears; performance fears such as eating and drinking in public, and being observed by others; and public speaking fears. The present study will examine whether fears of the three types of situations are related to differences in personality traits.

Treatment of SAD

The final setting in which the relationship between individual differences in social anxiety and personality traits will be examined is treatment outcome. Cognitive behavioural therapy (CBT) is one of the most effective treatments for social anxiety disorder (see Heimberg et al., 1990; Rodebaugh, Holaway, & Heimberg, 2004 for a review); however, meta-analyses of CBT for SAD have shown only moderate efficacy, with treatment effect sizes relative to waitlist of around 0.8 (e.g., Fedoroff & Taylor, 2001). Thus, despite empirical

evidence for the effectiveness of CBT, not all clients who complete a program of CBT for their social anxiety will have optimal levels of improvement. For example, Carleton and colleagues demonstrated that 58% of the participants who commenced CBT for their SAD were rated as improved at completion of treatment; thus, 42% had outcomes that were less than optimal (Carleton, Collimore, & Asmundson, 2010). These findings establish that even the best treatment for SAD has non-responders i.e., there are individual differences in treatment outcome. For example, empirical evidence shows that personality traits may interfere with therapeutic alliance (Kolden & Klein, 1996), and working alliance was found to be a critical component of CBT and other psychotherapies (Barber, Connolly, Crits-Christoph, Gladis, & Siqueland, 2000; Piper, Boroto, Joyce, McCallum, & Azim, 1995; Piper, Ogrodniczuk, & Joyce, 2004). Gray (1970) has suggested that individual differences seem to consistently impact on the experience, identification, learning and remembrance of threatening stimuli. Taking that SAD is a complex disorder, the lack of optimal results in the treatment of SAD may be due to the individual differences in personality that potentially impact in the SAD treatment outcome. While research attention has begun to turn to enhancing CBT treatments that might be offered to socially anxious individuals, relatively little attention has focussed on individual differences amongst clients that might maximise treatment responses. One of the aims of this thesis is to explore the relationship between SAD and personality, by investigating whether personality traits impact on SAD treatment outcome.

The construct of personality

The review now turns to examine the construct of personality as it is defined in this thesis. A number of different theoretical approaches to personality exist; for example, psychoanalytic (Freud, 2010); humanistic (Maslow, 1954); learning (Bandura & Walters, 1963); trait (Allport, 1927; Cattell, Eber, & Tatsuoka, 1970). This thesis focuses, however, on

trait theory, where a trait is conceptualised as the individual's dimensional tendency to demonstrate a pattern of actions, feelings, and thoughts (McCrae & Costa Jr, 1990). In particular, this thesis adopts a model of personality traits that suggests that personality can be adequately described by scores on five factors or traits: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness.

Researchers have used the natural language (e.g., Allport & Odbert, 1936; Cattell, 1943a, 1943b, 1945, 1947; Cattell et al., 1970; Fiske, 1949; Tupes & Christal, 1992) to select words descriptive of personality that capture subtle differences of human behaviour (for a comprehensive review see John, Angleitner & Ostendorf, 1988). A five-factor structure has been found and replicated by different authors (Borgatta, 1964; Digman & Kakemoto-Chock, 1981; Goldberg & Chun, 1990; Goldberg, 1981, 1990, 1992; Hampson, John, & Goldberg, 1986; McCrae & Costa Jr, 1985, 1987); however, to offer an integrative and pragmatic framework, the NEO Personality Inventory (NEO-PI) (Costa Jr & McCrae, 1976, 1985) was developed, using a cluster analysis approach, extracting three personality dimensions; neuroticism, extraversion, and openness to experience. Later, two other dimensions (agreeableness and conscientiousness) were included in the model, followed by the publication of a new version of the questionnaire with 240-item (NEO-PI-R; Costa & McCrae, 1992). *Extraversion* refers to assertiveness and sociability of the individual; *neuroticism* refers to emotional stability; *agreeableness* refers to an interpersonal style and incorporates tendencies to be compassionate and cooperative, instead of being suspicious and antagonistic; *openness to experience* refers to an intellectual style that could be described as curious, flexible, and creative; and *conscientiousness* refers to self-discipline and need for achievement. Each factor is made up of six facets that correlate together and define the dimensional factors of personality describing someone's emotional, interpersonal, experiential, attitudinal, and motivational styles covering a broad extent of thoughts, feelings, and actions (Costa & McCrae, 1992). The global trait neuroticism hosts anxiety, angry

hostility, depression, self-consciousness, impulsivity, and vulnerability; extraversion hosts warmth, gregariousness, assertiveness, activity, excitement-seeking, and positive emotions; agreeableness hosts trust, straightforwardness, altruism, compliance, modesty, and tender-mindedness; conscientiousness hosts competence, order, dutifulness, achievement striving, self-discipline, and deliberation; and openness to experience hosts fantasy, aesthetics, feelings, actions, ideas, and values. The NEO-PI-R has good internal consistency, convergent, and discriminant validity compared to peer and spouse ratings (Costa & McCrae, 1992; McCrae & Costa Jr, 2003).

Other scales have been developed to tap the same constructs, with the advantage of being in the public domain (e.g., International Personality Item Pool (IPIP); Goldberg, 1999). The IPIP was created as an "international effort to develop and refine a set of broad-bandwidth personality inventories" (Barrick & Ryan, 2003, p. 19), measuring personality traits. It also comprises five broad domains of personality each containing a number of bipolar facets; extraversion (E), agreeableness (A), conscientiousness (C), neuroticism (N), and openness to experience (O). Two versions were created, the 100-item and 50-item, and phrased as descriptive statements. It has strong correlations with NEO-PI-R (IPIP, 2011) and good internal consistency reliability for the American community sample; 91 (E), .88 (A), .88 (C), .91 (N), and .90 (O) (Mlacic & Goldberg, 2007).

Cross-cultural differences in the structure of personality traits

Researchers started to explore the natural language of personality in other countries. It has been argued that there are global personality traits independent of culture (for a review see (De Raad, Blas, Perugini, 1998a; McCrae et al., 2000; McCrae & Terracciano, 2005); these "universals" can be examined cross-culturally and their occurrence is interpreted by individuals based on their cultural perspectives (Triandis & Suh, 2002). However, generalisation of cross-cultural research should be done carefully, as collectivistic and individualistic individual behaviours are not predicted by personality traits equally (Church &

Katigbak, 2000), and openness to experience has not been identified in certain cultures (Cheung & Leung, 1998; McCrae & Terracciano, 2005).

A brief review is offered below (for a more comprehensive review see Saucier, Hampson, & Goldberg, 2000). The dimensional structure of the Big Five has been translated and supported in various languages (Caprara & Perugini, 1994; De Raad, 1992; De Raad, Perugini, & Szirmák, 1997; Shmelyov & Pokhil'ko, 1993; Szirmák & De Raad, 1994) with some variability (De Raad, Perugini, Hrebícková, & Szarota, 1998b). In the German language, correlations between German factors scores and factor scores of the Big Five were above 0.70 (Ostendorf, 1990; Ostendorf & Angleitner, 1994). In a Dutch sample, four of the Big Five were replicated (De Raad, 1992; Brokken, 1978), with weak support for the openness to experience domain (De Raad, 1994). In the Polish language, five factors were identified, three being identical to the Big Five, however the extraversion domain did not incorporate the sociability facet and the neuroticism domains had self-control related to the domain (Szarota, 1996). In the Italian language, two projects differed in the extraversion and openness results (Di Blas & Forzi, 1998, 1999; Caprara & Perugini, 1994). In the Korean language, conscientiousness and openness were grouped together forming a Methodical intellect domains; and conscientiousness alone stressing dependability (Hahn, Lee, & Ashton, 1999). The openness domain had the highest variability among the Big Five domains across samples. The variation in these studies may be accounted for by a number of methodological reasons: that is, the selection method of the word set, the nature of the words; the initial and final list size, subsets of words; the selectors of the words; the sample size; the types of rating scales used to apply the words; the data analysis method; and also the differences in the structure of personality that may be reflective of true cross-cultural differences.

Personality and psychopathology

Since the classification of mental health disorders and the occurrence of the taxonomy of personality, personality traits have been linked to mental disorders, contributing to an

extensive knowledge of the development of mental health problems (Bienvenu & Stein, 2003; Costa & McCrae, 1992; Westen & Morrison, 2001). However, researchers continue to stress the need for further understanding on how mental health disorders and personality traits relate (Costa & Widiger, 2002; Matthews, Saklofske, Costa Jr, Deary, & Zeidner, 1998; Widiger & Trull, 1992).

Investigating the relationship between personality and psychopathology has important implications for practice and research. For example, investigating individual differences in personality traits may be useful in the following specific ways: identification of individuals at risk of developing psychopathology in order to target groups for prevention (Kovacs & Lopez-Duran, 2010); identification of similar subgroups of disorders, or subtypes of disorders, that diverge in development directions (Beck, 1983); clarification of processes related to the development of disorders (Compas, Connor-Smith, & Jaser, 2004; Essex, Klein, Slattery, Goldsmith, & Kalin, 2010; Klein, Dougherty, Laptook, & Olino, 2008; Lahey, 2009); investigation of individual differences related to the expression of disorders that operate as phenotypes which may be more useful goals to increase genetic and neurobiological research than disorders per se (Canli, 2008); and lastly, tailoring of treatment (Zinbarg, Uliaszek, & Adler, 2008) and enhancement of treatment outcome (Bagby et al., 2008; Quilty et al., 2008).

Research has been conducted on the relationship between personality and psychopathology, however, most of the research focuses on the relationship between personality and mood disorders (e.g., Bagby et al., 2008; Compas et al., 2004; Klein et al., 2008; Kovacs & Lopez-Duran, 2010; Lahey, 2009; Quilty et al., 2008; Zinbarg et al., 2008), whereas the association between individual differences in personality and anxiety disorders is still in its early stages. This thesis proposes to contribute to the literature by investigating the association between individual differences in personality traits and the expression and treatment outcome for social anxiety.

Models of the association of personality and anxiety disorders

The association between personality and mental disorders has been explained via four different models. The *vulnerability/predisposition model* suggests that personality characteristics predispose individuals to distress disorders, as personality features are risk factors which increase the chances of developing an anxiety disorder. For instance, an individual high in neuroticism would be more prone to develop a disorder compared to an individual low in neuroticism, because having high neuroticism could increase individual behaviours that may promote the development of disorders. The *pathoplasty/exacerbation model* suggests that personality features impact on the distress disorder manifestation or expression. According to the pathoplasty model, personality traits may influence expression, chronicity, course, severity, and prognosis of a disorder, without necessarily being related to the onset of the disorder. For instance, a socially anxious individual with high neuroticism scores could present with a more severe disorder than a socially anxious individual with low neuroticism scores, because the high neuroticism individual could have other characteristics (e.g.; depression) worsening the disorder. The *complication/scar model* suggests that the distress disorder impacts personality, that is, personality features change concomitantly with disorder, either changing back or being maintained after the disorder is resolved. For instance, a long-term debilitating social anxiety disorder may impact individual's personality such as lack of confidence or dependency, as the disorder would have enduring effect on trait levels. The *spectrum/continuum model* suggests no causal relationship between disorder and personality traits, both being the expression of the same underlying processes, that is, this model proposes that disorder and personality exist in a continuum from subclinical characteristics to a fully developed disorder. For example, shyness and avoidant personality disorder would have an identical set of underlying factors, however they are different versions of the same phenomenon, in which the two constructs are superimposed upon one another

(Akiskal, Hirschfeld, & Yerevanian, 1983; Krueger & Tackett, 2003; Widiger, Verheul, & van den Brink, 1999).

Evidence about the relationship between personality and psychopathology that is taken to support each of these different models is now reviewed in turn.

Evidence for the vulnerability or predisposition model comes from studies which have found associations between normal personality traits and anxiety and mood disorders. High levels of neuroticism predicted onset of major depressive disorder episodes (De Graaf, Bijl, Ravelli, Smit, & Vollenbergh, 2002; Fanous, Neale, Aggen, & Kendler , 2007; Kendler, Neale, Kessler, Heath, & Eaves, 1993, 2006; Ormel, Oldehinkel, & Vollebergh, 2004; Clark, Watson, & Mineka, 1994); similar results were found for social anxiety and panic disorders, and agoraphobia (Bienvenu et al., 2001a; Bienvenu et al., 2001b). Personality traits were investigated as vulnerability factors for the development of distress disorders. Premorbid scores of neuroticism of individuals who had not developed depressive episode, over a 1 to 6 years follow-up, were expressively lower than those of remitted depressive episodes (Frank, Kupfer, Jacob, & Jarrett, 1987; Liebowitz, Stallone, Dunner, & Fieve, 1979). Also, low scores of self-confidence (extraversion) predicted depression (Holahan & Moos, 1991). In contrast, higher scores of extraversion were identified in individuals without history and familial history of depression (Frank et al., 1987). All anxiety disorders, except simple phobia, were found to be related to anxiety sensitivity, with higher levels in panic and posttraumatic stress disorder (Taylor, Koch, & McNally, 1992).

Personality traits may be an expression of environmental or genetic risk factor for anxiety disorders (Brandes & Bienvenu, 2006). Another way of collecting strong evidence for the vulnerability or predisposition model is through familial studies, as these studies can exhibit personality differences of individual's relatives with and without a disorder history. Although some studies have failed to differentiate environmental and genetic effects of traits, a number of familial studies have found personality traits to be partially inheritable in anxiety

disorders. In a comparison between control groups and parents with anxiety disorder, it was found that anxiety disordered parents had higher rates of children who were behaviourally inhibited (Rosenbaum et al., 1993; Rosenbaum et al., 2000). Similarly, compared to control, high obsessive-compulsive and neuroticism traits were found in relatives of OCD clients (Samuels et al., 2000), and relatives of generalised social phobics were found to have higher trait anxiety and harm avoidance compared to control groups (Stein et al., 2001).

The most compelling evidence for the predisposition model (that personality traits operate as risk factors for anxiety disorder) comes from longitudinal studies. In a community sample, a study was conducted testing participants and their mothers from childhood to young adulthood, to examine whether personality disorder traits would increase risk of developing anxiety disorders (Johnson et al., 1999). It was found that, by young adulthood, personality disorders traits were predictive of anxiety disorders when controlling for adolescent Axis I disorders. In a similar vein, Krueger (1999) followed a sample of young people for age 18 to age 21 and observed that onset of anxiety disorders was predicted by greater negative emotionality (neuroticism). Finally, three separate longitudinal studies have examined the onset of PTSD. The onset of PTSD was strongly predicted by the neuroticism trait in a sample of peacekeepers (Bramsen, Dirkzwager, & Van Der Ploeg, 2000); by high neuroticism and low extraversion baseline in a sample of severe burn survivors (Fauerbach, Lawrence, Schmidt, Munster, & Costa, 2000); and, by high narcissistic vulnerability in a sample presenting in an emergency room after going through a traumatic situation (Bachar, Hadar, & Shalev, 2005). Thus, personality traits have been shown to be predictive of anxiety disorders in support of the predisposition model. It should be noted, however, that the studies analysed did not clarify other possible processes involved in the development of the disorders; that is, perhaps low or high personality trait scores are early symptoms of anxiety disorders.

In support of the pathoplasty or exacerbation model of the relationship between personality traits and distress disorder are studies that examine the impact of personality traits

on the expression of disorders. For example, it has been found that higher negative affect (neuroticism) scores on depression episodes are related to more chronicity and poorer overall outcome (Clark et al., 1994). Furthermore, in a clinical sample, Schmidt & Bates (2003) investigated whether the anxiety sensitivity (neuroticism) trait would impact on the expression and course of panic disorder. It was found that anxiety sensitivity was related to the expression of panic disorder, demonstrated in the variation of symptoms, comorbid diagnosis, and medication intake. Variation in anxiety sensitivity after treatment predicted clinical prognosis at follow-up. Anxiety sensitivity has also been related to the predispositional (Schmidt, Lerew, & Jackson, 1997) and scar models (Schmidt, Lerew, & Joiner Jr, 2000) for panic, also impacting on the manifestation and course of panic disorder.

Evidence for the scar or complication model comes mostly from studies that have examined the effect of major depressive disorder on personality traits. There is evidence that levels of neuroticism (De Fruyt, Van Leeuwen, Bagby, Rolland, & Rouillon, 2006; Morey et al., 2010) and harm avoidance (Chien & Dunner, 1996; Lyoo, Yoon, Kang, & Kwon, 2003) decrease after treatment of different disorders, however some of these personality traits maintained moderate levels (De Fruyt et al., 2006; Hofmann & Loh, 2006; Morey et al., 2010), suggesting that depression resulted in a change in neuroticism levels.

Support also has been found for the spectrum or continuum model. For example, major depressive disorder and depressive personality were found to have shared heritable variables, also with unique heritable factors in a twin study (Ørstavik, Kendler, Czajkowski, Tambs, & Reichborn-Kjennerud, 2007).

Evidence has shown that personality and psychopathology are associated in a number of ways. Importantly, these models are not mutually exclusive. Furthermore, there is no clear evidence that one model is a better explanation of the relationship between personality and psychopathology than any other of the models.

The correlation of SAD and personality traits

Research has found relationships between social anxiety disorder and personality traits. Research based on Cloninger's dimensions of temperament and character (Cloninger, 1999), which correlates highly with dimensions of the FFM (De Fruyt, Van De Wiele, & Van Heeringen, 2000), demonstrated significantly elevated levels of harm avoidance in SAD (Chatterjee, Sunitha, Velayudhan, & Khanna, 1997; Hofmann & Loh, 2006; Kim & Hoover, 1996; Marteinsdottir, Tillfors, Furmark, Andenberg & Ekselius, 2003; Pelissolo et al., 2002) when compared to control groups. Harm avoidance is the tendency of inhibiting behaviours to avoid punishment and new stimuli. Harm avoidance correlates positively with neuroticism and negatively with extraversion. SAD participants also had decreased levels of self-directedness (which correlates negatively with neuroticism and positively with conscientiousness and extraversion) and cooperativeness (a facet of agreeableness) (Chatterjee et al., 1997; Marteinsdottir, Tillfors, Furmark, Andenberg, & Ekselius, 2003; Pelissolo et al., 2002). In other research, SAD participants were found to score low on all facets of extraversion, very low on mean trust (a facet of agreeableness), and low on self-discipline, competence, and achievement striving (all facets of conscientiousness) (Bienvenu et al., 2004). In another study, social anxiety showed a strong negative link with sociability and ascendance (extraversion), and a moderate negative correlation with positive emotionally (neuroticism) and weak correlation with fun-seeking (conscientiousness) (Naragon-Gainey, Watson, & Markon, 2009). Broadly, social anxiety disorder is correlated to high neuroticism and low extraversion, and somewhat with low conscientiousness and low agreeableness (trust).

Individual differences in the expression of SAD cross culturally

As previously demonstrated, the prevalence of social anxiety varies across countries. A number of reasons were put forward to explain the variability. One reason that has not gained much attention is that the cultural elements one is surrounded by may influence SAD

prevalence, affective experience, and individual differences in personality. The cultural elements that one is surrounded by may influence SAD prevalence, affective experience and individual differences in personality (Oishi, Napa Scollon, Diener, & Biswas-Diener, 2004; Kim, 2002; Levine, Norenzayan, & Philbrick, 2001; Kleinknecht et al., 1997). Perhaps, personality traits, which are associated with social anxiety such as high neuroticism and low extraversion, vary across cultures. Taken together, the evidence on the effects of culture on affective experience and personality suggests one construct that may account for differing prevalence rates across and within countries, that is individual differences in personality that may exist within each country.

SAD has a close relationship with neuroticism (Chatterjee et al., 1997; Hofmann & Loh, 2006; Kim & Hoover, 1996; Marteinsdottir et al., 2003; Pelissolo et al., 2002). Hofstede and McCrae (2004) reported that collectivistic cultures tend to be high in neuroticism, and display higher uncertainty avoidance levels which relates to low tolerance for ambiguity. SAD has demonstrated associations with uncertainty avoidance (Boelen, Vrinssen, & Van Tulder, 2010; Carleton et al., 2010), which is in accordance with SAD characteristics. Embarrassment, another characteristic of SAD, was found to be positively correlated with high collectivism and a lack of personal control correlating with vulnerability to depression (Oyserman et al., 2002). Along with meta-analytic research comparing cultures (Oyserman et al., 2002), personality traits such as sensitivity to rejection, need for affiliation, nurturance and meeting other's expectations were found to be positively correlated with collectivism. Thus, it might be expected that SAD, which is closely related to neuroticism, would be more prevalent in collectivistic cultures where neuroticism traits are also seen to be more prevalent.

Other researchers have investigated the relationship between personality and social anxiety cross-culturally. Heinrichs and colleagues (2006) compared individualistic (Australia, Canada, Germany, Netherlands, and the United States) and collectivistic (Japan, South Korea and Spain) countries towards individual differences and social norms, and their association

with social anxiety and fears of blushing; in order to verify this issue, social vignettes were applied to address cultural norms in regards to acceptability of social reticent behaviour and withdrawing (closely associated with neuroticism) versus attention-seeking and outgoing behaviour (closely associated with extraversion). It was found that collectivistic cultures are significantly more accepting of withdrawing and modesty; whereas individualistic countries were accepting of attention seeking behaviours. However no differences were found in personal views of those behaviours. When examined separately a positive association between cultural and personal norms was found within collectivistic countries; the authors suggested that in collectivistic cultures individuals report more consistent responses on both measures administered, they also conform more to perceived social norms. In collectivistic countries individuals were significantly more socially anxious and fearful of blushing compared to individualistic countries; authors proposed two explanations for the findings, (1) although collectivistic countries seem to have clearer rules of social behaviours, to diverge from the defined social rules would result in anxiety promoted by external sanctions; (2) also, collectivistic countries seem to relate to the concept of tightness while individualistic countries to the concept of looseness (for a review see Triandis, 2004), where a tight culture would have overt norms and violating them would lead to severe consequences.

To replicate and expand Heinrichs et al.'s (2006) study, Schreier et al. (2010) collected data in individualistic (Australia, Canada, Germany, Netherlands, and the United States) and collectivistic (East Asian - Japan, South Korea and Spain) and added countries from the Latin American (Costa Rica and Ecuador). The aim was to re-investigate Latin American's cultural *scrip* of *simpatia*, the social norm that supports sociability (or extraversion). They found that East Asian groups presented the higher levels of social anxiety and higher support of social reticent behaviours; the Latin American sample however, presented the lower levels of social anxiety among the three groups, suggesting that how collectivistic values are presented may interfere with social anxiety levels. In Latin American countries, group congruence derives

from being friendly, talkative and sociable which may decrease social anxiety, while in East Asian countries group congruence derives from submission and quietness which increase social anxiety. Latin American countries presented higher support of socially reticent behaviours compared to individualistic countries and is in accordance with East Asian groups, suggesting that socially reticent behaviours might be related to social anxiety disorder (see Furmark et al., 2002; Wittchen & Fehm, 2003). A cross-cultural personality study might reveal patterns of adaptation and individual differences (Benet-Martinez & Oishi, 2008).

Personality traits and individual diferences in social anxiety disorder - Research questions

This thesis focuses on individual differences in social anxiety disorder (across cultures, in subtypes, and in treatment outcome). The review now turns to evidence that personality traits are associated with the individual differences in social anxiety disorder.

The association between cross-cultural variation of SAD and personality traits

Both, SAD and collectivistic cultures have been demonstrated to be highly related to neuroticism and avoidance of uncertainty (Chatterjee et al., 1997; Hofmann & Loh, 2006; Hofstede & McCrae, 2004; Kim & Hoover, 1996; Marteinsdottir et al., 2003; Pelissolo et al., 2002). SAD has demonstrated associations with uncertainty avoidance (Boelen et al., 2010; Carleton et al., 2010), which is in accordance with SAD characteristics. Embarrassment, another characteristic of SAD, was found to be positively correlated with high collectivism and a lack of personal control correlating with vulnerability to depression (Oyserman et al., 2002). Along with meta-analytic research comparing cultures (Oyserman et al., 2002), personality traits such as sensitivity to rejection, need for affiliation, nurturance and meeting other's expectations were found to be correlated with collectivism. The two concepts share a range of similarities. Examining the cultural distinction in different countries may help to predict differences in personality expressions in SAD.

The first research question, based on the previous review, is to explore whether cross-cultural differences in the expression of SAD may be related to differences in personality traits. It is predicted that the there will be a higher level of neuroticism in a sample from a collectivist culture than in a sample from an individualist culture.

The association between SAD subtypes and personality traits

Empirical evidence suggests that there is variation in the context of expression of social anxiety, such that personality variables are related to the situations feared. For example, anxiety sensitivity was found to be significantly more predictive of non-generalised social phobia than generalised social phobia, and neuroticism (Norton et al., 2000; Norton et al., 1997) and dependent personality (Bagby, Parker, Joffe, & Buis, 1994) were significantly more predictive of generalised social phobia than non-generalised social phobia. Generalised social phobia has been found to be more associated with low positive affect than performance anxiety (Hughes et al., 2006; Kashdan, 2002).

Based on past research findings, the second research question will examine whether fears of the three types of situations are differentially related to personality traits. Specifically, it is predicted that social interaction fears will be related to extraversion, neuroticism, conscientiousness and openness to experience. Specific predictions regarding personality traits and their relationship with performance and public speaking fears are not made due to the scant research on these subtypes of fears.

The association between SAD treatment outcome and personality traits

One of the reasons that can be put forward for a lack of optimal response to CBT for SAD is individual differences in personality in the clients that impact treatment. Studies have found associations between normal personality traits and anxiety and mood disorders in the general population (Rector, Bagby, Huta, & Ayearst, 2012; Naragon-Gainey & Watson, 2011; Bienvenu et al., 2004; Sexton, Norton, Walker, & Norton, 2003; Massion et al., 2002; Bienvenu et al., 2001a; Bienvenu et al., 2001b; Fauerbach et al., 2000; Krueger, 1999; Clark

et al., 1994; Trull & Sher, 1994; Angst & Vollrath, 1991; Andrews, Stewart, Morris-Yates, Holt, & Henderson, 1990; Watson, Clark, & Carey, 1988). Taken together, past research has suggested that personality traits and disorders have a significant relationship with anxiety and its disorders. The question of how these individual characteristics relate to treatment outcome, however, has yet to be answered.

The present study will examine whether personality traits impact on SAD treatment outcome. Specifically, it was predicted that personality traits (neuroticism, extraversion, agreeableness, openness, and conscientiousness) measured at pre-treatment would moderate the effect of treatment for social anxiety disorder.

References

Abe, J. 2004. Shame, guilt, and personality judgment. *Journal of Research in Personality, 38*(2), 85–104.

Akiskal, H. S., Hirschfeld, R. M. A., & Yerevanian, B. I. (1983). The relationship of personality to affective disorders. A critical review. *Archives of General Psychiatry, 40*(7), 801-810.

Allport, G. W. (1927). Concepts of trait and personality. *Psychological Bulletin, 24*(5), 284-293.

Allport, G. W., & Odbert, H. S. (1936). *Trait-names: A psycho-lexical study* (Vol. 47): Psychological Monographs.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.) doi:10.1176/appi.books.9780890423349.

Andrade, L. H., Wang, Y. P., Andreoni, S., Silveira, C. M., Alexandrino-Silva, C., Siu, E. R., Nishimura, R., Anthony, J. C., Gattaz, W. F., Kessler, R. C., Viana, M. C. (2012). Mental disorders in megacities: Findings from the São Paulo megacity mental health survey, Brazil. *PLoS ONE, 7*(2). doi: 10.1371/journal.pone.0031879

Andrews, G., Stewart, G., Morris-Yates, A., Holt, P., & Henderson, S. (1990). Evidence for a general neurotic syndrome. *British Journal of Psychiatry, 157*(JULY), 6-12.

Angst, J., & Vollrath, M. (1991). The natural history of anxiety disorders. *Acta Psychiatrica Scandinavica, 84*(5), 446-452.

Antony, M. M., & Rowa, K. (2008). *Social Anxiety Disorder: Advances in Psychotherapy - evidence-based practice*. Washington, DC: Hogrefe & Huber Publishers.

Ashton, M. C., Perugini, M., De Vries, R. E., Boies, K., Lee, K., Szarota, P., Di Blas, L., De Raad, B. (2004). A Six-Factor Structure of Personality-Descriptive Adjectives: Solutions from Psycholexical Studies in Seven Languages. *Journal of Personality and Social Psychology, 86*(2), 356-366. doi: 10.1037/0022-3514.86.2.356

Bachar, E., Hadar, H., & Shalev, A. Y. (2005). Narcissistic vulnerability and the development of PTSD: A prospective study. *Journal of Nervous and Mental Disease, 193*(11), 762-765. doi: 10.1097/01.nmd.0000185874.31672.a5

Bagby R. M., Parker J. D. A., Joffe R. T., & T, Buis. (1994). Reconstruction and Validation of the Depressive Experiences Questionnaire. *Assessment, 1*(1), 59-68.

Bagby, R. M., Quilty, L. C., Segal, Z. V., McBride, C. C., Kennedy, S. H., & Costa Jr, P. T. (2008). Personality and differential treatment response in major depression: A randomized controlled trial comparing cognitive-behavioural therapy and pharmacotherapy. *Canadian Journal of Psychiatry, 53*(6), 361-370.

Baker, S. L., Heinrichs, N., Kim, H. J., & Hofmann, S. G. (2002). The Liebowitz social anxiety scale as a self-report instrument: A preliminary psychometric analysis. *Behaviour Research and Therapy*, 40(6), 701-715.

Bandura, A., & Walters, R. H. (1963). *Social learning and personality development.* New York: Holt, Rinehart and Winston.

Barber, J. P., Connolly, M. B., Crits-Christoph, P., Gladis, L., Siqueland, L. (2000). Alliance predicts patients' outcome beyond in-treatment change in symptoms. *Journal of Consulting and Clinical Psychology, 68*(6), 1027-1032.

Barrick, M. R., & Ryan, A. M. (2003). *Personality and Work:* Reconsidering the Role of Personality in Organizations. San Francisco (CA): Pfeiffer.

Beck, A. T. (1983). Cognitive therapy of depression: new approaches. In B. J. Clayton (Ed.), *Treatment of Depression: Old and New Approaches* (pp. 265-290). New York: Raven.

Bekker, M. H. J., & van Mens-Verhulst, J. (2007). Anxiety Disorders: Sex Differences in Prevalence, Degree, and Background, But Gender-Neutral Treatment. *Gender Medicine, 4*(SUPPL. 2).

Benet-Martinez, V., & Oishi, S. (2008). Culture and Personality. In O. P. John, R. W. Robins & L. A. Pervin (Eds.), *Handbook of Personality Theory and Research* (Third ed.). New York: Guilford Press.

Bienvenu, O. J., Brown, C., Samuels, J. F., Liang, K. Y., Costa, P. T., Eaton, W. W., & Nestadt, G. (2001a). Normal personality traits and comorbidity among phobic, panic and major depressive disorders. *Psychiatry Research, 102*(1), 73-85. doi: 10.1016/s0165-1781(01)00228-1

Bienvenu, O. J., Nestadt, G., Samuels, J. F., Costa, P. T., Howard, W. T., & Eaton, W. W. (2001b). Phobic, panic, and major depressive disorders and the five-factor model of personality. *Journal of Nervous and Mental Disease, 189*(3), 154-161.

Bienvenu, O. J., Samuels, J. F., Costa, P. T., Reti, I. M., Eaton, W. W., & Nestadt, G. (2004). Anxiety and depressive disorders and the five-factor model of personality: A higher- and lower-order personality trait investigation in a community sample. *Depression and Anxiety, 20*(2), 92-97.

Bienvenu, O. J., & Stein, M. B. (2003). Personality and anxiety disorders: A review. *Journal of Personality Disorders, 17*(2), 139-151.

Boelen, P. A., Vrinssen, I., & Van Tulder, F. (2010). Intolerance of uncertainty in adolescents: Correlations with worry, social anxiety, and depression. *Journal of Nervous and Mental Disease, 198*(3), 194-200.

Borgatta, E. F. (1964). The structure of personality characteristics. *Behavioral science, 61*, 8-17.

Bramsen, I., Dirkzwager, A. J. E., & Van Der Ploeg, H. M. (2000). Predeployment personality traits and exposure to trauma as predictors of posttraumatic stress symptoms: A prospective study of former peacekeepers. *American Journal of Psychiatry, 157*(7), 1115-1119. doi: 10.1176/appi.ajp.157.7.1115

Brandes, M., & Bienvenu, O. J. (2006). Personality and anxiety disorders. *Current Psychiatry Reports, 8*(4), 263-269. doi: 10.1007/s11920-006-0061-8

Brokken, F. B. (1978). *The language of personality*. Meppel, The Netherlands: Krips.

Brown, T. A., Di Nardo, P. A., Lehman, C. L., & Campbell, L. A. (2001). Reliability of DSM-IV anxiety and mood disorders: Implications for the classification of emotional disorders. *Journal of Abnormal Psychology, 110*(1), 49-58.

Brown, E. J., Heimberg, R. G., & Juster, H. R. (1995). Social phobia subtype and avoidant personality disorder: Effect on severity of social phobia, impairment, and outcome of cognitive behavioral treatment. *Behavior Therapy, 26*(3), 467-486. doi: 10.1016/s0005-7894(05)80095-4

Caldwell-Harris, C. L., & Ayçiçegi, A. (2006). When personality and culture clash: The psychological distress of allocentrics in an individualist culture and idiocentrics in a collectivist culture. *Transcultural Psychiatry, 43*(3), 331-361. doi: 10.1177/1363461506066982

Canli, T. (2008). Toward a neurogenetic theory of neuroticism. *Annals of the New York Academy of Sciences*, Vol. 1129, pp. 153-174.

Caprara, G. V., & Perugini, M. (1994). Personality described by adjectives: The generalizability of the Big Five to the Italian lexical context. *European Journal of Personality, 8,* 357-369.

Carleton, R. N., Collimore, K. C., & Asmundson, G. J. G. (2010). "It's not just the judgements-It's that I don't know": Intolerance of uncertainty as a predictor of social anxiety. *Journal of Anxiety Disorders, 24*(2), 189-195.

Cattell, R. B. (1943a). The description of personality. I. Foundations of trait measurement. *Psychological Review, 50*(6), 559-594. doi: 10.1037/h0057276

Cattell, R. B. (1943b). The description of personality: basic traits resolved into clusters. *Journal of Abnormal and Social Psychology, 38*(4), 476-506. doi: 10.1037/h0054116

Cattell, R. B. (1945). The principal trait clusters for describing personality. *Psychological Bulletin, 42*(3), 129-161. doi: 10.1037/h0060679

Cattell, R. B. (1947). Confirmation and clarification of primary personality factors. *Psychometrika, 12*(3), 197-220. doi: 10.1007/bf02289253

Cattell, R. B., Eber, H. W., & Tatsuoka, M. M. (1970). *The handbook for the Sixteen Personality Factor Questionnaire.* Champaign, IL.: Institute for Personality and Ability Testing.

