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Social Anxiety and Introversion in College Students

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Abstract

To better understand interrelationships of social anxiety, introversion, and self-esteem, 109 college students completed the SPS, SIAS, EPQ-R-SS, and SERS. Moderator analyses indicated social anxiety and introversion were not moderated by self-esteem (p > .05). However, significant main effects indicated a strong negative relationship between social anxiety and selfesteem and a moderate positive relationship between social anxiety and introversion. Problems with multicollinearity are likely to have masked relationships among variables. Chi-square analyses with the SPS indicated significant differences between low and high self-esteem subjects in the low (;(= 6.79,p < .001) and high social anxiety groups (;(= 7.94,p < .001). With the SIAS, significant differences were found between low and high self-esteem subjects in the high (;(= 6.89,p < .001), but not the low (p > .05), social anxiety groups. Furthermore, results suggest that self-esteem may be a stronger predictor of social anxiety than introversion. Results imply that methods for prevention, assessment, diagnosis, and treatment planning for social anxiety may be improved by considering the impacts of self-esteem and introversion.

Degree Type
Dissertation

SOCIAL ANXIETY AND INTROVERSION

IN COLLEGE STUDENTS

A DISSERTATION

SUBMITTED TO THE FACULTY

OF

SCHOOL OF PROFESSIONAL PSYCHOLOGY

PACIFIC UNIVERSITY, FOREST GROVE, OREGON

BY

LISA J. MULL

IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS FOR THE DEGREE

OF

DOCTOR OF PSYCHOLOGY

JULY 24, 2006

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ABSTRACT

To better understand interrelationships of social anxiety, introversion, and self-esteem, 109 college students completed the SPS, SIAS, EPQ-R-SS, and SERS. Moderator analyses indicated social anxiety and introversion were not moderated by self-esteem ($p > .05$). However, significant main effects indicated a strong negative relationship between social anxiety and self-esteem and a moderate positive relationship between social anxiety and introversion. Problems with multicollinearity are likely to have masked relationships among variables. Chi-square analyses with the SPS indicated significant differences between low and high self-esteem subjects in the low ($\chi^2 = 6.79, p < .001$) and high social anxiety groups ($\chi^2 = 7.94, p < .001$). With the SIAS, significant differences were found between low and high self-esteem subjects in the high ($\chi^2 = 6.89, p < .001$), but not the low ($p > .05$), social anxiety groups. Furthermore, results suggest that self-esteem may be a stronger predictor of social anxiety than introversion. Results imply that methods for prevention, assessment, diagnosis, and treatment planning for social anxiety may be improved by considering the impacts of self-esteem and introversion.

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ACKNOWLEDGMENTS

I wish to express sincere appreciation to my committee chair, Dr. Paula Truax, for her invaluable mentoring throughout my doctoral studies and dissertation research. Her exceptional guidance, generous commitment of time, and unfailing support was intrinsic in the preparation and completion of this manuscript. Special thanks are due to my committee reader, Dr. Krista Brockwood, especially for her much appreciated guidance with statistical methods. It has truly been a great privilege to have had the opportunity to work with the two of them. I would like to thank all the Pacific University students who participated in this study. I also wish to acknowledge my gratitude to my family and friends, particularly my husband, Jacob Galey, my sister, Jenny Mull, and my good friend, Dena Wanner, who have patiently supported and encouraged me and who have helped me maintain proper perspective and balance in my life.

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REVIEW OF THE LITERATURE ON SOCIAL ANXIETY,

INTROVERSION, AND SELF-ESTEEM

It is estimated that about 40% of college students experience social anxiety with approximately 10% of college students experiencing clinically significant social anxiety (Bryant & Trower, 1974). College students with social anxiety face exceptional challenges because of the great deal of social interaction inherent in academic experience and potential for social, academic, and occupational distress and impairment (Bryant & Trower, 1974). Social anxiety, introversion, and low self-esteem have been reported to share close relationships (Amies, Gelder, & Shaw, 1983; Arkowitz, 1975; Bienvenu, Brown, et al., 2001; Bienvenu, Nestadt, et al., 2001; Bown & Richek, 1969; Cheek & Buss, 1981; Clark & Arkowitz, 1975; Leary, 1983; Eysenck, 1982; Norton, Cox, Hewitt, & McLeod, 1997; Tolor, 1975; Trull & Sher, 1994); however, how they interrelate is not well-established in the literature.

A better understanding of these traits may facilitate knowledge of people susceptible to social anxiety, as well as inform the development of appropriate interventions. It is hypothesized that low self-esteem moderates the relationship between social anxiety and introversion, such that an introvert with low self-esteem is more likely to experience social anxiety than an introvert with high self-esteem. To test this hypothesis, social anxiety, introversion, and self-esteem measures were administered to college students, and moderator and chi-square analyses were conducted.

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Social Anxiety

Description of Social Anxiety

Social anxiety is the essential feature of the American Psychiatric Association's

Diagnostic and Statistical Manual of Mental Disorders (*DSM-IV-TR*; APA, 2000)

diagnosis of social phobia, defined as a "marked and persistent fear of social or

performance situations in which embarrassment may occur" (p. 456). Individuals who

experience the characterized anxiety are more fearful of negative evaluations inherent in

interpersonal interactions than of social interactions or situations themselves (Liebowitz,

Gorman, Fyer, & Klein, 1985). At its core, the experience of social anxiety is a strong

desire for producing favorable impressions in others while feeling insecure about the

ability to produce such impressions (Creed & Funder, 1998; Leary, 1983; Purdon,

Antony, Monteiro, & Swinson, 2001; Schlenker & Leary, 1982).

People who experience social anxiety are often concerned that in feared situations

or environments they may be judged as anxious, 'crazy', stupid, inarticulate, or otherwise

inadequate (APA, 2000; Clark & Wells, 1995; Rapee & Heimberg, 1997). Moreover,

they often fear that in these situations or environments they may exhibit noticeable

physical symptoms of anxiety (i.e., trembling hands, shaking voice, sweating, muscle

tension, and/or blushing, etc.), which may generate or confirm such negative evaluations

(Beidel, Turner, & Dancu, 1985; Leary, 1983; Liebowitz et al., 1985; McEwan & Devins,

1983).

In addition to thinking that others may notice their physical symptoms of anxiety,

individuals who experience social anxiety also often worry that others may view them as

socially incompetent (Beidel et al., 1985). Thus, they tend to avoid feared situations or

environments or otherwise endure them with dread (Turner & Beidel, 1989).

Furthermore, they are likely to experience a great deal of distress and expend a great deal

of time and energy for impression management, interpersonal hypervigilance, social

avoidance, post-event rumination, and pre-event worry (Clark & Wells, 1995; Kashdan,

2002; Rapee & Heimberg, 1997).

Socially anxious individuals are likely to be hypersensitive to criticism, negative

evaluation, and rejection, including when such disapproval is experienced indirectly

(APA, 2000; Clark & Arkowitz, 1975; Smith & Sarason, 1975; Liebowitz et al., 1985;

Nichols, 1974). They may have poor social skills (Segrin, 1996; Segrin & Flora, 2000),

which could contribute to negative evaluations (Creed & Funder, 1998). Others may

demonstrate adequate social functioning while underestimating positive aspects and

overestimating negative aspects of their social performance (Clark & Arkowitz, 1975).

Other traits commonly seen in the socially anxious include the following: low

self-esteem, perception of others as critical and disapproving, rigid standards for

appropriate social behavior, negative anticipatory fantasizing over future feared events,

increased awareness of scrutiny by others, discomfort in situations in which leaving

unobtrusively may be difficult, and acute awareness of physiological symptoms of

anxiety (Nichols, 1974). It has not been clarified in the literature how these factors are

related to social anxiety, such as if they may be causes or consequences of the disorder

(Liebowitz et al., 1985).

Differentiating Social Anxiety and Social Phobia

Social anxiety differs from social phobia in that social anxiety in itself is fear of

social scrutiny or negative social evaluation (Hofmann & Roth, 1996), whereas social

phobia is a diagnosis comprised of a number of symptoms that co-occur with social anxiety which cause marked distress and/or functional impairment (APA, 2000). Social anxiety is thought to be a normal human trait due to the frequency with which it occurs in nonclinical samples (Craske, Rapee, Jackel, & Barlow, 1989; Hofmann & Roth, 1996).

It is estimated that social phobia occurs in about 3-13% of the general population, (APA, 2000; Kessler et al., 1994; Liebowitz et al., 1985), whereas social anxiety is estimated to occur in about 50%-60% of the general population (Hofmann & Roth, 1996; Stein et al., 1994). It is unclear whether social anxiety and social phobia occur more often in men or women, as many studies have reported slightly larger in rates in one gender or the other (Amies et al., 1983; Marks, 1970; Sanderson, Rapee, & Barlow, 1987; Schneier et al., 1992). However, it appears that social phobia is likely to occur nearly as often in men as in women. Age of onset appears to be about 15-20 years with onset after 25 years being uncommon (Amies et al., 1983; Liebowitz et al., 1985; Marks, 1970; Schneier et al., 1992).

