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# Shyness and sociability re-examined: Psychometrics, interactions, and correlates

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SHYNESS AND SOCIABILITY RE-EXAMINED:  
PSYCHOMETRICS, INTERACTIONS, AND CORRELATES

SHYNESS AND SOCIABILITY RE-EXAMINED:  
PSYCHOMETRICS, INTERACTIONS, AND CORRELATES

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## **Abstract**

Numerous studies have suggested that shyness and sociability may be orthogonal personality traits, each of which are associated with distinct behavioural and psychophysiological correlates. Shyness has been linked to a variety of adverse mental health outcomes, and individuals who are high on both shyness and sociability (conflicted subtype) may be particularly at risk. The current study first aimed to assess the psychometric properties of the Revised Cheek and Buss Shyness Scale (RCBSS; Cheek, 1983) before examining the moderating influence of sociability on shyness in relation to psychological and psychosomatic functioning. The internal consistency, test–retest reliability, and convergent/discriminant validity of the RCBSS was assessed using a sample of 152 university students, a subset of whom were tested 6 months later. Results provided support for the strong internal consistency and short- and long-term stability of the measure, as well as its convergent, divergent, and predictive validity.

A significant shy X social interaction was found for the Bodily Preoccupations (BP) subscale of the Illness Attitudes Scale (IAS; Kellner, 1986, 1987). In particular, BP scores were significantly higher for the high shy-high social group than the low shy-high social group. This finding suggests that the conflicted subtype can be distinguished not only on behavioural and psychophysiological dimensions but also on the psychosomatic level. This result extends prior research and lends further evidence towards the notion that the treatment of shyness as a multidimensional construct, rather than a unitary construct, accounts for additional variance in psychosomatic outcomes in different types of shy and socially withdrawn individuals. Accordingly, this knowledge may better inform treatment in some cases of extreme shyness in which people are socially withdrawn and inhibited for different reasons.

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## **Introduction**

### ***The phenomenon***

Shyness is a ubiquitous phenomenon. In a sample of almost 5000 Americans, Zimbardo (1977) reported that over 40% considered themselves currently shy, while over 90% reported they had been shy at some point in their lives. Shyness is thought to reflect the discomfort or inhibition felt in real or imagined interpersonal situations (Cheek et al., 1986). Several behavioural, cognitive/affective, and psychophysiological correlates of shyness are known to exist. For example, behavioural correlates of shyness include gaze aversion and reduction in speech (Pilkonis, 1977a,b); cognitive/affective correlates include low self esteem and anxious thoughts (Melchoir & Cheek, 1990; Schmidt & Fox, 1995); psychophysiological correlates include right frontal encephalographic (EEG) asymmetry, elevated baseline heart rate, and high salivary cortisol levels at rest and in response to social challenges in children and adults (for reviews, see Kagan, Reznick, & Snidman, 1987, 1988; Schmidt, 1999; Schmidt & Schulkin, 1999). Despite its ubiquity, the stability, moderating factors, and mental health and psychosomatic correlates of shyness have not been fully explored.

### ***Stability Studies of Shyness and Related Constructs***

Longitudinal studies of children's social reticence reveal that early appearing characteristics can have a significant influence on later psychopathology (Thomas & Chess, 1986). Understanding the long-term persistence of this behavioural profile is therefore important. Numerous studies have investigated the stability of shyness and

behavioural inhibition, a related, but not identical, construct, from early childhood through to adulthood.

Bruch, Giordano, and Pearl (1986) examined the stability of shyness in a retrospective study using college students selected for their extreme scores on a shyness battery that consisted of the Revised Cheek and Buss Shyness Scale (RCBSS; Cheek, 1983), the fearfulness subscale from the Emotionality, Activity, and Sociability Temperament Survey (EAS-fear; Buss & Plomin, 1984), and the Public Self-Consciousness Scale (PSC) of the Self-Consciousness Inventory (Fenigstein, Scheier, & Buss, 1975). Bruch et al. found that almost half of the currently non-shy group reported feeling shy during their early childhood years. This group was then divided into those who were never shy and those who were previously shy. Those who reported previous shyness also reported more severe feelings of shyness during junior high school. For these students, it seems that the process of becoming less shy occurred during high school or college, but why this change occurred is unclear.

Engfer (1993) conducted a prospective study which examined the conditions that increased or decreased shyness between the ages of 33 months and 6.3 years in a sample of 39 children. Twelve children showed a substantial change in shy behaviour between these ages; 6 changed from high to low shy, while another 6 changed from low to high shy. Engfer also showed that more girls (33%) than boys (less than 10%) 'outgrew' their shyness, suggesting that shyness is more stable in males than in females. Furthermore, boys' shyness at 6.3 years could be predicted from their 33 month ratings; however, the same prediction could not be made for girls. Beidel and Turner (1999) suggested that

socialization differences between males and females might account for this discrepancy. Regardless of gender differences in stability, children who became shyer at 6.3 years had been rated by their mothers as being less socially competent at 43 months. This finding suggests that children rated as more socially competent at an early age became less shy as result of their ability to appropriately interact with others.

Stability studies have also examined behavioural inhibition (BI), a group of behaviours initially appearing in toddlers, which are characterized by uneasiness, wariness, and avoidance of unfamiliar situations, people, objects or events (Garcia-Coll, Kagan, & Reznick, 1984). These behaviours are also sometimes associated with shyness. For instance, children with BI show increased heart rate in the presence of unfamiliar people or events (Garcia-Coll, et al., 1984). Those who were shy also had increased heart rate in social performance situations (Turner, Beidel & Townsley, 1990). Both behaviourally inhibited children (Reznick et al., 1986) and shy children (Beidel, Turner & Morris, 1999) are slow to verbally engage with unfamiliar individuals. Based on these findings, there is speculation that the earliest manifestation of shyness may be reflected in the BI construct (Turner et al., 1990). It is, therefore, useful to review studies regarding the stability of BI for the purposes of the current investigation.