Chatterjee, S., Sunitha, T. A., Velayudhan, A., & Khanna, S. (1997). An investigation into the psychobiology of social phobia: Personality domains and serotonergic function. *Acta Psychiatrica Scandinavica, 95*(6), 544-550.

Cheung, F. M., & Leung, K. (1998). Indigenous personality measures: Chinese examples. *Journal of Cross-Cultural Psychology, 29*(1), 233-248.

Chien, A. J., & Dunner, D. L. (1996). The tridimensional personality questionnaire in depression: State versus trait issues. *Journal of Psychiatric Research, 30*(1), 21-27. doi: 10.1016/0022-3956(95)00041-0

Cho, M. J., Kim, J. K., Jeon, H. J., Suh, T., Chung, I. W., Hong, J. P., Bae, J. N., Lee, D. W., Park, J. I., Cho, S. J., Lee, C. K., Hahm, B. J. (2007). Lifetime and 12-month prevalence of DSM-IV psychiatric disorders among Korean adults. *Journal of Nervous and Mental Disease, 195*(3), 203-210. doi: 10.1097/01.nmd.0000243826.40732.45

Choy, Y., Schneier, F. R., Heimberg, R. G., Oh, K. S., & Liebowitz, M. R. (2008). Features of the offensive subtype of Taijin-Kyofu-Sho in US and Korean patients with DSM-IV social anxiety disorder. *Depression and Anxiety, 25*(3), 230-240. doi: 10.1002/da.20295

Church, A. T., & Katigbak, M. S. (2000). Trait psychology in the Philippines. *American Behavioral Scientist*(1), 73-94.

Clark, D. M., & Wells, A. (1995). A cognitive model of social phobia (Heimberg, R. G., Trans.). In Heimberg, R. G. et al.]. (Ed.), *Social phobia :diagnosis, assessment, and treatment* (pp. 435). New York: Guilford Press.

Clark, L. A., Watson, D., & Mineka, S. (1994). Temperament, personality, and the mood and anxiety disorders. *Journal of Abnormal Psychology, 103*(1), 103-116.

Cloninger, C. R. (1999). *Personality and Psychopathology*. Washington (DC): American Psychiatric Press, Inc.

Compas, B. E., Connor-Smith, J., & Jaser, S. S. (2004). Temperament, Stress Reactivity, and Coping: Implications for Depression in Childhood and Adolescence. *Journal of Clinical Child and Adolescent Psychology, 33*(1), 21-31.

Costa, P. T. J., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO PI-R) and Neo Five-Factor Inventory (NEO-FFI): Professional Manual*. Odessa, FL: Psychological Assessment Resources.

Costa Jr, P. T., & McCrae, R. R. (1985). *The NEO Personality Inventory manueal*. Odessa, FL: Psychological Assessment Resources.

Costa Jr, P. T., & McCrae, R. R. (1986). Personality stability and its implications for clinical psychology. *Clinical Psychology Review, 6*(5), 407-423.

Costa Jr, P. T., & McCrae, R. R. (1976). Age differences in personality structure: a cluster analytic approach. *Journals of Gerontology, 31*(5), 564-570.

Costa, P. T. J., & Widiger, T. A. (2002). *Personality disorders and the five-factor model of personality* (2nd ed.). Washington, DC: American Psychological Association.

Cox, B. J., Clara, I. P., Sareen, J., & Stein, M. B. (2008). The structure of feared social situations among individuals with a lifetime diagnosis of social anxiety disorder in two independent nationally representative mental health surveys. *Behaviour Research and Therapy, 46*(4), 477-846.

De Fruyt, F., Van De Wiele, L., & Van Heeringen, C. (2000). Cloninger's psychobiological model of temperament and character and the five-factor model of personality. *Personality and Individual Differences, 29*(3), 441-452.

De Fruyt, F., Van Leeuwen, K., Bagby, R. M., Rolland, J. P., & Rouillon, F. (2006). Assessing and interpreting personality change and continuity in patients treated for major depression. *Psychological Assessment, 18*(1), 71-80. doi: 10.1037/1040-3590.18.1.71

De Graaf, R., Bijl, R. V., Ravelli, A., Smit, F., Vollenbergh, W. A. M. (2002). Predictors of first incidence of DSM-III-R psychiatric disorders in the general population: findings from the Netherlands Mental Health Survey and Incidence Study. *Acta Psychiatrica Scandinavica,106* (4), 303–13. doi: 10.1034/j.1600-0447.2002.01397.x

De Raad, B. (1994). An expedition in search of a fifth universal factor: Key issues in the lexical approach. *European Journal of Personality, 8*(4), 229-250. Doi: 10.1002/per.2410080403

De Raad, B. (1992). The replicability of the Big Five personality dimensions in three word-classes of the Dutch language. *European Journal of Personality, 6*(1), 15-29. doi: 10.1002/per.2410060103

De Raad, B., Di Blas, L., & Perugini, M. (1998a). Two independently constructed Italian trait taxonomies: Comparisons among Italian and between Italian and Germanic languages. *European Journal of Personality, 12*(1), 19-41.

De Raad, B., Perugini, M., Hrebícková, M., & Szarota, P. (1998b). Lingua franca of personality: Taxonomies and structures based on the psycholexical approach. *Journal of Cross-Cultural Psychology, 29*(1), 212-232. doi: 10.1177/0022022198291011

De Raad, B., Perugini, M., & Szirmák, Z. (1997). In pursuit of a cross-lingual reference strucutre of personality traits: Comparisons among five languages. *European Journal of Personality, 11*(3), 167-185.

Di Blas, L., & Forzi, M. (1999). Refining a descriptive structure of personality attributes in the Italian language: The abridged Big Three circumplex structure. *Journal of Personality and Social Psychology, 76*(3), 451–481. doi: 10.1037/0022-3514.76.3.451

Di Blas, L., & Forzi, M. (1998). An alternative taxonomic study of personality-descriptive adjectives in the Italian language. *European Journal of Personality,* 12, 75–101.

Digman, J. M., & K., Takemoto-Chock, N. K. (1981). Factors in the natural language of personality: re-analysis and comparison of six major studies. *Multivariate Behavioral Research, 16*(2), 149-170.

Dinnel, D. L., Kleinknecht, R. A., & Tanaka-Matsumi, J. (2002). A cross-cultural comparison of social phobia symptoms. *Journal of Psychopathology and Behavioral Assessment, 24*(2), 75-84. doi: 10.1023/a:1015316223631

Eng, W., Heimberg, R. G., Coles, M. E., Schneier, F. R., & Liebowitz, M. R. (2000). An empirical approach to subtype identification in individuals with social phobia. *Psychological Medicine, 30*(6), 1345-1357.

Essex, M. J., Klein, M. H., Slattery, M. J., Goldsmith, H. H., & Kalin, N. H. (2010). Early risk factors and developmental pathways to chronic high inhibition and social anxiety disorder in adolescence. *American Journal of Psychiatry, 167*(1), 40-46. doi: 10.1176/appi.ajp.2009.07010051

Fanous A. H., Neale, M. C., Aggen, S., H., Kendler, K. S. (2007). A longitudinal study of personality and major depression in a population-based sample of male twins. *Psychological Medicine,* 37(8), 1163–72. doi: 10.1017/S0033291707000244

Fauerbach, J. A., Lawrence, J. W., Schmidt Jr, C. W., Munster, A. M., & Costa Jr, P. T. (2000). Personality predictors of injury-related posttraumatic stress disorder. *Journal of Nervous and Mental Disease, 188*(8), 510-517. doi: 10.1097/00005053-200008000-00006

Fedoroff, I. C., & Taylor, S. (2001). Psychological and pharmacological treatments of social phobia: A meta-analysis. *Journal of Clinical Psychopharmacology, 21*(3), 311-324.

Fiske, D. W. (1949). Consistency of the factorial structures of personality ratings from different sources. *The Journal of Abnormal and Social Psychology, 44*(3), 329-344. doi: 10.1037/h0057198

Fraley, R. C., & Roberts, B. W. (2005). Patterns of continuity: A dynamic model for conceptualizing the stability of individual differences in psychological constructs across the life course. *Psychological Review, 112*(1), 60-74. doi: 10.1037/0033-295x.112.1.60

Frank, E., Kupfer, D. J., Jacob, M., & Jarrett, D. (1987). Personality features and response to acute treatment in recurrent depression. *Journal of Personality Disorders*, 1, 14-26.

Freud, S. (2010). *The Ego and the Id.* Create Space Independent Publishing Platform

Furmark, T., Tillfors, M., Everz, P. O., Marteinsdottir, I., Gefvert, O., Fredrikson, M. (1999). Social phobia in the general population: Prevalence and sociodemographic profile. *Social Psycihatry and Psychiatric Epidemiology, 34*(8), 416-424.

Furmark, T., Tillfors, M., Marteinsdottir, I., Fischer, H., Pissiota, A., Långström, B., & Fredrikson, M. (2002). Common changes in cerebral blood flow in patients with social phobia treated with citalopram or cognitive-behavioral therapy. *Archives of General Psychiatry, 59*(5), 425-433.

Furmark, T., Tillfors, M., Stattin, H., Ekselius, L., & Fredrikson, M. (2000). Social phobia subtypes in the general population revealed by cluster analysis. *Psychological Medicine, 30(6),* 1335-1344.

Goldberg, L. R. (1999). *A Broad-Bandwidth, Public-Domain, Personality Inventory Measuring the Lower-Level Facets of Several Five-Factor Models* (Vol. 7). Tilburg, The Netherlands: I. Mervielde, I. Deary, F. De Fruyt, & F. Ostendorf (Eds.), Personality Psychology in Europe. Tilburg University Press.

Goldberg, L. R. (1992). The Development of Markers for the Big-Five Factor Structure. *Psychological Assessment, 4*(1), 26-42.

Goldberg, L. R. (1990). An Alternative "Description of Personality": The Big-Five Factor Structure. *Journal of Personality and Social Psychology, 59*(6), 1216-1229.

Goldberg, L. R. (1981). Unconfounding situational attributions from uncertain, neutral, and ambiguous ones: A psychometric analysis of descriptions of oneself and various types of others. *Journal of Personality and Social Psychology, 41*(3), 517-552. doi: 10.1037//0022-3514.41.3.517

Goldberg, L., & Chun, M. K. (1990). *Frequency doubling of diode laser radiation.* Paper presented at the Conference Digest. LEOS Summer Topical on New Semiconductor Laser Devices and Applications Conference Digest. LEOS Summer Topical on New Semiconductor Laser Devices and Applications, Monterey, CA, USA.

Gray, J. A. (1970). The psychobiological basis of introversion-extraversion. *Behaviour Research and Therapy, 8*(3), 249-266.

Gureje, O., Lasebikan, V. O., Kola, L., & Makanjuola, V. A. (2006). Lifetime and 12-month prevalence of mental disorders in the Nigerian Survey of Mental Health and Well-Being. *British Journal of Psychiatry, 188*(MAY), 465-471. doi: 10.1192/bjp.188.5.465

Hahn, D. W., Lee, K., & Ashton, M. C. (1999). A factor analysis of the most frequently used Korean personality trait adjectives. *European Journal of Personality*, *13*(4), 261–282.

Hampson, S. E., John, O. P., & Goldberg, L. R. (1986). Category Breadth and Hierarchical Structure in Personality. Studies of Asymmetries in Judgments of Trait Implications. *Journal of Personality and Social Psychology, 51*(1), 37-54. doi: 10.1037/0022-3514.51.1.37

Heimberg, R. G., Holt, C. S., Schneier, F. R., Spitzer, R. L., & Liebowitz, M. R. (1993). The issue of subtypes in the diagnosis of social phobia. *Journal of Anxiety Disorders, 7*(3), 249-269. doi: 10.1016/0887-6185(93)90006-7

Heimberg, R. G., Hope, D. A., Dodge, C. S., & Becker, R. E. (1990). DSM-III-R Subtypes of social phobia: Comparison of generalized social phobics and public speaking phobics. *Journal of Nervous and Mental Disease, 178*(3), 172-179.

Heinrichs, N., Rapee, R. M., Alden, L. A., Bögels, S., Hofmann, S. G., Ja Oh, K., & Sakano, Y. (2006). Cultural differences in perceived social norms and social anxiety. *Behaviour Research and Therapy, 44*(8), 1187-1197. doi: 10.1016/j.brat.2005.09.006

Herbert, J. D., Hope, D. A., & Bellack, A. S. (1992). Validity of the Distinction Between Generalized Social Phobia and Avoidant Personality Disorder. *Journal of Abnormal Psychology, 101*(2), 332-339. doi: 10.1037/0021-843x.101.2.332

Hettema, J. M., Prescott, C. A., & Kendler, K. S. (2004). Genetic and environmental sources of covariation between generalized anxiety disorder and neuroticism. *American Journal of Psychiatry, 161*(9), 1581-1587. doi: 10.1176/appi.ajp.161.9.1581

Hirschfeld, R. M. A., Klerman, G. L., Clayton, P. J., & Keller, M. B. (1983). Personality and depression. Empirical findings. *Archives of General Psychiatry, 40*(9), 993-998.

Hofmann, S. G., Anu Asnaani, M. A., & Hinton, D. E. (2010). Cultural aspects in social anxiety and social anxiety disorder. *Depression and Anxiety, 27*(12), 1117-1127. doi: 10.1002/da.20759

Hoffman, S. G., & Barlow, D. H. (2002). Social phobia (social anxiety disorder). In D. H. Barlow (Ed.), *Anxiety and its disorders: The nature and treatment of anxiety and panic* (2nd ed., pp. 454-476). New York: Guilford.

Hofmann, S. G., Ehlers, A., & Roth, W. T. (1995). Conditioning theory: A model for the etiology of public speaking anxiety? *Behaviour Research and Therapy, 33*(5), 567-571. doi: 10.1016/0005-7967(94)00072-r

Hofmann, S. G., & Loh, R. (2006). The Tridimensional Personality Questionnaire: Changes during psychological treatment of social phobia. *Journal of Psychiatric Research, 40*(3), 214-220. doi: 10.1016/j.jpsychires.2005.03.010

Hofstede, G. (1980). *Culture's consequences, international differences in work-related values* Beverly Hills: Sage Publications.

Hofstede, G., & McCrae, R. R. (2004). Personality and Culture Revisited: Linking Traits and Dimensions of Culture. *Cross-Cultural Research, 38*(1), 52-88.

Holahan, C. J., & Moos, R. H. (1991). Life stressors, personal and social resources, and depression: a 4-year structural model. *Journal of Abnormal Psychology, 100*(1), 31-38.

Holt, C. S., Heimberg, R. G., & Hope, D. A. (1992). Avoidant Personality Disorder and the Generalized Subtype of Social Phobia. *Journal of Abnormal Psychology, 101*(2), 318-325.

Hope, D. A., Herbert, J. D., & White, C. (1995). Diagnostic subtype, avoidant personality disorder, and efficacy of cognitive-behavioral group therapy for social phobia. *Cognitive Therapy and Research, 19*(4), 399-417. doi: 10.1007/bf02230408

Hughes, A. A., Heimberg, R. G., Coles, M. E., Gibb, B. E., Liebowitz, M. R., & Schneier, F. R. (2006). Relations of the factors of the tripartite model of anxiety and depression to types of social anxiety. *Behaviour Research and Therapy, 44*(11), 1629-1641. doi: 10.1016/j.brat.2005.10.015

Iancu, I., Levin, J., Hermesh, H., Dannon, P., Poreh, A., Ben-Yehuda, Y., Kaplan, Z., Marom, S., Kotler, M. (2006). Social phobia symptoms: prevalence, sociodemographic correlates, and overlap with specific phobia symptoms. *Comprehensive Psychiatry, 47*(5), 399-405. doi: 10.1016/j.comppsych.2006.01.008

Internationa Personality Item Pool (I. P. I. P.) (2011). A Scientific Collaboratory for the Development of Advanced Measures of Personality Traits and Other Individual Differences (http://ipip.ori.org/). Internet Web Site

Iwase, M., Nakao, K., Takaishi, J., Yorifuji, K., Ikezawa, K., & Takeda, M. (2000). An empirical classification of social anxiety: Performance, interpersonal and offensive.

Psychiatry and Clinical Neurosciences, 54(1), 67-75. doi: 10.1046/j.1440-1819.2000.00639.x

Jardine, R., Martin, N. G., & Henderson, A. S. (1984). Genetic covariation between neuroticism and the symptoms of anxiety and depression. *Genetic Epidemiology, 1*(2), 89-107.

John O. P., Angleitner A., & F., Ostendorf, F. (1988). The lexical approach to personality: A historical review of trait taxonomic research. *European Journal of Personality, 2*, 171-203. doi: 10.1002/per.2410020302

Johnson, J. G., Cohen, P., Skodol, A. E., Oldham, J. M., Kasen, S., & Brook, J. S. (1999). Personality disorders in adolescence and risk of major mental disorders and suicidality during adulthood. *Archives of General Psychiatry, 56*(9), 805-811. doi: 10.1001/archpsyc.56.9.805

Kandler, C., Bleidorn, W., Riemann, R., Spinath, F. M., Thiel, W., & Angleitner, A. (2010). Sources of Cumulative Continuity in Personality: A Longitudinal Multiple-Rater Twin Study. *Journal of Personality and Social Psychology, 98*(6), 995-1008. doi: 10.1037/a0019558

Kashdan, T. B. (2002). Social anxiety dimensions, neuroticism, and the contours of positive psychological functioning. *Cognitive Therapy and Research, 26*(6), 789-810. doi: 10.1023/a:1021293501345

Kawakami, N., Takeshima, T., Ono, Y., Uda, H., Hata, Y., Nakane, Y., Nakane, H., Iwata, N., Furukawa, T. A., Kikkawa, T. (2005). Twelve-month prevalence, severity, and treatment of common mental disorders in communities in Japan: Preliminary finding from the World Mental Health Japan Survey 2002-2003. *Psychiatry and Clinical Neurosciences, 59*(4), 441-452. doi: 10.1111/j.1440-1819.2005.01397.x

Kendler, K. S., Gatz, M., Gardner, C. O., Pederson, N. L. (2006). Personality and major depression: A Swedish Longitudinal, Population-Based Twin Study. *Archives of General Psychiatry, 63(10),*1113–20. doi: 10.1001/archpsyc.63.10.1113

Kendler, K. S., Neale, M. C., Kessler, R. C., Heath, A. C., Eaves, L. J. (1993). A longitudinal twin study of personality and major depression in women. *Archives of General Psychiatry, 50*(11), 853–62.

Kendler, K. S., Neale, M. C., Kessler, R. C., Heath, A. C., & Eaves, L. J. (1992). The genetic epidemiology of phobias in women: The interrelationship of agoraphobia, social phobia, situational phobia, and simple phobia. *Archives of General Psychiatry, 49*(4), 273-281.

Kerr, M., Lambert, W. W., & Bem, D. J. (1996). Life course sequelae of childhood shyness in Sweden: Comparison with the United States. *Developmental Psychology, 32*(6), 1100-1105.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication. *Archives of General Psychiatry, 62*(6), 593-602.

Kessler, R. C., Stein, M. B., Berglund, P. (1998). Social phobia subtypes in the National Comorbidity Survey. *American Journal of Psychology, 155*(5), 613-519.

Kim, H. S. (2002). We talk, therefore we think? A cultural analysis of the effect of talking on thinking. *Journal of Personality and Social Psychology, 83*(4), 828-842.

Kim, S. W., & Hoover, K. M. (1996). Tridimensional personality questionnaire: Assessment in patients with social phobia and a control group. *Psychological Reports, 78*(1), 43-49.

Kirmayer, L. J. (1991). The place of culture in psychiatric nosology: Taijin Kyofusho and DSM-III-R. *Journal of Nervous and Mental Disease, 179*(1), 19-28.

Klein, D. N., Dougherty, L. R., Laptook, R. S., & Olino, T. M. (2008). Temperament and risk for mood disorder in adolescents. In N. Allen & L. Sheeber (Eds.), *Adolescent Emotional Development and the Emergence of Depressive Disorders* (pp. 238-261). Cambridge: Cambridge University Press.

Kleinknecht, R. A., Dinnel, D. L., Kleinknecht, E. E., Hiruma, N., & Harada, N. (1997). Cultural factors in social anxiety: A comparison of social phobia symptoms and Taijin Kyofusho. *Journal of Anxiety Disorders, 11*(2), 157-177. doi: 10.1016/s0887-6185(97)00004-2

Knappe, S., Lieb, R., Beesdo, K., Fehm, L., Low, N. C. P., Gloster, A. T., & Wittchen, H. U. (2009). The role of parental psychopathology and family environment for social phobia in the first three decades of life. *Depression and Anxiety, 26*(4), 363-370. doi: 10.1002/da.20527

Knight, G. P., & Kagan, S. (1982). Siblings, Birth Order, and Cooperative-Competitive Social Behavior: A Comparison of Anglo-American and Mexican-American Children. *Journal of Cross-Cultural Psychology, 13*(2), 239-249.

Kolden, G. G., Klein, M. H. (1996). Therapeutic process in dynamic therapy for personality disorders: The joint influence of acute distress and dysfunction and severity of personality pathology. *Journal of Personality Disorders, 10*(2), 107-121.

Kovacs, M., & Lopez-Duran, N. (2010). Prodromal symptoms and atypical affectivity as predictors of major depression in juveniles: Implications for prevention. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 51*(4), 472-496.

Krueger R.F., & Johnson, W. (2008). Behavioral genetics and personality: a new look at the integration of nature and nurture. In O. P. John, R. W. Robins & L. A. Pervin (Eds.), *Handbook of Personality: Theory and Research* (3rd ed. ed., pp. 287-310). New York: Guilford.

Krueger, R. F. (1999). Personality Traits in Late Adolescence Predict Mental Disorders in Early Adulthood: A Prospective-Epidemiological Study. *Journal of personality, 67*(1), 39-65.

Krueger, R. F., & Tackett, J. L. (2003). Personality and psychopathology: Working toward the bigger picture. *Journal of Personality Disorders, 17*(2), 109-128. doi: 10.1521/pedi.17.2.109.23986

Lahey, B. B. (2009). Public Health Significance of Neuroticism. *American Psychologist, 64*(4), 241-256.

Levin, A. P., Saoud, J. B., Strauman, T., Gorman, J. M., Fyer, A. J., Crawford, R., & Liebowitz, M. R. (1993). Responses of "generalized" and "discrete" social phobics during public speaking. *Journal of Anxiety Disorders, 7*(3), 207-221. doi: 10.1016/0887-6185(93)90003-4

Levine, R. V., Norenzayan, A., & Philbrick, K. (2001). Cross-cultural differences in helping strangers. *Journal of Cross-Cultural Psychology, 32*(5), 543-560.

Levinson, C. A., Langer, J. K., & Rodebaugh, T. L. (2011). Self-construal and social anxiety: Considering personality. *Personality and Individual Differences, 51*(3), 355-359.

Li, J., Wang, L., & Fischer, K. W. (2004). The organisation of Chinese shame concepts. *Cognition and Emotion, 18*(6), 767-797.

Lieb, R., Wittchen, H. U., Höfler, M., Fuetsch, M., Stein, M. B., & Merikangas, K. R. (2000). Parental psychopathology, parenting styles, and the risk of social phobia in offspring: A prospective-longitudinal community study. *Archives of General Psychiatry, 57*(9), 859-866.

Liebowitz, M. R. (1987). Social phobia. *Modern problems of pharmacopsychiatry, 22*, 141-173.

Liebowitz, M. R., Stallone, F., Dunner, D. L., & Fieve, R. F. (1979). Personality features of patients with primary affective disorder. *Acta Psychiatrica Scandinavica*, 60, 214-224.

Lipsitz, J. D., & Schneier, F. R. (2000). Social phobia: Epidemiology and cost of illness. *PharmacoEconomics, 18*(1), 23-32.

Lyoo, I. K., Yoon, T., Kang, D. H., & Kwon, J. S. (2003). Patterns of changes in temperament and character inventory scales in subjects with obsessive-compulsive disorder following a 4-month treatment. *Acta Psychiatrica Scandinavica, 107*(4), 298-304. doi: 10.1034/j.1600-0447.2003.00054.x

Mancini, C., Van Ameringen, M., Szatmari, P., Fugere, C., & Boyle, M. (1996). A high-risk pilot study of the children of adults with social phobia. *Journal of the American Academy of Child and Adolescent Psychiatry, 35*(11), 1511-1517. doi: 10.1097/00004583-199611000-00020

Mannuzza, S., Schneier, F. R., Chapman, T. F., Liebowitz, M. R., Klein, D. F., & Fyer, A. J. (1995). Generalized Social Phobia: Reliability and Validity. *Arch Gen Psychiatry, 52*(3), 230-237. doi: 10.1001/archpsyc.1995.03950150062011

Marteinsdottir, I., Tillfors, M., Furmark, T., Andenberg, U. M., & Ekselius, L. (2003). Personality dimensions measured by the Temperament and Character Inventory (TCI) in subjects with social phobia. *Nordic Journal of Psychiatry, 57*(1), 29-35.

Maslow, A. H. (1954). *Motivation and personality*. New York: Harper.

Massion, A. O., Dyck, I. R., Tracie Shea, M., Phillips, K. A., Warshaw, M. G., & Keller, M. B. (2002). Personality disorders and time to remission in generalized anxiety disorder, social phobia, and panic disorder. *Archives of General Psychiatry*, *59*(5), 434-440.

Mathers, C. D., Vos, E. T., Stevenson, C. E. , Begg, S. J. (2000). The Australian burden of disease study: Measuring the loss of health from diseases, injuries and risk factors. *Medical Journal of Australia, 172*(12), 592-596.

Matthews, G., Saklofske, D. H., Costa Jr, P. T., Deary, L. J., & Zeidner, M. (1998). Dimensional models of personality: A framework for systematic clinical assessment. *European Journal of Psychological Assessment, 14*(1), 36-49.

McCrae, R. R. (2002). The maturation of personality psychology: Adult personality development and psychological well-being. *Journal of Research in Personality, 36*(4), 307-317. doi: 10.1016/s0092-6566(02)00011-9

McCrae, R. R., & Costa Jr, P. T. (2003). *Personality in adulthood: A five-factor theory perspective* (2nd ed.). New York: Guilford Press.

McCrae, R. R., & Costa Jr, P. T. (1990). *Personality in adulthood*. New York: Guilford Press.

McCrae, R. R., & Costa Jr, P. T. (1987). Validation of the Five-Factor Model of Personality Across Instruments and Observers. *Journal of Personality and Social Psychology,* McCrae, R. R., & Costa Jr, P. T. (1985). Updating Norman's "Adequate Taxonomy". Intelligence and Personality Dimensions in Natural Language and in Questionnaires. *Journal of Personality and Social Psychology, 49*(3), 710-721.

52(1), 81-90.

McCrae, R. R., Costa Jr, P. T., Hřebíčkově, M., Ostendorf, F., Angleitner, A., Avia, M. D., Sanz, J., Sanchez-Bernardos, M. L., Kusdil, M. E., Woodfield, R., Saunders, P. R., Smith, P. B. (2000). Nature over nurture: Temperament, personality, and life span development. *Journal of Personality and Social Psychology*, *78*(1), 173-186.

McCrae, R. R., & Terracciano, A. (2005). Universal features of personality traits from the observer's perspective: Data from 50 cultures. *Journal of Personality and Social Psychology, 88*(3), 547-561. doi: 10.1037/0022-3514.88.3.547

Medina-Mora, M. E., Borges, G., Lara, C., Benjet, C., Blanco, J., Fleiz, C., Villatoro, J., Rojas, E., Zambrano, J. (2005). Prevalence, service use, and demographic correlates of 12-month DSM-IV psychiatric disorders in Mexico: Results from the Mexican National Comorbidity Survey. *Psychological Medicine, 35*(12), 1773-1783. doi: 10.1017/s0033291705005672

Mlačić, B., Goldberg, L. R. (2007). An analysis of a cross-cultural personality inventory: The IPIP big-five factor markers in Croatia. *Journal of Personality Assessment, 88*(2), 168-177.

Morey, L. C., Shea, M. T., Markowitz, J. C., Stout, R. L., Hopwood, C. J., Gunderson, J. G., Grilo, C. M., McGlashan, T. H., Yen, S., Sanislow, C. A., Skodol, A. E. (2010). State effects of major depression on the assessment of personality and personality disorder. *American Journal of Psychiatry, 167*(5), 528-535. doi: 10.1176/appi.ajp.2009.09071023

Naragon-Gainey, K. (2010). Meta-Analysis of the Relations of Anxiety Sensitivity to the Depressive and Anxiety Disorders. *Psychological Bulletin, 136*(1), 128-150. doi: 10.1037/a0018055

Naragon-Gainey, K., & Watson, D. (2011). Clarifying the dispositional basis of social anxiety: A hierarchical perspective. *Personality and Individual Differences, 50*(7), 926-934. doi: 10.1016/j.paid.2010.07.012

Naragon-Gainey, K., Watson, D., & Markon, K. E. (2009). Differential Relations of Depression and Social Anxiety Symptoms to the Facets of Extraversion/Positive Emotionality. *Journal of Abnormal Psychology, 118*(2), 299-310.

Nelson, E. C., Grant, J. D., Bucholz, K. K., Glowinski, A., Madden, P. A. F., Reich, W., & Heath, A. C. (2000). Social phobia in a population-based female adolescent twin sample: Co-morbidity and associated suicide-related symptoms. *Psychological Medicine, 30*(4), 797-804. doi: 10.1017/s0033291799002275

Norton, G. R., Cox, B. J., Hewitt, P. L., & McLeod, L. (1997). Personality factors associated with generalized and non-generalized social anxiety. *Personality and Individual Differences, 22*(5), 655-660.

Norton, G. R., Buhr, K., Cox, B. J., Norton, P. J., & Walker, J. R. (2000). The role of depressive versus anxiety-related cognitive factors in social anxiety. *Personality and Individual Differences, 28*(2), 309-314.

Oishi, S., Napa Scollon, C., Diener, E., & Biswas-Diener, R. (2004). Cross-Situational Consistency of Affective Experiences Across Cultures. *Journal of Personality and Social Psychology, 86*(3), 460-472.

Ormel, J., Oldehinkel, A. J., Vollebergh, W. (2004). Vulnerability before, during, and after a major depressive episode. *Archives of General Psychiatry*, 61:990–96

Ørstavik, R. E., Kendler, K. S., Czajkowski, N., Tambs, K., & Reichborn-Kjennerud, T. (2007). The relationship between depressive personality disorder and major depressive disorder: A population-based twin study. *American Journal of Psychiatry, 164*(12), 1866-1872. doi: 10.1176/appi.ajp.2007.07010045

Ost, L. G. (1987). Age of Onset in Different Phobias. *Journal of Abnormal Psychology, 96*(3), 223-229.

Ostendorf, F. (1990). Sprache und persînlichkeitsstruktur: Zur Validität des Fünf-Faktoren-Modells der Persönlichkeit [Language and personality structure: Toward the validation of the Five-Factor model of personality]. Regensberg, Germany: S. Roderer Verlag.

Ostendorf, F., & Angleitner, A. (1994). Enthusiasts contra pessimists. *Psychological Inquiry*, 5, 159–162.

Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin, 128*(1), 3-52.

Pearson, V. M. S., & Stephan, W. G. (1998). Preferences for styles of negotiation: A comparison of brazil and the U.S. *International Journal of Intercultural Relations, 22*(1), 67-83.

Pelissolo, A., Andre, C., Pujol, H., Yao, S. N., Servant, D., Braconnier, A., Orain-Pelissolo, S., Bouchez, S., Lepine, J. P. (2002). Personality dimensions in social phobics with or without depression. *Acta Psychiatrica Scandinavica, 105*(2), 94-103.

Piper, W. E., Boroto, D. R., Joyce, A. S., McCallum, M., Azim, H. F. A. (1995). Pattern of alliance and outcome in short-term individual psychotherapy. *Psychotherapy, 32*(4), 639-647.

Piper, W. E., Ogrodniczuk, J. S., & Joyce, A. S. (2004). Quality of object relations as a moderator of the relationship between pattern of alliance and outcome in short-term individual psychotherapy. *Journal of Personality Assessment, 83*(3), 345-356.

Quilty, L. C., De Fruyt, F., Rolland, J. P., Kennedy, S. H., Rouillon, P. F., & Bagby, R. M. (2008). Dimensional personality traits and treatment outcome in patients with major depressive disorder. *Journal of Affective Disorders, 108*(3), 241-250.

Rapee, R. M. (1995). Descriptive psychopathology of social phobia. In R. G. Heimberg, M. R. Liebowitz, D. A. Hope & F. R. Schneier (Eds.), *Social phobia: diagnosis, assessment, and treatment* (1 edition ed., pp. 435). New York: The Guilford Press.

Rapee, R. M., & Heimberg, R. G. (1997). A cognitive-behavioral model of anxiety in social phobia. *Behaviour Research and Therapy, 35*(8), 741-756.

Rapee, R. M., Kim, J., Wang, J., Liu, X., Hofmann, S. G., Chen, J., Oh, K. Y., Bögels, S. M., Arman, S., Heinrichs, N., Alden, L. E. (2011). Perceived impact of socially anxious behaviors on individuals' lives in Western and East Asian countries. *Behavior Therapy, 42*(3), 485-492. doi: 10.1016/j.beth.2010.11.004

Rapee, R. M., & Sanderson, W. C. (1998). *Social Phobia: clinical application of evidence-based psychotherapy* (First ed.). New Jersey: Jason Aronson.

Rapee, R. M., & Spence, S. H. (2004). The etiology of social phobia: Empirical evidence and an initial model. *Clinical Psychology Review, 24*(7), 737-767.

Rector, N. A., Bagby, R. M., Huta, V., & Ayearst, L. E. (2012). Examination of the trait facets of the five-factor model in discriminating specific mood and anxiety disorders. *Psychiatry Research, 199*(2), 131-139. doi: 10.1016/j.psychres.2012.04.027.

Reich, J., Goldenberg, I., Vasile, R., Goisman, R., & Keller, M. (1994). A prospective follow-along study of the course of social phobia. *Psychiatry Research, 54*(3), 249-258. doi: 10.1016/0165-1781(94)90019-1

Reich, J., Noyes Jr, R., & Hirschfeld, R. (1987). State and personality in depressed and panic patients. *American Journal of Psychiatry, 144*(2), 181-187.

