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The Social Interaction Phobia Scale: Continued Support for the Psychometric Validity of the SIPS Using Clinical and Non-clinical Samples

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Abstract
The present study sought to extend findings supporting the psychometric validity of a promising measure of social anxiety (SA) symptoms, the Social Interaction Phobia Scale (SIPS; Carleton et al., 2009). Analyses were conducted using three samples: social anxiety disorder (SAD) patients, generalized anxiety disorder (GAD) patients, and healthy controls. SIPS scores of SAD patients demonstrated internal consistency and construct validity, and the previously demonstrated three-factor structure of the SIPS was replicated. Further, the SIPS total score uniquely predicted SA symptoms, and SIPS scores were significantly higher for SAD patients than GAD patients or controls. Two cutoff scores that discriminated SAD patients from GAD patients and from healthy controls were identified. The current study is the first to replicate the SIPS three-factor model in a large, treatment-seeking sample of SAD patients and establish a cutoff score discriminating SAD from GAD patients. Findings support the SIPS as a valid, SAD-specific assessment instrument.

Keywords: anxiety, social anxiety disorder, social phobia, psychometric characteristics, social interaction anxiety, fear of public scrutiny

Social anxiety disorder (SAD) is characterized by a persistent and excessive fear of social situations in which the individual is subject to potential evaluation from others (American Psychiatric Association, 2013; Heimberg, Hofmann, et al., 2014). Cognitive-behavioral models of social anxiety posit that socially anxious individuals hold negatively distorted views of their abilities, performance, and appearance. Negatively distorted views result in expectations of evaluation from others and contribute to the maintenance of social anxiety (Clark & Wells, 1995; Heimberg, Brozovich, & Rapee, 2014). Exposure to the feared social situation consistently elicits marked anxiety, causing the individual to endure the situation in distress or to avoid the situation entirely. As a result, the anxiety experienced by socially anxious individuals can result in substantial impairment in functioning across multiple domains, including interpersonal and occupational functioning (Acarturk, de Graaf, van Straten, ten Have, & Cuijpers, 2008; Aderka et al., 2012; Bruch, Fallon, & Heimberg, 2003). SAD is also a significant health concern, as it is the fourth most common psychiatric disorder in the United States, with a lifetime prevalence of 12.1% (Kessler et al., 2005).

The Social Phobia Scale (SPS; Mattick & Clarke, 1998) and the Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) are two companion measures which were developed to assess two different types of social anxiety-related concerns: the SPS assesses public scrutiny fears including performance-related anxiety, whereas the SIAS assesses anxiety experienced during interactions in dyads or groups. The SPS and SIAS have both demonstrated strong convergent and discriminant validity (Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992; Mattick &Clarke, 1998) and have been shown to relate positively to other measures of social anxiety (Heimberg et al., 1992; Mattick & Clarke, 1998). Furthermore, both the SPS and SIAS discriminated individuals with SAD from patients with other anxiety disorders and healthy controls (E. J. Brown et al., 1997; Heimberg et al., 1992); however, multiple studies employing exploratory and confirmatory factor analyses have yielded equivocal results with regard to the best-fitting factor structure of the combined SPS and SIAS item pool (see Habke, Hewitt, Norton, & Asmundson, 1997; Mattick & Clarke, 1998; Osman, Gutierrez, Barrios, Kopper, & Chiros, 1998; Safren, Turk, & Heimberg, 1998). In an effort to clarify the factor structure of the combined SPS and SIAS, and to address whether

the factor structures of the scales differ based on whether they are administered together or separately, Carleton et al. (2009) suggested utilizing select items from the original SPS and SIAS to create an abridged, singular measure of social anxiety symptoms, which has since been dubbed the *Social Interaction Phobia Scale* (SIPS).