Kagan and his colleagues have studied BI in a group of individuals, originally assessed at 21 months, over many years (Garcia-Coll, et al., 1984). Stability coefficients were reported 1 month ( $n = 58$ ,  $r = .63$ ) and 10 months ( $n = 40$ ,  $r = .66$ ) after the initial assessment. The cohort was again assessed at age 4 (Kagan, Reznick, Clarke, Snidman, & Garcia-Coll, 1984). Among those children classified as behaviourally inhibited at 21

months, 59% (13 of the 22 children) could still be classified as such. The remaining nine children had lower inhibition scores; however, their scores were not low enough to be considered uninhibited. Heart rate variability at 21 months was a predictive factor of lessening inhibition. Five of the nine children (55%) who were no longer behaviourally inhibited at age 4 had a variable heart rate at 21 months. On the other hand, eleven of the thirteen who remained behaviourally inhibited had a stable heart rate at 21 months. Overall, stable heart rates were characteristic of behaviourally inhibited children at 21 months. These findings show that children who had less consistency between their behavioural and physiological characteristics were more likely to become less inhibited with age.

The children were reassessed at 5.5 years. Those who were originally classified as behaviourally inhibited continued to exhibit inhibited behaviour (e.g., being cautious and restrained during tasks considered challenging or risky). It is interesting to note that the correlation between mother's ratings of children's shyness and BI at 5.5 years was only  $r = .33$ , suggesting that BI and shyness may be significantly correlated but are not identical constructs.

The next assessment point at two years later showed moderate stability of BI. The correlation coefficients between the BI index at 7.5 years and those from 21 months, 4 years, and 5.5 years were  $r = .67, .54, .57$ , respectively. Mother's ratings of shyness at 7.5 years were significantly correlated with BI scores at 21 months, 4 years, and 5.5 years ( $r = .66, .66, .63$ , respectively).

Long-term stability of BI was also assessed in a study by Schwartz, Snidman, and Kagan (1996). Adolescents (aged 13 years) who had been previously classified at 21 or 31 months as behaviourally inhibited ( $n = 21$ ) or uninhibited ( $n = 33$ ) were given the Stroop Interference Test using words that were either threatening, neutral, or positive. A longer latency to respond to threat words is considered a sign of anxious pathology. There were no significant differences in average latency across all words, nor was there any significant difference in average latency for any particular group of words. However, the words with the longest latencies for each participant revealed that those adolescents who had been classified as inhibited as children, as compared to those who had been uninhibited, had a significantly larger proportion of threat words among their longest latencies. The reason may be that threat words have generated a more intense emotional arousal or a greater number of associations for those who had been classified as behaviourally inhibited 11 years ago. Thus, aspects of the behaviourally inhibited temperamental profile remained stable over an 11 year period.

Other studies have also reported moderate stability of BI. For example, Broberg (1993) assessed a group of 144 Swedish children at 16, 28, and 40 months. Those rated by their mothers and an independent observer as inhibited at 16 months were significantly likely to be inhibited at 28 and 40 months of age. Schmidt et al. (1997) similarly found that 4 month old infants with a BI profile characterized by high motor activity and negative affect were more likely to be rated by their mothers as shy at 4 years of age. Infants rated as fearful and wary of novel stimuli at 14 months were more likely at 4 years

of age to display social wariness during peer play activities; they were also more likely to be rated by their mothers as shy.

Schwartz et al. (1996) reassessed the cohort originally seen by Kagan and colleagues at 21 or 31 months of age. Using the Youth Self Report (YSR) and Child Behaviour Checklist (CBCL), Schwartz et al. found that those adolescents (now 13 years of age) who were classified as behaviourally inhibited at 21 months had significantly lower scores than uninhibited children on the YSR Total Externalizing, Delinquent Behaviour, and Aggressive Behaviour scales and on the CBCL Total Externalizing and Aggressive Behaviour scales. The YSR and CBCL scores were not in the clinical range, showing that uninhibited children are simply more “outgoing” than their inhibited peers.

Gest (1997) examined the longer-term outcomes of BI. He reported a correlation coefficient of  $r = .57$  between ratings of BI at preadolescence (ages 8-12) and early adulthood (ages 17-24). BI ratings at preadolescence were based on an interview and observation of the child during laboratory-based tasks. BI ratings at early adulthood were based on 5-point observer rating scales which assessed interpersonal, cognitive, and affective behaviour during an interview with a same-sex examiner. High BI scores indicated those who were ill at ease, communicated hesitantly without expression, and rarely initiated contact by talking, smiling, or joking. Structural equation modeling was used to determine the relation between childhood BI and adult outcomes such as peer social success, emotional distress, and life course timing. The results showed that childhood BI was associated with low peer social success which was defined as a less positive and active social life in early adulthood. Additionally, participants classified as



behaviourally inhibited as children were less likely to have moved away from their family of origin by the early adulthood assessment. High BI in adulthood was also associated with greater emotional distress and negative emotionality in men.

***Measurement of Adult Shyness: Psychometric Properties of the Revised Cheek and Buss Shyness Scale (RCBSS)***

There have been several attempts to measure shyness in adults using self-report. Zimbardo (1977) was one of the first to devise a measure of shyness. His Stanford Shyness Survey consisted of 44 items and was used widely in early studies of shyness. The Stanford Shyness Survey was followed by the original 9-item Cheek and Buss (1981) Shyness Scale and the 13-item Revised Cheek and Buss Shyness Scale (RCBSS; Cheek, 1983). Although the RCBSS has been considered a prominent measure in shyness research (Heiser et al., 2003; Leary, 1991), relatively few studies have examined its psychometric properties. Such studies are important in order to justify the use of the RCBSS in research.

In their original study, Cheek and Buss (1981) reported a 90-day test-retest reliability coefficient of 0.74 ( $n = 96$ ) for the 9-item version of the scale. Melchior and Cheek (1990) reported the 45-day retest reliability of the 20-item version as 0.91 ( $n = 31$ ). Additionally, Bruch et al. (1989) investigated the internal consistency of both the 13-item Cheek and Buss Shyness scale (Cheek, 1983) and the 5-item Cheek and Buss (1981) Sociability scale. Both the shyness and sociability scales had strong internal consistency with reliability coefficients of .82 and .76, respectively.

Hopko and colleagues (2005) supported and extended these results. They examined the test-retest reliability and convergent/discriminant validity, among other measures, of the RBCSS using a sample of 261 university students. Their results provided strong support for the reliability of the measure and its predicted associations with contemporary measures of shyness, social anxiety, and related constructs. Internal consistency ( $\alpha = .86$ ) and 2-week test-retest reliability ( $r = .88$ ) of the RCBSS were strong and comparable to data previously reported. In terms of convergent/discriminant validity, RCBSS scores correlated moderately to strongly with scores on other shyness and social anxiety measures, but less so with measures of somatic anxiety and depressive symptoms. The previously reported relations among the RCBSS, the Social Reticence Scale (SRS-II; Jones & Briggs, 1986), and the general question of “How shy are you?” were replicated (Jones, Briggs & Smith, 1986). Furthermore, the RCBSS was significantly more strongly related to the Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) than the Social Phobia Scale (SPS; Mattick & Clarke, 1998).