Roberts, B. W., & Mroczek, D. (2008). Personality trait change in adulthood. *Current Directions in Psychological Science, 17*(1), 31-35. doi: 10.1111/j.1467-8721.2008.00543.x

Roberts, B. W., Walton, K. E., & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: A meta-analysis of longitudinal studies. *Psychological Bulletin, 132*(1), 1-25. doi: 10.1037/0033-2909.132.1.1

Rosenbaum, J. F., Biederman, J., Bolduc-Murphy, E. A., Faraone, S. V., Chaloff, J., Hirshfeld, D. R., & Kagan, J. (1993). Behavioral inhibition in childhood: a risk factor for anxiety disorders. *Harvard review of psychiatry, 1*(1), 2-16.

Rosenbaum, J. F., Biederman, J., Hirshfeld-Becker, D. R., Kagan, J., Snidman, N., Friedman, D., Nineberg, A., Gallery, D. J., Faraone, S. V. (2000). A controlled study of behavioral inhibition in children of parents with panic disorder and depression. *American Journal of Psychiatry, 157*(12), 2002-2010. doi: 10.1176/appi.ajp.157.12.2002

Rodebaugh, T. L., Holaway, R. M., & Heimberg, R. G. (2004). The treatment of social anxiety disorder. *Clinical Psychology Review, 24*(7), 883-908.

Russell, J. G. (1989). Anxiety disorders in Japan: A Review of The Japanese literature on Shinkeishitsu and taijinkyōfushī. *Culture, Medicine and Psychiatry, 13*(4), 391-403. doi: 10.1007/bf00052047

Safren, S. A., Heimberg, R. G., Horner, K. J., Juster, H. R., Schneier, F. R., & Liebowitz, M. R. (1999). Factor structure of social fears: The Liebowitz Social Anxiety Scale. *Journal of Anxiety Disorders, 13*(3), 253-270. doi: 10.1016/s0887-6185(99)00003-1

Safren, S. A., Turk, C. L., & Heimberg, R. G. (1998). Factor structure of the Social Interaction Anxiety Scale and the Social Phobia Scale. *Behaviour Research and Therapy, 36*(4), 443-453.

Samuels, J., Nestadt, G., Bienvenu, O. J., Costa P.T, Jr., Riddle, M. A., Liang, K. Y., Hoehn-Saric, R., Grados, M. A., Cullen, B. A. M. (2000). Personality disorders and normal personality dimensions in obsessive-compulsive disorder. *British Journal of Psychiatry, 177*(NOV.), 457-462. doi: 10.1192/bjp.177.5.457

Santor, D. A., Bagby, R. M., & Joffe, R. T. (1997). Evaluating stability and change in personality and depression. *Journal of Personality and Social Psychology, 73*(6), 1354-1362.

Saucier, G., Hampson, S. E.,&Goldberg, L. R. (2000). Cross-language studies of lexical personality factors. In S. E. Hampson (Ed.), *Advances in personality psychology* (Vol. 1, pp. 1–36). East Sussex, England: Psychology Press.

Schlenker, B. R., & Leary, M. R. (1982). Social anxiety and self-presentation: A conceptualization model. *Psychological Bulletin, 92*(3), 641-669.

Schmidt, N. B., & Bates, M. J. (2003). Evaluation of a pathoplastic relationship between anxiety sensitivity and panic disorder. *Anxiety, Stress and Coping, 16*(1), 17-30. doi: 10.1080/1061580021000057013

Schmidt, N. B., Lerew, D. R., & Jackson, R. J. (1997). The role of anxiety sensitivity in the pathogenesis of panic: Prospective evaluation of spontaneous panic attacks during

acute stress. *Journal of Abnormal Psychology, 106*(3), 355-364. doi: 10.1037/0021-843x.106.3.355

Schmidt, N. B., Lerew, D. R., & Joiner Jr, T. E. (2000). Prospective evaluation of the etiology of anxiety sensitivity: Test of a scar model. *Behaviour Research and Therapy, 38*(11), 1083-1095. doi: 10.1016/s0005-7967(99)00138-2

Schneier, F. R., Johnson, J., Hornig, C. D., Liebowitz, M. R., & Weissman, M. M. (1992). Social phobia: Comorbidity and morbidity in an epidemiologic sample. *Archives of General Psychiatry, 49*(4), 282-288.

Schreier, S.-S., Heinrichs, N., Alden, L., Rapee, R. M., Hofmann, S. G., Chen, J., Chen, J., Oh, K. J., Bogels, S. (2010). Social anxiety and social norms in individualistic and collectivistic countries. *Depression and Anxiety, 27*(12), 1128-1134. doi: http://dx.doi.org/10.1002/da.20746

Sexton, K. A., Norton, P. J., Walker, J. R., & Norton, G. R. (2003). Hierarchical Model of Generalized and Specific Vulnerabilities in Anxiety. *Cognitive Behaviour Therapy, 32*(2), 82-84. doi: 10.1080/16506070302321.

Shen, Y. C., Zhang, M. Y., Huang, Y. Q., He, Y. L., Liu, Z. R., Cheng, H., Tsang, A., Lee, S., Kessler, R. C. (2006). Twelve-month prevalence, severity, and unmet need for treatment of mental disorders in metropolitan China. *Psychological Medicine, 36*(2), 257-267.

Shmelyov, A. G., & Pokhil'ko, V. I. (1993). A taxonomy-oriented study of Russian personality-trait names. *European Journal of Personality, 7*(1), 1-17.

Slade, T., Johnston, A., Oakley Browne, M. A., Andrews, G., & Whiteford, H. (2009). 2007 National Survey of Mental Health and Wellbeing: Methods and key findings. *Australian and New Zealand Journal of Psychiatry, 43*(7), 594-605. doi: 10.1080/00048670902970882

Stein, M., Chartier, M. J., Lizak, M. V., & Jang, K. L. (2001). Familial aggression of anxiety-related quantitative traits in generalized social phobia: clues to understanding "disorder" heritibitily? *American Journal of Medical Genetics*(105), 79-83.

Stein, M. B., Jang, K. L., & Livesley, W. J. (2002). Heritability of social anxiety-related concerns and personality characteristics: A twin study. *Journal of Nervous and Mental Disease, 190*(4), 219-224. doi: 10.1097/00005053-200204000-00002

Stein, M. B., Torgrud, L. J., Walker, J. R. (2000). Social phobia symptoms, subtypes, and severity: Findings from a community survey. *Archives of General Psychiatry,57*(11), 1046-1052.

Szarota, P. (1996). Taxonomy of the Polish personality-descriptive adjectives of the highest frequency of use. *Polish Psychological Bulletin*, 27, 342–351.

Szirmák, Z., & De Raad, B. (1994). Taxonomy and structure of Hungarian personality traits. *European Journal of Personality, 8*(2), 95-118. doi: 10.1002/per.2410080203

Taylor, S., Koch, W., & McNally, R. (1992). How does anxiety sensitivity vary across the anxiety disorders? Journal of Anxiety Disorder, 6(3), 249-259. doi: 10.1016/0887-6185(92)90037-8.

Triandis, H. C. (2004). *Culture and social behavior*. Boston: McGraw-Hill.

Triandis, H. C. (2000). Cultural syndromes and subjective well-being. In E. F. Diener & E. M. Suh (Eds.), *Subjective well-being across cultures* (pp. 87-112). Cambridge, MA: MIT Press.

Triandis, H. C., & Suh, E. M. (2002) Cultural influences on personality. *Annual Review of Psychology, Vol. 53* (pp. 133-160).

Trull, T. J., & Sher, K. J. (1994). Relationship between the five-factor model of personality and axis I disorders in a nonclinical sample. *Journal of Abnormal Psychology*, *103*(2), 350-360. doi: 10.1037/0021-843x.103.2.350

Tupes, E. C., & Christal, R. E. (1992). Recurrent personality factors based on trait ratings. *Journal of personality, 60*(2), 225-251.

Turner, S. M., Beidel, D. C., & Townsley, R. M. (1992). Social Phobia: A Comparison of Specific and Generalized Subtypes and Avoidant Personality Disorder. *Journal of Abnormal Psychology, 101*(2), 326-331. doi: 10.1037/0021-843x.101.2.326

Vorcaro, C. M. R., Rocha, F. L., Uchoa, E., & Lima-Costa, M. F. (2004). The burden of social phobia in a Brazilian community and its relationship with socioeconomic circumstances, health status and use of health services: The Bambui study. *International Journal of Social Psychiatry, 50*(3), 216-226.

Wachs, T. D. (2000). *Necessary but not sufficient: The respective roles of single and multiple influences on individual development*. Washington: American Psychology Association.

Watson, D., Clark, L. A., & Carey, G. (1988). Positive and Negative Affectivity and Their Relation to Anxiety and Depressive Disorders. *Journal of Abnormal Psychology, 97*(3), 346-353.

Westen, D., & Morrison, K. (2001). A multidimensional meta-analysis of treatments for depression, panic, and generalized anxiety disorder: An empirical examination of the status of empirically supported therapies. *Journal of Consulting and Clinical Psychology, 69*(6), 875-899.

Widiger, T. A. (1992). Generalized Social Phobia Versus Avoidant Personality Disorder: A Commentary on Three Studies. *Journal of Abnormal Psychology, 101*(2), 340-343.

Widiger, T. A., & Trull, T. J. (1992). Personality and psychopathology: an application of the five-factor model. *Journal of personality, 60*(2), 363-393.

Widiger, T. A., Verheul, R., & van den Brink, W. (1999). Personality and psychopathology. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research*. New York: Guilford.

Wittchen, H. U., & Fehm, L. (2003). Epidemiology and natural course of social fears and social phobia. *Acta Psychiatrica Scandinavica, Supplement, 108*(417), 4-18.

Wittchen, H. U., & Jacobi, F. (2005). Size and burden of mental disorders in Europe - A critical review and appraisal of 27 studies. *European Neuropsychopharmacology, 15*(4), 357-376. doi: 10.1016/j.euroneuro.2005.04.012

Zhong, J., Wang, A., Qian, M., Zhang, L., Gao, J., Yang, J., . . . Chen, P. (2008). Shame, personality, and social anxiety symptoms in Chinese and American nonclinical samples: A cross-cultural study. *Depression and Anxiety, 25*(5), 449-460. doi: 10.1002/da.20358

Zinbarg, R. E., Uliaszek, A. A., & Adler, J. M. (2008). The role of personality in psychotherapy for anxiety and depression. *Journal of personality, 76*(6), 1649-1687. doi: 10.1111/j.1467-6494.2008.00534.x

CHAPTER 2:

This chapter is prepared for submission to the Journal of Cross-Cultural Psychology.

Authors' contribution:

Ms Brockveld was solely responsible for the conceptualisation and write up of this paper. Dr Taylor provided statistical supervision. Dr Peters provided academic supervision.

A preliminary examination of the relationship between social anxiety and personality: a comparison between Australia and Brazil

Keila Brockveld

Centre for Emotional Health
Department of Psychology
Macquarie University, NSW, 2109
Australia

Alan Taylor

Department of Psychology
Macquarie University, NSW, 2109
Australia

Lorna Peters

Centre for Emotional Health
Department of Psychology
Macquarie University, NSW, 2109
Australia

Correspondence concerning this article should be addressed to Keila Brockveld, Centre for Emotional Health, Department of Psychology, Macquarie University, NSW, 2109, Australia. Electronic mail may be sent to keila.brockveld@mq.edu.au, +61 (02) 9850 8627

Abstract

Objective: Social anxiety disorder presents different symptoms across cultures. Evidence suggests that culture may influence prevalence of SAD via differences in personality traits in different cultures. A model of social anxiety and personality characteristics was designed in order to verify whether it would fit samples from Australia and Brazil; whether the two samples would differ in the relationship between social anxiety and personality; and how the differences would be explained. **Method**: Structural equation modelling was used to design a social anxiety model based on a personality scale (International Personality Item Pool - IPIP) and social anxiety scales (Social Interaction Anxiety Scale- SIAS, Brief Fear of Negative Evaluation - BFNE, brief version of Social Phobia Inventory - Mini-SPIN and Liebowitz Social Anxiety Scale – Self Report - LSAS-SR), and applied in a sample of 374 Australians and 329 Brazilians to measure the relationship between social anxiety and individual differences across the two groups. **Results**: Results suggest that the model of social anxiety and personality seems to be the same across both cultural groups. The Brazilian sample was found to have a significant, stronger relationship between social anxiety and neuroticism than the Australian sample. **Conclusion**: The differences in prevalence of SAD across cultures might be attributed to personality differences within each culture. These findings may lead to the development of more suitable treatments for social anxiety in Brazil.

Keywords: social anxiety, individual differences, culture, collectivism - individualism

Social anxiety disorder (SAD) is characterised by intense and persistent fear of social or performance situations in which embarrassment may occur, according to the *Diagnostic and statistical manual of mental disorders* (4th ed., text rev; *DSM-IV-TR*; American Psychiatric Association, 2000). It can be a debilitating disorder with high comorbidity (Rapee, 1995; Rapee & Sanderson, 1998; Widiger, 1992) that markedly affects individuals' lives (López-Ibor Jr & Ayuso Gutierrez, 1997). SAD has been estimated to provide a major burden on both the individual and society (Norton et al., 1996). In 2001 it was estimated that 1.3% of Australian adults had experienced SAD within the 12 months (Andrews, Henderson, & Hall, 2001) based on the DSM-IV diagnostic criteria (*DSM-IV-TR*, 2000). In Brazil, while a representative sample has not been studied, the one-year prevalence of SAD was estimated to be 3.9% (Andrade, Walters, Gentil, & Laurenti, 2002). The difference in prevalence of SAD between Australia and Brazil may be due to differences between the two cultures. Individuals living in different cultures are influenced by their cultural surroundings, beliefs and values, and are shaped, and shape, their social context. As a result social anxiety expression may be impacted by factors shared within one's culture. This study examines whether there are differences in how social anxiety is structurally related to personality traits in two different countries: Australia and Brazil.

Studies have demonstrated variability in SAD symptoms across cultures (Kirmayer, 1991; Kleinknecht, Dinnel, Kleinknecht, Hiruma, & Harada, 1997). There are two lines of evidence which suggest that the cultural elements one is surrounded by may influence SAD symptom expression. First, there is evidence that cultural factors drive variation of individual's affective experience (Oishi, Napa Scollon, Diener, & Biswas-Diener, 2004), and that self-perception (a central feature of social anxiety) (Rapee & Heimberg, 1997) and others-perception may be influenced by cultural heritage (Kim, 2002). For example, in a form of social anxiety found in Japan and South Korea, *taijin kyofusho (TKS)* (Kirmayer, 1991), in which fears are centred on offending others, due to inappropriate behaviours or offending

appearance, evidence has been found that culture may mediate social anxiety by affecting self-definition (self-concept, self-construal) (Kleinknecht et al., 1997). *TKS* is mostly found in specific cultures and it reflects how social anxiety maintaining factors may be impacted by cultural context. Second, there is evidence that the cultural environment may provide a context to express certain types of personality traits (Levine, Norenzayan, & Philbrick, 2001). Perhaps, personality traits, which are associated with social anxiety such as high neuroticism and low extraversion, vary across cultures. Taken together, the evidence on the effects of culture on affective experience and personality suggest one construct that may account for differing prevalence rates across and within countries, that is individual differences in personality that may exist within each country.

The five-factor model of personality (FFM; Costa & McCrae, 1992), a model of personality which is widely accepted among personality researchers, proposes that personality is adequately explained by five broad domains. According to Costa and McCrae (1992), each one of the domains (extraversion, neuroticism, agreeableness, conscientiousness and openness to experience) hosts six dimensional facets, or lower-order facets, correlating to each other, representing nuances of personality description.

There is evidence that personality domains vary in their relationship to different psychological disorders. For example, research on social anxiety has shown links with extraversion, that is, a strong negative correlation with sociability and ascendance, a moderate negative correlation with positive emotionality and weak correlation with fun-seeking (Naragon-Gainey, Watson, & Markon, 2009). In another study, SAD participants scored low on all facets of extraversion, very low on mean trust (a facet of agreeableness), and low on self-discipline, competence and achievement striving (all facets of conscientiousness) (Bienvenu et al., 2004).

Research based on Cloninger's dimensions of temperament and character, which correlates highly with dimensions of the FFM (De Fruyt, Van De Wiele, & Van Heeringen,

2000), demonstrated significantly elevated levels of harm avoidance (a facet of neuroticism) in SAD (Chatterjee, Sunitha, Velayudhan, & Khanna, 1997; Hofmann & Loh, 2006; Kim & Hoover, 1996; Marteinsdottir, Tillfors, Furmark, Andenberg, & Ekselius, 2003); and decreased levels of self-directedness (conscientiousness) and cooperativeness (agreeableness) (Chatterjee et al., 1997; Marteinsdottir et al., 2003; Pelissolo et al., 2002). The research on the FFM and its relationship with SAD has largely been conducted in North America. Whether such relationships hold in a different cultural context is an empirical question.

This study examines whether the relationship between SAD and personality traits as defined by the FFM is constant across two countries assumed to differ in their cultural characteristics. Oyserman and colleagues (2002) conducted a meta-analysis of studies examining a supposed defining difference between cultures, that is, individualism and collectivism. While the division between countries in terms of whether they are collectivist or individualist is not always clear (see Oyserman, Coon, & Kemmelmeier, 2002), an important finding from the meta-analysis of the difference between individualism and collectivistic cultures is that they vary in communication styles and social interactions. Specifically, individualism encourages interpersonal interaction with loose ties and straightforward communication style, and collectivism encourages cohesive in-group interactions and face-saving. So for example, in an individualistic culture, individuals have closer bonds with family members than with friends, whilst in collectivistic cultures, individuals may have bonds that are as close as those with their family with their friendship groups. Also, in an individualistic culture assertive communication used, while in a collectivistic culture certain things will go unspoken to maintain group cohesion. According to Oyserman et al. (2002), latent individualism and collectivism do not always underlie variability between cultures. Nevertheless individualism and collectivism do impact in some psychological processes. Australia and Brazil were chosen in this study to examine the impact of culture on SAD and its relationship to personality traits as they reflect different types of societies. According to

research Australia was found to be high in individualism (Hofstede, 1980) and Brazil was found to be high in collectivism (Pearson & Stephan, 1998).

Some research examining the impact of culture on personality trait expression suggests that there may be differences between cultures in the relationship between SAD and personality traits. For example, Hofstede and McCrae (2004) reported that collectivist cultures tend to be high in neuroticism, and display higher uncertainty avoidance levels, which relates to low tolerance for ambiguity. SAD has demonstrated associations with uncertainty avoidance (Boelen, Vrinssen, & Van Tulder, 2010; Carleton, Collimore, & Asmundson, 2010). Embarrassment, another characteristic of SAD, was found to be positively correlated with high collectivism (Oyserman et al., 2002). In meta-analytic research comparing cultures (Oyserman et al., 2002), personality traits such as sensitivity to rejection, need for affiliation, nurturance and meeting other's expectations were found to be correlated with collectivistic groups. Taken together, the findings that some of the personality traits found to be associated with a collectivist culture are associated with characteristics of SAD suggest a reason for the apparently higher prevalence rates of SAD in Brazil than in Australia. That is, higher incidence of particular personality traits that are related to SAD may result in more SAD in collectivist than in individualist cultures. Whether the higher incidence of personality traits related to SAD results in a stronger association between personality and SAD in collectivist than in individualist cultures is a question that remains unanswered. The present research will examine both differences in the levels of personality traits between collectivist and individualist cultures and in the strength of the relationship between personality traits and SAD in the two types of culture.

As Brazil is considered to be a collective culture, it is expected that the Brazilian sample will have a higher level of Neuroticism than the Australian sample. The present study will also examine whether there is a stronger relationship between neuroticism and SAD in Brazil than in Australia. In the present study structural equation modelling (SEM) is used to examine

the relationship between SAD and FFM personality traits in Australia compared to Brazil. In particular, the purpose of this study was to examine whether the latent means of the two constructs (FFM and SAD) in the model and the strength of the relationship between the two constructs are different across the two groups (Australia vs. Brazil).

Method

Participants

The community samples were recruited in Australia and Brazil. In Australia, participants (n = 374) were recruited from the first-year Psychology subject pool (n = 267) (participants received course credit for their participation) and advertisement of the study through the Department of Psychology's web portal for online research (n = 107) (participants were entered into a draw for a monthly prize of $50). The Australian sample was made of 374 participants, including 301 females (80.5%) and 73 (19.5%) males, age ranging from 18 to 57 (M = 22.4, SD = 7.27) years.

In Brazil, participants (n = 329) responding to research advertisements placed on noticeboards at community libraries, sporting venues and email distribution were self-selected[3]. They did not receive incentives for participating in the research. The Brazilian sample was made of 329 participants, including 219 females (66.6%) and 110 (33.4%) males, age ranging from 18 to 72 (M = 28.16, SD = 9.22) years.

Measures

In order to measure characteristics of personality and identify social anxiety, the 100-item version of the International Personality Item Pool (IPIP; Goldberg, 1999) was completed, along with Social Phobia Scale (SPS; Mattick & Clarke, 1998), Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998), Brief Fear of Negative Evaluation (BFNE; Leary, 1983), the brief version of Social Phobia Inventory (Mini-SPIN; Connor, Kobak, Churchill,

[3] Hofsted et al.(2010) reported variances within Brazilian states regarding individualism and collectivist, in which south and southeast states are more individualistic than the rest of the country, although this information would be helpful to strengthen paper, it was not collected.

Katzelnick, & Davidson, 2001) and Liebowitz Social Anxiety Scale – Self Report (LSAS-SR; Liebowitz, 1987) in both samples and countries.

Two of these measures have been translated to Portuguese, LSAS-SR (Terra et al., 2006) and Mini-SPIN (Vilete, Figueira, & Coutinho, 2006), however, the IPIP 100-items, SPS, SIAS and BFNE have not. They were translated by the first author (KB) of the present study into Portuguese and then, to check the validity of the translation, translated back to English by a Brazilian PhD level sports science resident in New Zealand (Dr Camila Nassif). Any discrepancies between the original translation and the back-translation were resolved and the final agreed translation was used in the present study.

The IPIP measures personality traits and individual differences; it was created as an "international effort to develop and refine a set of broad-bandwidth personality inventories" (Barrick & Ryan, 2003, p. 19). It comprises five broad domains of the FFM of personality which each contain a number of bipolar traits (facets): extraversion (E), agreeableness (A), conscientiousness (C), neuroticism (N), and openness to experience (O). These items are keyed positively and negatively, that is, E+ (10 items), E− (10 items); A+ (14 items), A− (6 items); C+ (11 items), C− (9 items); N+ (5 items), N− (15 items), O+ (13 items), and O− (7 items). The items are phrased as descriptive statements which the participant endorses using a 5-point *Likert*-type scale to indicate how accurately the statement describes oneself: 1 (very inaccurate) to 5 (very accurate). The internal consistency reliability for an American community sample presented coefficient alpha for each domain as follows: .91 (E), .88 (A), .88 (C), .91 (N), and .90 (O) (Mlacic & Goldberg, 2007). This scale has demonstrated strong correlation with NEO-PI-R (IPIP, 2011).

The SIAS and SPS were designed as companion measures to assess symptoms of social anxiety (Mattick & Clarke, 1998). SIAS quantifies fear related to social interaction, whereas the SPS provides a measure of specific fears of being scrutinised during regular activities (Peters, 2000). These instruments contain 20 statements each, which are rated to indicate how

characteristic the statement is of oneself on a 5-point scale as follows: 0 (Not at all characteristic or true of me) to 4 (Extremely characteristic or true of me). The total scores for both measures range from 0 to 80, where a higher score indicates a greater severity of social anxiety. Both measures have demonstrated good internal consistency and high test-retest correlations in a sample which met criteria for social phobia (Mattick & Clarke, 1998). Both the SPS and the SIAS have been reported to be sensitive to change after cognitive and behaviour treatments (Cox, Ross, Swinson, & Direnfeld, 1998; Mattick & Peters, 1988; Mattick, Peters, & Clark, 1989).

The BFNE assesses a core cognitive feature of social anxiety – fear of negative evaluation (Leary, 1983). BFNE has 12 statements that are rated to indicate how characteristic they are of the participant on a 5-point *Likert*-type scale, from 1 (Not at all characteristic) to 5 (Extremely characteristic of me). There are 8 straightforward worded statements (1, 3, 5, 6, 8, 9, 11, 12) and 4 reverse worded (2, 4, 7, 10). The score is summed and total ranges from 12 to 60 points. This instrument demonstrated excellent reliability with an exceptional internal consistency (α=.97) and the test-retest for a 2 week interval of .94 (Collins, Westra, Dozois, & Stewart, 2005). In addition, the measure was sensitive to change with CBT and demonstrated significant discriminant validity between people presenting with social phobia and panic disorder (sensitivity = 74%; specificity = 67%) (Collins et al., 2005).

The Mini-SPIN is a tool developed to identify social anxiety in adults measuring avoidance and fear of embarrassment (Connor et al., 2001). This scale is a 3-item self-rated measure, where answers are rated on a 5-point scale as follows: 0 (Not at all) to 4 (Extremely). The score is summed, any score greater than 6 indicating a possible presence of SAD or other anxiety disorder. It has been reported to have significant correlations with SIAS ($r = .81$) and SPS ($r = .77$), good test-retest reliability ($r = .70$) after 12 weeks, excellent internal consistency ($\alpha = .91$), robust support discriminating people with and without social anxiety, a significant difference between scores of those participants with comorbid SAD and

Avoidant Personality Disorder and those with SAD only, and it has the ability to detect treatment response (Seeley-Wait, Abbott, & Rapee, 2009; Weeks, Spokas, & Heimberg, 2007). Internal consistency of the Portuguese version was reported as 0.81 (D'El Rey, Lacava, & Cardoso, 2007).

LSAS-SR is an assessment tool to measure levels of fear (L-Fear) and avoidance (L-Avoid) over a number of social situations (Baker, Heinrichs, Kim, & Hofmann, 2002). The instrument presents 24 descriptions of situations (11 social and 13 performance situations) that might elicit anxiety. There are 6 subscales derived from the ratings, being fear of social interaction, fear of performance, avoidance of social interaction, avoidance of performance, total fear, and total avoidance. The scale measures fear and avoidance experienced in the past week, with each situation being rated on a 0 to 3 *Likert*-type scale: Fear and Anxiety Rating – 0 (No fear or anxiety in this situation) to 3 (Severe fear or anxiety in this situation) and Avoidance Rating – 0 (Never avoid this situation) to 3 (Usually avoid this situation). An overall total score is reached by summing the subscores of fear and avoidance ratings. This scale has been reported to have good test–retest reliability after 12-week interval for the total score (r = 0.83), good internal consistency with all alpha coefficients 0.79 or higher, and has good sensitivity to treatment change (Baker et al., 2002). The Portuguese version has shown internal consistency of 0.95 (Terra et al., 2006).

Procedure

The procedures were approved by the Human Research Ethics Committee, and all participants gave informed consent. In response to advertisements of the research placed in public places, participants completed the questionnaires online.

Analytic Procedure

The analysis was conducted to answer three questions (1) are the measures of personality and social anxiety equivalent in the two samples (Australia and Brazil) (measurement model)?; (2) is the relationship between personality and social anxiety the same

in the two samples (structural model)?; and (3) are the scores on personality and social anxiety measures the same in the two countries (latent means)? In order to answer these questions AMOS 17.0.0 (Arbuckle, 2008) was used to conduct confirmatory factor analysis (CFA). The latent variable for personality was defined using the IPIP and was assumed to be presented by five factors, while the latent variable for social anxiety was defined using the social anxiety measures (BFNE, Mini-SPIN, LSAS (L-Fear and L-Avoid), SIAS, and SPS) and was assumed to be represented by a single factor.

As recommended by McDonald & Ho (2002), the first set of analyses is related to the fit of the measurement model, while the second set of analyses regarded proceeded to the path model.

Measurement Model

Firstly the latent structure of the IPIP measure and the social anxiety measures (SAM) (BFNE, SIAS, SPS, Mini-SPIN, L-Fear, L-Avoid) were tested separately, which constitutes a test of the individual measurement models. Personality was assumed to have five latent variables (N, E, A, O, C), each with three indicator variables. The indicator variables were constructed by randomly dividing the 20 items per domain (N, E, O, A, C) of the IPIP scale into three parcels: two 7-item parcels and one 6-item parcel per latent variable (N1, N2, N3, E1, E2, E3, A1, A2, A3, O1, O2, O3, C1, C2, C3) (for a discussion of item parcelling, see Schmit & Ryan, 1993; Schmit, Ryan, Stierwalt, & Powell, 1995). The items within each parcel were averaged to form a composite prior to analysis. Social anxiety was assumed to have one latent factor and six indicator variables, each composed of a total score on a scale or subscale from the measures of anxiety (BFNE, SIAS, SPS, Mini-SPIN, L-Fear, L-Avoid). These two measurement models were tested separately in each of the samples to ensure that the same measurement models were appropriate for both groups.

For the SAM model residual errors were allowed to correlate between SIAS and SPS; and L-Fear and L-Avoid. These subscale scores were specified separately in order to observe

their loadings; however together they made up one scale score (SIAS and SPS; LSAS-SR) so that is reasonable that they had unexplained variance in common. In the IPIP, residual errors N1-E2, N1-E3, E2-A3, and E3-A3[4] were allowed to correlate. The association of these measurements errors can be explained by the fact that some of the items within different parcels correlate. In an investigation of new sets of big-five factor markers, Goldberg (1992) compared NEO-PI and big-five factors markers variables using factor analyses of unipolar terms. It was demonstrated that E items (demanding) loaded significantly on the A factors and N items (unexcitable, insecure and self-pitying) loaded on E (Goldberg, 1992). A refining study (Mõttus, Pullmann, & Allik, 2006) of the IPIP NEO Estonian version demonstrated facets of N (self-consciousness and vulnerability) and A (modesty) loaded on E. Another study (De Fruyt et al., 2000) focusing on the equivalence between FFM domains and facets and Cloninger's dimensions of temperament and character, demonstrated high correlations between all facets of E and harm avoidance (related to N), facets of E (warmth and activity) and cooperativeness (related to A), and facets of A (straightforwardness, compliance and modesty) correlated to novelty seeking (related to E). It is not unusual for some items belonging to one factor to have significant correlations with items on another factor over and above the correlation accounted for by the factor intercorrelation. These adjustments in measurement errors, applied to both samples, produced improvement in the model fit presented in the results section.

In a final test measurement models for IPIP and SAM models were fitted together separately for each country.

Along with the chi-square (χ^2) goodness-of-fit (GOF) test, the following fit indices were used to assess the fit of the measurement models: root mean square error of approximation (RMSEA) (Browne & Cudeck, 1992), comparative fit index (CFI) and Tucker-Lewis index (TLI) (Vandenberg & Lance, 2000. Good fitting models have CFI >.90 and TLI close to .95

[4] Description of items within the parcels are available on request from the first author.

(Byrne, 2001). For nested model comparisons, the χ^2 difference test was used. Parameters, standard errors, significance tests and fit indices are based on maximum likelihood estimation.

Structural Model

Subsequently testing for structural model invariance across the two groups (Australia and Brazil) was applied. Specifically, the SEM tested whether the IPIP latent variable was related to SAM. SEM allows examination of the model for each country, which includes the investigated variables, measurement and structural errors and weights, and whether links are similar for each group. Fit indices as described above were used.

Latent Means

Finally, to examine whether the two groups differed on their mean scores on the latent variables, a test for latent mean differences was run. The five IPIP indicator variables were freely estimated for the Brazilian group and the Australian group was set to be the reference group, being constrained to equal zero. The reported fit indices in structure mean model analysis were used: RMSEA, critical ratio (C.R.) where values below 1.96 are non-significant at the .05 level, and expected cross-validation index (ECVI) where the lower the ECVI the greater is the model reapplication (Byrne, 2001).

Results

Descriptive Data

Table 1 here

Table 1 shows the descriptive statistics for the personality and social anxiety measures for each sample. The Brazilian sample had significantly higher scores on C2, N1, N2 and O1. Table A2 shows the bivariate correlations between the personality and social anxiety variables within each of the Australian and Brazilian samples.

Table 2 here

Structural Equation Modelling

Measurement Model

Analyses were based on fitting the IPIP and SAM measurement models for each sample. Four sets of CFA were conducted. Measurement error adjustments described in the analytic procedure section generated a significant improvement in the IPIP measurement model fit in the Australian sample from χ^2 (80) = 351, p = .000 to χ^2 (76) 304.3, p = .000; $\Delta\chi^2$ *(4) = 46.7, p < .05* and in the Brazilian sample, from χ^2 (80) = 264.7, p = .000 to χ^2 (76) 259.4, p = .000; $\Delta\chi^2$ *(4) = 5.3, p < .05.*

Table 3 here

Table 3 presents the GOF for the measurement models. The specified measurement models in each of the Australian and Brazilian samples adequately fitted the data.

Table 4 here

A full measurement model including both IPIP and SAM, with all latent variables allowed to covary, produced the results shown in Table 4, which demonstrated good fit to the data. The specified measurement models also fitted the data adequately.

Structural Model

The second set of analyses were run to test the structural model relating the IPIP and SAM; that is, the measurement model and path model combined, for each sample. The structural model acceptably fitted both samples (see Table 5). These findings yielded a baseline model identically specified, but not necessarily equivalent, for both samples.

Table 5 here

To test for invariance of the structural model, paths were set up between the latent constructs of IPIP and SAM and, using multigroup analysis, the hypothesised model was fitted. The GOF indexes for the unconstrained model provided the baseline value against which subsequent tests of invariance were taken. As shown in Table 6 the hypothesised model

fit the data, χ^2 (336) = 1020.4, p = .000, TLI = .93, CFI = .95, RMSEA = .05. Multigroup analysis was used to compute significance at the path level. The parameters were constrained to be equal across group, against the hypothesised model, χ^2 (341) = 1026.1, p = .000, TLI = .93, CFI = .95, RMSEA = .05. The constrained structural weight model did not produce a significant worsening of fit in the model, $\Delta\chi^2 (5) = 5.7$, $p > .05$, making the model accepted by being invariant between groups.

Table 6 here

The path level invariance tests presented no significant worsening of the model fit, which yields acceptance of the model. The final model with standardized solution is shown in Figure 1.

Latent Means

Finally, to test differences between the Australian sample and the Brazilian sample, the structured mean model was examined. As the latent means were estimated based on the Brazilian group, this indicates that the Brazilian sample has a significantly higher level of neuroticism (C.R. = 3.16, $p < .05$, RMSEA = .07, ECVI = 3.13) than the Australian group. On the other hand no significant differences were found in the levels of extraversion, agreeableness, conscientiousness and openness, between these two groups (see Table 7).