Carleton et al. (2009) conducted exploratory factor analyses of all 39 items[1] from the combined SPS and SIAS, analyzing items from each scale (a) separately as well as (b) simultaneously, using responses from a split-half clinical sample of patients with a principal diagnosis of SAD. Results suggested an optimal three-factor solution composed of 14 items. The solution was subsequently cross-validated via confirmatory factor analysis (CFA) in the remaining portion of the clinical sample and replicated in an undergraduate sample (Carleton et al., 2009). Each of the three SIPS subscales derived from the factor analyses represents a different latent dimension of social anxiety: SIAS items formed one factor, conceptualized as social interaction anxiety, whereas SPS items formed two separate (but correlated) factors, conceptualized as fear of overt evaluation and fear of attracting attention (Carleton et al., 2009).

Reilly, Carleton, and Weeks (2012) further evaluated the psychometric properties of the SIPS by administering the measure as a stand-alone item set for the first time. Using CFA in an undergraduate sample, the authors replicated the three-factor structure of the SIPS originally reported by Carleton et al. (2009) and found that the SIPS exhibited comparable factorial validity, whether it was administered as a stand-alone measure or when items were administered as part of the full SPS and SIAS scales. Furthermore, Reilly and colleagues found that the stand-alone SIPS demonstrated excellent internal consistency ($\alpha = .92$), as well as strong convergent and discriminant validity. In addition, the SIPS accounted for unique variance in social anxiety beyond fears of positive and negative evaluation (Reilly et al., 2012).

Alternative short-form versions of the SIAS/SPS, which demonstrate strong psychometric properties, have also been recently reported (Fergus, Valentiner, McGrath, Gier-Lonsway, & Kim, 2012; Kupper & Denollet, 2012; Peters, Sunderland, Andrews, Rapee, & Mattick, 2012). The psychometric properties of these short forms of the SIAS and SPS, including the SIPS, have been compared by Carleton, Thibodeau, Weeks, et al. (2014), and Le Blanc et al. (2014) also compared the SIAS/SPS short forms developed by Fergus et al. and Peters et al. with each other and with the original full-length forms. These studies have supported the incremental utility of the SIPS and the Peters et al. short forms relative to the other variations.

The current study was designed to advance the existing literature by comprehensively evaluating the psychometric properties of the SIPS across diagnostically diverse samples. It extends previous studies that have evaluated the psychometric properties of the SIPS in patients with SAD (e.g., Carleton et al., 2009) by incorporating two control groups consisting of patients with a principal diagnosis of GAD and healthy controls to (1) evaluate the specificity of elevated SIPS scores to SAD and (2) identify cutoff scores that best discriminate patients with SAD from GAD patients and healthy controls (to date, cutoff scores for the SIPS have been evaluated only for distinguishing between patients with SAD and unselected undergraduates; see Carleton et al., 2009). Additional analyses were conducted to

evaluate the construct validity of the SIPS and replicate the previously demonstrated 3-factor SIPS structure.

1. Method

1.1. Participants

Participants were: 433 treatment-seeking individuals with a primary diagnosis of SAD; 36 treatment-seeking individuals with a primary diagnosis of GAD; and 86 non-treatment seeking individuals who did not have any Axis I disorder. The over-all sample (n = 555) was evenly split on gender (53.3% male), diverse in age (range = 18–81 years, M = 32.2, SD = 11.2), well educated (89.1% with at least some college education), and comprised of multiple racial/ethnic groups (71.8% Caucasian/White; 18.2% African-American/Black; 2.9% Hispanic; 7.0% Asian or Pacific Islander; 0.2% Native American; 0.6% Other).