Social anxiety is likely to occur on a continuum in the general population (Hofmann & Roth, 1996). Persons with more severe social anxiety are likely to meet diagnostic criteria for social phobia (*DSM-IV-TR*, APA, 2000; Leary & Kowalski, 1995). Beyond experiencing fear in social situations, persons diagnosed with social phobia must also recognize that the fear is excessive or unreasonable, avoid or endure with dread such situations, and experience related impairment in functioning (daily, occupational, academic, or social) and/or marked distress. Moreover, the symptoms may not be due to substance use or a medical condition and may not be better accounted for by another mental disorder.

Social phobia may be further delineated as specific or generalized. While specific and generalized social phobia share the essential feature of social anxiety, the two differ in the number of social situations in which anxiety occurs. An individual with a specific social phobia may fear embarrassment or scrutiny by others while performing one or more particular activities in public, such as eating, drinking, writing, or speaking (APA, 2000; Marks, 1970). Generalized social phobia applies to persons whose fears are related to most social situations, such as conversing with others, participating in group activities, and attending parties (APA, 2000).

Problems Associated with Social Anxiety and Social Phobia

Comorbid disorders. Social phobia has a high rate of comorbidity with many other disorders. It is estimated that 45-70% of socially phobic individuals meet criteria for other disorders (Hofmann & Roth, 1996; Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992). Disorders commonly reported to co-occur with social phobia include the following: specific phobia, agoraphobia, major depressive disorder, dysthymic disorder, obsessive-compulsive disorder, bipolar disorder, panic disorder, somatization disorder, alcohol abuse, and avoidant personality disorder (Schneier et al., 1992). It is unclear whether social phobia or other predisposing factors are responsible for the high rate of comorbidity (Liebowitz et al., 1985).

Functional impairment. Besides the fact that social phobia may cause, exacerbate, or maintain other mental health problems, social phobia is likely to disrupt one's daily functioning and quality of life (APA, 2000). People with social phobia report high rates of academic- and career-related problems, including incomplete educational attainment, lack of career advancement, inability to work (Liebowitz et al., 1985; Phillips & Bruch,

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1988; Schneier et al., 1994; Turner, Beidel, Dancu, & Keys, 1986), increased risk for financial dependency (Schneier et al., 1992), and problems with alcohol abuse (Liebowitz et al., 1985; Schneier et al., 1994).

Individuals with social anxiety often experience less satisfaction in their social relationships (Jones & Carpenter, 1986; Schneier et al., 1994). They are less likely to date (Twentyman & McFall, 1975), to have romantic or sexual encounters (Schlenker & Leary, 1982), and to be married (Amies et al., 1983; Marks, 1970; Schneier et al., 1992). In addition, individuals with social phobia have increased risk of suicidal ideation, parasuicidal behaviors, and suicide attempts (Amies et al., 1983; Schneier et al., 1992).

Social Anxiety and Social Phobia in College Students

Prevalence rates of social phobia in college students are reported to be similar to those found in the general population (Bryant & Trower, 1974). As with the general population, social anxiety can cause a number of social, romantic, occupational, financial, and substance-related problems for students, as well as academic problems (Liebowitz et al., 1985; Judd, 1994).

Considering the high prevalence, distress, and functional impairment associated with social anxiety, a better understanding of who is susceptible to social anxiety and how to best treat individuals with social anxiety is increasingly important. Because social anxiety is common in individuals with introversion, exploring this relationship may help answer these questions.

Introversion

Description of Introversion and Extraversion

Early conceptualizations of introversion and extraversion trace back to Jung (1923). Jung theorized that extraversion and introversion are personality styles which occur on a continuum and at opposite poles. Furthermore, Jung thought that individuals had a relatively global, stable, and enduring tendency toward an extraverted or an introverted personality and lifestyle. In general, he described introversion as an orientation toward inner experience, considering all things in relation to the self, and as a tendency toward introspective cognitive activity. In contrast, Jung described extraversion as an orientation toward outer experience, considering all things in relation to the external world, and as a tendency toward interaction with the environment.

In more current conceptualizations, introverts have been described as preoccupied with inner ideas and emotions (Cattell, 1969); having the tendency to withdrawal socially (Good, 1959); and shy and self-focused (Eysenck & Eysenck, 1975). Eysenck and Eysenck (1994) describe introverts as quiet, retiring, introspective, serious, studious, reserved, passive, and pessimistic. They explain further that introverts tend to have a few intimate friends, have a well-structured life style, plan ahead, seldom lose their temper, and value ethical standards.

Extraverts have been described as preoccupied with the outer world (Cattell, 1969); socially involved (DeMan & Efraim, 1988); open, sociable, and socially aggressive (Eysenck, & Eysenck, 1975); sociable and active (Bienvenu, Nestadt et al., 2001), and having a great number and more intense interpersonal interactions and positive emotions (Bienvenu, Brown, et al., 2001). Eysenck and Eysenck (1994) describe

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extraverts as outgoing, impulsive, uninhibited, and aggressive. They explain further that extraverts tend to have many social contacts, take part in group activities, enjoy social gatherings, need people to talk to, take risks, act on the spur of the moment, be active, lose their temper easily, and not be as reliable.

Eysenck and Eysenck (1969) define extraversion and introversion as an attitudinal and behavioral response to physiological processes. According to this theory, introverts typically experience higher levels of cortical arousal than extraverts. Eysenck and Eysenck suggest that humans function optimally at a moderate level of arousal. Thus, introverts seek reduction in external stimulation whereas extraverts seek increase in external stimulation, which explains why extraverts prefer novel, lively, and spontaneous experiences and introverts prefer quiet, structured, and organized experiences.

Introversion in College Students

Introversion is likely to be a difficult personality and lifestyle for students (Henjum, 2001). It has been proposed that introversion in students is seen as a maladaptive behavioral pattern, rather than as a normal personality trait. Henjum (2001) suggests that introverted students are pressured to conform to an outgoing, participative, and socially-oriented "all American" personality style.

Henjum further explains that although many positive traits have been associated with introverts, such as being self-sufficient, hard-working, introspective, sensitive, and analytical, being called an introvert may not be seen as complimentary in today's society. He purports that introverted individuals may be seen by others as lacking the sociability prized in our society, and thus, introverts may doubt their normalcy as they have

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difficulties "fitting in", as well as experience subtle rejection by peers, parents, and teachers.

Relationship between Social Anxiety and Introversion

It has been well-established in the literature that social anxiety shares a strong relationship with introversion (Amies et al., 1983; Bienvenu, Brown, et al., 2001; Bienvenu, Nestadt, et al., 2001; Eysenck, 1982; Norton et al., 1997; Trull & Sher, 1994). In fact, at times, researchers have had difficulty separating these two constructs (Morris, 1979; Patterson & Strauss, 1972). However, researchers have devoted less attention to explaining how and why social anxiety and introversion are related, such as why introverts may be more susceptible to social anxiety.

The Evolutionary Function of Social Anxiety

In order to better understand what types of individuals may be most susceptible to social anxiety, it is helpful to first consider why individuals are susceptible to social anxiety. The high rate of social anxiety in the normal population has spurred evolutionary theories to explain the function of social anxiety as a survival instinct (Aron & Aron, 1997; Baumeister & Leary, 1995; Baumeister & Tice, 1990; Deci & Ryan, 2000; Kashdan, 2002; Leary, 1990; Liebowitz et al., 1985; Schlenker & Leary, 1982).

According to evolutionary theory, humans have the instinctual need and drive to relate to and belong with others (Baumeister & Leary, 1995; Deci & Ryan, 2000; Kashdan, 2002). It is thought that this is an adaptive trait because social inclusion increases the likelihood of survival in that social groups often provide increased protection from environmental dangers (Aron & Aron, 1997; Baumeister & Leary, 1995; Baumeister & Tice, 1990; Deci & Ryan, 2000; Kashdan, 2002; Leary, 1990).

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According to this evolutionary theory, social anxiety is thought to occur in response to perceived probability of being rejected by individuals or social groups (Schlenker & Leary, 1982). Moreover, the hypersensitivity toward social situations and fear of negative interpersonal evaluation produced by social anxiety are thought to generate motivation for adequate social performance, to increase probability of group inclusion and survival (Liebowitz et al., 1985).

Introverts' Susceptibility to Social Anxiety

While social anxiety is thought to occur on a continuum in the general population, it is likely that introverts are more susceptible to the experience than extraverts. As mentioned previously, all humans are thought to possess the need for social inclusion; however introverts may be particularly susceptible to social exclusion by nature. Because introverts tend toward a more internal focus with less environmental interaction (Eysenck & Eysenck, 1969), they may view themselves and be viewed as others as lacking good social skills and healthy interpersonal functioning (Henjum, 2001).

Introverts, especially in highly social environments, such as school and some occupations, may possess a strong desire to make good impressions on others while fearing their ability to do so, which is essentially the core of social anxiety. Socially anxious persons see themselves as not being interpersonally adept, and thus they fear being socially incompetent and the associated negative social evaluation (Creed & Funder, 1998; Leary & Kowalski, 1995).