The SIAS is a unifactorial 20-item measure that assesses cognitive, affective, and behavioural reactions to interpersonal situations and social interactions while the SPS is a 20-item scale that assesses anxiety elicited in performance situations (e.g. public speaking and routine activities such as eating and writing). Both the SIAS and SPS assess fears of negative evaluation and performance anxiety; however, the SIAS is restricted to the context of interpersonal interactions. Therefore, the stronger relation between the RCBSS and SIAS provided support for the idea that shyness and social anxiety are related but not

uniform experiences (Heiser et al., 2003), and that both measures are divergent from a more general index of phobic avoidance patterns.

Crozier (2005), most recently, examined the psychometric properties of the RCBSS using a sample of 741 university students. He investigated gender differences in shyness scores in order to clarify previously inconsistent findings. For example, a previous study found that men scored higher on the RCBSS than did women (Cheek & Melchior, 1990), while in another study men were found to score lower than women (Marcone & Nigro, 2001). Although Crozier (2005) found no gender differences in total shyness scores, there were significant gender differences on two items: women reported greater shyness when referring to interacting with an authority figure and worrying more about saying something foolish when conversing with unfamiliar people. Research has shown that female university students experience greater anxiety in interacting with their (usually male) tutors (Martin, 1997). This finding may explain the difference found on the item regarding interaction with an authority figure. Nevertheless, the relation between shyness and gender warrants further investigation.

### ***Conceptualizing Different Types of Shyness: Interaction of Shyness and Sociability***

It has long been recognized that there are different kinds of shyness each with distinct behavioural and psychophysiological correlates. Two prominent conceptualizations are those proposed by Buss (1986) and Asendorpf (1990).

Buss (1986) has argued that there are two kinds of shyness: fearful and self-conscious shyness. Fearful shyness is thought to emerge early in life during the second half of the first year; its development coincides with the infant's fear of strangers. Self

conscious shyness, on the other hand, emerges later in life around the age of 5 or 6 years, coinciding with the child's development of self and the ability to take the perspective of others.

Still, more recently, Asendorpf conceptualized shyness using an approach-avoidance paradigm (Asendorpf, 1990; Asendorpf & Meier, 1993). In this framework, shyness occurs as a result of an approach-avoidance conflict: children who are high on approach but also high on avoidance wish to engage in play but cannot enter the playgroup successfully. These children are classified as reticent. Other children may be high on avoidance but low on approach; such children are classified as avoidant. Reticent and avoidant shyness is associated with different developmental outcomes (Rubin & Asendorpf, 1993). Fox and colleagues (1995) reported that the reticent group experiences a high degree of anxiety in situations involving social evaluation. Rubin and colleagues (1995) found that avoidant children are described as socially withdrawn and sometimes depressed.

Schmidt and Fox (1999) noted that the Buss (1986) and Asendorpf (1990) models are actually quite similar. Buss' (1986) fearfully shy group can be described as high on avoidance and low on approach much like Asendorpf's (1990) avoidant group. The self-consciously shy group can be described as high on avoidance and high on approach like the reticent ("conflicted") group. These subtypes of childhood shyness are parallel to those described in the adult personality literature.

Cheek and Buss (1981) used the approach-avoidance paradigm to parse subtypes of adult shyness. They noted that some people may appear inhibited during social

situations because they are fearful (high shy-low social) and can be classified as “shy”; others are reserved during social situations because they prefer to be alone rather than with others (low shy-low social) and can be classified as introverts. Still others experience an approach-avoidance conflict and wish to affiliate with others but are anxious in social situations (high shy-high social), i.e. the conflicted group.

Cheek and Buss (1981) set out to determine whether shyness and sociability were orthogonal traits on an empirical level. It is commonly assumed that shyness and sociability are inversely related, but Cheek and Buss (1981) questioned whether high shyness is truly equivalent to low sociability. They devised separate measures of shyness and sociability by defining each trait separately. Shyness was defined as the discomfort and inhibition that may occur in the presence of others (i.e., a behaviour), while sociability was described as the tendency to affiliate and to prefer being with others (i.e., a motivation). The questionnaires were administered to 947 college students, and it was determined by factor analysis that the scales were only modestly correlated ( $r = -.30$ ), suggesting that, although shyness and sociability may be related, they are orthogonal traits. Thus, it seems that different forms of shyness may emerge as a result of differences in sociability.

Cheek and Buss then had undergraduates selected for high and low shyness and sociability interact in unfamiliar dyads. They found that the high shy-high social (conflicted) group displayed more anxious behaviours than did participants in the other three groups. Cheek (1983) later added four new items to the shyness scale, and this revised scale gave a slightly higher correlation between shyness and sociability ( $r = -.49$ ).

There is also psychophysiological evidence that shyness and sociability are orthogonal constructs. For example, Schmidt (1999) showed that both conflicted and avoidant adults exhibit greater relative right frontal EEG activity as a function of less power in the right lead compared to the left; this pattern is a marker of fear dysregulation (Davidson, 2000). Importantly, the shy subtypes were distinguishable based on activity in the left frontal lead: the conflicted group displayed greater left frontal activity than the avoidant group. This finding suggests that the conflicted group can be distinguished from the avoidant subtype at the neurophysiological level, signifying underlying differences in possible brain mechanisms. Additionally, Schmidt and Fox (1994) found that the conflicted group can be distinguished on the basis of heart rate variability. They reported that high shy-high social participants displayed significantly higher and more stable (less variable) heart rate than high shy-low social and low shy-high social participants. This finding is particularly interesting because researchers have linked heart rate variability to emotion regulation and expression (Porges, 1991). Individuals with lower heart rate variability may be deficient in emotion regulatory skills compared with individuals with higher heart rate variability. This possible lack of emotion regulatory mechanisms mediated by the autonomic nervous system may explain why the conflicted subtype show overt anxiety during novel social encounters (Cheek & Buss, 1981).

Beaton and colleagues (2008), more recently, reported that shy adults exhibit greater bilateral activation in the amygdala upon presentation of unfamiliar neutral faces as shown by functional magnetic resonance imaging (fMRI). The amygdala is a brain region involved in fear regulation. In contrast, sociable adults displayed greater bilateral

activation in the nucleus accumbens which is involved in incentive-related motivations. Thus, it appears that shyness and sociability are distinguishable both in terms of behaviour and physiology.