Table 7 here

Discussion

The present study investigated whether there were differences in the levels of personality traits and in the relationship of personality traits and social anxiety between the Australian and the Brazilian community samples. The samples were chosen to represent individualist and collectivist cultures respectively.

Composite variables measuring the FFM of personality and social anxiety measures were used in a series of structural equation models. According to results, the measurement of social anxiety and of personality is similar across the two cultural groups, that is, the measurement of SAM appears not to vary between Australia and Brazil. Furthermore, the strength of the relationship between personality and social anxiety is the same across the two cultural groups. That is, there were no significant differences between the samples in the strength of the relationship of social anxiety with personality factors (neuroticism, extraversion, agreeableness, conscientiousness and openness traits). The modelled relationship between FFM and SAM examined using SEM analysis is in line with results found in previous research. That is, social anxiety measures were negatively correlated with extraversion, and positively correlated with neuroticism in both samples, consistent with previous studies (Naragon-Gainey, Watson, & Markon, 2009; Bienvenu et al., 2004). Consistent with past research, extraversion had the strongest correlation with social anxiety measures (Bienvenu et al., 2004). Also, agreeableness was positively associated with social anxiety measures in both samples, different than previous research which found low mean trust, a facet of agreeableness (Chatterjee et al., 1997; Bienvenu et al., 2004). Conscientiousness was negatively associated with SAM in the Brazilian sample, also consistent with previous research (Bienvenu et al., 2004); the same direction was found in the relationship between conscientiousness and social anxiety in Australia but the relationship was not significant. Openness however did not have a significant relationship with SAM in either sample, a result which is also consistent with previous research (Cheung & Leung, 1998; McCrae & Terracciano, 2005). Overall, cultures do not seem to affect the relationship between social anxiety and personality traits.

Turning to the level of personality traits, the Brazilian sample had a higher mean level of N, but not of E, O, A and C, compared to the Australian sample. The difference between the two samples in the level of N might be attributed to differences found in each culture,

collectivistic and individualistic, as predicted earlier. Compared to individualist cultures, collectivist cultures tend to be high in neuroticism (Hofstede & McCrae, 2004) and sensitivity to rejection (Oyserman et al., 2002). Furthermore, prevalence of social anxiety varies between cultures: for example, 1.3% of adults in Australia had experienced SAD within the past 12 months (Andrews, Henderson, & Hall, 2001), while in Brazil it was estimated that 3.9% of adults in Sao Paulo experienced SAD within 12 months (Andrade, Walters, Gentil, & Laurenti, 2002); another city in Brazil was estimated to have a prevalence of 9.1% (Vorcaro, Rocha, Uchoa, & Lima-Costa, 2004). While there were no differences in SAM in the current study between the samples, perhaps due to the fact that the study did not sample in the same way that epidemiological studies do, the fact that there are different levels of N and N is associated with SAM might account for those higher prevalence rates in other samples.

The same relationship between neuroticism and social anxiety is found in the individualistic country, but in turn it does not seem to be as strong as in the collectivistic culture. Individualistic groups emphasise individuals' independency, freedom of choice, and needs.

At the same time that some potential limitations are considered, some suggestions for future research directions are made. These results should not be overgeneralised beyond these particular samples. Considering that the samples (Australians = 374; Brazilians = 329) are relatively diverse, with a heterogeneous background, it does not guarantee that the current findings would be valid in different cultures or in the same countries. This research was conducted in Brazil and Australia where other studies have demonstrated cultural variation within each country (Hofstede et al., 2010; Howe, Matthews, & Heard, 2010; Seidl-de-Moura, Lordelo, Vieira, Piccinini, Oliveira Siqueira, Colino Magalhaes, 2008; Wilkinson & Cheng, 1999). Perhaps a larger sample that allowed for analysis of participants locations and identified cultural background would substantially generalise the results. Despite the fact that

there may have been cultural variation within sample, the results still showed that there was cultural variation in the levels of neuroticism.

The IPIP 100-item scale was translated to Portuguese by the researcher of this project then translated back to English, but it has not been validated beyond this simple translation process. Although the IPIP scale was developed to be used cross-culturally, empirical evidence is still being gathered. Further research is also necessary to validate the translation of the SPS, SIAS and BFNE scales.

This research contributes to the need, and emphasises the examination of culture influencing the relationship between social anxiety and personality. This study provides a tentative suggestion that social anxiety appears not to vary between Australia and Brazil, however there are higher levels of neuroticism in Brazil, and also prevalence rates were found in previous epidemiological research in Brazil than in Australia, which may be linked to cultural differences in personality traits (specifically neuroticism). Further research might be useful in order to replicate results in other collectivistic and individualistic cultures.

The present research has found no differences in the strength of the relationship of personality and social anxiety in two different cultures, despite the presence of a higher level of neuroticism in a collectivistic regarded country when compared to an individualistic regarded country. This may lead to the development of more suitable treatments for collectivistic cultures where neuroticism may elicit general anxiety; perhaps this issue may be addressed prior to treatment.

References

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.) doi:10.1176/appi.books.9780890423349.

Andrade, L., Walters, E. E., Gentil, V., & Laurenti, R. (2002). Prevalence of ICD-10 mental disorders in a catchment area in the city of São Paulo, Brazil. *Social Psychiatry and Psychiatric Epidemiology, 37*(7), 316-325.

Andrews, G., Henderson, S., & Hall, W. (2001). Prevalence, comorbidity, disability and service utilisation: Overview of the Australian National Mental Health Survey. *British Journal of Psychiatry, 178*(FEB.), 145-153.

Arbuckle, J. L. (2008). Amos 17.0.0 [Computer software]. Chicago: Smallwaters.

Baker, S. L., Heinrichs, N., Kim, H. J., & Hofmann, S. G. (2002). The Liebowitz social anxiety scale as a self-report instrument: A preliminary psychometric analysis. *Behaviour Research and Therapy, 40*(6), 701-715.

Barrick, M. R., & Ryan, A. M. (2003). *Personality and Work:* Reconsidering the Role of Personality in Organizations. San Francisco (CA): Pfeiffer.

Benet-Martinez, V., & Oishi, S. (2008). Culture and Personality. In O. P. John, R. W. Robins & L. A. Pervin (Eds.), *Handbook of Personality Theory and Research* (Third ed.). New York: Guilford Press.

Bienvenu, O. J., Samuels, J. F., Costa, P. T., Reti, I. M., Eaton, W. W., & Nestadt, G. (2004). Anxiety and depressive disorders and the five-factor model of personality: A higher- and lower-order personality trait investigation in a community sample. *Depression and Anxiety, 20*(2), 92-97.

Browne, M. W., & Cudeck, R. (1992). Alternative Ways of Assessing Model Fit. *Sociological Methods Research, 21*(NOV), 230-258. doi: 10.1177/0049124192021002005

Boelen, P. A., Vrinssen, I., & Van Tulder, F. (2010). Intolerance of uncertainty in adolescents: Correlations with worry, social anxiety, and depression. *Journal of Nervous and Mental Disease, 198*(3), 194-200.

Byrne, M. B. (2001). *Strutural Equation Modeling with Amos: basic concepts, applications, and programming*. Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc., Publishers.

Carleton, R. N., Collimore, K. C., & Asmundson, G. J. G. (2010). "It's not just the judgements-It's that I don't know": Intolerance of uncertainty as a predictor of social anxiety. *Journal of Anxiety Disorders, 24*(2), 189-195.

Chatterjee, S., Sunitha, T. A., Velayudhan, A., & Khanna, S. (1997). An investigation into the psychobiology of social phobia: Personality domains and serotonergic function. *Acta Psychiatrica Scandinavica, 95*(6), 544-550.

Collins, K. A., Westra, H. A., Dozois, D. J. A., & Stewart, S. H. (2005). The validity of the brief version of the Fear of Negative Evaluation Scale. *Journal of Anxiety Disorders*, 19(3), 345-359.

Connor, K. M., Kobak, K. A., Churchill, L. E., Katzelnick, D., & Davidson, J. R. T. (2001). Mini-SPIN: A brief screening assessment for generalized social anxiety disorder. *Depression and Anxiety, 14*(2), 137-140.

Costa, P. T. J., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO PI-R) and Neo Five-Factor Inventory (NEO-FFI): Professional Manual*. Odessa, FL: Psychological Assessment Resources.

Cox, B. J., Ross, L., Swinson, R. P., & Direnfeld, D. M. (1998). A comparison of social phobia outcome measures in cognitive-behavioral group therapy. *Behavior Modification, 22*(3), 285-297.

D'El Rey, G. J. F., Lacava, J. P. L., & Cardoso, R. (2007). Internal consistency of the Portuguese version of the Mini-Social Phobia Inventory (Mini-SPIN). *Consistência*

interna da versão em português do Mini-Inventário de Fobia Social (Mini-SPIN), 34(6), 266-269.

De Fruyt, F., Van De Wiele, L., & Van Heeringen, C. (2000). Cloninger's psychobiological model of temperament and character and the five-factor model of personality. *Personality and Individual Differences, 29*(3), 441-452.

Goldberg, L. R. (1999). *A Broad-Bandwidth, Public-Domain, Personality Inventory Measuring the Lower-Level Facets of Several Five-Factor Models* (Vol. 7). Tilburg, The Netherlands: I. Mervielde, I. Deary, F. De Fruyt, & F. Ostendorf (Eds.), Personality Psychology in Europe. Tilburg University Press.

Goldberg, L. R. (1992). The Development of Markers for the Big-Five Factor Structure. *Psychological Assessment, 4*(1), 26-42.

Hofmann, S. G., & Loh, R. (2006). The Tridimensional Personality Questionnaire: Changes during psychological treatment of social phobia. *Journal of Psychiatric Research, 40*(3), 214-220. doi: 10.1016/j.jpsychires.2005.03.010

Hofstede, G. (1980). *Culture's consequences, international differences in work-related values* Beverly Hills: Sage Publications.

Hofstede, G., Garibaldi de Hilal, A. V., Malvezzi, S., Tanure, B., & Vinken, H. (2010). Comparing regional cultures within a country: Lessons from Brazil. *Journal of Cross-Cultural Psychology, 41*(3), 336-352.

Hofstede, G., & McCrae, R. R. (2004). Personality and Culture Revisited: Linking Traits and Dimensions of Culture. *Cross-Cultural Research, 38*(1), 52-88.

Howe, C., Matthews, L. R., & Heard, R. (2010) Work to retirement: A snapshot of psychological health in a multicultural Australian population. *Work, 36*(2), 119-127.

Internationa Personality Item Pool (I. P. I. P.) (2011). A Scientific Collaboratory for the Development of Advanced Measures of Personality Traits and Other Individual Differences (http://ipip.ori.org/). Internet Web Site

Kim, H. S. (2002). We talk, therefore we think? A cultural analysis of the effect of talking on thinking. *Journal of Personality and Social Psychology, 83*(4), 828-842.

Kim, S. W., & Hoover, K. M. (1996). Tridimensional personality questionnaire: Assessment in patients with social phobia and a control group. *Psychological Reports, 78*(1), 43-49.

Kirmayer, L. J. (1991). The place of culture in psychiatric nosology: Taijin Kyofusho and DSM-III-R. *Journal of Nervous and Mental Disease, 179*(1), 19-28.

Kleinknecht, R. A., Dinnel, D. L., Kleinknecht, E. E., Hiruma, N., & Harada, N. (1997). Cultural factors in social anxiety: A comparison of social phobia symptoms and Taijin Kyofusho. *Journal of Anxiety Disorders, 11*(2), 157-177. doi: 10.1016/s0887-6185(97)00004-2

Leary, M. R. (1983). A brief version of the Fear of Negative Evaluation Scale. *Personality and Social Psychology Bulletin, 9*, 371-376.

Levine, R. V., Norenzayan, A., & Philbrick, K. (2001). Cross-cultural differences in helping strangers. *Journal of Cross-Cultural Psychology, 32*(5), 543-560.

Liebowitz, M. R. (1987). Social phobia. *Modern problems of pharmacopsychiatry, 22*, 141-173.

López-Ibor Jr, J. J., & Ayuso Gutierrez, J. L. (1997). Social phobia: A debilitating disease that needs treatment. *International Clinical Psychopharmacology, 12*(SUPPL. 6).

Marteinsdottir, I., Tillfors, M., Furmark, T., Andenberg, U. M., & Ekselius, L. (2003). Personality dimensions measured by the Temperament and Character Inventory (TCI) in subjects with social phobia. *Nordic Journal of Psychiatry, 57*(1), 29-35.

Mattick, R. P., & Clarke, J. C. (1998). Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy, 36*(4), 455-470.

Mattick, R. P., & Peters, L. (1988). Treatment of severe social phobia: Effects of guided exposure with and without cognitive restructuring. *Journal of Consulting and Clinical Psychology, 56*(2), 251-260.

Mattick, R. P., Peters, L., & Clark, C. R. (1989). Exposure and cognitive restructuring for social phobia: A controlled study. *Behavior Therapy, 20*(1), 3-23.

McDonald, R. P., Ho, M. H. R. (2002). Principles and Practice in Reporting Statistical Equation Analyses. *Psychological Methods*, 7 (1), 64-82.

Mlačić, B., & Goldberg, L. R. (2007). An analysis of a cross-cultural personality inventory: The IPIP big-five factor markers in Croatia. *Journal of Personality Assessment, 88*(2), 168-177.

Mõttus, R., Pullmann, H., & Allik, J. (2006). Toward more readable Big Five personality inventories. *European Journal of Psychological Assessment, 22*(3), 149-157.

Naragon-Gainey, K., Watson, D., & Markon, K. E. (2009). Differential Relations of Depression and Social Anxiety Symptoms to the Facets of Extraversion/Positive Emotionality. *Journal of Abnormal Psychology, 118*(2), 299-310.

Norton, G. R., McLeod, L., Guertin, J., Hewitt, P. L., Walker, J. R., & Stein, M. B. (1996). Panic disorder or social phobia: Which is worse? *Behaviour Research and Therapy, 34*(3), 273-276.

Oishi, S., Napa Scollon, C., Diener, E., & Biswas-Diener, R. (2004). Cross-Situational Consistency of Affective Experiences Across Cultures. *Journal of Personality and Social Psychology, 86*(3), 460-472.

Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin, 128*(1), 3-52.

Pearson, V. M. S., & Stephan, W. G. (1998). Preferences for styles of negotiation: A comparison of brazil and the U.S. *International Journal of Intercultural Relations, 22*(1), 67-83.

Pelissolo, A., Andre, C., Pujol, H., Yao, S. N., Servant, D., Braconnier, A. (2002). Personality dimensions in social phobics with or without depression. *Acta Psychiatrica Scandinavica, 105*(2), 94-103.

Peters, L. (2000). Discriminant validity of the Social Phobia and Anxiety Inventory (SPAI), the Social Phobia Scale (SPS) and the Social Interaction Anxiety Scale (SIAS). *Behaviour Research and Therapy, 38*(9), 943-950.

Rapee, R. M. (1995). Descriptive psychopathology of social phobia. In R. G. Heimberg, M. R. Liebowitz, D. A. Hope & F. R. Schneier (Eds.), *Social phobia: diagnosis, assessment, and treatment* (1 ed., pp. 435). New York: The Guilford Press.

Rapee, R. M., & Heimberg, R. G. (1997). A cognitive-behavioral model of anxiety in social phobia. *Behaviour Research and Therapy, 35*(8), 741-756.

Rapee, R. M., & Sanderson, W. C. (1998). *Social Phobia: clinical application of evidence-based psychotherapy* (First Edition ed.). New Jersey: Jason Aronson.

Seeley-Wait, E., Abbott, M., & Rapee, R. M. (2009). Psychometric Properties of the Mini-SPIN. *Primary Care Companion to the Journal of Clinical Psychiatry, 11* (5), 231-236. doi: 10.4088/PCC.07m00576

Seidl-de-Moura, M. L., Lordelo, E., Vieira, M. L., Piccinini, C. A., de Oliveira Siqueira, J., Colino Magalhaes, C. M. (2008). Brazilian mothers' socialization goals: Intracultural differences in seven Brazilian cities. *International Journal of Behavioral Development, 32*(6), 465-472.

Schmit, M. J., & Ryan, A. M. (1993). The Big Five in Personnel Selection: Factor Structure in Applicant and Nonapplicant Populations. *Journal of Applied Psychology, 78*(6), 966-974.

Schmit, M. J., Ryan, A. M., Stierwalt, S. L., & Powell, A. B. (1995). Frame-of-Reference Effects on Personality Scale Scores and Criterion-Related Validity. *Journal of Applied Psychology, 80*(5), 607-620.

Terra, M. B., Barros, H. M. T., Stein, A. T., Figueira, I., Athayde, L. D., Goncalves, M. D. S. (2006). Internal consistency and factor structure of the Portuguese version of the Liebowitz Social Anxiety Scale among alcoholic patients. *Revista Brasileira de Psiquiatria, 28*(4), 265-269.

Triandis, H. C. (1995). *Individualism and Collectivism*. Boulder: Westview Press.

Vandenberg, R. J., & Lance, C. E. (2000). A Review and Synthesis of the Measurement Invariance Literature: Suggestions, Practices, and Recommendations for Organizational Research. *Organizational Research Methods, 3*(1), 4-69.

Vilete, L., Figueira, I., & Coutinho, E. (2006). Portuguese-language cross-cultural adaptation of the Social Phobia Inventory (SPIN) to be used with adolescent students. [*Adaptação transcultural para o português do Social Phobia Inventory (SPIN) para utilização entre estudantes adolescentes], Revista de Psiquiatria do Rio Grande do Sul, 28*(1), 40-48.

Vorcaro, C. M. R., Rocha, F. L., Uchoa, E., & Lima-Costa, M. F. (2004). The burden of social phobia in a Brazilian community and its relationship with socioeconomic circumstances, health status and use of health services: The Bambui study. *International Journal of Social Psychiatry, 50*(3), 216-226.

Watson, D., & Friend, R. (1969). Measurement of social-evaluative anxiety. *Journal of Consulting and Clinical Psychology, 33*(4), 448-457.

Weeks, J. W., Spokas, M. E., & Heimberg, R. G. (2007). Psychometric evaluation of the mini-social phobia inventory (Mini-SPIN) in a treatment-seeking sample. *Depression and Anxiety, 24*(6), 382-391.

Widiger, T. A. (1992). Generalized Social Phobia Versus Avoidant Personality Disorder: A Commentary on Three Studies. *Journal of Abnormal Psychology, 101*(2), 340-343.

Wilkinson, I. F., & Cheng, C. (1999). Perspectives: Multicultural marketing in Australia: Synergy in diversity. *Journal of International Marketing, 7*(3), 106-125.

Table 1

Means, standard deviations, t values and p values for the differences between Australia (n=374) and Brazil (n=329)

Variables	AUS *M* (*SD*)	BRA *M* (*SD*)	*t* value	*p* value
A1	27.7 (3.9)	27.4 (4.5)	0.94	.343
A2	27.9 (3.9)	27.5 (4.6)	1.26	.206
A3	22.6 (3.4)	22.7 (3.9)	-0.49	.621
C1	24.5 (4.9)	24.1 (5.8)	0.92	.356
C2	23.2 (5.0)	24.6 (5.9)	-3.53	.000
C3	19.3 (4.6)	19.3 (5.1)	0.03	.969
E1	17.6 (4.7)	17.6 (5.7)	0.15	.875
E2	21.3 (5.2)	21.4 (6.6)	-0.07	.938
E3	23.5 (5.5)	23.3 (6.8)	0.51	.604
N1	21.8 (5.5)	22.7 (6.7)	-1.98	.047
N2	20.8 (5.6)	23.3 (6.7)	-5.28	.000
N3	19.2 (5.0)	19.6 (5.4)	-0.90	.365
O1	25.9 (4.1)	26.9 (4.7)	-3.20	.001
O2	25.7 (3.7)	25.2 (4.3)	1.59	.110
O3	21.2 (3.7)	21.7 (4.1)	-1.69	.091
BFNE	36.9 (10.9)	37.0 (11.9)	-0.10	.920
SIAS	26.6 (14.2)	28.2 (16.1)	-0.48	.628
SPS	21.1 (16.1)	22.2 (18.1)	-0.79	.425
MiniSpin	4.7 (3.5)	4.2 (3.6)	1.68	.093
Liebowitz - Fear	24.0 (13.9)	24.3 (16.0)	-0.25	.797
Liebowitz - Avoid	21.7 (14.1)	22.6 (15.6)	-0.76	.442

Note. $p < 0.05$. Degrees of freedom = 701 for all variables. Agreeableness parcels - A1, A2, A3; Conscientiousness parcels - C1, C2, C3; Extraversion parcels - E1, E2, E3; Neuroticism parcels N1, N2, N3; Openness parcels O1, O2, O3; BFNE – Brief Fear of Negative Evaluation Scale; SIAS – Social Interaction Anxiety Scale; SPS - Social Phobia Scale; Mini-SPIN - brief Social Phobia Inventory; Liebowitz-Fear and Liebowitz-Avoid - Liebowitz Social Anxiety Scale – Self Report.

Table 2

Pearson correlations between the study variables for Australia (374) and Brazil (329)

	A1	A2	A3	C1	C2	C3	E1	E2	E3	N1	N2	N3	O1	O2	03	BFNE	SIAS	SPS	MS	LTF	LTA
A1		.77**	.62**	.22**	.17**	.17**	0.0	.15**	.28**	-0.03	-.12	-0.03	.24**	.23**	.16**	0.00	-.10	-0.03	0.00	-0.00	-0.05
A2	.73**		.64**	.23**	.22**	.19**	.23**	.28**	.38**	-0.01	-0.04	0.00	.36**	.38**	.29**	0.00	-.14**	-0.06	-0.0	-0.05	-.10
A3	.59**	.66**		.22**	.19**	.15**	.40**	.47**	.54**	-.11	-.12	-0.09	.20**	.21**	.13**	-.13	-.30**	-.23**	-.19**	-.21**	-.22**
C1	.27**	.28**	.30**		.79**	.78**	0.01	.16**	.15**	-.11	-.12	-0.07	.20**	.22**	.20**	-0.08	-.16**	-.14**	-.13**	-.13	-.10
C2	.28**	.27**	.28**	.86**		.83**	0.00	.16**	.10	-0.0	-0.08	-0.05	.18**	.21**	.14**	-0.08	-.15**	-.10	-.12	-0.08	-0.04
C3	.19**	.20**	.18**	.81**	.80**		-0.04	0.08	0.06	-0.08	-0.09	-0.0	.20**	.17**	.17**	-0.02	-0.09	-0.0	-0.04	-0.04	-0.01
E1	.29**	.46**	.52**	.17**	.14**	.13		.81**	.82**	-.34**	-.23**	-.27**	.11	.15**	.14**	-.42**	-.55**	-.50**	-.60**	-.59**	-.54**
E2	.28**	.49**	.50**	.32**	.29**	.23**	.80**		.80**	-.40**	-.27**	-.33**	.17**	.26**	.16**	-.49**	-.61**	-.55**	-.61**	-.62**	-.58**
E3	.41**	.60**	.54**	.26**	.23**	.20**	.84**	.83**		-.43**	-.34**	-.36**	.23**	.24**	.23**	-.45**	-.63**	-.60**	-.63**	-.63**	-.59**
N1	-.27**	-.30**	-.19**	-.38**	-.35**	-.35**	-.39**	-.47**	-.46**		.82**	.82**	-0.05	-0.0	-0.05	.61**	.48**	.53**	.50**	.55**	.48**
N2	-.28**	-.30**	-.19**	-.41**	-.36**	-.38**	-.39**	-.46**	-.44**	.89**		.86**	-0.07	-0.00	-0.08	.49**	.41**	.41**	.38**	.43**	.40**
N3	-.21**	-.21**	-0.10	-.32**	-.27**	-.27**	-.31**	-.40**	-.39**	.84**	.86**		-0.06	-0.00	-0.07	.55**	.44**	.46**	.44**	.46**	.41**
O1	.18**	.26**	.15**	.21**	.27**	.19**	.23**	.31**	.33**	-.29**	-.25**	-.23**		.73**	.80**	-0.09	-.12	-.16**	-.17**	-.13	-.19**
O2	.19**	.36**	.20**	.22**	.28**	.20**	.32**	.38**	.43**	-.30**	-.28**	-.25**	.67**		.69**	-0.06	-.12	-.10	-.14**	-.11	-.18**

O3	.15**	.28**	.19**	.15**	.17**	.19**	.31**	.30**	.39**	-.22**	-.17**	-.13	.71**	.58**		-0.05	-.11	-.13**	-.13**	-.13	-.19**
BFNE	-0.10	-.19**	-.16**	-.26**	-.24**	-.21**	-.38**	-.51**	-.48**	.60**	.54**	.53**	-.27**	-.31**	-.19**		.67**	.67**	.67**	.70**	.59**
SIAS	-.20**	-.34**	-.33**	-.39**	-.37**	-.33**	-.59**	-.72**	-.67**	.56**	.55**	.50**	-.29**	-.38**	-.28**	.68**		.84**	.72**	.85**	.75**
SPS	-.17**	-.28**	-.25**	-.32**	-.30**	-.28**	-.51**	-.63**	-.58**	.56**	.57**	.54**	-.29**	-.39**	-.25**	.69**	.83**		.73**	.84**	.77**
MS	-.15**	-.32**	-.32**	-.30**	-.27**	-.22**	-.65**	-.73**	-.70**	.58**	.54**	.50**	-.33**	-.46**	-.32**	.69**	.80**	.76**		.75**	.69**
LTF	-.18**	-.31**	-.29**	-.37**	-.36**	-.32**	-.58**	-.69**	-.65**	.57**	.57**	.52**	-.39**	-.47**	-.36**	.67**	.86**	.85**	.81**		.88**
LTA	-.18**	-.31**	-.27**	-.35**	-.35**	-.30**	-.55**	-.66**	-.62**	.53**	.51**	.48**	-.38**	-.48**	-.35**	.61**	.75**	.76**	.73**	.87**	

Note. The Australian sample is above the diagonal and the Brazilian sample is below the diagonal. All correlation values presented in the table are significant *($p < .05$)* and values that account for a minimum variance of 10% have been flagged. Agreeableness parcels - A1, A2, A3; Conscientiousness parcels - C1, C2, C3; Extraversion parcels - E1, E2, E3; Neuroticism parcels N1, N2, N3; Openness parcels O1, O2, O3; BFNE – Brief Fear of Negative Evaluation Scale Scores; SIAS – Social Interaction Anxiety Scale Scores; SPS –Social Phobia Scale Scores; MS – brief Social Phobia Inventory Scores; LTF and LTA – Liebowitz Social Anxiety Scale – Fear and Avoidance Self Report Scores, respectively.

Table 3

Goodness-of-fit summary for individual measurement models applied on separate samples.

Models	χ^2	*df*	TLI	CFI	RMSEA
IPIP AUS	345.7*	80	.92	.94	.09
IPIP BRA	264.6*	80	.94	.95	.08
SAM AUS	56.09*	5	.94	.97	.16
SAM BRA	41.07*	5	.96	.98	.14

Note. *$p = .000$. IPIP AUS and IPIP BRA – International Personality Item Pool applied in the Australia and the Brazilian community respectively; SAM AUS and SAM BRA – social anxiety scales (Social Phobia Scale, Social Interaction Anxiety Scale; Brief Fear of Negative Evaluation; the brief version of Social Phobia Inventory; Liebowitz Social Anxiety Scale – Self Report) applied in the Australia and Brazilian community, respectively; TLI - Tucker-Lewis index; CFI - comparative fit index; RMSEA - root mean square error of approximation.

Table 4

Goodness-of-fit summary for covariance of the measurement models applied on separate samples.

Models	χ^2	*df*	TLI	CFI	RMSEA
IPIP SAM AUS	538.8	168	.94	.95	.07
IPIP SAM BRA	481.6	168	.94	.95	.07

Note. *$p = .000$. IPIP SAM AUS and IPIP SAM BRA – measurement models of Australian and Brazilian samples, respectively.

Table 5

Goodness-of-fit summary for the structural model of IPIP and SAM for each sample

Models	χ^2	*df*	TLI	CFI	RMSEA
IPIP and SAM AUS	538.7*	168	.93	.94	.07
IPIP and SAM BRA	481.6*	168	.94	.95	.07

Note. *$p = .000$. IPIP SAM AUS and IPIP SAM BRA – structural models of IPIP and SAM for the Australian and Brazilian samples, respectively.

Table 6

Goodness-of-fit Summary for tests of invariance on the structural path level

Model Description	Comparative Model	χ^2	df	$\Delta \chi^2$	Δdf	*p*
Hypothesised Model (Model 1)	-	1020.4	336	-	-	-
Structural Weight Constrained	Model 1	1026.1	341	5.7	5	ns.

Note. $\Delta\chi^2$ - difference in χ^2 values between models; *Δdf* – difference in number of degrees of freedom between models.

Table 7

Latent Means Differences between Australian and Brazilian Groups

	Estimate	C.R.
Neuroticism	1.40*	3.16
Extraversion	-.20	-.57
Agreeableness	-.28	-1.00
Conscientiousness	.41	1.08
Openness	.62	1.95

Note. *$p < .05$. C.R. – critical ratios values are statistically significant when > 1.96

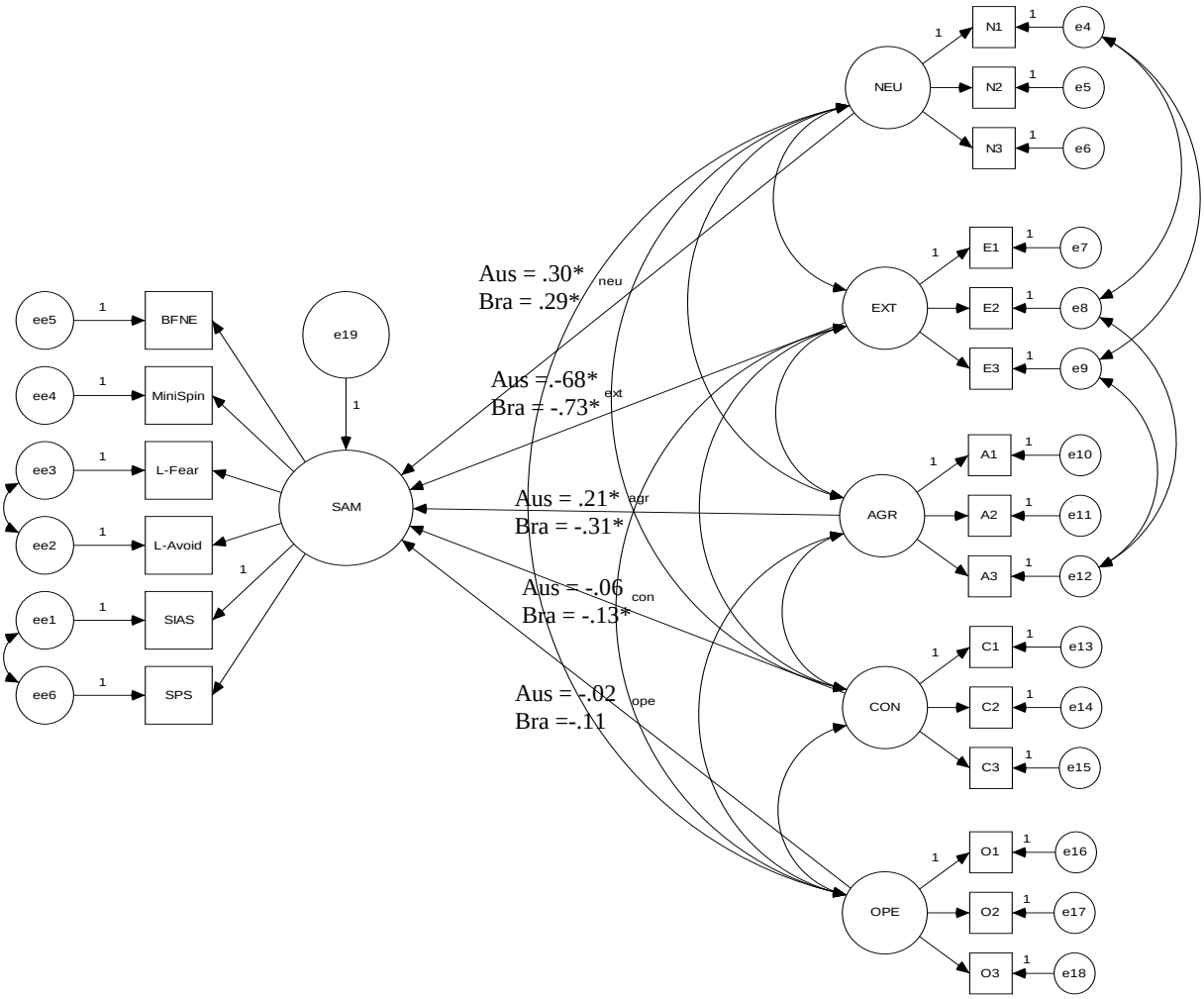

Figure 1. Final SEM Model for the Australian and Brazilian samples. Latent variables: SAM – social anxiety measures, NEU – Neuroticism, EXT – Extraversion, AGR – Agreeableness, CON – Conscientiousness, OPE – Openness; Observed variables: Agreeableness parcels - A1, A2, A3; Conscientiousness parcels - C1, C2, C3; Extraversion parcels - E1, E2, E3; Neuroticism parcels N1, N2, N3; Openness parcels O1, O2, O3; BFNE – Brief Fear of Negative Evaluation Scale; SIAS – Social Interaction Anxiety Scale, SPS - Social Phobia Scale; Mini-SPIN - brief Social Phobia Inventory; Liebowitz-Fear and Liebowitz-Avoid - Liebowitz Social Anxiety Scale – Self Report. The 'e' items are measurement error related to the observed variable they point to; e19 - structural error related to SAM latent variable; neu, ext, agr, con and ope items illustrate the structural path of the model. Strength of the relationship between personality traits and social anxiety measures in the Australian (AUS) and Brazilian (BRA) sample. *$p<05$.

CHAPTER 3:

This chapter is prepared for submission to the Journal of Personality and Individual Differences.

Authors' contribution:

Ms Brockveld was solely responsible for the conceptualisation and write up of this paper. Dr Peters provided academic supervision.