According to Templer (1971), it is not surprising that introversion and social anxiety are strongly correlated because of the nature of the introversion. Templer explains that introverts process environmental information inwardly, and thus they are

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consistently evaluating experience in relation to the self. Thus, in efforts to preserve identity and self-worth, introverts are withdrawn and cautious, and moreover, they tend toward being anxious.

While researchers have demonstrated a strong relationship between social anxiety and introversion (Amies et al., 1983; Bienvenu, Brown, et al., 2001; Bienvenu, Nestadt, et al., 2001; Eysenck, 1982; Norton et al., 1997; Trull & Sher, 1994), this is not a one-to-one relationship. In other words, not all introverts experience social anxiety. Why some introverts experience social anxiety and others do not is not clear in the literature. Because low self-esteem is closely related to both social anxiety (Cheek & Buss, 1981; Clark & Arkowitz, 1975; Leary, 1983) and introversion (Bown & Richek, 1969; Tolor, 1975) and because low self-esteem is a strong predictor of mental health problems and one of the strongest predictors of anxiety (Battle, Jarratt, Smit, & Precht, 1988; Leary, Schreindorfer, & Haupt, 1995; Rawson, 1992) exploring how these constructs interrelate may help answer this question.

<div align="center">Self-Esteem</div>

Description of Self-Esteem

Self-esteem is one's perception of his or her worth (Ziller, Hagey, Smith, & Long, 1969). The appraisal of self-esteem is largely interpersonally based, such that the individual uses comparisons of himself or herself with others to determine personal value (Festinger, 1954).

The Evolutionary Function of Self-Esteem

Leary, Tambor, Terdal, and Downs (1995) proposed an interpersonal model of self-esteem, *the sociometer model*, explaining that self-esteem serves an important

evolutionary function in human beings, indicating the degree to which one is socially included and accepted (see also Leary, 2004; Leary, 2003; Leary & Baumeister, 2000; Leary & Downs, 1995; Leary, Haupt, Strausser, & Chokel, 1998; Leary, Shreindorfer, & Haupt, 1995). According to this theory, individuals are intrinsically motivated toward social inclusion for survival, and self-esteem exists as a monitor of others' reactions toward the individual. When self-esteem is low, individuals are alerted that their behaviors are undesirable to others. Thus, low self-esteem is an aversive experience that motivates individuals to improve their behaviors in order to increase the likelihood of being socially accepted.

Bridging Theories of Social Anxiety and Self-Esteem

The model proposed by Leary et al. (1995) is quite similar to the previously mentioned theory regarding the evolutionary basis of social anxiety (Aron & Aron, 1997; Baumeister & Leary, 1995; Baumeister & Tice, 1990; Deci & Ryan, 2000; Kashdan, 2002; Leary, 1990; Liebowitz et al., 1985; Schlenker & Leary, 1982). Putting these theories together, the possible evolutionary link between self-esteem and social anxiety becomes apparent. Accordingly, human beings are motivated to be included and accepted in social groups as means of survival, and they experience an aversive reaction (i.e., low self-esteem) when they are excluded and rejected (Leary & Downs, 1995). Such an aversive reaction is distressing, and thus, individuals become fearful of negative social evaluations which cause the painful experiences, and they become hypervigilant to social interactions which cause the negative social evaluations (i.e., social anxiety; Aron & Aron, 1997; Baumeister & Leary, 1995; Baumeister & Tice, 1990; Deci & Ryan, 2000; Kashdan, 2002; Leary, 1990; Liebowitz et al., 1985; Schlenker & Leary, 1982).

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In the past, some researchers have reported that people with social anxiety have exceptionally high standards for their social performance, and thus, continually fail to meet their goals (Rehm, 1977; Schlenker & Leary, 1982). However, more recently, it has been argued that socially anxious individuals do not hold higher expectations for themselves than non-socially anxious individuals, they merely do not expect to meet their expectations (Doerfloer & Aron, 1995; Kocovski & Endler, 2000; Wallace & Alden, 1991). Thus, their negative evaluations of themselves, as unable to meet their social expectations, are thought to produce or be a product of low self-esteem and perpetuate experiences of social anxiety (Leary & Kowalski, 1995; Kocovski & Endler, 2000).

While these models help to explain how and why social anxiety and self-esteem are related, they do not explain how and why some individuals are particularly prone to social anxiety or low self-esteem. They also do not explain how and why introversion is strongly related to both of these constructs.

The Role of Self-Esteem in Social Anxiety and Introversion

According to Morris (1979), when introverts experience adjustment problems, they are typically anxiety-related; however, the relationship between introversion and anxiety may be made clearer by investigating the variables associated with anxiety, such as low self-esteem, rather than trying to understand the relationship directly.

Social anxiety and introversion are both related to many constructs, including shyness (Briggs, 1988; Crozier, 1982; Heiser, Turner, & Beidel, 2003; Zimbardo, 1977), self-consciousness (Abrams, 1988; Franzoi, 1983), communication (Chambless, Hunter, & Jackson, 1982; McCroskey & Richmond, 1990; Richmond, McCroskey, & McCroskey, 1989), social withdrawal (Good, 1959; Eysenck & Eysenck, 1975; Judd,

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1994), loneliness (Anderson & Harvey, 1988; Leary, 1990), sociability (Schmidt & Fox, 1995), social skills (Meares, 1958; Segrin, 1996; Segrin & Flora, 2000), and self-esteem (Bown & Richek, 1969; Cheek & Buss, 1981; Clark & Arkowitz, 1975; Leary, 1983; Tolor, 1975). Researchers have demonstrated that self-esteem has a negative correlation to both social anxiety (Cheek & Buss, 1981; Clark & Arkowitz, 1975; Leary, 1983) and introversion (Bown & Richek, 1969; Tolor, 1975) and that low self-esteem is a strong predictor of mental health problems (Leary, Schreindorfer, & Haupt, 1995). However, how social anxiety, introversion, and self-esteem interrelate is unclear.

Low self-esteem is thought to influence an individual's experience of social anxiety through negative self-evaluation (Clark & Arkowitz, 1975; Creed & Funder, 1998). Introverts may tend toward evaluating themselves negatively for a variety of reasons, such as because they may not possess the social traits that are highly valued in our culture (Henjum, 2001; Meares, 1958; Templer, 1971), they may be easily rejected by others due to their low sociability (Henjum, 2001), and their efforts to succeed may be thwarted by their social difficulties (Meares, 1958). According to Leary (1990), persons with low self-esteem are more likely to experience fears of social exclusion, and as a result, they may be prone to anxiety and loneliness. Thus, introverts may be susceptible to low self-esteem, as well as to social anxiety.

Introverts with low self-esteem may be exceptionally prone to social anxiety because of their low sociability. Sociability and extraversion are often regarded as desirable traits in our culture (Henjum, 2001; Meares, 1958; Templer, 1971). Thus, introverts are often aware that their personality style is not valued, as well as of the social difficulties that they experience as introverts (Meares, 1958). Introverts may make valiant

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attempts to be better adjusted, more socially involved, and more extraverted (Meares, 1958). However, because extraverted attitudes and behaviors are incongruent with introverts' genuine orientation and preferences, they are likely to fail. In response, they may experience low self-esteem because they are not deemed socially desirable in their culture, as well as because they are unable to correct for this failure. Thus, the combination of introversion and low self-esteem may lead to experiences of social anxiety, such that with their repeated failures and experiences of social rejection, individuals may fear being evaluated negatively in social situations and develop hypersensitivity to their social performance.

Possible Implications

Persons Vulnerable to Social Anxiety

If introverted persons are susceptible to social anxiety, such information may be important for assessment, diagnosis, and treatment. Clinicians may wish to use personality assessment instruments with socially anxious clients, as well as social anxiety inventories with introverted clients. Appropriate assessment and diagnosis of social anxiety is likely to be influential to the course and success of treatment.

Appropriate Treatment Interventions

Improving self-esteem in introverts may be important for decreasing experiences of social anxiety. Therapeutic techniques may be focused toward goals for improving interpersonal functioning and acceptance. Goals therapists may want to consider include the following: decreasing the likelihood of rejection (i.e., by improving interpersonal skills through skills training), decreasing the fear of rejection (i.e., by using cognitive restructuring to challenge maladaptive thought patterns and a positive therapeutic

relationship as a positive interpersonal model), and increasing the ability to manage aversive reactions in social situations (i.e., by improving ability to cope through skills training of self-soothing behaviors and positive self-statements), and increasing overall self-esteem (i.e., by building and focusing on competencies and strengths and developing a positive therapeutic alliance).