### ***Shyness, Sociability, Mental Health and Psychosomatic Problems***

Shyness is adversely related to many psychosomatic and mental health outcomes in older and young adults and children. For example, Bell and colleagues (1990) reported that young adults with extreme shyness have a greater prevalence of depression and allergies compared to those who are non-shy. Bell and colleagues (1993) also found a similar finding in older adults (aged 50-88), i.e. those who reported health problems such as insomnia, constipation, and hay fever were more likely to be shy than those who did not report health problems. Similarly, Schmidt and Fox (1995) found that a higher proportion of high shy participants reported problems with allergies and gastrointestinal functioning compared to low shy young adult participants. More recently, Henriksen and Murberg (2009) showed a significant positive relation between shyness in secondary school students (between 14 and 16 years old) and somatic complaints as well as reports of school related stress. These somatic complaints were assessed using the Ursin Health Inventory and Hopkins Symptoms Checklist. Items included asthma, allergies, migraines, stomach pains, headaches, neck and back pains, and were rated from 'no complaints' to 'severe complaints'. They noted that since it is known that shy people experience internal discomfort during social situations (Pilkonis, 1977a), shyness may influence the perception of stress which is, in turn, a strong predictor of health complaints.

Shyness has also been linked to disordered eating in young adults. Miller, Schmidt and Vaillancourt (2008) examined a nonclinical group of 520 female undergraduates and obtained self-report measures of shyness, sociability, and eating behaviours. A significant main effect of shyness was found for all eating behaviours some of which included bulimia, drive for thinness, and body dissatisfaction. Shy women also reported lower self esteem compared to those who scored low on shyness. Taken together, these results suggest that shyness is a reliable predictor of both poor physical and mental health among both children and adults.

The conflicted subtype is of particular interest when relating shyness to psychopathology due to the approach-avoidance conflict experienced during social situations. This conflict and the consequent anxiety that accompanies it may put these individuals at a greater risk for dysregulated behaviour as compared to their avoidant (high shy-low social) counterparts. For example, Page (1990) used the Cheek and Buss (1981) model of shyness to understand substance use in a sample of male adolescents. He believed that the conflicted subtype was especially at risk for substance abuse because such behaviours may be used as a coping strategy in social situations. Page found that shy males were more likely to use illicit substances than those who scored low on shyness. Males who scored high on both shyness and sociability reported more use of hallucinogenic substance and slightly more use of marijuana and cocaine compared with the other three groups.

Santesso, Schmidt and Fox (2004) extended these findings and found young adult undergraduates in the US who scored high on both shyness and sociability reported more



substance use behaviours (e.g. “I have missed academic classes after a night of alcohol or other drug use”) (Santesso, Schmidt & Fox, 2004). Interestingly, this pattern of results was not found in a sample of Canadian undergraduates, suggesting that further research is required to elucidate the relation between conflicted shyness and substance use behaviours.

### ***The Present Study***

The present study was designed to replicate and extend previous findings on the study of adults’ shyness *and* sociability. There were two goals of the present study. First, the psychometric properties of the RCBSS were examined. Here the inter-item reliability (i.e., internal consistency) was established and the stability of the measure was examined within the same laboratory visit and again 6 months later in a selected sample. The predictive utility of the shyness measure was then examined contemporaneously and prospectively. Lastly, the convergent validity of the measure was examined.

Second, once the psychometric properties were established, the moderating influences on shyness were examined in relation to mental health and psychosomatic outcomes. Along with sociability, gender and age were investigated as potential moderating influences. Bruch et al. (1986) and Phillips and Bruch (1988) showed that shy men, but not women, reported greater levels of behavioural disturbance in their social interactions, suggesting a moderating effect of gender on the behavioural outcomes of shyness.

The present study involved the administration of the RCBSS and a battery of related mental health and psychosomatic measures. As an extension of previous studies of

shyness and its mental health correlates, the Illness Attitudes Scales (IAS; Kellner, 1986, 1987) was used to assess psychosomatic traits. A subset of participants were then selected for high and low shyness, and these selected participants returned to the laboratory 6 months later. They were then given the RCBSS again along with a smaller battery of mental health questionnaires. It was predicted that shyness, as measured by the RCBSS, would remain stable both over a short (i.e., within the same day) and long (i.e., 6 months) term. Shyness was also predicted to be correlated with conceptually related constructs such as depression and social phobia. A significant shy X social interaction was also predicted on psychosomatic traits, with the high shy-high social individuals exhibiting higher bodily preoccupations than the other combinations of high and low shyness and sociability.

## **Method**

### *Participants*

Participants were 152 undergraduate students (60 males,  $M = 19.78$  years,  $SD = 2.07$ ; 92 females,  $M = 20.4$ ,  $SD = 3.43$ ) who were enrolled in psychology classes at McMaster University, a medium size urban research university located in southern Ontario. Students completed a series of self-report questionnaires related to personality, emotional wellbeing and mental health in exchange for course credit.

*Participant selection.* Of the 152 participants, 24 (15 males,  $M = 20.86$ ,  $SD = 2.77$ ; 9 females,  $M = 21.22$ ,  $SD = 2.77$ ) were selected for high ( $n = 16$ ; upper 25%) and low ( $n = 8$ , bottom 25%) shyness based on the responses to the Revised Cheek and Buss Shyness Scale (Cheek, 1983; Cheek & Buss, 1981) and invited to the laboratory where

they once again completed the forms used in the initial screening. All selected participants were right handed and free of psychiatric problems and received additional course credit for their participation.

### *Measures*

*Revised Cheek and Buss Shyness and Sociability Scales (RCBSS).* Shyness was assessed using the 5 highest-loaded (Bruch et al., 1989) items from the original CBSS (Cheek, 1983; Cheek & Buss, 1981); an example item includes: ‘I find it hard to talk to strangers’. Sociability was assessed using the 5-item CBSS (Cheek & Buss, 1981); an example item includes: ‘I find people more stimulating than anything else’. Items were scored on a 5-point scale ranging from 0 (‘not at all characteristic’) to 4 (‘extremely characteristic’). Reliability and validity data are presented elsewhere (Bruch et al., 1989; Cheek & Buss, 1981).