Predictors of performance and social interaction fears in community and clinic samples

Keila Brockveld

Centre for Emotional Health
Department of Psychology
Macquarie University, NSW, 2109
Australia

Lorna Peters

Centre for Emotional Health
Department of Psychology
Macquarie University, NSW, 2109
Australia

Correspondence concerning this article should be addressed to Keila Brockveld, Centre for Emotional Health, Department of Psychology, Macquarie University, NSW, 2109, Australia. Electronic mail may be sent to keila.brockveld@mq.edu.au or keilac@gmail.com, +61 (02) 9850 8627

Abstract

Objective: The aim of this study was to investigate whether individual differences in personality were related to differences in severity of social fears in three types of social situations (interaction, performance, and public speaking). **Method**: Hierarchical regression analyses were conducted to test whether the personality domains uniquely predict participants' ratings of fear for the three social fear domains, in two separate samples: community (n = 358) and clinical (n = 217) samples. **Results**: The results indicate that the five personality domains are related to elevated fears category scores, with different patterns of association between personality variables and social fear score depending on the type of situation and the sample (clinical vs. community). **Conclusion**: The findings suggest that social fears experienced in different situations share a number of characteristics; however social interaction, public speaking, and performance scores have important differences in terms of their relationships with personality variables.

Keywords: social anxiety, individual differences, interaction fears, performance fears, public speaking fears

Social anxiety disorder (SAD) is defined by the *Diagnostic and statistical manual of mental disorders* (4th ed., text rev; *DSM-IV-TR*; American Psychiatric Association, 2000) as a marked and persistent fear of social or performance situations in which embarrassment may occur. There is good empirical evidence for the efficacy of cognitive behavioural treatment (CBT) for SAD, with meta-analyses generally showing large effect size changes of around 0.8 (Federoff & Taylor, 2001). Nevertheless, a significant minority of socially anxious participants who embark on CBT achieve less than optimal outcomes. As a result, attention has turned to predictors of CBT outcome for social anxiety disorder with the aim of enhancing CBT efficacy by allowing tailoring of CBT to account for individual differences in pre-treatment characteristics. A recent review of predictors of treatment outcomes for social anxiety disorder points to several individual differences at pre-treatment (e.g., functional impairment, severity and duration of disorder, expectations for change, etc.) as important in predicting treatment outcome (Eskilsden, Hougaard, & Rosenberg, 2010). However, the review authors also point to the paucity of research on individual differences as predictors of treatment outcome. The focus of this paper is on two individual differences that are possible predictors of treatment outcome: subtype of social anxiety disorder and personality characteristics.

The SAD diagnostic criteria allows for a generalised subtype of SAD where fears are evident in most social or performance situations (*DSM-IV-TR*, 2000) and, by default, those who are not included in the generalised subtype of social phobia have been called non-generalised, discrete, limited, specific, or circumscribed social phobics. Despite the suggestion in the diagnostic classification that subtypes of SAD may be identified, the empirical evidence for whether there are subtypes, and if so, what defines them is mixed. For example, recently, using taxometric analysis, researchers have found a latent structure of SAD proposing a dimensional solution for this disorder (Crome, Baillie, Slade, & Ruscio, 2010; Kollman, Brown, Liverant, & Hofmann, 2006; Ruscio, 2010), which is best described as

varying in a continuous manner. The latent structure of SAD may be taken to indicate that there are no distinct subtypes. Nevertheless, there is evidence that the diagnosis of generalised social phobia can be made reliably (Holt, Heimberg, & Hope, 1992; Mannuzza et al., 1995; Turner, Beidel, & Townsley, 1992) and that it is a valid diagnosis in that people with this diagnosis differ from their non-generalised counterparts on a number of demographic and clinical correlates (e.g., Carter & Wu, 2010a, 2010b; Safren, Heimberg, Brown, & Holle, 1996/1997; Starcevic, Eric, Kelln, & Markovic-Zigic, 1994; Stein & Chavira, 1998; Turner, Beidel, & Townsley, 1992). Generally, compared to those with non-generalised social phobia, those with generalised social phobia are more likely to have an earlier onset of social anxiety, to be unmarried, less educated and unemployed (Brown, Heimberg, & Juster, 1995; Heimberg, Hope, Dodge, & Becker, 1990; Holt et al., 1992; Mannuzza et al., 1995). Also, generalised social phobia are more likely than non-generalised social phobia to have more severe social anxiety, to be more fearful of negative evaluation, to have comorbid disorders, to be more impaired, to have lower positive affect and to have poorer treatment outcome (Brown et al., 1995; Heimberg et al., 1990; Herbert, Hope, & Bellack, 1992; Holt et al., 1992; Hope, Herbert, & White, 1995; Hughes et al., 2006; Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992; Turner et al., 1992). Nevertheless, other studies have not found the same results regarding socioeconomic status and age (Herbert et al., 1992; Hofmann, Ehlers, & Roth, 1995; Mannuzza et al., 1995). Generalised social phobia and non-generalised social phobia differ in most of its predictors, the magnitude of pervasiveness of fears, comorbidity, treatment outcome, and symptoms.

While there tends to be consistency in research studies in what constitutes generalised social phobia, the other subtype, the non-generalised subtype, has been variously defined by researchers. Some researchers have defined the non-generalised subtype based on the *number of feared situations* (e.g., Carter & Wu, 2010a; Perugi et al., 2001; Stein, 1996). It could be argued that the number of situations feared is simply a measure of severity of the disorder and

does nothing to assist in the endeavour to identify whether there are different types of social anxiety that may, for instance, respond differently to evidence-based treatment. Others researchers have defined non-generalised social phobia based on *the type of situation feared* (e.g., Heimberg, Holt, Schneier, Spitzer, & Liebowitz, 1993), perhaps allowing for a conceptualisation of social anxiety that is not confounded with severity.

For example, a number of researchers have used conceptual (e.g., Norton, Buhr, Cox, Norton, Walker, 2000; Norton, Cox, Hewitt, & McLeod, 1997) or empirical methods (e.g., Eng, Heimberg, Coles, Schneier, & Liebowitz, 2000; Furmark, Tillfors, Stattin, Ekselius, & Fredrikson, 2000; Safren et al., 1999b; Safren, Turk, & Heimberg, 1998b) to examine the presence of subtypes of social phobia based on the types of situations feared, rather than basing the subtype distinction on the number of fears endorsed. In particular, subtypes of social phobia have been defined conceptually in terms of those who fear performance situations as compared to those who fear social interaction situations. For example, Heimberg et al. (1993) proposed a situational quantitative model in which, generalised social phobia encompassed fears of most social interactions; non-generalised social phobia encompassed fears of social interactions but demonstrated at least one domain of social functioning without experiencing clinical anxiety, and circumscribed social phobia encompassed fears of one or two specific situations like public speaking.

Commonly used measures of social anxiety operationalize the conceptual difference between interaction and performance fears. For example the Social Interaction Anxiety Scale (SIAS) and the Social Phobia Scale (SPS; Mattick & Clarke, 1998) are companion scales designed to measure two related facets of social fears/anxiety. The SIAS measures the level of general anxiety associated with the initiation and maintenance of social interactions (e.g., meeting and talking to strangers, friends, or members of the opposite sex), while the SPS measures the experience of anxiety associated with the performance of various tasks while being scrutinised by others (e.g., working, eating, drinking, writing, using public toilets). The

Liebowitz Social Anxiety Scale (LSAS; Liebowitz, 1987) has been found to have a four factor solution: one factor encompassing social interaction situations and three performance anxiety factors (public speaking, observation by others, and eating and drinking in front of others), supporting public speaking as an independent subtype of fear from social and other performance fears in a clinical sample (Safren et al., 1999a).

Thus, the present study will examine clinical differences between three subtypes of SAD based on the nature of the situation feared: social interaction fears; performance fears such as eating and drinking in public, and being observed by others; and public speaking fears. In addition, the present study will examine whether the three subtypes differ in their personality characteristics. In particular, if subtypes based on the nature of the situation feared are predicted by different personality characteristics, then it may be possible to tailor treatment for social anxiety disorder to account for the differences in personality.

To date, there is a small body of research on the relationship between personality characteristics and subtypes of social anxiety, even if the subtypes were not defined based on type of situation feared. For example, in a meta-analysis (Naragon-Gainey, 2010), anxiety sensitivity was found to be significantly more predictive of performance fears (non-generalised social phobia) than generalised social phobia (social interaction), and neuroticism (Norton et al., 2000; Norton et al., 1997) were significantly more predictive of generalised social phobia than non-generalised social phobia. Generalised social phobia (social interaction) has been found to be more associated with low positive affect (extraversion) than performance anxiety (non-generalised social phobia) (Hughes et al., 2006; Kashdan, 2002). Kashdan (2002) found that social interaction explained unique variance in curiosity while controlling for neuroticism and scrutiny fears (e.g., public speaking, eating and drinking in public), whereas scrutiny fears relationship with curiosity reduced to near zero while controlling for social interaction fears.

By revealing such differences better planned treatment may be offered to individuals fearful of different situations taking personality traits into account, as suggested by other researchers (Miller, 1991; Mutén, 1991; McCrae and Costa, 1989).

The present study aims to examine whether individual differences in personality, in a community and clinical sample, are related to differences in social anxiety disorder expression, operationalized as severity of fear scores in different situations (interaction fears, performance fears, and public speaking fears). Based on past research findings, it is hypothesised that social interaction anxiety fears will be mostly predicted by extraversion, neuroticism, conscientiousness and openness to experience. Due to the scant research on the relationship between the five personality dimensions and performance and public speaking fears, exploratory analysis will be conducted.

Method

Community Sample

Given that pure public speaking fears are relatively uncommon in samples seeking treatment for social phobia, the source of the participants in this study was a volunteer sample from the community, and especially students, where it is expected that the base rate of public-speaking fears is higher than in treatment-seeking samples. In order to obtain a large enough sample with a broad base of social fears, a community sample was recruited from two sources: an undergraduate Psychology subject pool (students participate in research for course credit; n = 201) and via advertising the study online through a web portal for online research (participants are entered into a draw for a monthly prize of $50; n = 157). The combined community sample was made of 358 participants, including 262 females (73.2%) and 96 (26.8%) males, age ranging from 18 to 57 years, with a mean age of 22.4 (s.d. = 7.27). Participants who have social fears as well as those who do not were recruited for the study.

Clinical Sample

The clinical sample consisted of 217 patients, including 95 females (43.8%) and 92 males (42.4%), 30 participants (13.8%) did not provide gender. Age ranged from 21to 59 years, with a mean of 32.5 (s.d.= 8.03), 171 participants (78%) did not provide age. Participants were referred or self-referred to the Emotional Health Clinic (EHC - Macquarie University – Sydney - Australia), which provides a 12-week group Cognitive-Behavioural Treatment for social anxiety disorder delivered by trained psychologists. Inclusion criteria were being18 years-old or over and meeting *DSM-IV-TR (2000)* criteria for social anxiety disorder as a primary diagnosis as measured by the Anxiety Disorders Interview Schedule–IV (ADIS–IV; Di Nardo, Brown, & Barlow, 1994). Diagnoses were made by clinical psychologists and graduate students. In our clinic, the agreement between raters for the principal diagnosis of social anxiety disorder is acceptable ($\kappa = .86$, Rapee, Gaston, & Abbott, 2009).

Procedure

The procedure was approved by the Human Research Ethics Committee and participants provided informed consent.

In the clinical sample, participants were recruited through general practitioners, mental health professionals, occasional media coverage, and word of mouth, from 2007 to 2011. Telephone screening was carried out and those who emerged as potentially having anxiety-related difficulties were invited for an assessment. All of the participants in this sample completed the questionnaires prior to treatment. Data from some participants in this sample have been presented elsewhere for other purposes (Brockveld & Peters, 2012; Peters, Gaston, Baillie, & Rapee, 2011; Rapee, Gaston, & Abbott, 2009; Rapee et al., 2011).

In the community sample, participants completed online questionnaires in response to advertisements of the research placed in public places. Participants in this sample have provided data for other purposes (Brockveld, Taylor, & Peters, 2012).

Measures

Measure of social anxiety

The study involved administration of a battery of questionnaires designed to measure the constructs of performance and interaction anxiety. Measures of anxiety in social interaction, performance, and public-speaking situations were administered. The Liebowitz Social Anxiety Scale – Self-Report version (LSAS-SR; Baker, Heinrichs, Kim, & Hofmann, 2002; Liebowitz, 1987) assesses fear and avoidance in 11 interaction and 13 performance situations. The instrument has 24 descriptions of situations that might elicit anxiety. The scale measures both fear and avoidance experienced in the past week, with each situation being rated on two 0 to 3 *Likert*-type scales: Fear and Anxiety Rating – 0 (No fear or anxiety in this situation) to 3 (Severe fear or anxiety in this situation) and Avoidance Rating – 0 (Never avoid this situation) to 3 (Usually avoid this situation). To differentiate between anxiety experienced in different types of social anxiety, the LSAS can be scored as a four-factor model, measuring social interaction fear, public speaking fear, observation fear, and eating and drinking in public fears, as proposed by Safren, Heimberg, Horner, Juster, Schneier, & Liebowitz (1999) and supported by Oakman, Van Ameringen, Mancini, & Farvolden (2003). In the present study, the last two types of situations were aggregated together as they represent performance fears (Safren, Turk, & Heimberg, 1998a). An overall total score is reached by summing the subscores of fear and avoidance ratings. This scale has been reported to have good test–retest reliability after 12-week interval for the total score (r = 0.83), good internal consistency with all alpha coefficients 0.79 or higher (Baker et al., 2002).

Personality measure

The 50-item (clinical samples) and 100-item (community sample) version of the International Personality Item Pool (IPIP; Goldberg, 1999) was administered to measure variation in personality traits (Barrick & Ryan, 2003). It comprises five broad domains corresponding to the Five Factor Model (FFM) of personality: extraversion (E), agreeableness

(A), conscientiousness (C), emotional stability (ES; low scores reflect neuroticism), and openness to experience (O). The scale contains items that are keyed positively and negatively, that is, E+ (5 items), E− (5 items); A+ (6 items), A− (4 items); C+ (6 items), C− (4 items); ES+ (2 items), ES− (8 items), O+ (7 items), and O− (3 items). The items are phrased as descriptive statements that the participant endorses using a 5-point *Likert*-type scale to indicate how accurately the statement describes oneself: 1 (very inaccurate) to 5 (very accurate). The internal consistency reliability for the American community sample demonstrated coefficient alpha for each domain as follows, .87 (E), .82 (A), .79 (C), .86 (ES), and .84 (O) (Mlacic & Goldberg, 2007). The IPIP 50-item scale has demonstrated strong correlation with NEO-PI-R: .77(E), .70(A), .79(C), .82(ES), .79(O) (I.P.I.P., 2011).

Depression measure

The 14 items depression subscale of Depression Anxiety Stress Scales (DASS-D; Lovibond & Lovibond, 1995) was administered in the clinical samples. DASS-D was developed to measure depression differentiating it from anxiety and stress. Good psychometric properties were demonstrated in clinical and nonclinical populations (Antony, Cox, Enns, Bieling, & Swinson, 1998). As social anxiety and depression have a considerable comorbidity (Rapee, 1995), this measure was included.

Analytical Procedure

The aim of analysis was to examine whether personality variables contributed unique variance to the prediction of severity of social fears in three types of situations: interaction, performance, and public-speaking. First, bivariate correlation analyses were conducted between all variables (personality, social anxiety, and depressive symptoms). As these variables were substantially related among themselves, in both samples, multiple regression analyses were necessary to test the personality variables' unique contribution to severity of the three types of social fears while other variables (depression and/or gender) were held constant. Hierarchical multiple regression analyses were conducted to test whether the

personality domains uniquely predict participants' ratings of fear for the three social fear domains. SPSS Version 19 (IBM, 2010) was used to conduct all analyses.

In the clinical sample, for each regression, gender and DASS-D subscale were entered in step 1, and in step 2 personality domains were entered. Three separate models were run for the following dependent variables: social interaction fears, public speaking fears, and performance fears. In the community sample, gender was entered in step 1, and personality domains were entered in step 2, for the three distinct models for each dependent variable: social interaction fears, public speaking fears and performance fears.

Results

Descriptive analysis

Correlation analyses are shown in Table 1. Correlations were inspected and differences between genders were examined. Where there were significant correlations between a variable and a dependent variable (social interaction fear, public speaking fear, or performance fear) or a significant difference on the dependent variable by gender, variables were treated as control variables in the regression. In both samples, there is a consistent pattern where the social anxiety measures had significant negative relationships with extraversion, emotional stability and openness. Mean scores are listed in Table 2, in which the community sample demonstrated higher mean scores compared to the clinical sample on all social anxiety subscales, except for public speaking in men, where females had higher scores on all subscales in the community sample, while men in the clinical sample had comparable mean scores on PSF to females in the community sample. For the clinical sample, there was a significant difference between males and females only for public speaking fears such that males had a higher score than females. For the community sample, there were gender differences on all social fears such that females had higher scores than males.

Table 1 here

In the clinical sample, results indicated that scores on public speaking fear were not related to depressive symptoms; males were higher on their public speaking scores ($t(183) = -3.338$, $p = .001$) (Table 2). Scores on all three types of social fears situations scales were negatively related to extraversion and emotional stability; conscientiousness is only related to interaction fears; agreeableness is not related to scores on any fear subtype; and openness is negatively significantly related to scores on the interaction and public speaking fears scales, and positively significantly related to performance fears. In the community sample, extraversion, emotional stability and openness are negatively significantly related to scores on all three scales of types of social fears situation scales; conscientiousness and agreeableness are only negatively significantly related to scores on interaction fears, and again, males and females are different on their public speaking scores, in which men were higher on public speaking scores ($t(372) = 3.240$, $p = .001$).

Table 2 here

Multiple regression analyses

Hierarchical multiple regression analyses were conducted to assess whether scores on the five personality domains (agreeableness, conscientiousness, extraversion, emotional stability, and openness) predicted scores on the three domains of social fear (social interaction fears, public speaking fears, performance fears) in separate samples (clinical and community), after controlling for gender and depressive symptoms (see Table 3). The variables described in the final model contributed to unique variance at <.01.

Table 3 here

Regression analyses for the clinical sample

Gender[5] and depressive symptoms were entered in step 1, explaining 16% of the variance in social interaction fears. After adding the five personality domains in step 2, the total variance explained in the model was 36.2%, $F(7, 175) = 14.20$, $p < .001$. The five

[5] Given that there were gender differences in both samples on social fear scores, gender was included in the regression.

predictor variables explained an extra 19.7% of the variance in social interaction fears, after controlling for gender and depressive symptoms, $R\Delta^2 = .19$, $F\Delta$ (5, 175) = 10.82, $p < .001$. In the final model, the variables that contributed significantly to prediction of social interaction fears were depressive symptoms, agreeableness, conscientiousness, and extraversion. The semi-partial correlations, which show the unique variance accounted for by a variable, suggest that extraversion accounted for more variance in social interaction fears ($sr^2 = 14\%$) than the depressive symptoms[6] ($sr^2 = 3\%$), conscientiousness ($sr^2 = 2\%$), agreeableness ($sr^2 = 1\%$), and emotional stability ($sr^2 = 1\%$) (see Table 3).

Turning to public speaking fears, gender and depressive symptoms were entered in step 1, explaining 8.4% of the public speaking fears variance. Entering the five personality domains in step 2, the total variance explained by the model was 26.3%, F (7, 175) = 8.91, $p < .001$. The five personality predictors explained an additional 17.9% of the variance in public speaking fears, after gender and depressive symptoms were controlled, $R\Delta^2 = .17$, $F\Delta$ (5, 175) = 8.49, $p < .001$. The final model had gender, agreeableness, openness, and again extraversion as significant predictors of public speaking fears. The semi-partial correlations suggest that extraversion accounted for more variance in public speaking fears ($sr^2 = 11\%$) than the agreeableness ($sr^2 = 2\%$), and openness ($sr^2 = 2\%$).

For the performance fears gender and depressive symptoms were entered in step 1 and explained 10% of the variance. Then, entering the five personality domains to the model, the total variance explained by the model was 16.6%, F (7, 175) = 4.98, $p < .001$. These five personality domains explained an additional 6.7% of the variance in performance fears, after controlling for gender and depressive symptoms, $R\Delta^2 = .06$, $F\Delta$ (5, 175) = 2.79, $p < .05$. The semi-partial correlations suggest that extraversion accounted for more variance in

[6] Analyses were also run without the depression measure in the clinical sample. The only difference was found for the dependent variable LSI, in which agreeableness falls below significance and neuroticism strengthens. For the other dependent variables no changes were found. Thus, the original analyses, controlling for depression is reported.

performance fears (sr^2 = 3%) than the depressive symptoms (sr^2 = 2%), and emotional stability (sr^2 = 2%).

In summary, the strongest predictors of interaction fears were extraversion, conscientiousness, agreeableness and depressive symptoms; of public speaking fears were extraversion, openness, agreeableness and gender; of performance fears were extraversion, emotional stability and depressive symptoms.

Regression analyses for the community sample

Gender was entered in step 1 and explained 1.4% of the variance in social interaction fears. After adding the five personality domains in step 2 the model total variance explained was 52.8%, F (3, 367) = 68.53, $p < .05$. The five personality domains explained an extra 51.4% of the variance in social interaction fears, after controlling for gender, $R\Delta^2 = .51$, $F\Delta$ (5, 367) = 80.04, $p < .001$. In the final model the variables that contributed significantly to prediction of social interaction fears, and according to semi-partial correlations extraversion accounted for more variance in social interaction fears (sr^2 = 26%) than emotional stability (sr^2 = 4%), and agreeableness (sr^2 = 1%).

Gender explained 2.7% of the variance in public speaking fears. Entering the five personality domains in step 2, the model total variance explained was 51.8%, F (6, 367) = 65.63, $p < .000$. The five personality predictors explained an additional 49% of the variance in public speaking fears, after gender was controlled, $R\Delta^2 = .49$, $F\Delta$ (5, 367) = 74.54, $p < .001$. The final model for public speaking fears had agreeableness, emotional stability, openness, gender, and extraversion as significant predictors. Semi-partial correlations suggest that extraversion accounted for more variance in public speaking fears (sr^2 = 30%) than the agreeableness (sr^2 = 3%), openness (sr^2 = 1%), and emotional stability (sr^2 = 1%).

For the performance fears, gender explained 1.6% of the variance. Entering the five personality domains in step 2, the total variance explained by the model was 25.9%, F (6, 367) = 21.43, $p < .001$. These five personality domains explained an extra 24.4% of the

variance in performance fears, after controlling for gender, $R\Delta^2 = .24$, $F\Delta$ (5, 367) = 24.15, $p < .001$. In the final model, the variables that contributed significantly to prediction of performance fears were extraversion and emotional stability. Both variables accounted for similar amounts of variance in performance fears (extraversion: $sr^2 = 8\%$; emotional stability: $sr^2 = 6\%$).

In summary, the strongest predictors of interaction fears were extraversion, agreeableness and emotional stability; of public speaking fears were extraversion, openness, agreeableness, emotional stability and gender; of performance fears were extraversion, and emotional stability.

Discussion

The aim of the present study was to investigate whether individual differences in personality, in a community and clinical sample, were related to differences in severity of social fears in three types of social situations (interaction, performance, and public speaking). The results indicate that the five personality domains are related to elevated fears category scores, with different patterns of association between personality variables and social fear score depending on the type of situation and the sample (clinical vs. community).

In the clinical sample, extraversion and conscientiousness scores were unique predictors of social interaction fear scores, consistent with previous investigation (Hughes et al., 2006; Kashdan, 2002; Norton et al., 2000; Norton et al., 1997). Exploratory analysis in the clinical sample indicated that agreeableness and openness were unique predictors of public speaking fear scores. Emotional stability was a unique predictor of performance fear scores. In the community sample, extraversion and emotional stability were predictors of social interaction fear scores, also consistent with previous research (Hughes et al., 2006; Kashdan, 2002; Norton et al., 2000; Norton et al., 1997). Agreeableness, and openness were unique predictors of public speaking scores. Consistent with previous research, emotional stability was a

predictor of performance fear scores (Norton et al., 2000; Norton et al., 1997), and public speaking, albeit accounting for less unique variance with public speaking than performance fear scores. Although the results of this study indicate that the different social fear scores measured by LSAS-SR correlated highly with personality domains scores, there are patterns of results identifying differences in the proportions of variance accounted for by the personality dimensions for each fear category score. Based on the results, this study suggests that personality domains scores have differential associations with social anxiety fears in the three different situational domains.

Personality domains scores predicted fear in more than one type of situation, however the proportion of variance accounted for differed, suggesting that fear in each type of situation has a distinct set of features. Across both samples scores, extraversion uniquely predicted variance in social interaction fears. On the public speaking fear scale, which measures fears of public performance (Heimberg et al., 1999), across both samples agreeableness and openness were unique contributors to variance in public speaking fear scores. On the performance fear scale, which measures fears of being observed or scrutinised by others (Safren et al., 1999), neuroticism, extraversion and conscientiousness were predictors in the clinical sample. The same pattern was found in the community sample, with personality domains contributing to larger amounts of variance in performance fear scores than in the clinical sample. It is noteworthy that depression symptoms and possible comorbidities were not measured in the community sample and this may partially account for the higher contribution to variances between personality traits and social anxiety fear scores (Brown et al., 1995; Heimberg et al., 1990; Herbert, Hope, & Bellack, 1992; Holt et al., 1992; Hope, Herbert, & White, 1995; Hughes et al., 2006; Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992; Turner et al., 1992).

It is not surprising that social interaction fear scores, which measure interaction with dyads and groups the individual does not know very well (Safren et al., 1999) are strongly

associated with extraversion which measures, amongst other things, a person's tendencies to be sociable and assertive. Predictors of social interaction scores are in line with past research. For example, in a clinical sample, generalised social fear was found to be strongly related to low positive affect and anhedonic depression while negative emotionally was held constant (Hughes et al., 2006). Openness, however, in contrast to past research (Kashdan, 2007; Kashdan, Rose, & Fincham, 2004), did not contribute to variance in scores on social interaction fear, but openness contributed to variance in the public speaking fear scores.

The results suggest that individuals scoring high on the public speaking measure are individuals with difficulties adapting to social changes however compliant with authority. Of interest is the finding that, across both samples, the unique predictor of performance anxiety, emotional stability, was not found to be a unique predictor of public speaking fears, suggesting that individuals with public speaking fears may differ from those with other fears of performance such as writing or eating in front of others.

Performance fear results that individuals with high performance fear scores experience negative affect and unrealistic beliefs and expectations, have difficulties refraining impulsiveness, and to a lesser extent experience social isolation.

The present study contained some limitations. The 50 and 100-item IPIP embrace the FFM of personality domains but they do not capture the lower-order items (facets) which could enrich the findings of this research. Also, the results of this study are only generalised to the present measures. Further replication of these findings with different measures is warranted. Furthermore, the contribution of the predictors may vary according to the measures used.

The findings suggest that social fears experienced in different situations share a number of characteristics, however social interaction, public speaking, and performance scores have important differences in terms of their relationships with personality variables. These distinctions may be caused by genetics (Kendler, Neale, Kessler, Heath, & Eaves, 1992) and

learning (Ost, 1985) factors. Nonetheless, the results of the present study suggest that there is a qualitative difference in social fears. And, based on evidence here presented, it may be possible that better tailored treatment can be offered for individuals suffering from fears of different social situations when accounting for the differences in personality. Further research on the implications of the qualitative difference between social fears in different situations for diagnosis and treatment of social anxiety disorder is warranted.

References

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.) doi:10.1176/appi.books.9780890423349.

Antony, M. M., Cox, B. J., Enns, M. W., Bieling, P. J., & Swinson, R. P. (1998). Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and a community sample. *Psychological Assessment, 10*(2), 176-181. doi: 10.1037/1040-3590.10.2.176

Bagby R. M., Parker J. D. A., Joffe R. T., & Buis, T. (1994). Reconstruction and Validation of the Depressive Experiences Questionnaire. *Assessment, 1*(1), 59-68.

Baker, S. L., Heinrichs, N., Kim, H.-J., & Hofmann, S. G. (2002). The Liebowitz social anxiety scale as a self-report instrument: a preliminary psychometric analysis. *Behaviour Research and Therapy, 40*, 701-715.

Barrick, M. R., & Ryan, A. M. (2003). *Personality and Work:* Reconsidering the Role of Personality in Organizations. San Francisco (CA): Pfeiffer.

Brockveld, K. C., & Peters, L. (2012). Personality as a moderator of cognitive-behavioural treatment outcome for social anxiety disorder. *To be submitted*.

Brockveld, K. C., Taylor, A., & Peters, L. (2012). A preliminary examination of the relationship between social anxiety and personality: a comparison between Australia and Brazil. *To be submitted*.

Brown, E. J., Heimberg, R. G., & Juster, H. R. (1995). Social phobia subtype and avoidant personality disorder: Effect on severity of social phobia, impairment, and outcome of cognitive behavioral treatment. *Behavior Therapy, 26*(3), 467-486. doi: 10.1016/s0005-7894(05)80095-4

Carter, S. A., & Wu, K. D. (2010a). Relations Among Symptoms of Social Phobia Subtypes, Avoidant Personality Disorder, Panic, and Depression. *Behavior Therapy, 41*(1), 2-13. doi: 10.1016/j.beth.2008.10.002

Carter, S. A., & Wu, K. D. (2010b). Symptoms of specific and generalized social phobia: An examination of discriminant validity and structural relations with mood and anxiety symptoms. *Behavior Therapy, 41*(2), 254-265. doi: 10.1016/j.beth.2009.04.002

Crome, E., Baillie, A., Slade, T., & Ruscio, A. M. (2010). Social phobia: Further evidence of dimensional structure. *Australian and New Zealand Journal of Psychiatry, 44*(11), 1012-1020. doi: 10.3109/00048674.2010.507544

Di Nardo, P. A., Brown, T. A., & Barlow, D. H. (1994). *Anxiety Disorders Interview Schedule for DSM-IV: Lifetime Version* (ADIS-IV-L). San Antonio, TX: Psychological Corporation.

Eng, W., Heimberg, R. G., Coles, M. E., Schneier, F. R., & Liebowitz, M. R. (2000). An empirical approach to subtype identification in individuals with social phobia. *Psychological Medicine, 30,* 1345-1357.

Eskildsen, A., Hougaard, E., Rosenberg, N. K. (2010). Pre-treatment patient variables as predictors of drop-out and treatment outcome in cognitive behavioural therapy for social phobia: A systematic review. *Nordic Journal of Psychiatry, 64*(2), 94-105.

Federoff, I. C., Taylor, S. (2001). Psychological and pharmacological treatments of social phobia: A meta-analysis. *Journal of Clinical Psychopharmacology, 21*(3), 31-324.

Furmark, T., Tillfors, M., Stattin, H., Ekselius, L., & Fredrikson, M. (2000). Social phobia subtypes in the general population revealed by cluster analysis. *Psychological Medicine, 30,* 1335-1344.

Goldberg, L. R. (1999). *A Broad-Bandwidth, Public-Domain, Personality Inventory Measuring the Lower-Level Facets of Several Five-Factor Models* (Vol. 7). Tilburg, The Netherlands: I. Mervielde, I. Deary, F. De Fruyt, & F. Ostendorf (Eds.), Personality Psychology in Europe. Tilburg University Press.

Heimberg, R. G., Holt, C. S., Schneier, F. R., Spitzer, R. L., & Liebowitz, M. R. (1993). The issue of subtypes in the diagnosis of social phobia. *Journal of Anxiety Disorders, 7*(3), 249-269. doi: 10.1016/0887-6185(93)90006-7

Heimberg, R. G., Hope, D. A., Dodge, C. S., & Becker, R. E. (1990). DSM-III-R Subtypes of social phobia: Comparison of generalized social phobics and public speaking phobics. *Journal of Nervous and Mental Disease, 178*(3), 172-179.

Heimberg, R. G., Horner, K. J., Juster, H. R., Safren, S. A., Brown, E. J., Schneier, F. R., & Liebowitz, M. R. (1999). Psychometric properties of the Liebowitz Social Anxiety Scale. *Psychological Medicine, 29*(1), 199-212. doi: 10.1017/s0033291798007879

Herbert, J. D., Hope, D. A., & Bellack, A. S. (1992). Validity of the Distinction Between Generalized Social Phobia and Avoidant Personality Disorder. *Journal of Abnormal Psychology, 101*(2), 332-339. doi: 10.1037/0021-843x.101.2.332

Hofmann, S. G., Ehlers, A., & Roth, W. T. (1995). Conditioning theory: A model for the etiology of public speaking anxiety? *Behaviour Research and Therapy, 33*(5), 567-571. doi: 10.1016/0005-7967(94)00072-r

Holt, C. S., Heimberg, R. G., & Hope, D. A. (1992). Avoidant Personality Disorder and the Generalized Subtype of Social Phobia. *Journal of Abnormal Psychology, 101*(2), 318-325.

Hope, D. A., Herbert, J. D., & White, C. (1995). Diagnostic subtype, avoidant personality disorder, and efficacy of cognitive-behavioral group therapy for social phobia. *Cognitive Therapy and Research, 19*(4), 399-417. doi: 10.1007/bf02230408

Hughes, A. A., Heimberg, R. G., Coles, M. E., Gibb, B. E., Liebowitz, M. R., & Schneier, F. R. (2006). Relations of the factors of the tripartite model of anxiety and depression to types of social anxiety. *Behaviour Research and Therapy, 44*(11), 1629-1641. doi: 10.1016/j.brat.2005.10.015

IBM. (2010). IBM SPSS Statistics for Windows, Version 19.0. [Computer Software]. Armonk, NY: IBM Corp.

Internationa Personality Item Pool (I. P. I. P.) (2011). A Scientific Collaboratory for the Development of Advanced Measures of Personality Traits and Other Individual Differences (http://ipip.ori.org/). Internet Web Site

Kashdan, T. B. (2007). Social anxiety spectrum and diminished positive experiences: Theoretical synthesis and meta-analysis. *Clinical Psychology Review, 27*(3), 348-365. doi: 10.1016/j.cpr.2006.12.003

Kashdan, T. B. (2002). Social anxiety dimensions, neuroticism, and the contours of positive psychological functioning. *Cognitive Therapy and Research, 26*(6), 789-810. doi: 10.1023/a:1021293501345

Kashdan, T. B., Rose, P., & Fincham, F. D. (2004). Curiosity and exploration: Facilitating positive subjective experiences and personal growth opportunities. *Journal of Personality Assessment, 82*(3), 291-305.

Kendler, K. S., Neale, M. C., Kessler, R. C., Heath, A. C., & Eaves, L. J. (1992). The genetic epidemiology of phobias in women: The interrelationship of agoraphobia, social phobia, situational phobia, and simple phobia. *Archives of General Psychiatry, 49*(4), 273-281.

Kirmayer, L. J. (1991). The place of culture in psychiatric nosology: Taijin Kyofusho and DSM-III-R. *Journal of Nervous and Mental Disease, 179*(1), 19-28.