Summary

In sum, while social anxiety and introversion are strongly correlated (Amies et al., 1983; Bienvenu, Brown, et al., 2001; Bienvenu, Nestadt, et al., 2001; Eysenck, 1982; Norton et al., 1997; Trull & Sher, 1994), not all introverts experience social anxiety. It is possible that low self-esteem mediates this relationship, as it is a trait that is closely related to both social anxiety (Cheek & Buss, 1981; Clark & Arkowitz, 1975; Leary, 1983) and introversion (Bown & Richek, 1969; Tolor, 1975) and because low self-esteem is a strong predictor of anxiety (Battle, Jarratt, Smit, & Precht, 1988; Leary, Schreindorfer, & Haupt, 1995; Rawson, 1992). Exploring how these constructs interrelate may help answer this question. College students with social anxiety face exceptional challenges because of the great deal of social interaction inherent in academic experience and potential for social, academic, and occupational distress and impairment (Bryant & Trower, 1974), and thus, a better understanding of these traits may facilitate knowledge of persons susceptible to social anxiety, as well as inform the development of appropriate interventions.

Hypotheses

It is hypothesized that self-esteem moderates the relationship between introversion and social anxiety, such that the following are true: (a) introverts will be

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more likely to have high social anxiety and low self-esteem than extraverts and (b) introverts with low self-esteem will be more likely to have high social anxiety than introverts with high self-esteem, extraverts with low self-esteem, and extraverts with high self-esteem.

METHODS

Participants

A total of 107 college students (45 males and 62 females) participated in the study. Approximately 74% of participants identified themselves as Caucasian, 8% as Pacific Islander, 7% as Asian, 6% as Hispanic, 1% as African American, and 4% as multiethnic or other ethnic minority. Participants ranged in age from 18 to 27 years ($M = 19.11$, $SD = 1.70$). Approximately 48% of participants were first-year undergraduates, 30% were second-year undergraduates, 10% were third-year undergraduates, 8% were fourth-year undergraduates, and 4% were graduate students.

Instruments

Participants completed four standardized self-report measures and a basic demographics questionnaire. The Social Phobia Scale (SPS; Mattick & Clarke, 1989) and the Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1989) were used to assess social anxiety, the Eysenck Personality Questionnaire-Revised-Short Scale (EPQ-R-SS; Eysenck & Eysenck, 1994) was used to assess introversion, and the Self-Esteem Rating Scale (SERS; Nugent & Thomas, 1993) was used to assess self-esteem. In addition, a basic questionnaire was used to gather participants' demographic information (i.e., gender, age, education, and ethnicity). Psychometric properties for each scale are described below.

Social Phobia Scale (SPS) and Social Interaction Anxiety Scale (SIAS). The SPS (see Appendix A) and the SIAS (see Appendix B) were developed as companion measures by Mattick and Clarke (1989). While the initial norming data and psychometric properties of these scales were not published by the authors, a summary of the development of these scales was later published by Heimburg, Mueller, Holt, Hope, and Liebowitz (1992).

The SPS was designed to assess one's fear of being observed and scrutinized by others while engaging in routine behaviors (e.g., public speaking, eating, or writing); whereas, the SIAS was designed to assess one's general fear of engaging with others (e.g., initiating and maintaining conversations). In other words, the SPS more strongly captures performance anxiety, whereas the SIAS more strongly captures interaction anxiety. The SPS and the SIAS are both 20-item measures with each item rated on a 5-point Likert scale. For each item, the participant indicates the extent to which each statement is characteristic of him or her from 0 (not at all) to 5 (extremely).

For each measure, total scores range from 0 to 80, with higher scores depicting higher social anxiety. On the SPS, Heimberg et al. (1992) reported mean scores for the community sample of 12.5 (*SD*= 11.5) and mean scores of 32.8 (*SD*= 14.8) for a socially phobic sample. The mean score for the SIAS in the community sample was 19.9 (*SD*= 14.2), and in the socially phobic sample, the mean score was 49.0 (*SD*=15.6).

Both the SPS and the SIAS have been demonstrated to have good psychometric properties. Internal consistency has been shown to range from .85 to .94 for the SPS and .87 to .93 for the SIAS (Heimberg et al., 1992; Mattick & Clarke, 1989). For the current study, Cronbach alphas for the SPS and the SIAS were also good (0.89 and 0.90,

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respectively). For both scales, test-retest correlations coefficients exceeded 0.90 for one and three-month intervals. Mattick and Clarke (1989) found good concurrent validity for both scales with positive correlations with the Fear of Negative Evaluation Scale (Watson & Friend, 1969), The Social Avoidance and Distress Scale (Watson & Friend, 1969), the social phobia subscale of the Fear Questionnaire (Marks & Matthews, 1979), the Interaction Anxiousness Scale (Leary, 1983), and the Audience Anxiousness Scale (Leary, 1983).

Heimberg et al. (1992) reported good convergent and divergent validity for the SPS and the SIAS. They explained that the SPS was more strongly correlated with the performance subscale of the Liebowitz Social Phobia Scale (Liebowitz, 1987) and the social phobia subscale of the Fear Questionnaire (Marks & Matthews, 1979), both measures of performance fears, whereas the SIAS was more strongly correlated to the Social Avoidance and Distress Scale (Watson & Friend, 1969) and the social interaction subscale of the Liebowitz Social Phobia Scale (Liebowitz, 1987), both measures of social interaction anxiety.

Eysenck Personality Questionnaire-Revised-Short Scale (EPQ-R-SS). The EPQ-R-SS (Eysenck & Eysenck, 1994) is a brief questionnaire used to assess the major dimensions of personality (see Appendix C). The EPQ-R-SS is made up of 4 scales: the Extraversion Scale, the Neuroticism Scale, the Psychoticism Scale, and the Lie Scale. The Extraversion Scale is thought to measure sociability on a continuum with extraverts at the high end (i.e., social, enjoy gatherings, have many friends, and need people to talk to) and introverts at the low end (i.e., quiet, reserved, enjoys solitary pursuits, and keep all but intimate friends at a distance). The Neuroticism Scale is indicative of emotionality

and reactivity with those scoring at the high end being more anxious, emotionally labile, and overreactive and those at the low end being more calm, even-tempered, and easygoing. The Psychoticism Scale is designed to measure tough-mindedness. Persons scoring high in psychoticism are likely to be cruel, inhumane, and socially indifferent while those low in psychoticism may lack such traits. The Lie Scale was introduced in order to measure the tendency to "fake good" in test response style. Thus, high scores on the Lie Scale are thought to be indicative of present one's self as free of common failings.

Items are scored 0 or 1 in corresponding scales based on yes or no responses. The maximum score for each scale matches the total numbers of items in that scale. There are 12 items in the Extraversion Scale, 12 items in the Neuroticism Scale, 17 items in the Psychoticism Scale, and 16 items in the Lie Scale. Each scale total is tallied for comparison to the gender-based norm means and standard deviations.

In the norming sample, males scored significantly, at $p = .001$, higher than females on the Psychoticism Scale (males: $M = 2.84$, $SD = 2.17$; females: $M = 2.09$, $SD = 1.87$) and lower than females on the Neuroticism Scale (males: $M = 4.66$, $SD = 3.44$; females: $M = 6.70$, $SD = 3.36$) and the Lie Scale (males: $M = 4.35$, $SD = 3.02$; females: $M = 5.29$, $SD = 3.18$; Eysenck & Eysenck, 1994). There were no significant gender differences on the Extraversion Scale (males: $M = 7.90$, $SD = 3.30$; females: $M = 8.08$, $SD = 3.31$; Eysenck & Eysenck, 1994).

Eysenck and Eysenck (1994) found that alpha coefficients for the four scales of the EPQ-R-SS were similar for males (Extraversion: 0.84, Neuroticism: 0.84, Psychoticism: 0.59, and Lie: 0.74) and females (Extraversion: 0.84, Neuroticism: 0.83, Psychoticism: 0.57, and Lie: 0.74). These scores demonstrate acceptable internal

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consistency for all scales except the Psychoticism Scale, which appears relatively low. Similar findings were demonstrated in other studies (Caruso, Witzkiwitz, Belcourt-Dittloff, & Gottlier, 2001; Ortet, Ibanez, Moro, Silva, & Boyle, 1999).

Eysenck and Eysenck (1994) report one-month test-retest reliabilities for the EPQ-R scales as good with the exception of the Psychoticism Scale, which demonstrates less consistency (Extraversion: 0.92, Neuroticism: 0.89, Psychoticism: 0.71, Lie: 0.83). Good factorial validity is reported, again, with the Psychoticism Scale being the weak factor. Further psychometric properties of the EPQ-R have not been provided by the authors, and few studies have been conducted to demonstrate the reliability and validity of the measure.

The EPQ-R-SS was developed from its parent scale, the EPQ-R (Eysenck & Eysenck, 1994). The EPQ-R was condensed to create the EPQ-R-SS, containing 57 of the 94 items and made up of the same subscales. Because the short and long versions of the measure are highly correlated and identical for males and females (Extraversion: 0.95, Neuroticism: 0.94, Psychoticism: 0.89, Lie: 0.96) psychometric properties appear comparable. Further, the alpha coefficients for the current study (Extraversion: 0.87, Neuroticism: 0.81, Psychoticism: 0.66, and Lie: 0.75) provide additional evidence that the EPQ-R-SS is comparable to the longer EPQ-R on all but the Psychoticism scale.