*Social Phobia Inventory (SPIN).* The SPIN (Connor, Davidson, Churchill, Sherwood, Foa, & Wesler, 2000) is a 17-item inventory consisting of questions evaluating fear (e.g., of people in authority, of parties and social events, and of talking to strangers), avoidance (e.g., of being the centre of attention), and physiological discomfort (e.g., blushing or trembling in front of others). Each of the 17 items is rated on a scale from 0 (‘not at all’) to 4 (‘extremely’). It has been shown to have good test-retest reliability, internal consistency, as well as convergent and divergent validity (Connor et al., 2000).

*Social Phobia Scale (SPS).* The Social Phobia Scale (SPS; Mattick & Clarke, 1998) is a 20-item scale that assesses anxiety elicited in performance situations (e.g.,

public speaking or routine activities such as eating and writing). Internal consistency and 4- and 12-week test–retest reliability of the measure have been found to be strong (Mattick & Clarke, 1998; Osman et al., 1998). Convergent validity of the SPS has also been supported (Mattick & Clarke, 1998).

*Beck Depression Inventory (BDI).* The BDI (Beck, Steer, & Brown, 1996) is used to measure the severity of depression. It consists of 21 items which relate to the cognitive, emotional and physical symptoms of depression. Each item is rated on a 4-point Likert scale ranging from 0 to 3. Psychometric data of this measure are reported elsewhere (Beck, Steer & Garbin, 1988).

*Positive and Negative Affective Schedule (PANAS).* The Positive and Negative Affective Schedule (PANAS; Watson, Clark & Tellegen, 1988) is comprised of ten positive and ten negative adjectives, which are rated on a 5-point Likert scale ranging from 1 (“very slightly or not at all”) to 5 (“extremely”). Students were asked to rate how they “generally” felt. Internal consistency has been reported, with  $\alpha = 0.86$  for the Positive Affect Scale and  $\alpha = 0.88$  for the Negative Affect Scale (McLennan et al., 1994).

*Carver and White Behavioural Inhibition/Behavioural Activation Scales (BIS/BAS).* The behavioural inhibition scale (BIS)/behavioural activation scale (BAS) (Carver & White, 1994) is a 20-item scale that measures the sensitivity of 2 motivational systems: a behavioural inhibition (withdrawal) system and a behavioural activation (approach) system. Sample items from the scale include, “I worry about my mistakes” (BIS), and, “When I see an opportunity for something I like, I get excited right away” (BAS). Each item is scored on a 4-point Likert scale, ranging from 1 (“very true for me”)

to 4 (“very false for me”). Lower scores on the BIS scale indicate increased inhibition, and lower scores on the BAS scale indicate increased activation. The BAS score is a composite of 3 subscales: drive (“When I want something, I usually go all-out to get it”), reward responsiveness (“It would excite me to win a contest”), and fun seeking (“I crave excitement and new sensations”). Psychometric data for the BIS/BAS are presented elsewhere (Carver & White, 1994).

*Eysenck Personality Questionnaire-Revised Short Form (EPQ-RS).* The Eysenck Personality Questionnaire-Revised Short Form (EPQ-RS) is a 48-item questionnaire that measures three personality dimensions: neuroticism (a predisposition to anxiety), extraversion (a predisposition to sociability), and psychoticism (a predisposition to antisocial behaviour) (Eysenck, Eysenck, & Barrett, 1985). Sample items from the scales include, “Do you ever feel ‘just miserable’ for no reason?” “Are you a worrier?” (neuroticism), “Are you a talkative person?” “Can you usually let yourself go and enjoy yourself at a lively party?” (extraversion), “Would being in debt worry you?” and “Do you enjoy co-operating with others?” (psychoticism). The EPQ-RS also includes a lie scale which measures social desirability. Sample items from the lie scale include, “Are all your habits good and desirable ones?” and “Have you ever said anything bad or nasty about anyone?” All items are answered either “yes” (1) or “no” (0) and scores are summed to derive a total for each of the 4 subscales. The EPQ-RS is a psychometrically sound measure with strong test-retest reliability and internal consistency (Eysenck, Eysenck, & Barrett, 1985).

*UCLA Loneliness Scale.* The University of California, Los Angeles (UCLA) loneliness scale is composed of 20 items rated from 0 (“extremely uncharacteristic”) to 4 (“extremely characteristic”). Sample items include, “I lack companionship,” and “I feel left out.” Reliability and validity are reported elsewhere (Russell et al., 1980).

*Illness Attitudes Scale (IAS).* The Illness Attitudes Scale (IAS; Kellner, 1986, 1987) is a 29-item instrument used to assess fears, attitudes, and beliefs associated with hypochondriasis and abnormal illness behaviour. It consists of nine three-item subscales (Kellner, 1986, 1987): Worry about Illness (WI; general worry about having a serious illness), Concern about Pain (CP; concerns that physical pain experiences may be indicative of an underlying disease), Health Habits (HH; avoidance of behaviours that may be harmful to one's health), Hypochondriacal Beliefs (HB; belief in the existence of a disease which physicians have failed to diagnose), Thanatophobia (TH; fear of death), Disease Phobia (DP; worries about having specific diseases), Bodily Preoccupations (BP; a sensitivity to bodily sensations which may be indicative of illness), Treatment Experiences (TE; how frequently a person has sought medical treatments), and Effects of Symptoms (ES; the extent to which bodily symptoms interfere with general functioning). Each item is scored on a 5-point Likert scale ranging from 0 (“no”) to 4 (“most of the time”). Two additional items on the IAS (items 22 and 26) provide supplementary information, but are not used in scoring. The IAS has been reported to have sound psychometric properties (Kellner, 1987).

*Depression Anxiety Stress Scales 21 (DASS-21).* The Depression Anxiety Stress Scales 21 (DASS-21; Lovibond & Lovibond, 1995) is a 21-item questionnaire consisting

of three 7-item subscales, which respectively assess depression, anxiety, and stress. Each item refers to the past week and is scored on a 4-point scale ranging from 0 (“Did not apply to me at all”) to 3 (“Applied to me very much, or most of the time”). The DASS-21 is derived from the 42-item Depression Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1995).