Kleinknecht, R. A., Dinnel, D. L., Kleinknecht, E. E., Hiruma, N., & Harada, N. (1997). Cultural factors in social anxiety: A comparison of social phobia symptoms and Taijin Kyofusho. *Journal of Anxiety Disorders, 11*(2), 157-177. doi: 10.1016/s0887-6185(97)00004-2

Kollman, D. M., Brown, T. A., Liverant, G. I., & Hofmann, S. G. (2006). A taxometric investigation of the latent structure of social anxiety disorder in outpatients with

anxiety and mood disorders. *Depression and Anxiety, 23*(4), 190-199. doi: 10.1002/da.20158

Liebowitz, M. R. (1987). Social phobia. *Modern problems of pharmacopsychiatry, 22*, 141-173.

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the depression anxiety stress scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy, 33*(3), 335-343. doi: 10.1016/0005-7967(94)00075-u

Mannuzza, S., Schneier, F. R., Chapman, T. F., Liebowitz, M. R., Klein, D. F., & Fyer, A. J. (1995). Generalized Social Phobia: Reliability and Validity. *Archives of General Psychiatry, 52*(3), 230-237. doi: 10.1001/archpsyc.1995.03950150062011

Mattick, R. P., & Clarke, J. C. (1998). Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy, 36*(4), 455-470.

McCrae, R. R., Costa, P. T. Jr. (1989). More reasons to adopt the five-factor-model. The *American Psychologist, 44*(2), 451-452. doi: 10.1037/0003-066X.44.2.451

McCrae, R. R., & Costa Jr, P. T. (1987). Validation of the Five-Factor Model of Personality Across Instruments and Observers. *Journal of Personality and Social Psychology, 52*(1), 81-90.

Mlačić, B., & Goldberg, L. R. (2007). An analysis of a cross-cultural personality inventory: The IPIP big-five factor markers in Croatia. *Journal of Personality Assessment, 88*(2), 168-177.

Miller, T. R. (1991). The psychotherapeutic utility of the five-factor model of personality: a clinician's experience. *Journal of Personality Assessment, 57*(3), 415-433.

Mutén, E. (1991). Self-reports, spouse ratings, and psychophysiological assessment in a behavioral medicine program: an application of the five-factor model. *Journal of Personality Assessment, 57*(3), 449-464.

Naragon-Gainey, K. (2010). Meta-Analysis of the Relations of Anxiety Sensitivity to the Depressive and Anxiety Disorders. *Psychological Bulletin, 136*(1), 128-150. doi: 10.1037/a0018055

Norton, G. R., Buhr, K., Cox, B. J., Norton, P. J., & Walker, J. R. (2000). The role of depressive versus anxiety-related cognitive factors in social anxiety. *Personality and Individual Differences, 28*(2), 309-314.

Norton, G. R., Cox, B. J., Hewitt, P. L., & McLeod, L. (1997). Personality factors associated with generalized and non-generalized social anxiety. *Personality and Individual Differences, 22*(5), 655-660.

Oakman, J., Van Ameringen, M., Mancini, C., & Farvolden, P. (2003). A confirmatory factor analysis of a self-report version of the Liebowitz Social Anxiety Scale. *Journal of Clinical Psychology, 59*(1), 149-161.

Ost, L. G. (1985). Ways of acquiring phobias and outcome of behavioral treatments. *Behaviour Research and Therapy, 23*(6), 683-689.

Perugi, G., Nassini, S., Maremmani, I., Madaro, D., Toni, C., Simonini, E., & Akiskal, H. S. (2001). Putative clinical subtypes of social phobia: A factor-analytical study. *Acta Psychiatrica Scandinavica, 104*(4), 280-288. doi: 10.1034/j.1600-0447.2001.00128.x

Peters, L., Gaston, J. E., Baillie, A., & Rapee, R. M. (2011). Preparing participants with social phobia for cognitive behavioural treatment: A pilot trial of a program addressing treatment expectations and engagement (TEE). *Submitted*.

Rapee, R. M. (1995). Descriptive psychopathology of social phobia. In R. G. Heimberg, M. R. Liebowitz, D. A. Hope & F. R. Schneier (Eds.), *Social phobia: diagnosis, assessment, and treatment* (1 ed., pp. 435). New York: The Guilford Press.

Rapee, R. M., Gaston, J. E., & Abbott, M. J. (2009). Testing the Efficacy of Theoretically Derived Improvements in the Treatment of Social Phobia. *Journal of Consulting and Clinical Psychology, 77*(2), 317-327.

Rapee, R. M., MacLeod, C., Carpenter, L., Gaston, J. E., Frei, J., Peters, L., & A.J., B. (2013). Integrating cognitive bias modification into a standard cognitive behavioural treatment package for social phobia. *Behaviour Research and Therapy,* Accepted 11th January, 2013.

Ruscio, A. M. (2010). The latent structure of social anxiety disorder: Consequences of shifting to a dimensional diagnosis. *Journal of Abnormal Psychology, 119*(4), 662-671. doi: 10.1037/a001934110.1007/s001270050026

Safren, S. A., Heimberg, R. G., Brown, E. J., & Holle, C. (1996/1997). Quality of life in social phobia. *Depression and Anxiety, 4*(3), 126-133.

Safren, S. A., Heimberg, R. G., Horner, K. J., Juster, H. R., Schneier, F. R., & Liebowitz, M. R. (1999). Factor structure of social fears: The Liebowitz Social Anxiety Scale. *Journal of Anxiety Disorders, 13*(3), 253-270. doi: 10.1016/s0887-6185(99)00003-1

Safren, S. A., Turk, C. L., & Heimberg, R. G. (1998a). Factor structure of the Social Interaction Anxiety Scale and the Social Phobia Scale. *Behaviour Research and Therapy, 36*(4), 443-453. doi: 10.1016/s0005-7967(98)00032-1

Safren, S. A., Turk, C. L., & Heimberg, R. G. (1998b). Factor structure of the Social Interaction Anxiety Scale and the Social Phobia Scale. *Behaviour Research and Therapy, 36*, 443-453.

Schneier, F. R., Johnson, J., Hornig, C. D., Liebowitz, M. R., & Weissman, M. M. (1992). Social phobia: Comorbidity and morbidity in an epidemiologic sample. *Archives of General Psychiatry, 49*(4), 282-288.

Starcevic, V., Eric, L., Kelln, K., & Markovic-Zigic, D. (1994). The structure of discrete social phobias. *European Journal of Psychiatry, 8*(3), 140-148.

Stein, M. B. (1996). How shy is too shy? *Lancet, 347*(9009), 1131-1132.

Stein, M. B., & Chavira, D. A. (1998). Subtypes of social phobia and comorbidity with depression and other anxiety disorders. *Journal of Affective Disorders, 50*(Supplement), S11-S16.

Turner, S. M., Beidel, D. C., & Townsley, R. M. (1992). Social Phobia: A Comparison of Specific and Generalized Subtypes and Avoidant Personality Disorder. *Journal of Abnormal Psychology, 101*(2), 326-331. doi: 10.1037/0021-843x.101.2.326

Watson, D., Clark, L. A., & Chmielewski, M. (2008). Structures of personality and their relevance to psychopathology: II. Further articulation of a comprehensive unified trait structure. *Journal of personality, 76*(6), 1545-1585. doi: 10.1111/j.1467-6494.2008.00531.x

Table 1.

Correlations between personality traits and social fears in the combined sample.

	1	2	3	4	5	6	7	8	9
DASS-D		-.22**	-.29**	-.26**	-.44**	-.26**	-.40**	.12	.31**
Agreeableness	-		.13	.20**	.12	.23**	-.04	.07	-.03
Conscientiousness	-	.24**		-.05	.18*	.10	-.21**	.06	-.08
Extraversion	-	.39**	.17**		.28**	.20**	-.47**	-.38**	-.27**
Emotional Stability	-	.05	.17**	.39**		.18	-.35**	-.17*	-.29**
Openness	-	.31**	.21**	.25**	.04		-.26**	-.16*	-.20**
SIF	-	-.16**	-.14**	-.67**	-.49**	-.14**		.35**	.54**
PSF	-	-.09	-.07	-.66**	-.40**	-.22**	.76**		.38**
PF	-	-.06	-.06	-.42**	-.40**	-.11*	.68**	.59**	

Note: **p < 0.01, *p < 0.05. The clinical sample is above the diagonal and the community sample is below the diagonal. DASS-D - Depression Anxiety Stress Scales – depression symptoms; SIF – social interaction fears; PSF – public speaking fears; PF – performance fears

Table 2.

Means and standard deviations for social fears by gender.

	Female	**Male**	***t***	***p***
	Clinical Sample			
SIF	29.230	28.914	.221	.852
	(10.186)	*(9.227)*		
PSF	20.307	22.989	-.3.338	**.001**
	(5.755)	*(5.162)*		
PF	7.879	7.946	-.076	.939
	(5.662)	*(6.394)*		
	Community Sample			
SIF	33.923	30.808	2.312	**.021**
	(10.504)	*(9.550)*		
PSF	22.930	19.835	3.240	**.001**
	(7.398)	*(6.990)*		
PF	18.996	17.082	2.439	**.015**
	(6.408)	*(3.995)*		

Note: SIF – social interaction fears; PSF – public speaking fears; PF – performance fears, Clinical sample (df = 183), Community sample (df = 372).

Table 3.

Hierarchical multiple regression analyses for IPIP personality domains, depressive scale and gender predicting social anxiety subtypes scores

Variable	Step	Predictors	*ΔR²*	*B*	SEB	β	*t*	*Part r²%*
			Clinical Sample					
SIF	2	Gender	.19***	.03	.12	.01	0.28	0%
		DASS-D		.22	.07	.22	3.00 **	3%
		Agreeableness		.13	.06	.13	2.02*	1%
		Conscientiousness		-.16	.06	-.16	-2.55*	2%
		Extraversion		-.41	.06	-.41	-6.29***	14%
		Emotional Stability		-.11	.07	-.11	-1.63	1%
		Openness		-.02	.06	-.02	-0.40	0%
PSF	2	Gender	.17***	.47	.13	.23	3.47**	5%
		DASS-D		.02	.08	.02	0.31	0%
		Agreeableness		.14	.07	.14	2.00*	2%
		Conscientiousness		.03	.07	.03	0.53	0%
		Extraversion		-.36	.07	-.36	-5.13***	11%
		Emotional Stability		-.06	.07	-.06	-.88	0%
		Openness		-.17	.07	-.17	-2.42*	2%
PF	2	Gender	.06*	.00	.14	.00	0.02	0%
		DASS-D		.19	.08	.19	2.27*	2%
		Agreeableness		.08	.07	.08	1.09	0%
		Conscientiousness		-.01	.07	-.01	-.22	0%
		Extraversion		-.18	.07	-.18	-2.42*	3%
		Emotional Stability		-.16	.08	-.16	-2.05*	2%

		Openness		-.56	.07	-.05	-.75	0%
			Community Sample					
SIF	2	Gender	.51***	-.09	.09	-.03	-1.01	0%
		Agreeableness		.10	.04	.09	2.37*	1%
		Conscientiousness		-.03	.03	-.03	-.89	0%
		Extraversion		-.62	.04	-.61	-14.33***	26%
		Emotional Stability		-.24	.04	-.24	-5.95***	4%
		Openness		.01	.03	.01	.29	0%
PSF	2	Gender	.49***	-.19	.09	-.07	-2.05*	0%
		Agreeableness		.19	.04	.19	4.56***	3%
		Conscientiousness		.03	.03	.03	.81	0%
		Extraversion		-.66	.04	-.66	-15.22***	30%
		Emotional Stability		-.14	.04	-.14	-3.46**	1%
		Openness		-.11	.04	-.10	-2.75**	1%
PF	2	Gender	.24***	-.10	.11	-.04	-.89	0%
		Agreeableness		.09	.05	.09	1.82	1%
		Conscientiousness		.01	.04	.01	.35	0%
		Extraversion		-.34	.05	-.34	-6.40***	8%
		Emotional Stability		-.27	.05	-.27	-5.34***	6%
		Openness		-.03	.04	-.03	-.75	0%

Note: ***p<.000, ** p< .01; *p < .05. SIF – social interaction fears; PSF – public speaking fears; PF – performance fears

CHAPTER 4:

This chapter is prepared for submission to the Journal of Behaviour Research and Therapy.

Authors' contribution:

Ms Brockveld was solely responsible for the conceptualisation and write up of this paper. Dr Peters provided academic supervision.

Personality as a moderator of cognitive-behavioural treatment outcome for social anxiety disorder

Keila Brockveld

Centre for Emotional Health
Department of Psychology
Macquarie University, NSW, 2109
Australia

Lorna Peters

Centre for Emotional Health
Department of Psychology
Macquarie University, NSW, 2109
Australia

Correspondence concerning this article should be addressed to Keila Brockveld, Centre for Emotional Health, Department of Psychology, Macquarie University, NSW, 2109, Australia. Electronic mail may be sent to keila.brockveld@mq.edu.au or keilac@gmail.com, +61 (02) 9850 8627

Abstract

Objective: Social anxiety disorder is characterised by the intense and persistent fear of social and performance situations in which embarrassment may occur. Cognitive-behavioural therapy is one the most effective treatment for social anxiety, however, not all clients who complete this type of treatment improve at optimal levels. One of the reasons that may be put forward for the lack of optimal achievement is the individual differences in personality. The present study explored whether differences in personality moderate treatment outcome in social anxiety disorder. **Method**: Hierarchical multiple regression analyses were conducted to explore the moderating effects of personality differences measured by five personality traits (neuroticism, extraversion, openness to experience, conscientiousness, and agreeableness) on social anxiety symptoms change with treatment. Participants were a clinical sample of 192 subjects who were referred or self-referred to the Emotional Health Clinic (Macquarie University) which provides a 12-week group Cognitive-Behavioural Treatment for social anxiety disorder. **Results**: Results suggested that personality differences (agreeableness and extraversion) do moderate symptom change with treatment. Participants with high levels of pre-treatment social anxiety who also had high levels of agreeableness and extraversion had more improvement in their social anxiety symptoms than did participants low in agreeableness and extraversion at pre-treatment. **Conclusion**: Personality impacts on treatment outcome for social anxiety disorder. Taking client's personality differences into account prior to treatment may optimize cognitive-behavioural therapy treatment outcome for social anxiety disorder.

Keywords: social anxiety disorder, cognitive-behavioural therapy, personality, treatment outcome

Social anxiety disorder (SAD) is characterized by intense and persistent fear of social or performance situations in which embarrassment may occur (*Diagnostic and statistical manual of mental disorders* 4th ed., text rev; *DSM-IV-TR*; American Psychiatric Association, 2000). The disorder is prevalent. For example, in Australia, 2.7% of adults have experienced social phobia within 12 months (Andrews, Henderson, & Hall, 2001). The disorder persists when untreated (Reich, Goldenberg, Vasile, Goisman, & Keller, 1994) and impairs the individual's general functioning (López-Ibor Jr & Ayuso Gutierrez, 1997). It has a chronic course, impairing work productivity, and social and intimate relationships, and is comorbid with depression, substance abuse and avoidant personality disorder (Rapee, 1995; Rapee & Sanderson, 1998).

Cognitive behavioural therapy (CBT) is one of the most effective treatments for social anxiety disorder (SAD) (see Heimberg et al., 1990; Rodebaugh, Holaway, & Heimberg, 2004 for a review); however, meta-analyses of CBT for SAD have shown only moderate efficacy, with treatment effect sizes relative to waitlist of around 0.8 (e.g., Fedoroff & Taylor, 2001). Thus, despite empirical evidence for the effectiveness of CBT, not all clients who complete a program of CBT for their social anxiety will have optimal levels of improvement. For example, Carleton and colleagues demonstrated that 58% of the participants who commenced CBT for their SAD were rated as improved at completion of treatment; thus, 42% had outcomes that were poor (Carleton, Collimore, & Asmundson, 2010).

One of the reasons that can be put forward for a lack of optimal response to CBT for SAD is individual differences in personality in the clients which impact treatment. Whilst some studies have identified demographic and clinical predictors of treatment outcome (see Eskildsen, Hougaard, & Rosenberg, 2010, for a review of predictors of CBT outcome for social anxiety) relatively scant research has been conducted to explore whether personality traits play a role in moderating social anxiety disorder treatment outcome.

The relationship of anxiety disorders and personality traits has been established for some time. Studies have found associations between normal personality traits and anxiety and mood disorders in the general population (Bienvenu et al., 2001a; Bienvenu et al., 2001b; Trull & Sher, 1994). Personality traits have also been investigated as vulnerability factors for the development of anxiety and mood disorders in clinical samples (Andrews, Stewart, Morris-Yates, Holt, & Henderson, 1990; Clark, Watson, & Mineka, 1994). Furthermore, personality factors have been found to be predictive of mood disorders (Watson, Clark, & Carey, 1988). Individual differences in personality have been explored as predictors of the onset of social anxiety in longitudinal studies (Angst & Vollrath, 1991; Fauerbach, Lawrence, Schmidt Jr, Munster, & Costa Jr, 2000; Krueger, 1999). Also, personality traits have been found to impact on the course of remission of anxiety disorders (Massion et al., 2002). Taken together, past research has suggested that personality traits and disorders have a significant relationship with anxiety and its disorders.

More recently, the association between anxiety disorders and specific personality facets has been examined. Naragon-Gainey & Watson (2011) reviewed specific lower- and higher-order personality characteristics and their relationship to specific anxiety disorders. Higher levels of social anxiety were particularly related to lower levels of sociability and dominance, facets of extraversion. In addition, higher levels of social concern regarding anxiety symptoms (anxiety sensitivity) were found in socially anxious individuals. Social anxiety was also found to have higher correlations with facets of neuroticism (evaluation sensitivity, self-critical perfectionism, curiosity and low positive emotionality) than other disorders. The authors suggested that environment factors and personality traits seem to interact together and promote an increased risk of developing social anxiety. For instance, one having high levels of the anxiety sensitivity trait and experiencing negative events would be at risk of developing social anxiety; whereas having a high positive emotionality trait would play a protective

factor in the same situation (Naragon-Gainey & Watson, 2011). This study starts to reveal that particular aspects of extraversion and neuroticism are important in social anxiety.

Other research has further examined specific personality traits and their impact on anxiety (Bienvenu et al., 2004; Rector, Bagby, Huta, & Ayearst, 2012; Sexton, Norton, Walker, & Norton, 2003). Empirical evidence has shown that low conscientiousness is related to social avoidance, which may be either a predisposing vulnerability to social avoidance and social anxiety development or long lasting changes in personality as a result of having had this condition (Bienvenu et al., 2004). A more recent study (Rector et al., 2012) comparing social anxiety to mood and other anxiety disorders, in outpatients diagnosed with DSM-IV, demonstrated lower levels of self-consciousness (a facet of neuroticism) than all other disorders, low levels of assertiveness (a facet of extraversion) with similar results to obsessive-compulsive disorder, and high levels of depression (a facet of neuroticism) with similar results to major depressive disorder. Altogether, these findings suggest that, in both clinical and community samples, particular individual differences in personality are related to specific emotional disorders. The question of how these individual characteristics relate to treatment outcome, however, has yet to be answered.

A number of researchers have made suggestions about how personality characteristics might impact treatment. For example, McCrae and Costa (1989) suggested that the five-factor model (FFM) of personality may be used as a guide by professionals to better understand clients, the presenting problem, and to customise treatment. In a theoretical paper, Miller (1991) suggested that, in clinical settings, extraversion may affect the client's interest for treatment; neuroticism may affect the client's level and persistence of distress and adjustment at the end of the treatment; openness may affect the client's response to treatment interventions; conscientiousness may affect the client's desire to carry out psychotherapy work, levels of tolerance to discomfort, and delaying gratification; and agreeableness may affect the client's response to the therapist and ultimately therapeutic alliance. Mutén (1991)

has also suggested that personality characteristics may be taken into account to assist in clinical settings, integrating it with other techniques to develop diagnosis, adjusting treatment and, predicting compliance and treatment outcome. Similar to Miller, Mutén also proposed that treatment will vary depending on client's personality features. He suggested that clients high in neuroticism may need to focus on one of the multiple presenting problems; clients low in extraversion may need to learn interpersonal skills, increase level of activities, assertiveness training, and positive emotional activities; clients high in openness may adapt to any type of therapy due to their ability and willingness to experience, whereas clients low in openness may be inclined to search for medical intervention; clients high in agreeableness may be overly compliant to treatment in order to please the therapist, and they may need to be prompted to express their feelings towards the treatment process; clients high in conscientiousness may benefit from short-term therapy as they seem to be achiviement-oriented, whereas clients low in conscientiousness may have poorer treatment outcome as well as long-term treatment. However, there are no empirical data to support these suggestions about how personality characteristics might affect the treatment process or outcome in social anxiety disorder.

Others have researched the relationship of personality and treatment outcome in other disorder. Piper and colleagues examined personality (as the quality of object relations) as a moderating factor in the relationship between therapeutic alliance and treatment outcome in a short-term individual psychotherapy (n = 72) (Piper, Ogrodniczuk, & Joyce, 2004). The personality variable examined, quality of object relations, is defined by a dimensional pattern of relationships in a person's life, varying from primitive to mature relationships. Quality of object relations was found to be a moderator of the outcome of symptomatology and dysfunction, in which, clients high in quality of object relations and increased working alliance levels had better outcome. In an examination of the relationship between the FFM of personality, working alliance and outcome, in a community mental health sample (n = 103), it

was found that agreeableness, openness, extraversion, and conscientiousness were associated with working alliance, which was suggested to be greatly permeated by client's personality characteristics (agreeableness, extraversion, conscientiousness and openness) (Coleman, 2006). Coleman also found that neuroticism was positively associated with symptoms and inversely associated with well-being. Given that specific personality traits are linked to specific disorders and may also relate to treatment course, it may be that individual differences in personality moderate the effect of social anxiety treatment. Perhaps attending to personality and its moderating effects on social anxiety treatment may allow avenues to further enhance treatment outcome.

The present study was designed to explore whether individual differences in personality moderate treatment outcome in social anxiety disorder. Based on the literature review, it was hypothesised that personality traits (neuroticism, extraversion, agreeableness, openness, and conscientiousness) measured at pre-treatment would moderate the effect of treatment for social anxiety disorder. More specifically, it was hypothesised that high extraversion at pre-treatment will moderate treatment outcome such that those with higher extraversion will have better outcome.

Method

Sample

The sample (n =217) was comprised of patients from two different sources (trials), being 95 females (43.8%) and 92 males (42.4%), 13.8% of the participants (n = 30) did not provide gender. Participants referred or self-referred to the Emotional Health Clinic (EHC; Macquarie University – Sydney - Australia), which provides a 12-week group CBT program.

The first sample consisted of 171 (99 females) participants admitted to the attention training trial (AT) examining an online clinician-assisted cognitive behavioural therapy

program for the treatment of social phobia, known as The Shyness Program (Rapee et al., 2013). The sample ranged from 20-53 years with a mean age of 30.7 years (s.d. = 6.88).

The second sample consisted of 46 (26 females) patients admitted to the motivation interviewing trial (MI), a pilot study examining the impact of a preparatory treatment prior to CBT which focused on engagement and expectation about treatment, known as Treatment Expectations and Engagement (TEE) (Peters, Gaston, Baillie, & Rapee, 2011). The sample ranged from 21-58 years with a mean age of 32.2 years (s.d. = 9.13)

Participants' relationship status was as follows: 65.2% were never married, 30.5% were married or in *de facto* relationship, 4.3% were separated or divorced. The highest educational level attained was: 29.9% secondary school, 21.3% certificate degree or associate diploma, 3.2% undergraduate diploma, and 45.5% bachelor degree or higher. Their employment status was: 63.5% employed, 0.5% retired; 10.2% unemployed, 3.7% temporarily unable to work, 3.2% full-time home duties, and 18.7% full-time students

Procedure

AT Sample

The procedures of the AT trail were approved by the Human Research Ethics Committee and participants provided informed consent. Participants contacted the EHC 2010 through general practitioners, mental health professionals, occasional media coverage, and word of mouth, between August 2007 and May 2008. Telephone screen was carried and those who emerged as potentially having anxiety-related difficulties were invited for a thorough assessment. Inclusion criteria were: being 18 years-old or over and to meeting *DSM-IV-TR* criteria for social anxiety disorder as primary diagnostic, measured by the Anxiety Disorders Interview Schedule–IV (ADIS–IV; Di Nardo, Brown, & Barlow, 1994). Diagnoses were made by clinical psychologists and graduate students. When *DSM-IV-TR* criteria for social anxiety disorder were met participants were randomly allocated to either an attention bias

modification procedure (ABMP) or placebo training (PT) in addition to the standard 12-week group CBT program.

The treatment for social anxiety disorder was delivered by psychologists with expertise in these treatments. Group treatment was delivered in 12 weeks, weekly, over 2-hour sessions. Psychologists followed treatment protocols guided by manuals and participants were supported by printed materials and handouts. For full details of the treatment procedures, see Rapee et al. (2013). All participants completed questionnaires prior to and at the end of treatment.

MI Sample

In the second sample, the procedures for the trial were approved by the Human Research Ethics Committee and participants provided informed consent. Participants contacted the EHC between January 2010 and October 2011. Inclusion criteria and diagnostic procedures were the same as for the first (AT) sample. After diagnostic interview and at the end of treatment, participants completed the questionnaire measures online via SurveyGizmo (http://www.surveygizmo.com). Participants proceeding into the trial in 2010 received the preparatory TEE sessions prior to the group CBT program (TEE+CBT) while participants who attended in 2011 received group CBT program alone. The TEE program expands from motivational interviewing principles (Westra & Dozois, 2008) and aimed to increase engagement with treatment and expectations for treatment. TEE was delivered to individuals by clinical psychologists for one-hour for three weeks. The same CBT treatment that was used for the first (AT) sample was used here. For full details of the treatment procedures, see Peters et al. (2011).

Measures

Personality

The 50-item version of the International Personality Item Pool (IPIP; Goldberg, 1999) was developed to measure variation in personality traits on an international scale (Barrick &

Ryan, 2003). It comprises five broad domains of the FFM of personality: extraversion (E), agreeableness (A), conscientiousness (C), neuroticism (N), and openness to experience (O). In the IPIP measure neuroticism is referred to as emotional stability (ES), in which low levels of neuroticism reflect high levels of emotional stability. The scale contains items that are keyed positively and negatively, that is, E+ (5 items), E− (5 items); A+ (6 items), A− (4 items); C+ (6 items), C− (4 items); ES+ (2 items), ES− (8 items), O+ (7 items), and O− (3 items). The 50 items are phrased as descriptive statements that the participant endorses using a 5-point *Likert*-type scale to indicate how accurately the statement describes oneself: 1 (very inaccurate) to 5 (very accurate). The internal consistency reliability for the American community sample presented coefficient alpha for each domain as follows, .87 (E), .82 (A), .79 (C), .86 (ES), and .84 (O) (Mlacic & Goldberg, 2007). The IPIP 50-item scale has demonstrated strong correlation with NEO-PI-R, comparison measures between these two scales shown correlations of .77(E), .70(A), .79(C), .82(ES), .79(O) (I.P.I.P., 2011)

Social Anxiety

The Social Phobia Scale (SPS; Mattick & Clarke, 1998) and Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) were designed as companion measures to assess symptoms of social anxiety (Mattick & Clarke, 1998). The SIAS quantifies fear related to social interaction, whereas the SPS provides a measure of specific fears of being scrutinised during regular activities. These instruments contain 20 statements each, which are rated by participants to indicate how characteristic the statement is of them on a 5-point scale as follows: 0 (Not at all characteristic or true of me) to 4 (Extremely characteristic or true of me). The total scores for both measures range from 0 to 80, where a higher score indicates a greater severity. Both measures have demonstrated good internal consistency (SPS α =.89, SIAS α =.93) and high test-retest reliability (at 12 weeks, SPS .93, SIAS .92) correlations in a sample which met criteria for social phobia (Mattick & Clarke, 1998). Both the SPS and the SIAS have been reported to be sensitive to change after cognitive and behaviour treatments

(Cox, Ross, Swinson, & Direnfeld, 1998; Mattick & Peters, 1988; Mattick, Peters, & Clark, 1989).

The Brief Fear of Negative Evaluation (BFNE; Leary, 1983) assesses a core cognitive feature of social anxiety – fear of negative evaluation (Leary, 1983). BFNE has 12 statements that are rated to indicate how characteristic they are of the participant on a 5-point *Likert*-type scale, from 1 (Not at all characteristic) to 5 (Extremely characteristic of me). There are 8 straightforward worded statements (1, 3, 5, 6, 8, 9, 11, and 12) and 4 reverse worded (2, 4, 7, and 10). The score is summed and the result can be rated from 12 to 60 points. This instrument demonstrated good internal consistency (α=.97) and test-retest reliability for a 2 week interval of .94 (Collins, Westra, Dozois, & Stewart, 2005). In addition, the measure was sensitive to CBT intervention and demonstrated significant discriminant validity between people presenting with social phobia and panic disorder (sensitivity = 74%; specificity = 67%) (Collins et al., 2005).

Liebowitz Social Anxiety Scale – Self Report (LSAS-SR; Liebowitz, 1987) is an assessment tool to measure levels of avoidance (LSASA) and fear (LSASF) over a number of social situations (Baker, Heinrichs, Kim, & Hofmann, 2002). The instrument presents 24 descriptions of situations (11 social and 13 performance situations) that might elicit anxiety. There are 6 subscales derived from the ratings, being fear of social interaction, fear of performance, avoidance of social interaction, avoidance of performance, total fear and total avoidance. The scale measures both fear and avoidance experienced in the past week, with each situation being rated on two 0 to 3 *Likert*-type scales: Fear and Anxiety Rating – 0 (No fear or anxiety in this situation) to 3 (Severe fear or anxiety in this situation); and Avoidance Rating – 0 (Never avoid this situation) to 3 (Usually avoid this situation). An overall total score is reached by summing the subscores of fear and avoidance ratings. This scale has been reported to have good test–retest reliability after 12-week interval for the total score (*r* =

0.83), good internal consistency with all alpha coefficients 0.79 or higher, and has good sensitivity to treatment change (Baker et al., 2002).

Analytic Procedure

Bivariate correlations at pre-treatment between the social anxiety scales and personality traits were calculated. Paired t-tests were conducted to compare pre- and post-treatment scores on the social anxiety measures, and examine whether there was a significant decrease in social anxiety following treatment. Also, paired *t*-tests were conducted to compare whether there were differences in personality pre- and post-treatment. Bonferroni adjusted alpha levels of .0125 per set of test (.05/4) for the social anxiety measures, and .01 (.05/5) for the personality scale, were used to account for the multiple *t*-tests (Tabachnick & Fidell, 1996).

Hierarchical multiple regression analyses were conducted to examine the moderating effects of each of the five personality traits on treatment outcome. The procedures for testing moderation outlined by Frazier, Tix, and Barron (2004) were followed. The regression analyses tested whether the relationship between pre (predictor variable) and post (outcome variable) treatment measures of social anxiety was moderated by each of the personality traits (moderator variable). Standard scores (Frazier et al, 2004) were used to reduce problems associated with interaction terms created to investigate the interaction between two specific variables, for instance, extraversion and pre-treatment BFNE. The moderating effect was tested by entering the predictor variable (pre-treatment social anxiety), the moderator (personality trait) and the interaction between the predictor and the moderator in sequential steps to predict the outcome (post-treatment social anxiety). Where a significant moderating effect was found, the nature of the interaction was examined further by following the common procedure suggested by Cohen et al. (2003) whereby groups that were one SD above the mean and one SD below the mean on the relevant social anxiety measure at pre-treatment were selected. Next, scores on the relevant post-treatment social anxiety measure were plotted for groups who were one SD above and one SD below the mean on the relevant personality trait

measure. The significance of the slopes was then tested. The test provides information about the significance of the relationship between the dependent variable (pre-treatment social anxiety) and the outcome (post-treatment social anxiety) at different levels of the moderator (personality trait). The worksheet developed by Dawson (2012) was used to test the significance of the slopes. The worksheet is based on Aiken and West (1991) and Dawson and Richter (2006). In this worksheet, the interaction effect is plotted by entering unstandardized regression coefficients for the independent variable (pre-treatment social anxiety), moderator variable (personality trait) and interaction. A graph is created, plotting the slopes for those who are high versus low on the moderator (personality trait) against high versus low scores on the dependent variable (pre-treatment social anxiety). Statistics provided the slope-gradient, its *t*-value, and associated *p*-value slope.

Results

Descriptive Analysis

Table 1 shows the correlation analyses used to examine the relationship between pre-treatment scores on the personality and social anxiety measures. Results indicated an inverse relationship between all social anxiety measures and emotional stability and extraversion personality traits at pre-treatment.

Table 1 here

Changes in anxiety levels and personality traits following treatment

Paired *t*-tests compared pre- and post-treatment scores on the social anxiety measures to examine whether there was a significant decrease in social anxiety following treatment. Bonferroni corrections ($\alpha = .01$) accounted for the multiple *t*-tests. Table 2 shows participant scores on all social anxiety measures decreased significantly.

Table 2 here

Paired *t*-tests compared pre- and post-treatment personality traits scores to examine whether there were significant changes in traits. Table 2 shows significant increases in conscientiousness, extraversion, and emotional stability.

Moderation of change in social anxiety symptoms by personality traits

Table 3 presents the results of the regression analyses testing the moderating effect of each of the five personality traits on the relationship between each of the five pre- and post-treatment measurements of social anxiety. Beginning with the SIAS, the regression analysis revealed that there is a significant relationship between pre- and post-treatment SIAS, ($F(1,103) = 66.359$, $p = .000$, $R^2 = .388$). Adding agreeableness to the model resulted in no significant change in R^2, $F(1,102) = 2.833$, $p = .053$, $R^2 = .022$. When the interaction term between SIAS and agreeableness was added to the model there was a significant increase in R^2, $F(1, 101) = 6.136$, $p = .015$, $R^2 = .033$. Thus, the interaction between agreeableness and SIAS pre-treatment measures explained 3.3% of the variance in SIAS post-treatment over and above the variance explained by the first-order effects of SIAS pre-treatment and agreeableness alone. Furthermore, agreeableness uniquely predicted post-treatment for the following social anxiety measures, SPS ($F(1, 102) = 6.849$, $p = .010$, $R^2 = .038$), BFNE ($F(1, 102) = 7.698$, $p = .007$, $R^2 = .044$) and LSAS-SR ($F(1, 102) = 6.526$, $p = .012$, $R^2 = .031$). Similar results were also found for the interaction term between agreeableness and pre-treatment SPS ($F(1, 101) = 10.793$, $p = 001$, $R^2 = .055$) and LSAS-SR ($F(1, 101) = 5.197$, $p = .025$, $R^2 = .024$). The interaction term between agreeableness and pre-treatment BFNE ($F(1, 101) = 3.423$, $p = .067$, $R^2 = .019$) did not significantly predicted post-treatment BFNE.