Self-Esteem Rating Scale (SERS). The SERS (see Appendix D) was developed by Nugent and Thomas and published in 1993. The scale was designed to measure self-evaluation in order to indicate problematic, as well as non-problematic and positive levels of self-esteem. The SERS is a 40-item instrument with each item scoring 1 (never) to 7 (total), depending on the extent to which the statement applies to the examinee, with a

total score ranging from -120 to 120. Higher self-esteem is indicated by positive scores while lower self-esteem is indicated by negative scores.

Relatively good psychometric properties are reported for the SERS (Nugent & Thomas, 1993). The SERS has good internal consistency with an alpha coefficient of .97. The Cronbach alpha for the current study was also good at 0.96. Good content and factorial validity are also reported. Significant correlations of the SERS to the Index of Self-Esteem (Hudson, 1982) and the Generalized Contentment Scale (Hudson, 1982) have demonstrated good construct validity.

Procedures

Participants were recruited from a small Northwestern university. Each participant received an instant lottery ticket for participation; additionally, if professors offered it, some participants received extra course credit for participation. The procedures of the study were explained to participants, and written consent was obtained (Appendix E). All participants consenting to participate were administered questionnaires on one occasion for approximately 30-40 minutes. Assessments took place in a group setting in university buildings. For the current study, the SPS, SIAS, the Extraversion subscale of the EPQ-R-SS, and the SERS were used in analyses.

RESULTS

Means, standard deviations, and Pearson correlations among scales are presented

in Table 1. All means and standard deviations were similar to those established in scale

norms with community samples (Eysenck & Eysenck, 1994; Mattick & Clarke, 1989;

Nugent & Thomas, 1993). All intercorrelations between scales were statistically

significant at $p < .001$.

Table 1
Means, Standard Deviations, and Pearson Correlations among Scales in the Study

Scale	M	SD	1	2	3	4
1. SPS	15.09	10.12	--	0.71**	-0.35**	-0.52**
2. SIAS	22.36	12.25	--	--	-0.60**	-0.73**
3. Extraversion[a]	8.14	3.52	--	--	--	0.55**
4. SERS	42.59	35.51	--	--	--	--

Note. $N = 107$. SPS = Social Phobia Scale, SIAS = Social Interaction Anxiety Scale,
SERS = Self Esteem Rating Scale.
[a] Extraversion is a subscale of EPQ-R-SS
** $p < .001$.

Scale data were checked for normality, which is a critical assumption of

parametric analyses. Results indicated skewed frequencies among all scales except the

SERS. Because means and standard deviations were similar to those of scale norms with

community samples (Eysenck & Eysenck, 1994; Mattick & Clarke, 1989; Nugent &

Thomas, 1993), it was decided to continue with original plan to complete moderator

analyses. However, it is noted that using caution is imperative in interpreting these analyses.

To compensate for the limitations in interpretations of the moderator analyses, nonparametric chi-square analyses were also performed. These analyses allow categorical representation of data, and thus, do not assume normal distribution of scales. For these analyses data were converted from continuous to categorical using a median split, and the following assumptions were tested as part of the moderator hypothesis: (a) introverts are more likely to have high social anxiety and low self-esteem than extraverts and (b) introverts with low self-esteem are more likely to have high social anxiety than introverts with high self-esteem, extraverts with low self-esteem, and extraverts with high self-esteem.

First, to test the hypothesis that self-esteem moderates the link between introversion (IV) and social anxiety (DV), procedures for establishing moderators through hierarchical multiple regression were used. These analyses were completed individually for the two social anxiety measures (i.e., SPS and SIAS). In each of these analyses, the independent variable was entered (i.e., extraversion) in Step 1, the main effects were added (i.e., extraversion and self-esteem) in Step 2, and the interaction term was created and added (i.e., extraversion X self-esteem) in Step 3. The amount of variance accounted for (R^2) was examined at each step for statistical significance. If the interaction term at Step 3 was statistically significant, the interaction was interpreted.

The results of the moderator analyses for the SPS are presented in Table 2 and for the SIAS in Table 3. As shown in Table 2, significant main effects for the SPS occurred in Step 1 for extraversion ($R^2 = .13, p < .001$) and in Step 2 for extraversion and self-

esteem ($R^2 = .28$, R^2 Change $= .15$, $p < .001$). However, in Step 3, interaction effects were not significant at $p > .05$. Similarly, as shown in Table 3, in analyses with the SIAS, significant main effects were indicated in Step 1 for extraversion ($R^2 = .36$, $p < .001$) and in Step 2 for extraversion and self-esteem ($R^2 = .58$, R^2 Change $= .23$, $p < .001$). Again, in Step 3, interaction effects were not significant at $p > .05$. Thus, the hypothesis that self-esteem moderates the relationship between introversion and social anxiety was not supported.

Table 2
Moderating Effect of Self-Esteem on the Relationship between Extraversion and Social Phobia Scale

Step and Variables	B	β	R^2	R^2 Change
Step 1				
Extraversion	-1.02	-.35**	.13	.13**
Step 2				
Extraversion	-.27	-.09	.28	.15**
Self-Esteem	-.13	-.47**		
Step 3	-.25	-.09	.28	.00
Extraversion	-.13	-.45		
Self-Esteem	.00	-.02		
Extraversion X Self-Esteem				

Note. $N = 107$. Adj. = Adjusted.
** $p < .001$.

Table 3

Moderating Effect of Self-Esteem on the Relationship between Extraversion and Social Interaction Anxiety Scale

Step and Variables	B	β	R^2	R^2 Change
Step 1				
Extraversion	-2.08	-.60**	.36	.36**
Step 2				
Extraversion	-.97	-.28**	.58	.23**
Self-Esteem	-.20	-.57**		
Step 3				
Extraversion	-1.00	-.29*	.58	.00
Self-Esteem	-.21	-.59**		
Extraversion X Self-Esteem	.00	.03		

Note. $N = 107$. Adj. = Adjusted.

* $p < .01$. ** $p < .001$.

It is noteworthy that there were some differences in results of the SPS and the SIAS in terms of the amount of variance the variables accounted for and significance of these amounts at each step. For the SPS, extraversion accounted for a significant amount of variance ($\beta = -.35$, $p < .001$) in Step 1; however, when self-esteem was added into the analyses in Step 2, self-esteem accounted for a significant amount of variance ($\beta = -.47$, $p < .001$) and extraversion did not account for a significant amount of variance at $p > .05$. This indicates that after accounting for the variance of self-esteem in social anxiety, extraversion did further contribute a significant amount of unique variance. Furthermore, when extraversion, self-esteem, and the interaction variable were entered in the analyses in Step 3, none of these three variables accounted for a significant amount of variance at $p > .05$. This indicates that none of the three variables, when considered together,

accounted for a significant amount of unique variance. Considering these results and the significant intercorrelations among scales (see Table 1), the effects of multicollinearity may be masking the relationships among these variables.

For the SIAS, extraversion accounted for a significant amount of variance in Step 1 ($\beta = -.60$, $p < .001$), and when self-esteem was added into the analyses in Step 2, both self-esteem and extraversion accounted for a significant amount of variance ($\beta = -.28$, $p < .001$ and $\beta = -.57$, $p < .001$, respectively). In Step 3, although the interaction variable did not account for a significant amount of variance at $p > .05$, extraversion and self-esteem continued to account for a significant amount of variance ($\beta = -.29$, $p < .01$ and $\beta = -.59$, $p < .001$, respectively). Multicollinearity appears to have been less of a problem in analyses with the SIAS than with the SPS.

Second, chi-square analyses were completed due to the concern about the violation of the assumption of normality. To complete these analyses, variables were converted from continuous to categorical. Thus, participants were divided into dichotomous groups for each of the three variables (introverts versus extraverts, low self-esteem versus high self-esteem, and low social anxiety versus high social anxiety) using median splits. Again, chi-square analyses were used to determine if introverts were more likely than extraverts to have high social anxiety and if introverts with low self-esteem were more likely to have high social anxiety than introverts with high self-esteem, extraverts with low self-esteem, and extraverts with high self-esteem.

Results of the chi-square analyses with the SPS are presented in Table 4. With the SPS, significant differences were found between the participants with low self-esteem and high self-esteem in both the low social anxiety ($\chi^2 = 6.79$, $p < .01$) and the high social

anxiety groups ($\chi^2 = 7.94$, $p < .01$). Within the introvert group ($n = 57$), 59.6% had high social anxiety and 70.2% had low self-esteem, whereas within the extravert group ($n = 50$), 36.0% had high social anxiety and 28.0% had low self-esteem. In addition, of introverts with low self-esteem ($n = 40$), 70.0% had high social anxiety, whereas of introverts with high self-esteem ($n = 17$), 35.3% had high social anxiety, of extraverts with low self-esteem ($n = 14$), 57.1% had high social anxiety, and of extraverts with high self-esteem ($n = 36$), 27.8% had high social anxiety. These prevalence rates are consistent with the assumptions of the moderator hypothesis.