## Results

### *Psychometric Properties of the RCBSS*

#### *Reliability Analyses*

Internal consistency for both the shyness ( $\alpha = .85$ ) and sociability ( $\alpha = .80$ ) scales of the RCBSS were strong and comparable to previously reported data. The internal consistency for the RCBSS administered at the same time point was also strong for both scales (shyness,  $\alpha = .90$ ; sociability,  $\alpha = .81$ ). When administered 6 months later, the internal consistency remained strong (shyness,  $\alpha = .90$ ; sociability,  $\alpha = .81$ ). Test-retest reliability between the initial administrations of the RCBSS within visit were strong for both the shyness,  $r(151) = 0.88, p < 0.001$ , and sociability,  $r(152) = 0.76, p < 0.001$ , scales. 6-month test-retest reliability of the RCBSS had correlation coefficients of 0.56 ( $p < 0.05, n = 23$ ) and 0.50 ( $p < 0.05, n = 23$ ) for the shyness and sociability scales, respectively.

#### *Convergent-Discriminant Validity*

Correlations were calculated to examine the relation between the RCBSS and other commonly administered measures related to the construct of shyness (Tables 1 – 4). Weak to strong correlations were found between the RCBSS shyness scores and related measures of social phobia (SPIN, .80; SPS, .65), depression (BDI, .37), and loneliness

(UCLA Loneliness Scale, .58). Sociability was weakly negatively correlated with social phobia (SPIN, -.34; SPS, -.28) and loneliness (-.38) (Table 1). The BIS/BAS scales were generally weakly correlated with both shyness (BIS, -.24; BAS Reward, .25; BAS Drive, .24; BAS Fun Seeking, .32) and sociability (BAS Reward, -.23; BAS Drive, -.24; BAS Fun Seeking, -.30) scores. RCBSS scores were weakly to moderately correlated with the Eysenck personality subscales of extraversion (shyness, -.67; sociability, .58) and neuroticism (shyness, .51; sociability, -.25) (Table 3). Lastly, RCBSS shyness scores were weakly correlated with the DASS-21 subscales of depression (.33), anxiety (.30) and stress (.36) (Table 4).

### *Predictive Validity*

In order to determine the predictive validity of the RCBSS, correlations were calculated between RCBSS scores and other common measures of social phobia, depression, and affective valence administered 6 months later (Table 5). RCBSS shyness scores were strongly correlated with measures of social phobia 6 months later (SPIN, .73; SPS, .71) and weakly correlated with measures of depression (BDI, .39) and negative affect (.39). Sociability scores were moderately negatively correlated with social phobia measures (SPIN, -.61; SPS, -.60).

It should be noted that the magnitudes of the correlations presented in Table 5 were inflated due to the selected nature of the second visit. Participants selected for extreme shyness were likely to have scored higher on related measures and therefore yielded higher correlations. In order to determine the predictive validity of shyness in an



alternate fashion, the group differences between the high and low shy groups were also examined at Visit 2 (Table 6).

Table 1

Pearson correlations between RCBSS scores and related constructs at Visit 1

	SPIN	SPS	BDI	UCLA Loneliness Scale
Shy	.798**	.654**	.368**	.576**
Social	-.344**	-.275**	-.111	-.375**

\*\*  $p < 0.001$

Table 2

Pearson correlations between RCBSS scores and BIS/BAS scores at Visit 1

	BIS	BAS Reward	BAS Drive	BAS Fun Seeking
Shy	-.239*	.254*	.237*	.324**
Social	.015	-.231*	-.244*	-.292**

\* $p < 0.05$ , \*\*  $p < 0.001$

Table 3

Pearson correlations between RCBSS scores and Eysenck Personality Questionnaire subscales at Visit 1

	Psychoticism	Extraversion	Neuroticism	Lie
Shy	-.049	-.670**	.505**	.121
Social	-.077	.575**	-.253*	.071

\*  $p < 0.05$ , \*\*  $p < 0.001$

Table 4

Pearson correlations between RCBSS scores and DAS-21 subscales at Visit 1

	Depression	Anxiety	Stress
Shy	.326**	.299**	.363**
Social	-.375	-.0467	-.036

\*\*  $p < 0.001$

Table 5

Pearson correlations between RCBSS scores and related constructs at Visit 2

	SPIN T2	SPS T2	BDI T2	PA	NA
Shy	.726**	.711**	.391*	-.183	.385*
Social	-.601*	-.590*	-.002	.196	-.273

\*  $p < 0.05$ , \*\*  $p < 0.001$

Table 6  
Means and standard deviations of the high and low shy groups for Visit 2 measures

Measure	High Shy (n = 16)		Low Shy (n = 8)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
SPIN*	13.38	13.38	1.81	2.97
PA	32.38	7.58	35.81	5.06
NA	23.88	9.79	19.13	6.46
SPS*	24.25	17.97	6.40	5.25
BDI	8.27	9.92	2.75	2.86