Table 3 here

Next the same steps were applied to test extraversion, emotional stability, conscientiousness and openness as moderators of the relationship between social anxiety at pre- and post-treatment (see Table 3). Significant moderation of the relationship between pre-treatment and post-treatment anxiety scores by extraversion was only found for the SIAS.

The interaction term between extraversion and pre-treatment SIAS ($F(1, 102) = 5.473$, $p = .021$, $R^2 = .031$) explained 31% of the variance in SIAS post-treatment over and above the variance explained by the first-order effects of SIAS pre-treatment and extraversion alone. There was no significant effect for the interaction terms between extraversion and pre-treatment SPS ($F(1, 102) = 2.449$, $p = .121$, $R^2 = .014$), BFNE ($F(1, 101) = .604$, $p = .439$, $R^2 = .004$) and LSAS-SR ($F(1, 101) = 2.851$, $p = .094$, $R^2 = .014$) predicting their respective post-treatment scores.

There was no significant moderation of the relationship between pre- and post-treatment social anxiety scores by emotional stability for any of the measures of social anxiety: (SIAS, $F(1, 101) = 2.131$, $p = .147$, $R^2 = .011$; SPS, $F(1, 101) = 3.102$, $p = .081$, $R^2 = .017$; BFNE, $F(1, 101) = 2.219$, $p = .148$, $R^2 = .012$; LSAS-SR, $F(1, 101) = .217$, $p = .642$, $R^2 = .001$). However, emotional stability itself significantly predicts post-treatment SIAS ($F(1, 102) = 18.234$, $p = .000$, $R^2 = .092$), SPS ($F(1, 102) = 6.877$, $p = .010$, $R^2 = .038$), BFNE ($F(1, 102) = 7.271$, $p = .008$, $R^2 = .042$) and LSAS-SR ($F(1, 102) = 4.816$, $p = .030$, $R^2 = .023$) over and above the respective pre-treatment measures.

There was no significant moderation of the relationship between pre- and post-treatment social anxiety scores by conscientiousness for any of the measures of social anxiety: (SIAS, $F(1, 102) = .336$, $p = .564$, $R^2 = .002$; SPS, $F(1, 102) = .113$, $p = .737$, $R^2 = .001$; BFNE, $F(1, 101) = .595$, $p = .442$, $R^2 = .004$; LSAS-SR, $F(1, 101) = .003$, $p = .419$, $R^2 = .003$), and openness (SIAS, $F(1, 102) = 2.598$, $p = .110$, $R^2 = .015$; SPS, $F(1, 102) = 1.009$, $p = .318$, $R^2 = .006$; BFNE, $F(1, 101) = 1.127$, $p = .291$, $R^2 = .007$; LSAS-SR, $F(1, 101) = .280$, $p = .598$, $R^2 = .001$).

Next, significance testing of the slopes was applied for each of the personality traits having significant moderation.

Figure 1 shows that for post-treatment SIAS scores, the slopes for those who are high versus low on agreeableness plotted against high versus low on pre-treatment SIAS are

significantly different (Slope = 0.411, $t = 3.752$, $p < .001$). For those with low pre-treatment SIAS scores, agreeableness does not affect their post-treatment SIAS scores. But, for those with high pre-treatment SIAS scores, agreeableness affects post-treatment SIAS scores such that those with high agreeableness have lower post-treatment SIAS scores than those with low agreeableness. The same patterns of results were found for the interaction between agreeableness and the other measures of social anxiety (SPS (Slope = 0.384, $t = 3.505$, $p = .001$) and LSAS-SR (Slope = 0.536, $t = 4.893$, $p < .001$) shown in Figure 1, 2, and 3. Figure 4 shows the nature of the interaction between Extraversion and pre-treatment SIAS. The slopes for those who are high versus low on Extraversion plotted against high versus low on pre-treatment SIAS are significantly different (Slope = 0.420, $t = 3.834$, $p < .001$).

Discussion

Previous research has found personality traits and facets to be related to anxiety disorders. It has been suggested that individual differences in personality may also be related to treatment course, yet no empirical evidence exists on whether personality actually impacts on SAD treatment outcome. The present study examined whether individual differences in personality moderate treatment outcome in social anxiety disorder. Over the course of the 12-week group CBT program, there was significant decrease in social anxiety symptoms. This decrease was moderated by agreeableness (for three (SIAS, SPS, LSAS-SR) out of four measures of social anxiety) and by extraversion (for one (SIAS) out of four measures of social anxiety). The other personality traits, emotional stability, conscientiousness and openness, were not found to be moderators of treatment outcome on the measures administered.

Nonetheless, emotional stability and agreeableness significantly impacted on SAD treatment outcome; these personality traits had a direct main effect on social anxiety treatment course. That is, emotional stability and agreeableness each directly predict post-treatment anxiety controlling for pre-treatment anxiety. These results suggest that more neurotic and

less agreeable people tend to show worse treatment outcome, when initial anxiety levels are held constant. As previously suggested (McCrae & Costa, 1989; Miller, 1991; Mutén; 1991), personality factors do predict better treatment outcome across the board.

For agreeableness, the nature of the interaction was such that participants with high levels of pre-treatment social anxiety as measured by SIAS, SPS, LSAS-SR who also had high levels of agreeableness had more improvement in social anxiety than participants with low agreeableness. At the lower levels of pre-treatment social anxiety, agreeableness did not have an impact on post-treatment social anxiety scores. Also, the nature of the interaction between extraversion and pre-treatment social anxiety as measured by SIAS was such that participants with high levels of extraversion and social anxiety at pre-treatment had more improvement in social anxiety than participants with low extraversion. That is, at the lower levels of pre-treatment social anxiety extraversion did not have an impact on post-treatment social anxiety scores.

One plausible explanation for the interaction is that over the treatment course, personality features play a role in the group interaction and in therapeutic alliance, as previously suggested by Miller (1991). Agreeableness and extraversion are interpersonal dimensions of personality, and although extraversion did not have the same extensive impact as agreeableness did, it also showed a significant moderating effect on treatment outcome. It may be that high extraversion which is related to being active, friendly, cheerful, and gregarious, may facilitate the client to engage in group interactions, gradually participating in the discussions in the session, engaging in behavioural experiments in group and outside of it, being curious about collecting evidence against their feared predictions, volunteering information in the group setting and group cohesion. Nevertheless, there were no significant main effects of extraversion, that is, generally extraverts do not necessarily do better in treatment outcome. For those with high extraversion, it is only when their initial levels of anxiety are relatively severe that extraversion improves treatment outcome more than if their

initial levels of anxiety are less severe. Extraversion might be said to enhance treatment response for those with high anxiety. High agreeableness, on the other hand, is about being trusting, compliant, cooperative, at the same time believing in other's good will and honesty, which may facilitate the client's engaging with the therapist, enhancing therapeutic alliance and acceptance of the interventions proposed by the therapist. High agreeableness also has the characteristic of sympathy, altruism and caring for others, which may facilitate client's engaging with the group and creating a supportive environment. Agreeableness enhances treatment outcome regardless of initial levels of social anxiety. Regardless of whether the effect is direct or indirect, it could be suggested that agreeableness and extraversion affect treatment outcome because of their impact on group interaction and therapeutic alliance, which have both been found to predict treatment outcome (Bagby et al., 2008; Horvath & Symonds, 1991; Parker et al., 1992; Woody & Adessky, 2002).

The next reasonable step would be to analyse whether agreeableness mediates therapeutic alliance and treatment outcome. However there are a few issues that do not allow for mediation analysis in the present study as they impact on power; that is, the number of participants required, the comparable size correlation between predictor variable (working alliance) and mediator (agreeableness) compared to mediator (agreeableness) and outcome measures (post-BFNE, SIAS, SPS, LSAS-SR) (Kenny, Judd, & Bolger, 1998), and also the requirement of having a scale reliability of at least .90 (Hoyle & Robinson, 2003). Openness, conscientiousness, and neuroticism did not moderate treatment outcome for the present measures. However, neuroticism itself directly predicted post-treatment social anxiety as measured by SIAS, SPS, BFNE and LSAS-SR. Previous research has found neuroticism to be related to SAD (Naragon-Gainey & Watson, 2011; Rector et al., 2012). The findings of the present study go further to suggest that having high or low levels of neuroticism in the beginning of the treatment predicts eventual treatment outcome.

As some potential limitations are considered, suggestions for future research are made. Considering that the 50-item IPIP embraces the FFM of personality domains, it does not capture the lower-order items (facets) which could enrich the findings of this research. Also, the results of this research are only generalised to the present measures, to participants with social anxiety and to group CBT type of intervention. As suggested by Muller (1991) and Mutén (1991), personality characteristics may have different impact on different intervention approaches. Further investigation of moderation of treatment outcome for different treatment is warranted. Of course, the significant findings regarding moderation by agreeableness may have occurred by chance given the number of regression analyses conducted. Nevertheless, that 3 out of the 4 regression analyses involving agreeableness as a moderator were significant (albeit at an uncorrected level) suggests that agreeableness is likely to be a moderator in future research. Replication of the findings is warranted to strengthen this conclusion.

Testing for changes in personality as a result of treatment was not an original aim of the current study, nevertheless some fluctuations were observed. Agreeableness and openness did not demonstrate significant changes, whilst levels of extraversion, emotional stability, and conscientiousness significantly increased, from pre- to post-treatment. Studies have considered whether personality changes after treatment, (see Costa Jr & McCrae, 1986; McCrae, 2002; Santor, Bagby, & Joffe, 1997). In addition, studies examining personality stability status over time found evidence that personality is a dynamic construct which develops over the lifespan, ever-changing in view of contingencies and maturation (Fraley & Roberts, 2005; Roberts & Mroczek, 2008; Roberts et al., 2006). While some aspects of personality contribute to its stability, like genes (Kandler et al., 2010; Krueger & Johnson, 2008), other processes contribute to change, like life stressors (Fraley & Roberts, 2005; Kandler et al., 2010). In line with these studies, treatment of social anxiety may be seen as a significant life event – an enduring anxiety disorder is ameliorated by treatment and this may result in changes in the expression of personality traits. McCrae (2002) suggested that

fluctuation of a trait may occur when the group faces the same defining experience, in this case, the group CBT program. Although this is not the scope of this research, it raises the question whether these increased mean levels hold over longer intervals. Similarly, it would be interesting to examine whether relapse in social anxiety is predicted by changes in personality traits with treatment.

The results of the present investigation suggest a pathway to optimization of CBT treatment outcome for SAD clients. Perhaps those with lower agreeableness scores would benefit from individually delivered treatment rather than group-based treatment. The main effects of neuroticism might suggest that those with high neuroticism may need to address emotional reactivity prior to embarking on CBT or perhaps receive intensive treatment over an extended period of time, focusing on one problem at the time (Mutén, 1991). That is, it may be possible to consider how pre-treatment personality traits characteristics could be accommodated in CBT for social anxiety disorder.

References

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, London: Sage.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.) doi:10.1176/appi.books.9780890423349.

Andrews, G., Henderson, S., & Hall, W. (2001). Prevalence, comorbidity, disability and service utilisation: Overview of the Australian National Mental Health Survey. *British Journal of Psychiatry, 178*(FEB.), 145-153.

Andrews, G., Stewart, G., Morris-Yates, A., Holt, P., & Henderson, S. (1990). Evidence for a general neurotic syndrome. *British Journal of Psychiatry, 157*(JULY), 6-12.

Angst, J., & Vollrath, M. (1991). The natural history of anxiety disorders. *Acta Psychiatrica Scandinavica, 84*(5), 446-452.

Bagby, R. M., Quilty, L. C., Segal, Z. V., McBride, C. C., Kennedy, S. H., & Costa Jr, P. T. (2008). Personality and differential treatment response in major depression: A randomized controlled trial comparing cognitive-behavioural therapy and pharmacotherapy. *Canadian Journal of Psychiatry, 53*(6), 361-370.

Baker, S. L., Heinrichs, N., Kim, H. J., & Hofmann, S. G. (2002). The Liebowitz social anxiety scale as a self-report instrument: A preliminary psychometric analysis. *Behaviour Research and Therapy, 40*(6), 701-715.

Barrick, M. R., & Ryan, A. M. (2003). *Personality and Work: Reconsidering the Role of Personality in Organizations*. San Francisco (CA): Pfeiffer.

Bienvenu, O. J., Brown, C., Samuels, J. F., Liang, K. Y., Costa, P. T., Eaton, W. W., & Nestadt, G. (2001a). Normal personality traits and comorbidity among phobic, panic and major depressive disorders. *Psychiatry Research, 102*(1), 73-85. doi: 10.1016/s0165-1781(01)00228-1

Bienvenu, O. J., Nestadt, G., Samuels, J. F., Costa, P. T., Howard, W. T., & Eaton, W. W. (2001b). Phobic, panic, and major depressive disorders and the five-factor model of personality. *Journal of Nervous and Mental Disease, 189*(3), 154-161.

Bienvenu, O. J., Samuels, J. F., Costa, P. T., Reti, I. M., Eaton, W. W., & Nestadt, G. (2004). Anxiety and depressive disorders and the five-factor model of personality: A higher- and lower-order personality trait investigation in a community sample. *Depression and Anxiety, 20*(2), 92-97.

Carleton, R. N., Collimore, K. C., & Asmundson, G. J. G. (2010). "It's not just the judgements-It's that I don't know": Intolerance of uncertainty as a predictor of social anxiety. *Journal of Anxiety Disorders, 24*(2), 189-195.

Clark, L. A., Watson, D., & Mineka, S. (1994). Temperament, personality, and the mood and anxiety disorders. *Journal of Abnormal Psychology, 103*(1), 103-116.

Cohen, J., Cohen, P., West, S. G., Aiken, L. S. (2003). Applied Multiple Regression/ Correlation Analysis for the Behavioral Sciences (3rd ed.) Mahwah, NJ: Erlbaum.

Coleman, D. (2006). Client personality, working alliance and outcome: A pilot study. *Social Work in Mental Health, 4*(4), 83-98. doi: 10.1300/J200v04n04_06

Collins, K. A., Westra, H. A., Dozois, D. J. A., & Stewart, S. H. (2005). The validity of the brief version of the Fear of Negative Evaluation Scale. *Journal of Anxiety Disorders, 19*(3), 345-359.

Costa Jr, P. T., & McCrae, R. R. (1986). Personality stability and its implications for clinical psychology. *Clinical Psychology Review, 6*(5), 407-423.

Cox, B. J., Ross, L., Swinson, R. P., & Direnfeld, D. M. (1998). A comparison of social phobia outcome measures in cognitive-behavioral group therapy. *Behavior Modification, 22*(3), 285-297.

Dawson, J. (2012, November). Interpreting interaction effects. Retrieved from http://www.shef.ac.uk/management/staff/dawson

Dawson, J. F., & Richter, A. W. (2006). Probing three-way interactions in moderated multiple regression: Development and application of a slope difference test. *Journal of Applied Psychology,* 91, 917-926.

Di Nardo, P. A., Brown, T. A., & Barlow, D. H. (1994). *Anxiety Disorders Interview Schedule for DSM-IV: Lifetime Version* (ADIS-IV-L). San Antonio, TX: Psychological Corporation.

Eskildsen, A., Hougaard, E., & Rosenberg, N. K. (2010). Pre-treatment patient variables as predictors of drop-out and treatment outcome in cognitive behavioural therapy for social phobia: A systematic review. *Nordic Journal of Psychiatry, 64*(2), 94-105. doi: 10.3109/08039480903426929

Fauerbach, J. A., Lawrence, J. W., Schmidt Jr, C. W., Munster, A. M., & Costa Jr, P. T. (2000). Personality predictors of injury-related posttraumatic stress disorder. *Journal of Nervous and Mental Disease, 188*(8), 510-517. doi: 10.1097/00005053-200008000-00006.

Fedoroff, I. C., & Taylor, S. (2001). Psychological and pharmacological treatments of social phobia: A meta-analysis. *Journal of Clinical Psychopharmacology, 21*(3), 311-324.

Fraley, R. C., & Roberts, B. W. (2005). Patterns of continuity: A dynamic model for conceptualizing the stability of individual differences in psychological constructs across the life course. *Psychological Review, 112*(1), 60-74. doi: 10.1037/0033-295x.112.1.60

Frazier, P. A., Tix, A. P., Barron, K. E. (2004). Testing Moderator and Mediator Effects in Counseling Psychology Research. *Journal of Counseling Psychology, 51*(1), 115-134. doi: 10.1037/0022-0167.51.1.115

Goldberg, L. R. (1999). *A Broad-Bandwidth, Public-Domain, Personality Inventory. Measuring the Lower-Level Facets of Several Five-Factor Models* (Vol. 7). Tilburg,

The Netherlands: I. Mervielde, I. Deary, F. De Fruyt, & F. Ostendorf (Eds.), Personality Psychology in Europe. Tilburg University Press.

Heimberg, R. G., Dodge, C. S., Hope, D. A., Kennedy, C. R., Zollo, L. J., & Becker, R. E. (1990). Cognitive behavioral group treatment for social phobia: Comparison with a credible placebo control. *Cognitive Therapy and Research, 14*(1), 1-23.

Horvath, A. O., & Symonds, B. D. (1991). Relation Between Working Alliance and Outcome in Psychotherapy: A Meta-Analysis. *Journal of Counseling Psychology, 38*(2), 139-149. doi: 10.1037/0022-0167.38.2.139.

Hoyle, R. H., & Robinson, J. I. (2003). Mediated and moderated effects in social psychological research: Measurement, design, and analysis issues. In C. Sansone, C. Morf & A. T. Panter (Eds.), *Handbook of methods in social psychology*. Thousand Oaks: CA.: Sage.

Internationa Personality Item Pool (I. P. I. P.) (2011). A Scientific Collaboratory for the Development of Advanced Measures of Personality Traits and Other Individual Differences (http://ipip.ori.org/). Internet Web Site

Kandler, C., Bleidorn, W., Riemann, R., Spinath, F. M., Thiel, W., & Angleitner, A. (2010). Sources of Cumulative Continuity in Personality: A Longitudinal Multiple-Rater Twin Study. *Journal of Personality and Social Psychology, 98*(6), 995-1008. doi: 10.1037/a0019558

Kenny, D. A., Judd, C. M., & Bolger, N. (1998). Data analysis in social psychology. In D. T. Gilbert, S. T. Fiske & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed. ed.). New York: Oxford University Press.

Krueger, R. F. (1999). Personality Traits in Late Adolescence Predict Mental Disorders in Early Adulthood: A Prospective-Epidemiological Study. *Journal of personality, 67*(1), 39-65.

Krueger R.F., & Johnson, W. (2008). Behavioral genetics and personality: a new look at the integration of nature and nurture. In O. P. John, R. W. Robins & L. A. Pervin (Eds.), *Handbook of Personality: Theory and Research* (3rd ed. ed., pp. 287-310). New York: Guilford.

Leary, M. R. (1983). A brief version of the Fear of Negative Evaluation Scale. *Personality and Social Psychology Bulletin, 9*, 371-376.

Liebowitz, M. R. (1987). Social phobia. *Modern problems of pharmacopsychiatry, 22*, 141-173.

López-Ibor Jr, J. J., & Ayuso Gutierrez, J. L. (1997). Social phobia: A debilitating disease that needs treatment. *International Clinical Psychopharmacology, 12*(SUPPL. 6).

Massion, A. O., Dyck, I. R., Tracie Shea, M., Phillips, K. A., Warshaw, M. G., & Keller, M. B. (2002). Personality disorders and time to remission in generalized anxiety disorder, social phobia, and panic disorder. *Archives of General Psychiatry, 59*(5), 434-440.

Mattick, R. P., & Clarke, J. C. (1998). Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy, 36*(4), 455-470.

Mattick, R. P., & Peters, L. (1988). Treatment of severe social phobia: Effects of guided exposure with and without cognitive restructuring. *Journal of Consulting and Clinical Psychology, 56*(2), 251-260.

Mattick, R. P., Peters, L., & Clarke, J. C.. (1989). Exposure and cognitive restructuring for social phobia: A controlled study. *Behavior Therapy, 20*(1), 3-23.

McCrae, R. R. (2002). The maturation of personality psychology: Adult personality development and psychological well-being. *Journal of Research in Personality, 36*(4), 307-317. doi: 10.1016/s0092-6566(02)00011-9.

McCrae, R. R., Costa, P. T. Jr. (1989). More reasons to adopt the five-factor-model. The *American Psychologist, 44*(2), 451-452. doi: 10.1037/0003-066X.44.2.451

Miller, T. R. (1991). The psychotherapeutic utility of the five-factor model of personality: a clinician's experience. *Journal of Personality Assessment, 57*(3), 415-433.

Mlacic, B., & Goldberg, L. R. (2007). An analysis of a cross-cultural personality inventory: The IPIP big-five factor markers in Croatia. *Journal of Personality Assessment, 88*(2), 168-177.

Mutén, E. (1991). Self-reports, spouse ratings, and psychophysiological assessment in a behavioral medicine program: an application of the five-factor model. *Journal of Personality Assessment, 57*(3), 449-464.

Naragon-Gainey, K., & Watson, D. (2011). Clarifying the dispositional basis of social anxiety: A hierarchical perspective. *Personality and Individual Differences, 50*(7), 926-934. doi: 10.1016/j.paid.2010.07.012.

Parker, G., Hadzi-Pavlovic, D., Brodaty, H., Boyce, P., Mitchell, P., Wilhelm, K., & Hickie, I. (1992). Predicting the course of melancholic and nonmelancholic depression. A naturalistic comparison study. *Journal of Nervous and Mental Disease, 180*(11), 693-702.

Peters, L. (2000). Discriminant validity of the Social Phobia and Anxiety Inventory (SPAI), the Social Phobia Scale (SPS) and the Social Interaction Anxiety Scale (SIAS). *Behaviour Research and Therapy, 38*(9), 943-950.

Peters, L., Gaston, J. E., Baillie, A., & Rapee, R. M. (2011). Preparing participants with social phobia for cognitive behavioural treatment: A pilot trial of a program addressing treatment expectations and engagement (TEE). *Submitted*.

Piper, W. E., Ogrodniczuk, J. S., & Joyce, A. S. (2004). Quality of object relations as a moderator of the relationship between pattern of alliance and outcome in short-term individual psychotherapy. *Journal of Personality Assessment, 83*(3), 345-356.

Rapee, R. M. (1995). Descriptive psychopathology of social phobia. In R. G. Heimberg, M. R. Liebowitz, D. A. Hope & F. R. Schneier (Eds.), *Social phobia: diagnosis, assessment, and treatment* (1 edition ed., pp. 435). New York: The Guilford Press.

Rapee, R. M., MacLeod, C., Carpenter, L., Gaston, J. E., Frei, J., Peters, L., & A.J., B. (2013). Integrating cognitive bias modification into a standard cognitive behavioural treatment package for social phobia. *Behaviour Research and Therapy,* Accepted 11th January, 2013.

Rapee, R. M., & Sanderson, W. C. (1998). *Social Phobia: clinical application of evidence-based psychotherapy* (First ed.). New Jersey: Jason Aronson.

Rector, N. A., Bagby, R. M., Huta, V., & Ayearst, L. E. (2012). Examination of the trait facets of the five-factor model in discriminating specific mood and anxiety disorders. *Psychiatry Research, 199*(2), 131-139. doi: 10.1016/j.psychres.2012.04.027.

Reich, J., Goldenberg, I., Vasile, R., Goisman, R., & Keller, M. (1994). A prospective follow-along study of the course of social phobia. *Psychiatry Research, 54*(3), 249-258. doi: 10.1016/0165-1781(94)90019-1.

Roberts, B. W., & Mroczek, D. (2008). Personality trait change in adulthood. *Current Directions in Psychological Science, 17*(1), 31-35. doi: 10.1111/j.1467-8721.2008.00543.x

Roberts, B. W., Walton, K. E., & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: A meta-analysis of longitudinal studies. *Psychological Bulletin, 132*(1), 1-25. doi: 10.1037/0033-2909.132.1.1

Rodebaugh, T. L., Holaway, R. M., & Heimberg, R. G. (2004). The treatment of social anxiety disorder. *Clinical Psychology Review, 24*(7), 883-908.

Santor, D. A., Bagby, R. M., & Joffe, R. T. (1997). Evaluating stability and change in personality and depression. *Journal of Personality and Social Psychology, 73*(6), 1354-1362.

Sexton, K. A., Norton, P. J., Walker, J. R., & Norton, G. R. (2003). Hierarchical Model of Generalized and Specific Vulnerabilities in Anxiety. *Cognitive Behaviour Therapy, 32*(2), 82-84. doi: 10.1080/16506070302321.

Tabachnick, B. G., & Fidell, L. S. (1996). *Using Multivariate Statistics* (3rd edition ed.). New York: HarperCollins.

Terra, M. B., Barros, H. M. T., Stein, A. T., Figueira, I., Athayde, L. D., Goncalves, M. D. S., Tergolina, L. P., Rovani, J. S., Da Silveira, D. X. (2006). Internal consistency and factor structure of the Portuguese version of the Liebowitz Social Anxiety Scale among alcoholic patients. *Revista Brasileira de Psiquiatria, 28*(4), 265-269.

Trull, T. J., & Sher, K. J. (1994). Relationship between the five-factor model of personality and axis I disorders in a nonclinical sample. *Journal of Abnormal Psychology, 103*(2), 350-360. doi: 10.1037/0021-843x.103.2.350.

Watson, D., Clark, L. A., & Carey, G. (1988). Positive and Negative Affectivity and Their Relation to Anxiety and Depressive Disorders. *Journal of Abnormal Psychology, 97*(3), 346-353.

Watson, D., & Friend, R. (1969). Measurement of social-evaluative anxiety. *Journal of Consulting and Clinical Psychology, 33*(4), 448-457.

Westra, H. A., & Dozois, D. J. A. (2008). Motivational Interviewing in the Treatment of Anxiety. In H. Arkowitz, H. A. Westra, W. R. Miller & S. Rollnick (Eds.), *Motivational Interviewing in the Treatment of Psychological Problems* (pp. 354). New York: Guilford Press.

Woody, S. R., & Adessky, R. S. (2002). Therapeutic alliance, group cohesion, and homework compliance during cognitive-behavioral group treatment of social phobia. *Behavior Therapy, 33*(1), 5-27.

Table 1.

Correlations between pre-treatment scores of personality and social anxiety measures

	SIAS	SPS	BFNE	LSAS-SR	A	C	E	ES	O
SIAS	-	.596**	.582**	.734**	-.082	-.165*	-.591**	-.423**	-.264**
SPS		-	.411**	.743**	.032	-.056	-.299**	-.305**	-.087
BFNE			-	.406**	-.073	-.087	-.280**	-.432**	-.073
LSAS-SR				-	-.021	-.159*	-.490**	-.378**	-.191**
Agreeableness					-	.133	.202**	.128	.231**
Conscientiousnes						-	-.057	.189*	.105
Extraversion							-	.285**	.208**
Emotional Stability								-	.018
Openness									-

*Note. ** p = 0.01; *p = 0.05.* SIAS (Social Interaction Anxiety Scale), SPS (Social Phobia Scale), BFNE (Brief Fear of Negative Evaluation), LSAS-SR (Liebowitz Social Anxiety Scale – Self Report).

Table 2.

Means and standard deviations for social anxiety measures and personality traits before and after treatment.

	Mean Pre	Mean Post	*t*	*p*
Pre and Post-Treatment SIAS	52.213	38.091	11.720	**.000**
	(13.583)	*(15.101)*		
Pre and Post-Treatment SPS	30.333	17.735	10.722	**.000**
	(14.913)	*(13.062)*		
Pre and Post-Treatment BFNE	50.064	41.066	11.528	**.000**
	(7.702)	*(9.794)*		
Pre and Post-Treatment LSAS-SR	72.028	51.990	10.760	**.000**
	(22.888)	*(25.742)*		
Agreeableness	37.641	38.339	-1.641	.104
	(6.344)	*(6.075)*		
Conscientiousness	33.735	34.905	-2.743	**.007**
	(6.186)	*(6.368)*		
Extraversion	19.877	23.726	-7.995	**.000**
	(6.546)	*(7.069)*		
Openness	33.830	34.217	-.931	.354
	(6.826)	*(6.167)*		
Emotional Stability	24.292	27.150	-5.640	**.000**
	(7.424)	*(8.206)*		

Note. SIAS (Social Interaction Anxiety Scale), SPS (Social Phobia Scale), BFNE (Brief Fear of Negative Evaluation), LSAS-SR (Liebowitz Social Anxiety Scale – Self Report), SIAS and SPS (n = 108) (*df* = 107); BFNE, LSASF (n = 106) (*df* = 105).

Table 3.

Hierarchical Multiple Regression Analyses for testing Personality trait levels as moderator factors of the relationship between pre and post-treatment measures of social anxiety

Dependent Variable	Step	Variables	B	SE B	F, *df*	ΔR^2	*p*
Post SIAS	1	Pre SIAS	.602	.074	66.359 (1, 104)	.388	.000
	2	A	-.157	.080	3.833 (1, 103)	.022	.053
	3	A X Pre SIAS	-.191	.077	6.136 (1, 102)	.033	**.015**
Post SPS	1	Pre SPS	.634	.078	66.278(1, 104)	.389	.000
	2	A	-.204	.078	6.849(1, 103)	.038	.010
	3	A X Pre SPS	-.250	.076	10.793(1, 102)	.055	**.001**
Post BFNE	1	Pre BFNE	.599	.074	56.808(1, 103)	.345	.000
	2	A	-.219	.079	7.698 (1, 102)	.044	.007
	3	A X Pre BFNE	-.131	.071	3.423(1, 101)	.019	.067
Post LSAS-SR	1	Pre LSAS-SR	.676	.069	96.024(1, 103)	.481	.000
	2	A	-.182	.071	6.526(1, 102)	.031	.012
	3	A X Pre LSAS-SR	-.140	.061	5.197(1, 101)	.024	**.025**
Post SIAS	1	Pre SIAS	.602	.074	66.359(1, 104)	.388	.000
	2	E	-.108	.102	1.132(1, 103)	.007	.290
	3	E X Pre SIAS	-.182	.078	5.473(1, 102)	.031	**.021**
Post SPS	1	Pre SPS	.634	.078	66.278(1, 104)	.389	.000
	2	E	-.030	.090	.110 (1, 103)	.001	.741
	3	E X Pre SPS	-.130	.083	2.449 (1, 102)	.014	.121
Post BFNE	1	Pre BFNE	.599	.074	56.808(1, 103)	.345	.000
	2	E	-.018	.090	.041(1, 102)	.000	.841

	3	E X Pre BFNE	-.054	.070	.604(1, 101)	.004	.439
Post LSAS-SR	1	Pre LSAS-SR	.676	.069	96.024(1, 103)	.481	.000
	2	E	-.139	.089	2.442(1, 102)	.012	.121
	3	E X Pre LSAS-SR	-.126	.075	2.851(1, 101)	.014	.094
Post SIAS	1	Pre SIAS	.602	.074	66.359 (1, 104)	.338	.000
	2	ES	-.342	.080	18.234 (1, 103)	.092	.000
	3	ES X Pre SIAS	-.087	.059	2.131 (1, 102)	.011	.147
Post SPS	1	Pre SPS	.634	.078	66.278 (1, 104)	.389	.000
	2	ES	-.204	.078	6.877(1, 103)	.038	.010
	3	ES X Pre SPS	-.146	.083	3.102(1, 102)	.017	.081
Post BFNE	1	Pre BFNE	.559	.074	56.808 (1, 103)	.345	.000
	2	ES	-.241	.089	7.271 (1,102)	.042	.008
	3	ES X Pre BFNE	-.087	.060	2.129 (1, 101)	.012	.148
Post LSAS-SR	1	Pre LSAS-SR	.676	.069	96.024(1, 103)	.481	.000
	2	ES	-.162	.074	4.816(1, 102)	.023	.030
	3	ES X Pre LSAS-SR	-.031	.068	.217(1, 101)	.001	.642
Post SIAS	1	Pre SIAS	.602	.074	66.359(1, 104)	.388	.000
	2	C	-.044	.088	.255(1, 103)	.002	.615
	3	C X Pre SIAS	.047	.082	.336(1, 102)	.002	.564
Post SPS	1	Pre SPS	.634	.078	66.278(1, 104)	.389	.000
	2	C	-.041	.086	.228 (1, 103)	.001	.634
	3	C X Pre SPS	.032	.095	.113 (1, 102)	.001	.737
Post BFNE	1	Pre BFNE	.599	.074	56.808(1, 103)	.345	.000
	2	C	-.143	.087	2.690(1, 102)	.016	.104

	3	C X Pre BFNE	-.062	.081	.595(1, 101)	.004	.442
Post LSAS-SR	1	Pre LSAS-SR	.676	.069	96.024(1, 103)	.481	.000
	2	C	-.067	.079	.725 (1, 102)	.004	.396
	3	C X Pre LSAS-SR	-.071	.087	.658(1, 101)	.003	.419
Post SIAS	1	Pre SIAS	.602	.074	66.359(1, 104)	.388	.000
	2	O	-.004	.082	.002(1, 103)	.000	.963
	3	O X Pre SIAS	-.113	.070	2.598(1, 102)	.015	.110
Post SPS	1	Pre SPS	.634	.078	66.278(1, 104)	.389	.000
	2	O	-.105	.076	1.914(1, 103)	.011	.170
	3	O X Pre SPS	-.076	.076	1.009(1, 102)	.006	.318
Post BFNE	1	Pre BFNE	.559	.074	56.808(1, 103)	.345	.000
	2	O	-.071	.077	.835(1, 102)	.005	.363
	3	O X Pre BFNE	-.079	.074	1.127(1, 101)	.007	.291
Post LSAS-SR	1	Pre LSAS-SR	.676	.069	96.024(1, 103)	.481	.000
	2	O	-.106	.072	2.162(1, 102)	.011	.145
	3	O X Pre LSAS-SR	-.039	.073	.280(1, 101)	.001	.598

Note: n=105; SIAS (Social Interaction Anxiety Scale), SPS (Social Phobia Scale), BFNE (Brief Fear of Negative Evaluation), LSAS-SR (Liebowitz Social Anxiety Scale – Self Report), A (agreeableness), C (conscientiousness), E (extraversion), ES (emotional stability) and O (Openness).