Table 4

Relationship of the Social Phobia Scale to Introversion-Extraversion and Self-Esteem

		N	Introverts n (%)	Extraverts n (%)	χ^2
Low Social Anxiety		55	23	32	6.79*
	Low Self-Esteem	18	12 (21.8%)	6 (10.9%)	
	High Self-Esteem	37	11 (20.0%)	26 (47.3%)	
High Social Anxiety		52	34	18	7.94*
	Low Self-Esteem	36	28 (53.8%)	8 (15.4%)	
	High Self-Esteem	16	6 (11.5%)	10 (19.2%)	

Note. $N = 107$. p is based on one-tailed tests.
* $p < .01$.

Results of the chi-square analyses with the SIAS are presented in Table 5. With the SIAS, significant differences were found between the participants with low self-esteem and high self-esteem in the high social anxiety group ($\chi^2 = 6.89$, $p < .01$) but not in the low social anxiety group ($p > .05$). However, other findings were similar to those

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found in the SPS analyses. Within the introvert group ($n = 57$), 66.7% had high social

anxiety and 70.2% had low self-esteem, whereas within the extravert group ($n = 50$),

28.0% had high social anxiety and 28.0% had low self-esteem. In addition, for introverts

with low self-esteem ($n = 40$), 85.0% had high social anxiety, whereas for introverts with

high self-esteem ($n = 17$), 23.5% had high social anxiety, for extraverts with low self-

esteem ($n = 14$), 57.1% had high social anxiety, and for extraverts with high self-esteem

($n = 36$), 16.7% had high social anxiety. Again, these prevalence rates are consistent with

assumptions of the moderator hypothesis.

Table 5

Relationship of the Social Interaction Anxiety Scale to Introversion-Extraversion and
Self-Esteem

		N	Introverts n (%)	Extraverts n (%)	χ^2
Low Social Anxiety		55	19	36	1.62
	Low Self-Esteem	12	6 (10.9%)	6 (10.9%)	
	High Self-Esteem	43	13 (23.6%)	30 (54.5%)	
High Social Anxiety		52	38	14	6.89*
	Low Self-Esteem	42	34 (65.4%)	8 (15.4%)	
	High Self-Esteem	10	4 (7.7%)	6 (11.5%)	

Note. $N = 107$. p is based on one-tailed test.
* $p < .01$.

DISCUSSION

The chief aim of this study was to better understand how introversion, social anxiety, and self-esteem are interrelated. It was hypothesized that self-esteem acted as a moderator between introversion and social anxiety. It was further theorized that introverts would be more likely to have higher social anxiety and lower self-esteem than extraverts and that introverts with low self-esteem would be more likely to have high social anxiety than introverts with high self-esteem, extraverts with low self-esteem, and extraverts with high self-esteem.

To test theses hypotheses, moderator analyses and chi-square analyses were completed. Moderator analyses with the SPS and with the SIAS did not demonstrate a significant moderator effect for self-esteem. Thus, the hypothesis that self-esteem moderates the relationship between social anxiety and introversion was not supported. However, significant main effects with the SPS and SIAS indicated a strong negative relationship between social anxiety and self-esteem and a moderate positive relationship between social anxiety and introversion. It is important to note that problems with multicollinearity appear to have masked the relationships among these variables.

Results of chi-square analyses with the SPS and with the SIAS were somewhat different. In chi-square analyses with the SPS, results indicated significant differences between participants with low self-esteem and participants with high self-esteem in both the low social anxiety and the high social anxiety groups. Whereas in chi-square analyses

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with the SIAS, results indicated significant differences between participants with low self-esteem and participants with high self-esteem in the high social anxiety group but not in the low social anxiety group. These results suggest that that individuals low in interactional-type social anxiety (the SIAS is a stronger measure of interactional social anxiety whereas the SPS is a stronger measure of performance anxiety) are just as likely to have low self-esteem as to have high self-esteem and just as likely to be introverted as to be extraverted.

Prevalence rates in chi-square analyses with the SPS and with the SIAS were consistent with hypotheses. Introverts were more likely to fall in the high social anxiety and low self-esteem group than extraverts. In addition, introverts with low self-esteem were more likely to fall in the high social anxiety group than introverts with high self-esteem, extraverts with low self-esteem, and extraverts with high self-esteem. Furthermore, results suggest that self-esteem may be a stronger predictor of social anxiety than introversion.

Results of the current study are consistent with previous research with these variables. Previous studies have also indicated that social anxiety, introversion, and low self-esteem are closely related variables (Amies, Gelder, & Shaw, 1983; Arkowitz, 1975; Bienvenu, Brown, et al., 2001; Bienvenu, Nestadt, et al., 2001; Bown & Richek, 1969; Cheek & Buss, 1981; Clark & Arkowitz, 1975; Leary, 1983; Eysenck, 1982; Norton, Cox, Hewitt, & McLeod, 1997; Tolor, 1975; Trull & Sher, 1994). Also consistent with previous research is the finding that introverts often have social anxiety (Amies et al., 1983; Bienvenu, Brown, et al., 2001; Bienvenu, Nestadt, et al., 2001; Eysenck, 1982;

Norton et al., 1997; Trull & Sher, 1994), and people with social anxiety also often have low self-esteem (Cheek & Buss, 1981; Clark & Arkowitz, 1975; Leary, 1983).

In sum, previous research has demonstrated that introverts may be susceptible to social anxiety and people with low self-esteem may be susceptible to social anxiety, but what previous research had not addressed was the interaction of introversion and self-esteem interact on social anxiety. The current study has aided in clarifying this relationship and has confirmed the hypothesis that introverts with low self-esteem are more susceptible to social anxiety than introverts with high self-esteem, extraverts with low self-esteem, and extraverts with high-self esteem. Thus, it is suggested that the interaction of introversion and self-esteem heightens one's vulnerability to developing social anxiety or introversion and social anxiety heightens one's vulnerability to developing low self-esteem.

Implications

Study findings have many important clinical implications. First, because social anxiety and introversion are such highly related constructs, clinicians may want to use assessment tools, such as the EPQ-R, SPS, and/or SIAS to clarify diagnosis and to foster treatment planning. For example, should a clinician find the client is troubled by introversion and not by social anxiety, the treatment plan may be more personality oriented, involving strengthening the client's extraverted qualities, accepting introverted nature, building interpersonal skills, and improving the client's ability to manage relational frustrations for more effective interpersonal functioning.

On the other hand, should a clinician find the client is troubled by social anxiety and not by introversion, the treatment plan may be more anxiety oriented, involving

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behavioral exposure to a fear hierarchy, cognitive restructuring of maladaptive thoughts, and skills training for relaxation for more effective anxiety management. Moreover, should the client experience difficulties with both introversion and social anxiety, the clinician may wish to combine such treatment approaches. Thus, appropriate assessment, diagnosis, and treatment of individuals with introversion and/or social anxiety are likely to be influential to the course and success of treatment.

Beyond teasing apart the client's experiences of social anxiety and introversion, the clinician may also wish to assess the client's self-esteem, not only for diagnosis and treatment planning, but also as a preventative measure. For example, should the client demonstrate introversion and social anxiety, he or she may be susceptible to experiences of low self-esteem. Similarly, should the client demonstrate introversion and low self-esteem, he or she may be susceptible to experiences of social anxiety. With this in mind, the clinician may wish to incorporate such possibilities in continual assessment of the client and in treatment planning.

Limitations

Sample. There are several limitations to consider with this study. First, the sample was relatively small (109 people), focused (i.e., may over-represent moderate-high SES), and selected at convenience (i.e., not randomly). This small sample may have sufficiently reduced power to obscure possible significant effects. In addition, results from this college population may not be generalizable to most college populations, to clinical populations, and/or the general population. Thus, it is important to note that caution must be used in making inferences about study results with differing populations.

Measures. Use of a single social anxiety measure, rather than use of the SPS and the SIAS, may have brought more clarity to interpretation of results. In addition, as demonstrated with Pearson correlations in Table 1, there was significant intercorrelation among scales, suggesting that the scales tended to measure the same construct, contributing to problems with multicollinearity. Furthermore, all measures used in this study were self-report. It is possible that individuals are poor self-reporters of personality styles, self-esteem, and social anxiety (i.e., lack insight, wish to report self in favorable light, or exaggerate qualities, etc). Such information is important for determining the extent to which the instruments employed are adequately measuring the appropriate constructs.

Procedures. It is important to consider that individuals must voluntarily agree to participate in the study. Thus, it is possible that individuals who are more extraverted and less socially anxious will self-select to participate in the study whereas individuals who are more introverted and more socially anxious will be uninterested in or fearful of participation in research. However, because the procedures used in the study (i.e., completing questionnaires) involved minimal social interaction, this may or may not have posed a problem to adequate representation of introverted and socially anxious individuals.

Analyses. While distributions for the measures were similar to those reported in norming data, distributions for all measures, except the SERS, were skewed. Because these distributions were skewed, the assumption of normal distribution necessary for valid moderator analyses was violated. Moderator analyses were completed with consideration of the caution that would be heeded in interpretation of results. To

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compensate for this limitation, data was made categorical using a median split and chi-square analyses were also completed. However, it is important to note that variability is lost in converting data from continuous to categorical for non-parametric analyses, which are thus, less meaningful. Further, the median splits do not represent clinically meaningful cut-off scores (i.e., separating those who are likely to meet criteria for a diagnosis vs. those who are not). Thus, these categorizations may not directly correspond to clinical populations.