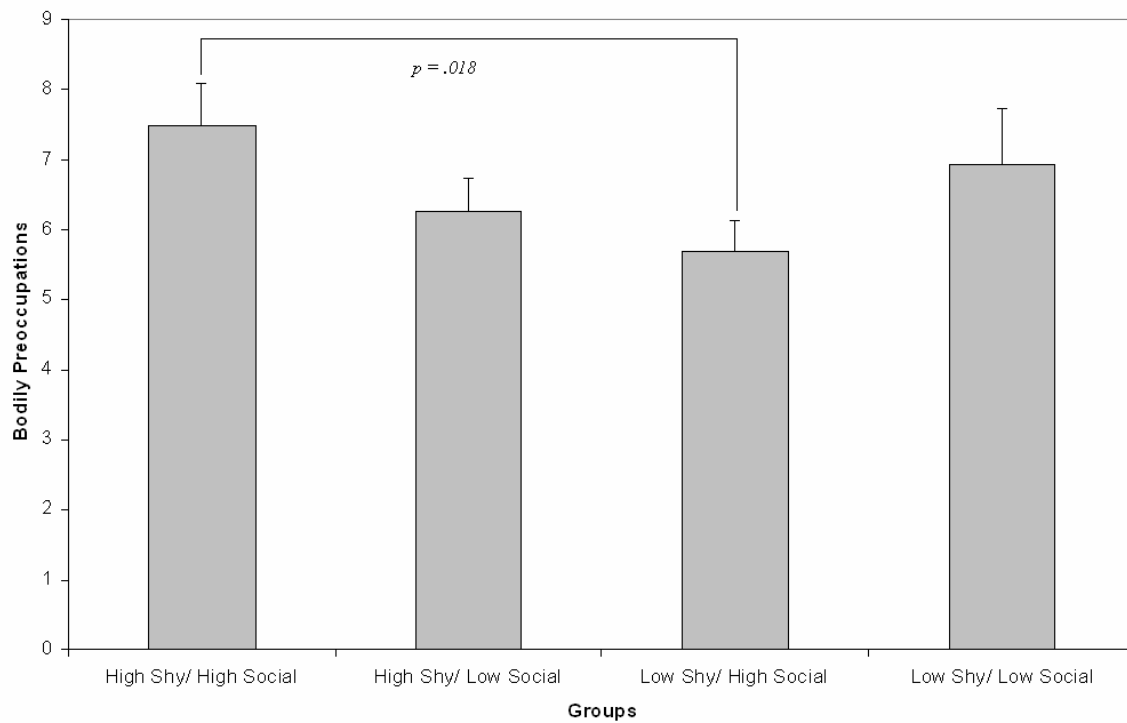
\*  $p < 0.05$

### *Moderating Influences*

In order to determine whether sociability had a moderating effect on the relation between shyness and mental health outcomes, a median split was first performed to yield high shy and low shy groups as well as high social and low social groups. A two-way analysis of variance (ANOVA) was then performed with group (shy: high, low; social: high, low) as the between-subjects variable and IAS score as the dependent measure. Only scores from female participants were used, given that a disproportionate number of studies have utilized solely female participants when examining the relation between shyness and sociability (e.g. Schmidt, 1999; Schmidt & Fox, 1994). Means and standard deviations for each of the nine IAS subscales are presented in Table 6.

The analysis revealed a significant shy X social interaction only on the Bodily Preoccupations subscale of the IAS ( $F(1, 83) = 4.16, p = 0.04$ ). In order to decompose the source of this interaction, separate between-subject *t*-tests were performed. Four groups were created: high shy-high social, high shy-low social, low shy-high social, low shy-low social. As predicted, there was a significant difference in scores for the high shy-

high social ( $M = 7.50$ ,  $SD = 2.39$ ) and low shy-high social ( $M = 5.69$ ,  $SD = 2.43$ ) groups,  $t(46) = 2.45$ ,  $p = 0.018$  (see Figure 1).



*Figure 1.* Differences between high and low shy and social groups on Bodily Preoccupations scores.

Table 7  
*Means and standard deviations for the nine IAS subscales*

	High Shy/ High Social		High Shy/ Low Social		Low Shy/ High Social		Low Shy/ Low Social	
	(n = 16)		(n = 27)		(n = 32)		(n = 12)	
	M	SD	M	SD	M	SD	M	SD
Bodily Preoccupations	7.50	2.39	6.26	2.47	5.69	2.43	6.92	2.78
Worry about Illness	9.00	2.48	8.89	2.42	8.97	2.96	8.50	2.97
Concerns about Pain	8.69	2.60	8.22	2.47	7.63	2.80	8.08	2.81
Health Habits	10.56	2.34	10.56	2.34	9.78	2.35	9.33	2.81
Hypochondriacal beliefs	4.63	2.19	5.44	2.49	3.56	1.27	4.58	2.47
Thanatophobia	7.00	2.66	7.33	2.83	6.56	2.97	6.50	2.65
Disease Phobia	4.47	2.72	4.59	2.15	4.84	2.78	4.25	1.87
Treatment Experience	7.81	2.76	6.89	2.28	7.40	2.11	7.08	1.68
Effects of Symptoms	7.81	2.79	6.37	2.37	6.88	2.94	5.42	2.35

There were no significant main or interactions effects for sex and age on the IAS.

### Discussion

The purpose of the present thesis was to examine two issues. Firstly, the psychometric properties of the Revised Cheek and Buss Shyness and Sociability (RCBSS; Cheek, 1983; Cheek & Buss, 1981) scale were examined in terms of reliability and validity. Secondly, once it was established that the RCBSS was psychometrically sound, the interaction between shyness and sociability in predicting mental health and psychosomatic functioning was assessed.

### ***Psychometric Properties of Shyness Measure***

One of the primary aims of the present investigation was to assess the psychometric properties of the RCBSS (Cheek, 1983; Cheek & Buss, 1981) scale. Results supported the notion that the RCBSS is a sound measure of shyness. Internal consistency and test-retest reliability, assessed between two initial administrations within visit and again six months later, were strong and comparable to previously reported data. Scores on the RCBSS correlated moderately-to-strongly with measures of social phobia and related personality traits. Importantly, RCBSS scores correlated less so with measures of depressive symptomology, yielding support for the convergent/discriminant validity of the measure. Additionally, strong correlations between RCBSS scores and measures of social phobia administered 6 months later and weak correlations with measures of depression and negative affect administered 6 months later provided support for the prospective utility of this measure. These findings not only serve to replicate previous findings (Hopko et al., 2005) but provide further support that the RCBSS is a reliable measure of shyness short and long term.

The psychometric analyses performed yielded results that both replicate and extend previous findings. The strong internal consistency (shy,  $\alpha = .85$ ; social,  $\alpha = .80$ ) of the 10-item RCBSS used in this investigation was comparable to previously reported analyses of various versions of the scale (see Crozier, 2005, for a review). Furthermore, no previous studies have evaluated the reliability of the RCBSS during the same visit. The present study showed that RCBSS shyness and sociability scores remained both internally consistent and reliable when administered during the same visit. The weak

correlations between RCBSS shyness scores and BDI and SPS scores reported by Hopko et al. (2005) were replicated. Furthermore, Hopko et al. (2005) found a significantly stronger correlation between RCBSS shyness score and social anxiety as assessed by the Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) as compared to the Social Phobia Scale (SPS; Mattick & Clarke, 1998). Similarly, the present study found a stronger correlation between the RCBSS and SPIN as compared with the SPS. Like the SIAS, the SPIN is more circumscribed than the SPS in that it was designed to assess symptoms specific to social phobia while the SPS assesses more general fears of being evaluated in various situations. This finding mirrors the results by Hopko et al. (2005) and further supports the notion that shyness and social phobia are similar but not overlapping constructs (Heiser et al., 2003) and that they are divergent from more general socially phobic behaviours.

***Shyness and Mental Health: Moderating influences of sociability***

The second research aim was to determine whether sociability had a moderating influence on the relation between shyness and different aspects of mental health beyond what has been reported in the extant literature e.g. disordered eating (Miller, Schmidt, & Vaillancourt, 2008), depression (Bell et al., 1990), allergies (Schmidt & Fox, 1995), and somatic complaints (Henriksen & Murberg, 2009). The results revealed a significant shy X social interaction on the Bodily Preoccupations subscale of the IAS. This interaction was decomposed to show that BP scores for the high shy-high social group were significantly higher than those of the low shy-high social group.