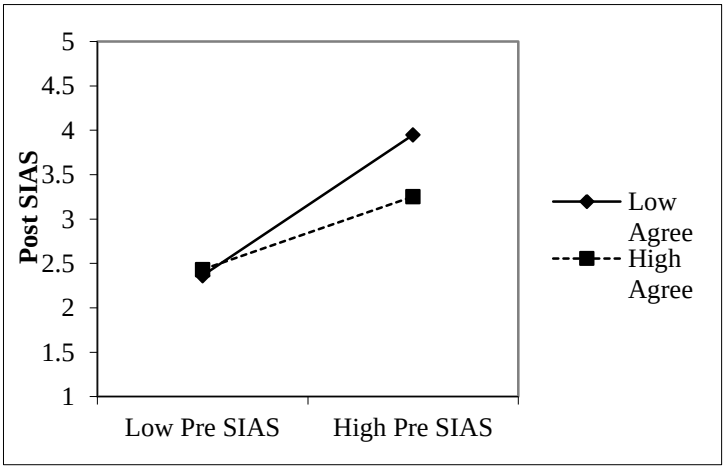

Figure 1. Plot of significant Agreeableness X Post SIAS. Solid diamonds = low agreeableness; solid squares = high agreeableness.

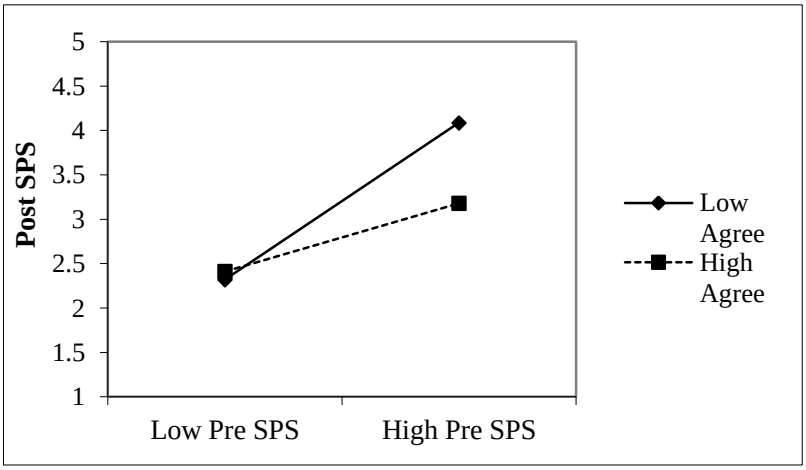

Figure 2. Plot of significant Agreeableness X Post SPS. Solid diamonds = low agreeableness; solid squares = high agreeableness.

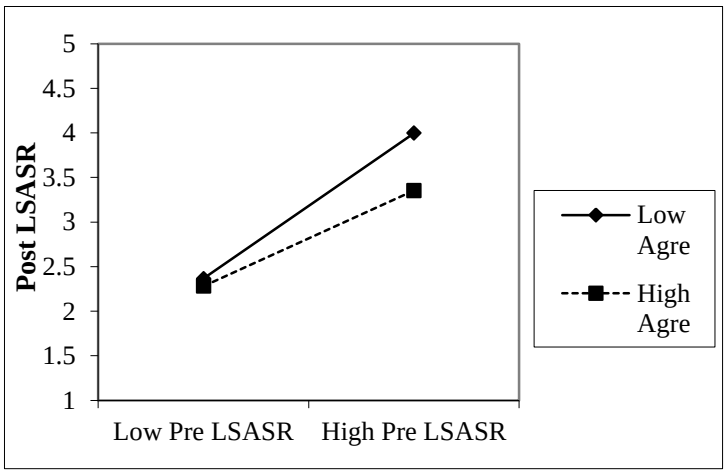

Figure 3. Plot of significant Agreeableness X Post LSAS-SR. Solid diamonds = low agreeableness; solid squares = high agreeableness.

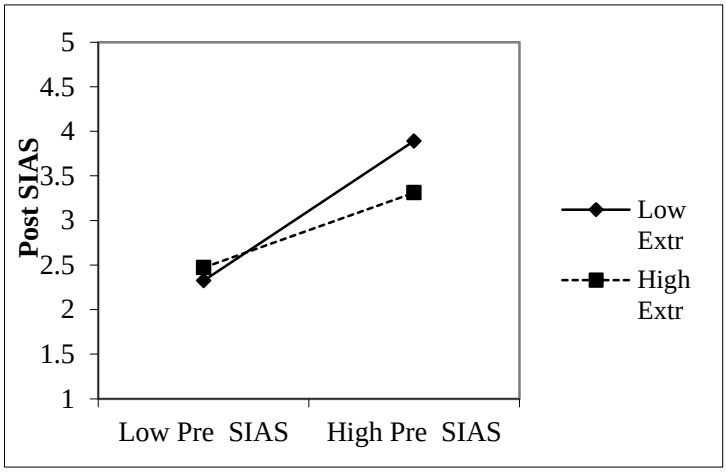

Figure 4. Plot of significant Extraversion X Post SIAS. Solid diamonds = low extraversion; solid squares = high extraversion.

CHAPTER 5:

General Discussion

Overall findings

The findings from this research demonstrated the important role of personality in social anxiety in different settings.

In Chapter 2 the results of the examination of the relationship of personality traits and social anxiety between the Australian and the Brazilian community samples were presented. Three main findings were that: the measurement of social anxiety and of personality were similar in Australia and Brazil; the nature of the relationship between personality and social anxiety is the same across the two cultural groups; and, differences in the strength of the relationship between social anxiety and personality traits between the two cultural groups were not found. Nonetheless, in both countries, social anxiety was negatively correlated with extraversion and positively correlated with neuroticism (Naragon-Gainey, Watson, & Markon, 2009; Bienvenu et al., 2004); in addition, extraversion had the strongest relationship with social anxiety (Bienvenu et al., 2004). Contrary to previous research (Chatterjee et al., 1997; Bienvenu et al., 2004), agreeableness had a positive correlation with social anxiety in both samples; and conscientiousness appears to vary between samples, in the Brazilian sample conscientiousness was found to be negatively correlated with social anxiety (Bienvenu et al., 2004) and non-significant results were found in the Australian sample. Openness did not have a significant relationship with social anxiety measures (Cheung & Leung, 1998; McCrae & Terracciano, 2005).

The Brazilian sample was found to have higher mean level of neuroticism in Chapter 2 which was attributed to individual differences found in each culture, namely, collectivistic and individualistic. Collectivistic cultures have been found to be high in neuroticism, compared to individualistic cultures (Hofstede & McCrae, 2004). In addition, prevalence of social anxiety has been found to be higher in some collectivistic cultures (Andrae, Walters, Gentil, & Laurenti, 2002; Vorcaro, Rocha, Unchoa, & Lima-Costa, 2004).

Chapter 2 provides evidence once again of high mean levels of neuroticism in collectivist compared to individualist cultures, which may be linked to cultural differences in personality traits that are linked to social anxiety. This may lead to the development of a more suitable treatment for collectivistic cultures where neuroticism may be higher, addressing extensively neuroticism prior to treatment in collectivistic cultures via cognitive restructuring.

In Chapter 3, it was shown that the five personality domains have different patterns of association with social fear score depending on the type of situation and the sample (clinical vs. community). A larger proportion of the variance in social interaction fear scores was accounted for by extraversion, in both samples. This finding suggests that individuals scoring high in social interaction fears are mostly interpersonally detached, unassertive (McCrae & Costa Jr, 1987). In the clinical sample, conscientiousness and depressive symptoms also accounted for variance in social interaction fear scores, more so than in other social fear scores. Individuals having higher scores in social interaction fear may be more isolated developing more comorbid disorder, such as depression, and may be less conscientious than non-clinical samples.

In both samples, public speaking fears score had a larger proportion of variance accounted for by gender, openness to experience and agreeableness. Results suggest that individuals scoring high on the public speaking measure are mostly males, and to a lesser extent are individuals with difficulties adapting to social changes however compliant with authority. Openness has been found to contribute to the variance in social interaction fear scores in past research (Kashdan, 2007; Kashdan, Rose, & Fincham, 2004), however, in this study, it contributed to variance in the public speaking fear scores.

Different from other public speaking and social interaction, performance fear scores measures fears of being observed or scrutinised by others (Safren et al., 1999). These measures had a larger proportion of variance accounted for by emotional stability, suggesting that individuals with high performance fear scores experience unrealistic beliefs and

expectations and to a lower extent experience difficulties coping with stress. It is noteworthy that depression symptoms and possible comorbidities were not measured in the community sample which may partially account for the higher contribution to variances between personality traits and social anxiety fear scores in that sample (Brown, Heimberg, & Juster, 1995; Heimberg, Hope, Dodge, & Becker, 1990; Herbert, Hope, & Bellack, 1992; Holt, Heimberg, & Hope, 1992; Hope, Herbert, & White, 1995; Hughes et al., 2006; Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992; Turner, Beidel, Townsley, 1992). In addition, some personality variables were important in both the clinical and community samples; that is, the findings were replicated within this study.

The findings build upon prior social anxiety disorder research, the importance of examining qualitative differences in specific domains of social anxiety. Building upon findings such as these may allow tailoring of treatment to take different personality traits into account, thus enhancing treatment outcome for those with social anxiety.

In Chapter 4 a significant decrease in social anxiety symptoms after a 12-week cognitive-behavioural treatment for social anxiety disorder was moderated by agreeableness and by extraversion. Participants with high levels of pre-treatment social anxiety as measured by SIAS, SPS, LSAS-SR, who also had high levels of agreeableness had worse improvement in social anxiety than participants with low agreeableness. Also, participants with high levels of extraversion and social anxiety at pre-treatment had worse improvement in social anxiety than participants with low extraversion. It was suggested that over the treatment course, personality features play a role in group interaction and in therapeutic alliance, as previously suggested by Miller (1991). Thus, agreeableness and extraversion may moderate treatment outcome because of their impact on group interaction and therapeutic alliance, which have both been found to predict treatment outcome (Bagby et al., 2008; Horvath & Symonds, 1991; Parker et al., 1992; Woody & Adessky, 2002). The present investigation suggests that CBT

treatment outcome for SAD clients may be optimized when individual differences in personality are taken into consideration.

Theoretical and treatment implications

The association between personality with anxiety and mood disorders in the general population has been the focus of research (Bienvenu et al., 2001a; Bienvenu et al., 2001b; Trull & Sher, 1994) where personality traits have been examined as: vulnerability factors for the development of anxiety and mood disorders in clinical samples (Andrews, Stewart, Morris-Yates, Holt, & Henderson, 1990; Clark, Watson, & Mineka, 1994); predictors of mood disorders (Watson, Clark, & Carey, 1988); predictors of the onset of social anxiety (Angst & Vollrath, 1991; Fauerbach, Lawrence, Schmidt Jr, Munster, & Costa Jr, 2000; Krueger, 1999); and for their impact on course and remission of anxiety disorders (Massion et al., 2002). However, this thesis represents the first series of studies to explore specifically the impact of personality traits on social anxiety CBT treatment outcome, to explore the relationship between social anxiety fear scores and personality traits in two different contexts, and to compare social anxiety scores to personality traits in two different cultures.

Firstly, it has been suggested that SAD seems to be similar culture-culturally (Rapee and Spence, 2004), while others have found variability of SAD symptoms across cultures (Kirmayer, 1991; Kleinknecht, Dinnel, Kleinknecht, Hiruma, & Harada, 1997). The first study in this thesis adds to the literature that social anxiety can be measured similarly in Australia and Brazil despite variability in the mean level of neuroticism trait scores across samples from countries that vary on the cultural variable of individualism versus collectivism. Extrapolating from the finding of a single measurement model for the two countries, it can be suggested that social phobia models (Clark & Wells, 1995; Rapee & Heimberg, 1997), designed to capture the maintaining factors for social anxiety in individualistic cultures may

be applied to the collectivistic sample here represented. Nevertheless, these models of social anxiety will need to pay more attention to how neuroticism impacts in collectivistic cultures.

Secondly, personality differences were found to be associated with different social anxiety fear scores, which are in line with previous research (Hughes et al., 2006; Kashdan, 2002, 2007; Kashdan et al., 2004; McCrae & Costa Jr, 1987; Norton, Buhr, Cox, Norton, & Walker, 2000; Norton, Cox, Hewitt, & McLeod, 1997). Additionally, given the distinct relationships between different personality traits and different types of social fears, the findings are consistent with previous research suggesting that public speaking is an independent type of performance fear (Safren et al., 1999; Eng, Heimberg, Coles, Schneier, & Liebowitz, 2000; Cox, Clara, Sareen, & Stein, 2008).

Thirdly, results of this research showed that having high levels of social anxiety and high levels of certain personality traits (agreeableness and extraversion) predicted treatment outcome. Personality is a relatively under researched as predictor of treatment outcome compared to other clinical and demographic variables. Future research on prediction of treatment outcome should pay closer attention to personality variables.

As a whole, the research in this thesis has contributed to knowledge about how the five factor model of personality traits are associated with social anxiety. For example, while neuroticism is known to be elevated in SAD (Chatterjee, Sunitha, Velayudhan, & Khanna, 1997; Hofmann & Loh, 2006; Kim & Hoover, 1996; Marteinsdottir, Tillfors, Furmark, Andenberg & Ekselius, 2003; Naragon-Gainey, Watson, & Markon, 2009; Pelissolo et al., 2002), higher neuroticism is found in collectivistic cultures compared to individualistic cultures (Hofstede and McCrae, 2004), and neuroticism was found to be significantly more predictive of generalised social phobia (interaction fears) than non-generalised social fears (performance fears) (Norton et al., 2000; Norton et al., 1997). In this study neuroticism was found to have a higher mean level in a collectivistic culture compared to an individualistic culture. And, different from previous research, neuroticism was mostly associated with

performance fear scores in the clinical and community samples. Although, neuroticism did not moderate SAD treatment outcome, it decreased after group CBT treatment, and directly predicted post-treatment social anxiety.

Extraversion is known to be low in SAD (Bienvenu et al., 2004; Naragon-Gainey et al., 2009), to predict treatment outcome (Bagby et al., 2008; Horvath & Symonds, 1991; Parker et al., 1992; Woody & Adessky, 2002), and to be mostly related to performance fears (Safren et al., 1999). In this research, however, extraversion was found to be mostly associated with interaction fear scores (together with conscientiousness and depressive symptoms in the clinical sample, and emotional stability in the community sample), and to moderate SAD treatment outcome such that there was better outcome for those high in social anxiety and extraversion at pre-treatment.

Agreeableness has been also related to social anxiety; that is, SAD had been associated with low levels of cooperativeness (Chatterjee et al., 1997; Marteinsdottir et al., 2003; Pelissolo et al., 2002) and trust (Bienvenu et al., 2004). In this thesis, however, agreeeableness was mostly associated with public speaking fear scores (together with gender and openness to experience), and was found to moderate treatment outcome. These findings support Miller's (1991) theoretical work, in which, he suggested that mapping client's personality characteristics may help to adjust treatment and predict its compliance and outcome. Similarly, Mutén (1991) proposed that tretament will vary according to client's personality traits.

Conscientiousness has also been related to SAD. Low levels of self-directedness (Chatterjee et al., 1997; Marteinsdottir et al., 2003; Pelissolo et al., 2002), self-discipline, competence, achievement striving (Bienvenu et al., 2004), and weak correlation with fun-seeking (Naragon-Gainey et al., 2009) have been found to be associated with SAD. In addition, low conscientiousness was found to be related to social avoidance (Bienvenu et al., 2004). In this study, conscientiousness was found to be mostly associated with interaction fear

scores (Hughes et al., 2006; Kashdan, 2002; Norton et al., 2000; Norton et al., 1997; Safren et al., 1999; Watson et al., 2008) (together with extraversion and depression symptoms). It has been suggested that conscientiousness is a predictor of treatment outcome since those who are low on conscientiousness may not be compliant with treatment (Miller, 1991; Mutén, 1991). Contrary to this suggestion, the findings in this thesis suggest that while conscientiousness may be related to social interaction fears, it does not moderate treatment outcome.

Generally, openness to experience has not been identified in certain cultures (Cheung & Leung, 1998; McCrae & Terracciano, 2005). In the first study of this thesis, the measurement model suggests that openness has a similar association with social anxiety in two different cultures. In the second study openness to experience was mostly related to public speaking fear scores (together with gender and agreeableness). According to Miller and Mutén's (1991) theoretical proposal, an individual's levels of openness to experience would affect response to treatment intervention. The findings from the third study do not support this contention: openness to experience did not moderate treatment outcome for social anxiety disorder.

Taken together, the research presented in this thesis demonstrates the variability of the relationship between personality traits and to social anxiety.

Limitations of present research

Several limitations of the research were previously noted. These results should not be overgeneralised beyond these particular samples, the present measures, CBT type of intervention. Also, reported in Chapter 2, the samples (Australians = 374; Brazilians = 329) are relatively diverse, with a heterogeneous background which does not guarantee that the current findings would be valid in different cultures or in different regions within the same countries. Secondly, the 50 and 100-item IPIP embraces the FFM of personality domains but they do not capture the lower-order items (facets) which could enrich the findings of this research as whole. The IPIP 100-item scale was translated to Portuguese by the researcher of

this project then translated back to English, but it has not been validated beyond this simple translation process. Although the IPIP scale was developed to be used cross-culturally, empirical evidence is still being gathered. Furthermore, research is necessary to validate the SPS, SIAS and BFNE scales cross-culturally.

A limitation of the research in general is the correlational evidence for two of the studies, as causation cannot be inferred. Future research on the impact of personality traits on social anxiety would benefit from a longitudinal design.

Strengths of present research

This research is the first to examine the relationship between personality traits and social anxiety disorder in three different ways: cross-culturally, with respect to different types of social fears, and in moderation of treatment outcome. It builds upon other social anxiety disorder literature to help explain the relationship between the two constructs (personality traits and social anxiety disorder). One of the strengths of the study was the large samples, which permits greater confidence in the results.

A second strength is the longitudinal design of the study in Chapter 4 and the use of clinical sample.

A further strength of the study was the use of cross cultural investigation, in Chapter 2, using two countries (Australia and Brazil) representing different cultures. In which, sample scarcely explored was introduced. Brazil has not been greatly explored by researchers despite its large number of inhabitants (almost two hundred million inhabitants).

Lastly, it was a strength of the study to use a number of well-established social anxiety measures used to identify social anxiety (Baker, Heinrichs, Kim, & Hofmann, 2002; Collins, Westra, Dozois, & Stewart, 2005; Cox, Ross, Swinson, & Direnfeld, 1998; D'El Rey, Lacava, & Cardoso, 2007; Mattick & Peters, 1988; Mattick, Peters, & Clark, 1989; Seeley-Wait, Abbott, & Rapee, 2009; Terra et al., 2006; Weeks, Spokas, & Heimberg, 2007).

Future directions

In this research the investigation of the relationship between personality traits and social anxiety in different settings was conducted. Although the samples used were quite large, an even larger sample that allowed for analysis of participants locations and identified cultural background would substantially improve the results.

Future research might examine whether personality traits expressed in young people predicts development of particular types of social fears. Furthermore, future research could examine how to tailor treatments to account for personality differences, for example, perhaps for those low in extraversion, an individual rather than a group treatment would be beneficial; or for those low in agreeableness, perhaps a few sessions to build rapport and enhance the therapeutic relationship would be warranted. Also, research which explores how personality traits operate in the treatment environment would be important, for example, asking whether personality traits operate via the therapeutic alliance.

Finally, replication of the studies would be warranted using measures of personality traits that embraces also the lower-order items (facets) would enrich the literature.

Summary and conclusion

Research investigating the relationship between personality traits and social anxiety disorder has been scant. The research examined the relationship between personality traits and social anxiety in three different studies: the impact of personality traits on cross-cultural expression of anxiety; the relationship between personality traits and the expression of social anxiety in performance versus interaction situations; and the impact of personality traits on cognitive-behavioural treatment outcome for social anxiety. The findings indicate a stronger relationship between social anxiety and neuroticism in a collectivist group sample (Brazilian) than in a individualistic group sample (Australian); that personality traits have different

associations with social anxiety fear in different situations, in a community and clinical sample; and a significant decrease in social anxiety symptoms was moderated by agreeableness and by extraversion after 12-week treatment for social anxiety disorder.

These findings indicate that personality traits need to be considered in understanding variability of social anxiety scores. Personality traits should be taken into consideration when diagnosis and intervention for social anxiety disorder are being developed and applied.

References

Andrews, G., Stewart, G., Morris-Yates, A., Holt, P., & Henderson, S. (1990). Evidence for a general neurotic syndrome. *British Journal of Psychiatry, 157*(JULY), 6-12.

Angst, J., & Vollrath, M. (1991). The natural history of anxiety disorders. *Acta Psychiatrica Scandinavica, 84*(5), 446-452.

Bagby, R. M., Quilty, L. C., Segal, Z. V., McBride, C. C., Kennedy, S. H., & Costa Jr, P. T. (2008). Personality and differential treatment response in major depression: A randomized controlled trial comparing cognitive-behavioural therapy and pharmacotherapy. *Canadian Journal of Psychiatry, 53*(6), 361-370.

Baker, S. L., Heinrichs, N., Kim, H. J., & Hofmann, S. G. (2002). The Liebowitz social anxiety scale as a self-report instrument: A preliminary psychometric analysis. *Behaviour Research and Therapy, 40*(6), 701-715.

Bienvenu, O. J., Brown, C., Samuels, J. F., Liang, K. Y., Costa, P. T., Eaton, W. W., & Nestadt, G. (2001a). Normal personality traits and comorbidity among phobic, panic and major depressive disorders. *Psychiatry Research, 102*(1), 73-85. doi: 10.1016/s0165-1781(01)00228-1

Bienvenu, O. J., Nestadt, G., Samuels, J. F., Costa, P. T., Howard, W. T., & Eaton, W. W. (2001b). Phobic, panic, and major depressive disorders and the five-factor model of personality. *Journal of Nervous and Mental Disease, 189*(3), 154-161.

Bienvenu, O. J., Samuels, J. F., Costa, P. T., Reti, I. M., Eaton, W. W., & Nestadt, G. (2004). Anxiety and depressive disorders and the five-factor model of personality: A higher- and lower-order personality trait investigation in a community sample. *Depression and Anxiety, 20*(2), 92-97.

Brown, E. J., Heimberg, R. G., & Juster, H. R. (1995). Social phobia subtype and avoidant personality disorder: Effect on severity of social phobia, impairment, and outcome of

cognitive behavioral treatment. *Behavior Therapy, 26*(3), 467-486. doi: 10.1016/s0005-7894(05)80095-4

Chatterjee, S., Sunitha, T. A., Velayudhan, A., & Khanna, S. (1997). An investigation into the psychobiology of social phobia: Personality domains and serotonergic function. *Acta Psychiatrica Scandinavica, 95*(6), 544-550.

Cheung, F. M., & Leung, K. (1998). Indigenous personality measures: Chinese examples. *Journal of Cross-Cultural Psychology, 29*(1), 233-248.

Clark, L. A., Watson, D., & Mineka, S. (1994). Temperament, personality, and the mood and anxiety disorders. *Journal of Abnormal Psychology, 103*(1), 103-116.

Clark, D. M., & Wells, A. (1995). A cognitive model of social phobia (Heimberg, R. G., Trans.). In Heimberg, R. G. et al.]. (Ed.), *Social phobia :diagnosis, assessment, and treatment* (pp. 435). New York: Guilford Press.

Collins, K. A., Westra, H. A., Dozois, D. J. A., & Stewart, S. H. (2005). The validity of the brief version of the Fear of Negative Evaluation Scale. *Journal of Anxiety Disorders, 19*(3), 345-359.

Cox, B. J., Clara, I. P., Sareen, J., & Stein, M. B. (2008). The structure of feared social situations among individuals with a lifetime diagnosis of social anxiety disorder in two independent nationally representative mental health surveys. *Behaviour Research and Therapy, 46*(4), 477-846.

Cox, B. J., Ross, L., Swinson, R. P., & Direnfeld, D. M. (1998). A comparison of social phobia outcome measures in cognitive-behavioral group therapy. *Behavior Modification, 22*(3), 285-297.

D'El Rey, G. J. F., Lacava, J. P. L., & Cardoso, R. (2007). Internal consistency of the Portuguese version of the Mini-Social Phobia Inventory (Mini-SPIN). *Consistência interna da versão em português do Mini-Inventário de Fobia Social (Mini-SPIN), 34*(6), 266-269.

Eng, W., Heimberg, R. G., Coles, M. E., Schneier, F. R., & Liebowitz, M. R. (2000). An empirical approach to subtype identification in individuals with social phobia. *Psychological Medicine, 30*(6), 1345-1357.

Fauerbach, J. A., Lawrence, J. W., Schmidt Jr, C. W., Munster, A. M., & Costa Jr, P. T. (2000). Personality predictors of injury-related posttraumatic stress disorder. *Journal of Nervous and Mental Disease, 188*(8), 510-517. doi: 10.1097/00005053-200008000-00006

Heimberg, R. G., Hope, D. A., Dodge, C. S., & Becker, R. E. (1990). DSM-III-R Subtypes of social phobia: Comparison of generalized social phobics and public speaking phobics. *Journal of Nervous and Mental Disease, 178*(3), 172-179.

Herbert, J. D., Hope, D. A., & Bellack, A. S. (1992). Validity of the Distinction Between Generalized Social Phobia and Avoidant Personality Disorder. *Journal of Abnormal Psychology, 101*(2), 332-339. doi: 10.1037/0021-843x.101.2.332

Hofmann, S. G., & Loh, R. (2006). The Tridimensional Personality Questionnaire: Changes during psychological treatment of social phobia. *Journal of Psychiatric Research, 40*(3), 214-220. doi: 10.1016/j.jpsychires.2005.03.010

Hofstede, G., & McCrae, R. R. (2004). Personality and Culture Revisited: Linking Traits and Dimensions of Culture. *Cross-Cultural Research, 38*(1), 52-88.

Holt, C. S., Heimberg, R. G., & Hope, D. A. (1992). Avoidant Personality Disorder and the Generalized Subtype of Social Phobia. *Journal of Abnormal Psychology, 101*(2), 318-325.

Hope, D. A., Herbert, J. D., & White, C. (1995). Diagnostic subtype, avoidant personality disorder, and efficacy of cognitive-behavioral group therapy for social phobia. *Cognitive Therapy and Research, 19*(4), 399-417. doi: 10.1007/bf02230408

Horvath, A. O., & Symonds, B. D. (1991). Relation Between Working Alliance and Outcome in Psychotherapy: A Meta-Analysis. *Journal of Counseling Psychology, 38*(2), 139-149. doi: 10.1037/0022-0167.38.2.139

Hughes, A. A., Heimberg, R. G., Coles, M. E., Gibb, B. E., Liebowitz, M. R., & Schneier, F. R. (2006). Relations of the factors of the tripartite model of anxiety and depression to types of social anxiety. *Behaviour Research and Therapy, 44*(11), 1629-1641. doi: 10.1016/j.brat.2005.10.015

Kashdan, T. B. (2007). Social anxiety spectrum and diminished positive experiences: Theoretical synthesis and meta-analysis. *Clinical Psychology Review, 27*(3), 348-365. doi: 10.1016/j.cpr.2006.12.003

Kashdan, T. B. (2002). Social anxiety dimensions, neuroticism, and the contours of positive psychological functioning. *Cognitive Therapy and Research, 26*(6), 789-810. doi: 10.1023/a:1021293501345

Kashdan, T. B., Rose, P., & Fincham, F. D. (2004). Curiosity and exploration: Facilitating positive subjective experiences and personal growth opportunities. *Journal of Personality Assessment, 82*(3), 291-305.

Kiko, S., Stevens, S., Mall, A. K., Steil, R., Bohus, M., Hermann, C. (2012). Predicting post-event processing in social anxiety disorder following two prototypical social situations: State variables and dispositional determinants. *Behaviour Research and Therapy. 50*(10), 617-626. Doi: 10.1016/j.brat.2012.06.001.

Kim, S. W., & Hoover, K. M. (1996). Tridimensional personality questionnaire: Assessment in patients with social phobia and a control group. *Psychological Reports, 78*(1), 43-49.

Kirmayer, L. J. (1991). The place of culture in psychiatric nosology: Taijin Kyofusho and DSM-III-R. *Journal of Nervous and Mental Disease, 179*(1), 19-28.

Kleinknecht, R. A., Dinnel, D. L., Kleinknecht, E. E., Hiruma, N., & Harada, N. (1997). Cultural factors in social anxiety: A comparison of social phobia symptoms and Taijin Kyofusho. *Journal of Anxiety Disorders, 11*(2), 157-177. doi: 10.1016/s0887-6185(97)00004-2

Krueger, R. F. (1999). Personality Traits in Late Adolescence Predict Mental Disorders in Early Adulthood: A Prospective-Epidemiological Study. *Journal of personality, 67*(1), 39-65.

Marteinsdottir, I., Tillfors, M., Furmark, T., Andenberg, U. M., & Ekselius, L. (2003). Personality dimensions measured by the Temperament and Character Inventory (TCI) in subjects with social phobia. *Nordic Journal of Psychiatry, 57*(1), 29-35.

Massion, A. O., Dyck, I. R., Tracie Shea, M., Phillips, K. A., Warshaw, M. G., & Keller, M. B. (2002). Personality disorders and time to remission in generalized anxiety disorder, social phobia, and panic disorder. *Archives of General Psychiatry*, *59*(5), 434-440.

Mattick, R. P., & Peters, L. (1988). Treatment of severe social phobia: Effects of guided exposure with and without cognitive restructuring. *Journal of Consulting and Clinical Psychology*, *56*(2), 251-260.

Mattick, R. P., Peters, L., & Clarke, J. C.. (1989). Exposure and cognitive restructuring for social phobia: A controlled study. *Behavior Therapy, 20*(1), 3-23.

McCrae, R. R., & Costa Jr, P. T. (1987). Validation of the Five-Factor Model of Personality Across Instruments and Observers. *Journal of Personality and Social Psychology, 52*(1), 81-90.

McCrae, R. R., & Terracciano, A. (2005). Universal features of personality traits from the observer's perspective: Data from 50 cultures. *Journal of Personality and Social Psychology, 88*(3), 547-561. doi: 10.1037/0022-3514.88.3.547

Miller, T. R. (1991). The psychotherapeutic utility of the five-factor model of personality: a clinician's experience. Journal of Personality Assessment, 57(3), 415-433.

Mutén, E. (1991). Self-reports, spouse ratings, and psychophysiological assessment in a behavioral medicine program: an application of the five-factor model. Journal of Personality Assessment, 57(3), 449-464.

Naragon-Gainey, K., Watson, D., & Markon, K. E. (2009). Differential Relations of Depression and Social Anxiety Symptoms to the Facets of Extraversion/Positive Emotionality. *Journal of Abnormal Psychology, 118*(2), 299-310.

Norton, G. R., Buhr, K., Cox, B. J., Norton, P. J., & Walker, J. R. (2000). The role of depressive versus anxiety-related cognitive factors in social anxiety. *Personality and Individual Differences, 28*(2), 309-314.

Norton, G. R., Cox, B. J., Hewitt, P. L., & McLeod, L. (1997). Personality factors associated with generalized and non-generalized social anxiety. *Personality and Individual Differences, 22*(5), 655-660.

Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin, 128*(1), 3-52.

Parker, G., Hadzi-Pavlovic, D., Brodaty, H., Boyce, P., Mitchell, P., Wilhelm, K., & Hickie, I. (1992). Predicting the course of melancholic and nonmelancholic depression. A naturalistic comparison study. *Journal of Nervous and Mental Disease, 180*(11), 693-702.

Pelissolo, A., Andre, C., Pujol, H., Yao, S. N., Servant, D., Braconnier, A., Orain-Pelissolo, S., Bouchez, S., Lepine, J. P. (2002). Personality dimensions in social phobics with or without depression. *Acta Psychiatrica Scandinavica, 105*(2), 94-103.

Rapee, R. M., Abbott, M. J. (2007). Modelling relationships between cognitive variables during and following public speaking in participants with social phobia. *Behaviour Research and* Therapy, 45(12) 2977-2989. doi:10.1016/j.brat.2007.08.008

Rapee, R. M., & Heimberg, R. G. (1997). A cognitive-behavioral model of anxiety in social phobia. *Behaviour Research and Therapy, 35*(8), 741-756.

Rapee, R. M., & Spence, S. H. (2004). The etiology of social phobia: Empirical evidence and an initial model. *Clinical Psychology Review, 24*(7), 737-767.

Safren, S. A., Heimberg, R. G., Horner, K. J., Juster, H. R., Schneier, F. R., & Liebowitz, M. R. (1999). Factor structure of social fears: The Liebowitz Social Anxiety Scale. *Journal of Anxiety Disorders, 13*(3), 253-270. doi: 10.1016/s0887-6185(99)00003-1

Seeley-Wait, E., Abbott, M., & Rapee, R. M. (2009). Psychometric Properties of the Mini-SPIN. *Primary Care Companion to the Journal of Clinical Psychiatry, 11* (5), 231-236. DOI: 10.4088/PCC.07m00576

Schneier, F. R., Johnson, J., Hornig, C. D., Liebowitz, M. R., & Weissman, M. M. (1992). Social phobia: Comorbidity and morbidity in an epidemiologic sample. *Archives of General Psychiatry, 49*(4), 282-288.

Terra, M. B., Barros, H. M. T., Stein, A. T., Figueira, I., Athayde, L. D., Goncalves, M. D. S., Tergolina, L. P., Rovani, J. S., Da Silveira, D. X. (2006). Internal consistency and factor structure of the Portuguese version of the Liebowitz Social Anxiety Scale among alcoholic patients. *Revista Brasileira de Psiquiatria, 28*(4), 265-269.

Trull, T. J., & Sher, K. J. (1994). Relationship between the five-factor model of personality and axis I disorders in a nonclinical sample. *Journal of Abnormal Psychology, 103*(2), 350-360. doi: 10.1037/0021-843x.103.2.350

Turner, S. M., Beidel, D. C., & Townsley, R. M. (1992). Social Phobia: A Comparison of Specific and Generalized Subtypes and Avoidant Personality Disorder. *Journal of Abnormal Psychology, 101*(2), 326-331. doi: 10.1037/0021-843x.101.2.326

Watson, D., Clark, L. A., & Carey, G. (1988). Positive and Negative Affectivity and Their Relation to Anxiety and Depressive Disorders. *Journal of Abnormal Psychology, 97*(3), 346-353.

Weeks, J. W., Spokas, M. E., & Heimberg, R. G. (2007). Psychometric evaluation of the mini-social phobia inventory (Mini-SPIN) in a treatment-seeking sample. *Depression and Anxiety, 24*(6), 382-391.

Woody, S. R., & Adessky, R. S. (2002). Therapeutic alliance, group cohesion, and homework compliance during cognitive-behavioral group treatment of social phobia. *Behavior Therapy, 33*(1), 5-27.

Appendix

Appendix removed from Open Access version as it may contain sensitive/confidential content.