Variables. As mentioned previously, introversion, social anxiety, and self-esteem are highly intercorrelated constructs. Multicollinearity among variables is likely to have masked interrelationships. Moreover, these constructs are highly interrelated with many other constructs, including shyness, self-consciousness, communication, social withdrawal, loneliness, sociability, and social skills. It is possible that one or more of these or other constructs may act as confounding variables in studying the relationships among introversion, social anxiety, and self-esteem. For example, it is possible that introverts are prone to shyness, which leads to self-consciousness, social anxiety, and poor self-esteem, which leads to social withdrawal and loneliness. Thus, it is important to consider the extent to which internal validity may be limited by the extent to which introversion, social anxiety, and self-esteem overlap with many other variables, which were not assessed in this study.

Future Research Directions

In future research, mentioned limitations with the sample, measures, procedures, analyses, and variables could be corrected to produce more internally and externally valid results. The sample could be larger, more representative of most college populations (i.e.,

geographic location and SES), and randomly selected. This study could also be completed with a clinical sample or a sample representative of the general population. Measures could be improved by including a semi-structured interview, such as the Liebowitz Social Phobia Scale (Liebowitz, 1987) with the self-report measures. In addition, to clarify interpretation of results, one, instead of two, social anxiety measures could have been used, such as the Interaction Anxiousness Scale (Leary, 1983).

One problem encountered with the current study was significant intercorrelation among scales, contributing to problems with multicollinearity. Future research could employ measures with better discriminant validity. Moreover, it was particularly difficult to find a personality measure that had good discriminant validity. Because the current study focused on the relationship between introversion and social anxiety, it was important that assessment tools demonstrated as little as possible overlap of the two constructs (i.e., introversion measures did not assess social anxiety and social anxiety measures did not assess introversion). Use of a better extraversion-introversion measure in this study may have better assessed this construct and better delineated the relationships with social anxiety and self-esteem. Future research could be focused on developing such a tool with particular focus on demonstrating good discriminant validity from social anxiety measures.

If use of better measures produced more normal distributions of the data, then analyses would be improved by allowing more confident use of parametric analyses and by yielding more meaningful results. In future research, the relationships between social anxiety, introversion, and self-esteem could also be analyzed using a mediator model. Such analyses may clarify the role of self-esteem in these variables.

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Future research could also attribute to this study by including additional measures of related constructs. Considering how other constructs interrelate with introversion, social anxiety, and self-esteem could improve internal validity by eliminating the possibility of confounding variables or to help clarify how these constructs contribute to these relationships. Other measures that could be included in future research include the Social Reticence Scale (Jones & Russell, 1982), the Revised Self-Consciousness Scale (Scheier & Carver, 1985), the Willingness to Communicate Scale (Richmond & McCroskey, 1990), the Loneliness Rating Scale (Scalise, Ginter, & Gerstein, 1991), the Sociability Scale (Cheek & Buss, 1981), and the Social Skills Inventory (Riggio, 1986), how they relate to introversion, social anxiety, and self-esteem could be better understood. This information could aid in better assessment, diagnosis, and treatment of individuals presenting with these various overlapping traits.

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Appendix A

Social Phobia Scale (SPS; Mattick and Clarke, 1989)

Instructions: For each question, please circle a number to indicate the degree to which

you feel the statement is characteristic or true of you. The rating scale is as follows:

0= Not at all characteristic or true of me
1= Slightly characteristic or true of me
2= Moderately characteristic or true of me
3= Very characteristic or true of me
4= Extremely characteristic or true of me

	Not at all	Slightly	Moderately	Very	Extremely
1. I become anxious if I have to write in front of other people.	0	1	2	3	4
2. I become self-conscious when using public toilets.	0	1	2	3	4
3. I can suddenly become aware of my own voice and of others listening to me.	0	1	2	3	4
4. I get nervous that people are staring at me as I walk down the street.	0	1	2	3	4
5. I fear I may blush when I am with others.	0	1	2	3	4
6. I feel self-conscious if I have to enter a room where others are already seated.	0	1	2	3	4
7. I worry about shaking or trembling when I'm watched by other people.	0	1	2	3	4
8. I would get tense if I had to sit facing other people on a bus or a train.	0	1	2	3	4

9. I get panicky that others might see me faint or be sick or ill.	0	1	2	3	4
10. I would find it difficult to drink something if in a group of people.	0	1	2	3	4
11. It would make me feel self-conscious to eat in front of a stranger in a restaurant.	0	1	2	3	4
12. I am worried people will think my behavior odd.	0	1	2	3	4
13. I would get tense if I had to carry a tray across a crowded cafeteria.	0	1	2	3	4
14. I worry I'll lose control of myself in front of other people.	0	1	2	3	4
15. I worry I might do something to attract the attention of other people.	0	1	2	3	4
16. When in an elevator, I am tense if people look at me.	0	1	2	3	4
17. I can feel conspicuous standing in a line.	0	1	2	3	4
18. I can get tense when I speak in front of other people.	0	1	2	3	4
19. I worry my head will shake or nod in front of others.	0	1	2	3	4
20. I feel awkward and tense if I know people are watching me.	0	1	2	3	4

Appendix B

Social Interaction Anxiety Scale (SIAS; Mattick and Clarke, 1989)

Instructions: For each question, please circle a number to indicate the degree to which you feel the statement is characteristic or true of you. The rating scale is as follows:

0= Not at all characteristic or true of me
1= Slightly characteristic or true of me
2= Moderately characteristic or true of me
3= Very characteristic or true of me
4= Extremely characteristic or true of me

	Not at all	Slightly	Moderately	Very	Extremely
1. I get nervous if I have to speak with someone in authority (teacher, boss, etc.).	0	1	2	3	4
2. I have difficulty making eye-contact with others.	0	1	2	3	4
3. I become tense if I have to talk about myself or my feelings.	0	1	2	3	4
4. I find difficulty mixing comfortably with the people I work with.	0	1	2	3	4
5. I find it easy to make friends of my own age.	0	1	2	3	4
6. I tense-up if I meet an acquaintance on the street.	0	1	2	3	4
7. When mixing socially, I am uncomfortable.	0	1	2	3	4
8. I feel tense if I am alone with just one person.	0	1	2	3	4
9. I am at ease meeting people at parties, etc.	0	1	2	3	4

10. I have difficulty talking with other people.	0	1	2	3	4
11. I find it easy to think of things to talk about.	0	1	2	3	4
12. I worry about expressing myself in case I appear awkward.	0	1	2	3	4
13. I find it difficult to disagree with another's point of view.	0	1	2	3	4
14. I have difficulty talking to an attractive person of the opposite sex.	0	1	2	3	4
15. I find myself worrying that I won't know what to say in social situations.	0	1	2	3	4
16. I am nervous mixing with people I don't know well.	0	1	2	3	4
17. I feel I'll say something embarrassing when talking.	0	1	2	3	4
18. When mixing in a group, I find myself worrying I will be ignored.	0	1	2	3	4
19. I am tense mixing in a group.	0	1	2	3	4
20. I am unsure whether to greet someone I know only slightly.	0	1	2	3	4

Appendix C

Eysenck Personality Questionnaire-Revised-Short Scale (EPQ-R-SS; Eysenck &

Eysenck, 1994)

Instructions: Please answer each question by putting an X in the circle of the "Yes" or the "No" following the question. There are no right or wrong answers, and no trick questions. Work quickly and do not think too long about the exact meaning of the questions. Please remember to answer each question.

	YES	NO
1. Does your mood often go up and down?	Y	N
2. Do you take much notice of what people think?	Y	N
3. Are you a talkative person?	Y	N
4. Would being in debt worry you?	Y	N
5. Were you ever greedy by helping yourself to more than your share of anything?	Y	N
6. Are you rather lively?	Y	N
7. Would it upset you a lot to see a child or animal suffer?	Y	N
8. If you say you will do something, do you always keep your promise no matter how inconvenient it might be?	Y	N
9. Can you usually let yourself go and enjoy yourself at a lively party?	Y	N
10. Have you ever blamed someone for doing something that you knew was really your fault?	Y	N
11. Are good manners very important?	Y	N
12. Are your feelings easily hurt?	Y	N
13. Are all your habits good and desirable ones?	Y	N
14. Do you tend to keep in the background on social occasions?	Y	N
15. Do you often feel "fed-up"?	Y	N
16. Have you ever taken anything (even a pin or button) that belonged to someone else?	Y	N
17. Do you prefer to go your own way rather than act by the rules?	Y	N
18. Do you enjoy hurting people you love?	Y	N