The interaction between shyness and sociability in predicting BP scores is interesting in that this finding supports the notion that high shy-high social individuals (the conflicted subtype) can be differentiated from some of the other high and low combinations of shyness and sociability. It has long been recognized that shyness is not a unitary construct and that shy individuals can be differentiated based on sociability (Asendorpf, 1990; Asendorpf & Meier, 1993; Cheek & Buss, 1981). Furthermore, work by Schmidt and his colleagues (Schmidt, 1999; Schmidt & Fox, 1994, 1995) has shown that shyness and sociability are distinguishable on measures of central (i.e., regional EEG) and autonomic (i.e., heart rate variability) psychophysiology, and the conflicted group is distinguishable from the other shyness and sociability combinations. Santesso, Schmidt and Fox (2004) extended these findings and found that young adults who scored highly on both shyness and sociability reported more substance use behaviours. Nevertheless, little work has been done to elucidate how shy subtypes differ on psychosomatic measures such as the IAS. The BP subscale assesses sensitivity to bodily sensations which may be indicative of illness. That the conflicted group had higher BP scores than did the low shy-high social group perhaps shows that the conflicted group is particularly in tune with their internal milieu.

Cheek and Krasnoperova (1999) put forth the idea that the best way to organize typical shyness symptoms is through a tripartite model which includes somatic anxiety, acute public self-consciousness, and social competence. The first component is of particular interest because somatic anxiety (which includes global feelings of emotional arousal and specific physiological complaints like upset stomach, pounding heart,

sweating, or blushing) is related to items assessed on the BP subscale. Furthermore, Crozier (1979, 1982) argued that shyness may be conceptualized as the tendency to become anxiously self-preoccupied about social interactions. Hartman (1989) similarly hypothesized that shy people become “preoccupied by metacognition”; that is, they pay particular attention to thoughts about their physiological arousal, social performance, and other’s perceptions of them as socially incompetent and inadequate. It is possible that socially conflicted individuals are hypersensitive to their internal milieu and that this sensitivity plays a role in maintaining their characteristic behaviours (such as somatic anxiety and anxious self preoccupation) to an even greater extent, especially when compared to those who are low shy-high social. Taken together with the results by Santesso, Schmidt and Fox (2004), if the conflicted subtype is comprised of individuals who are particularly attuned to their internal milieu, this may contribute to their use of alcohol in order to deal with the somatic anxiety that preoccupies them.

### ***Limitations***

There are several limitations of the present study that warrant discussion. First, this study is limited by the sole use of self-report measures. Psychophysiological or behavioural data would strengthen the results in that a more accurate profile of the conflicted subtype would be garnered. Second, the use of a fairly homogenous undergraduate university student population of generally uniform age and ethnic background weakens the applicability of these results to a more general population in the larger community. Lastly, the shy X social interaction on BP scores was significant when



considering female participants only; further study is required to determine why this relation does not hold for the male sample.

### ***Conclusion and Implications***

The results of the present study suggest that the RCBSS was psychometrically strong. That is, the scale was shown to be strong in terms of internal consistency, test-retest reliability, and convergent/discriminant as well as predictive validity. Importantly, these qualities were assessed within the same visit as well as 6 months later. These findings are an extension of the current literature which has primarily focused on long-term rather than very short-term reliability.

The moderating influence of sociability on the relation between shyness and psychosomatic functioning was also assessed. It was found that sociability in combination with shyness predicted greater BP scores for the high shy-high social group compared to the low shy-high social group, lending support to the notion that shyness is a heterogeneous construct, and that the conflicted subtype is of particular interest in that the treatment of shyness as a multidimensional construct, rather than a unitary construct, allows for us to account for additional variance in behavioural outcomes in different types of shy and socially withdrawn individuals. Such work informs early diagnosis because by determining the risk profiles of different shyness subtypes, appropriate therapeutic interventions can be applied that are more tailored and specific to different types of socially inhibited individuals.

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## Appendix

### The Revised Cheek and Buss Shyness Scale (RCBSS)

Cheek, J.M. (1983). Unpublished, Wellesley College, Wellesley MA 02181

Original 9-item version in Cheek, J.M., & Buss, A.H. (1981). Shyness and sociability. *Journal of Personality and Social Psychology*, 41, 330-339.

**INSTRUCTIONS:** Please read each item carefully and decide to what extent it is characteristic of your feelings and behavior. Fill in the blank next to each item by choosing a number from the scale printed below.

1 = Very uncharacteristic or untrue, strongly disagree

2 = Uncharacteristic

3 = Neutral

4 = Characteristic

5 = Very characteristic or true, strongly agree

- \_\_\_\_\_ 1. I feel tense when I'm with people I don't know well.
- \_\_\_\_\_ 2. I am socially somewhat awkward.
- \_\_\_\_\_ 3. I do not find it difficult to ask other people for information.
- \_\_\_\_\_ 4. I am often uncomfortable at parties and other social functions.
- \_\_\_\_\_ 5. When in a group of people, I have trouble thinking of the right things to talk about.
- \_\_\_\_\_ 6. It does not take me long to overcome my shyness in new situations.
- \_\_\_\_\_ 7. It is hard for me to act natural when I am meeting new people.
- \_\_\_\_\_ 8. I feel nervous when speaking to someone in authority.
- \_\_\_\_\_ 9. I have no doubts about my social competence.
- \_\_\_\_\_ 10. I have trouble looking someone right in the eye.
- \_\_\_\_\_ 11. I feel inhibited in social situations.
- \_\_\_\_\_ 12. I do not find it hard to talk to strangers.

\_\_\_\_\_ 13. I am more shy with members of the opposite sex.

Items 3, 6, 9 & 12 are reversed, recode before scoring (1=5) (2=4) (4=2) (5=1)

For college students, mean = 33.3. for men and 32.4 for women, alpha coefficient = .90, 45-day retest reliability = .88, correlation with aggregated ratings of shyness by friends and family = .68, and correlation with original 9-item version = .96. This revised scale is copyright 1983, Jonathan M. Cheek. The scale may be used in non-profit educational research without further permission.

For a review of the 13-item RCBS, see Leary, M.R. (1991) *Social anxiety, shyness, and related constructs*. In J.P. Robinson, P.R. Shaver & L.S. Wrightsman (Eds.), *Measures of Personality and Social Psychological Attitudes* (pp. 182-184). San Diego: Academic Press.