19. Are you often troubled about feelings of guilt?	Y	N
20. Do you have enemies who want to harm you?	Y	N
21. Would you call yourself a nervous person?	Y	N
22. Do you have many friends?	Y	N
23. Do you enjoy practical jokes that can sometimes really hurt people?	Y	N
24. Are you a worrier?	Y	N
25. As a child did you do as you were told immediately and without grumbling?	Y	N
26. Do good manners and cleanliness matter much to you?	Y	N
27. Do you worry about awful things that might happen?	Y	N
28. Have you ever broken or lost something belonging to someone else?	Y	N
29. Do you usually take the initiative in making new friends?	Y	N
30. Would you call yourself tense or "highly-strung"?	Y	N
31. Are you mostly quiet when you are with other people?	Y	N
32. Do you think marriage is old-fashioned and should be done away with?	Y	N
33. Can you easily get some life into a rather dull party?	Y	N
34. Have you ever said anything bad or nasty about anyone?	Y	N
35. Do most things taste the same to you?	Y	N
36. As a child were you ever cheeky to your parents?	Y	N
37. Do you like mixing with people?	Y	N
38. Do you always wash before a meal?	Y	N
39. Have you ever cheated at a game?	Y	N
40. Have you ever taken advantage of someone?	Y	N
41. Do you think people spend too much time safeguarding their future with savings and insurance?	Y	N
42. Can you get a party going?	Y	N
43. Do you try not to be rude to people?	Y	N
44. Do you worry too long after an embarrassing experience?	Y	N
45. Do you generally "look before you leap"?	Y	N
46. Do you suffer from "nerves"?	Y	N
47. Do you often feel lonely?	Y	N
48. Can you on the whole trust people to tell the truth?	Y	N
49. Do you always practice what you preach?	Y	N
50. Are you easily hurt when people find fault with you or the work you do?	Y	N
51. Have you ever been late for an appointment or work?	Y	N
52. Do you like plenty of bustle and excitement around you?	Y	N

53. Would you like other people to be afraid of you?	Y	N
54. Do you sometimes put off until tomorrow what you ought to do today?	Y	N
55. Do other people think of you as being lively?	Y	N
56. Do you believe one has special duties to one's family?	Y	N
57. Are you always willing to admit when you have mad a mistake?	Y	N

Appendix D

Self-Esteem Rating Scale (SERS; Nugent & Thomas, 1993)

Instructions: This questionnaire is designed to measure how you feel about yourself. It is not a test, so there are no right or wrong answers. Please answer each item as carefully and accurately as you can by placing an X in the appropriate box.

1 = Never
2 = Rarely
3 = A little of the time
4 = Some of the time
5 = A good part of the time
6 = Most of the time
7 = Always

	Never	Rarely	A little of the time	Some of the time	A good part of the time	Most of the time	Always
1. I feel that people would *NOT* like me if they really knew me well.	1	2	3	4	5	6	7
2. I feel that others do things much better than I do.	1	2	3	4	5	6	7
3. I feel that I am an attractive person.	1	2	3	4	5	6	7
4. I feel confident in my ability to deal with other people.	1	2	3	4	5	6	7
5. I feel that I am likely to fail at things I do.	1	2	3	4	5	6	7
6. I feel that people really like to talk with me.	1	2	3	4	5	6	7

7. I feel that I am a very competent person.	1	2	3	4	5	6	7
8. When I am with other people I feel that they are glad I am with them.	1	2	3	4	5	6	7
9. I feel that I make a good impression on others.	1	2	3	4	5	6	7
10. I feel confident that I can begin new relationships if I want to.	1	2	3	4	5	6	7
11. I feel that I am ugly.	1	2	3	4	5	6	7
12. I feel that I am a boring person.	1	2	3	4	5	6	7
13. I feel very nervous when I am with strangers.	1	2	3	4	5	6	7
14. I feel confident in my ability to learn new things.	1	2	3	4	5	6	7
15. I feel good about myself.	1	2	3	4	5	6	7
16. I feel ashamed about myself.	1	2	3	4	5	6	7
17. I feel inferior to other people.	1	2	3	4	5	6	7
18. I feel that my friends find me interesting.	1	2	3	4	5	6	7
19. I feel that I have a good sense of humor.	1	2	3	4	5	6	7
20. I get angry at myself over the way I am.	1	2	3	4	5	6	7
21. I feel relaxed meeting new people.	1	2	3	4	5	6	7
22. I feel that other people are smarter than I am.	1	2	3	4	5	6	7
23. I do NOT like myself.	1	2	3	4	5	6	7
24. I feel confident in my ability to cope with difficult situations.	1	2	3	4	5	6	7
25. I feel that I am NOT very likeable.	1	2	3	4	5	6	7
26. My friends value me a lot.	1	2	3	4	5	6	7
27. I am afraid I will appear stupid to others.	1	2	3	4	5	6	7
28. I feel that I am an OK person.	1	2	3	4	5	6	7

29. I feel that I can count on myself to manage things well.	1	2	3	4	5	6	7
30. I wish I could just disappear when I am around other people.	1	2	3	4	5	6	7
31. I feel embarrassed to let others hear my ideas.	1	2	3	4	5	6	7
32. I feel that I am a nice person.	1	2	3	4	5	6	7
33. I feel that if I could be more like other people then I would feel *better* about myself.	1	2	3	4	5	6	7
34. I feel that I get pushed around more than others.	1	2	3	4	5	6	7
35. I feel that people like me.	1	2	3	4	5	6	7
36. I feel that people have a good time when they are with me.	1	2	3	4	5	6	7
37. I feel confident that I can do well in whatever I do.	1	2	3	4	5	6	7
38. I trust the competence of others more than I trust my own abilities.	1	2	3	4	5	6	7
39. I feel that I mess things up.	1	2	3	4	5	6	7
40. I wish that I were someone else.	1	2	3	4	5	6	7

Appendix E

Statement of Informed Consent

Title: Social anxiety and introversion in College Students

Investigators: Lisa Mull, MS (503-788-3300) and Paula Truax, PhD (503-352-2627)

Investigators' address: Pacific University, 511 SW 10th St., Suite 400, Portland, OR

97205

You are invited to participate in a research study. This study will look at the relationship

among emotions, self-attributes, and personality characteristics. This information may

help us learn more about how college students can be successful in their academic

experiences. Please read this form and ask any questions you may have before agreeing

to take part in this study.

What You Will Be Asked to Do

Between July 1, 2005 and January 31, 2006, we are conducting a study at Pacific

University. We are asking graduate and undergraduate students who are fluent in English

to participate. Persons who are not fluent in English and who do not voluntarily agree to

participate will be excluded from the study. If you decide to take part, you will participate

in about 30-40 minutes of completing questionnaires. Completion of questionnaires will

take place in a group setting in a Pacific University room. These questionnaires will

assess emotions, self-attributes, and personality characteristics. You are asked to fully complete questionnaires.

Risks and What Will Be Done to Reduce Risks

There are no significant risks to this study. Minor risks include possible distress, fatigue, or frustration while completing questionnaires. To address these risks, you are free to take a break from testing and/or withdraw from testing at any time. If you feel very distressed, you will be referred to a counselor at Pacific University's Student Health Clinic. You are not a patient, agent, or employee of Pacific University, and this study is not a substitute for regular medical care. As a voluntary participant in this study, you will be responsible for any medical care costs that result from your participation.

In addition, some students will participate in the study during regular class period or time that extends beyond the regular class period, and thus, there is a minor risk that study participation may detract from a small portion of students' educational experiences and/or extend the length of stay beyond the normal class period. To address these risks, professors will be contacted in advance to prearrange a time when students may be able to participate in the study while not detracting from necessary class tasks. Please remember that participation is entirely voluntary and that you may withdraw from study at any time without penalty.

Also, students who participate in the study outside of regular class period may incur additional costs (i.e., loss of wages or transportation costs). To reduce these risks, testing periods will be scheduled during convenient times and in Pacific University rooms.

Another possible risk is that someone who is not supposed to see personal information will see it. To address this risk, all data collection, use, and storage methods will comply with HIPAA guidelines. We take the following steps to make sure your information is kept confidential:

1.) All personal information given for this study will be kept confidential

2.) Only ID numbers will be written on questionnaires. ID numbers and questionnaires will not be connected to participants' names or identifying information.

3.) Everyone directly involved in this research has been trained to work with private information. The privacy of participants is very important to us.

Benefits to You for Your Participation

There are also benefits to you for taking part in this study. Your participation will help us understand more about how anxiety, self-esteem, and personality characteristics interrelate in college students, which may help us learn more about how college students can be successful in their academic experiences. All participating students will receive a $1 instant lottery ticket. Students may receive class credit for participation which will be prearranged. All students receiving credit for participation will be provided with a receipt upon completion.

Your Right to Withdraw

Your participation in this study is completely voluntary and you may withdraw from the study at any time with no negative penalty. All information collected from you will be owned by the primary investigator whether you complete the study or drop out. If you have questions about this research, you can call or send a note to one of the investigators listed. If you have questions about your rights as a research participant, you can also call Karl Citek, PhD, OD at (503) 352-2126. You will be given a copy of this form for you to keep.

If you sign below, it shows that you: (1) read and understand this form; (2) agree to take part in this study; (3) have been given an opportunity to ask questions; and (4) have received a copy of this form.

_____
Participant

_____
Investigator