The principal SAD sample was composed of four subsamples of individuals who either participated in randomized controlled trials (RCTs) of cognitive-behavioral therapy (CBT) and/or medication treatments for SAD, or open CBT for SAD, at three treatment centers: the Adult Anxiety Clinic of Temple (AACT), the Anxiety Disorders Clinic of the New York State Psychiatric Institute (NYSPI), or the Anxiety Disorders Clinic of the University of Nebraska–Lincoln (UNL). One subsample comprised 38 individuals from the AACT who participated in a study that compared group CBT, the monoamine oxidase inhibitor phenelzine, their combination, and placebo medication in the treatment of SAD (Blanco et al., 2010). A second subsample consisted of 138 individuals who participated in an as-yet unpublished study of CBT augmentation of treatment with the selective serotonin reuptake inhibitor paroxetine conducted at the AACT (n = 46) and at NYSPI (n = 92) (Heimberg et al., 2015). A third subsample included 38 individuals who participated in a study of individual CBT versus a waitlist control for SAD at the AACT (n = 21) and UNL (n = 17) (Ledley et al., 2009). The fourth subsample, consisting of the remaining 219 patients with SAD, sought individual (n = 113) or group (n = 106) CBT for SAD at the AACT but did not participate in a treatment trial. This sample was also utilized in the study reported above by Le Blanc et al. (2014). However, all analyses are nonoverlapping, as Le Blanc et al. did not evaluate the SIPS. The principal GAD sample (n = 36) participated in an open trial (Mennin, Fresco, Heimberg, Ritter, & Moore, 2010) or RCT (Mennin, Fresco, Heimberg, & Ciesla, 2012) of emotion regulation therapy for GAD conducted at the AACT. The healthy control sample included two subsamples of individuals assessed at the AACT who were recruited from the community as comparison groups for two different studies (n_1 = 34, n_2= 52).

All patients from the AACT and UNL were screened with the Anxiety Disorders Interview Schedule for DSM-IV, Lifetime version (ADIS-IV-L; Di Nardo, Brown, & Barlow, 1994). Patients from the NYSPI were screened using the Structured Clinical Interview for DSM-IV (SCID-IV; First, Spitzer, Gibbon, & Williams, 1996). Most patients with SAD met criteria for one or more additional diagnoses: 28.9% met criteria for one additional diagnosis, 18.0% for two additional diagnoses, 5.8% for three additional diagnoses, and 4.2% for four or more additional diagnoses. The most common comorbid diagnoses were anxiety disorders (36.7%; 21.7% of the sample met criteria for an additional diagnosis of GAD), followed by unipolar depressive disorders (19.8%), substance abuse or dependence (4.4%),

and bipolar disorder (2.1%). Between one and three individuals met diagnostic criteria for each of the following disorders: anxiety disorder NOS, anorexia nervosa, eating disorder NOS, hypochondriasis, stuttering, adjustment disorder, dyssomnia, and pathological gambling.

In the principal GAD sample, exclusionary criteria included: imminent risk of suicide; substance abuse or dependence within the previous six months; a current diagnosis of organic mental disorder, schizophrenia, psychotic disorder, bipolar I disorder, or dementia; diagnosis of borderline or narcissistic personality disorder; concurrent psychotherapy; and psychotropic medications not stabilized for at least three months prior to study initiation. The rates of comorbidity were high. A majority of the sample met criteria for one or more additional diagnoses: 30.6% met criteria for one additional diagnosis, 22.2% for two additional diagnoses, 16.7% for three additional diagnoses, and 2.8% for four additional diagnoses. The most common comorbid diagnoses were anxiety disorders (66.7%; 47.2% met criteria for an additional diagnosis of SAD), followed by unipolar depressive disorders (41.7%). Healthy control participants were assessed using the current version of the ADIS-IV (T. A. Brown, Di Nardo, & Barlow, 1994). Participants were excluded if they met criteria for any current Axis I diagnosis.

All participants were recruited via advertisements at each of the respective sites, in the community, or online. Individuals who participated in the RCTs received treatment at no charge, and some were compensated for participation in post-treatment assessments; individuals in open treatment were provided therapy on a sliding scale, and healthy control participants were provided a modest monetary compensation for their participation. Patients completed the questionnaires used in the present analyses as part of a battery of questionnaires, prior to initiation of treatment. Healthy control participants also completed a battery of questionnaires, including those used in the current analyses, following administration of the ADIS-IV.

1.2. Measures

Study participants completed a series of measures that allowed for the assessment of the psychometric validity of the SIPS.

1.2.1. Clinician-administered measures

Anxiety Disorders Interview Schedule for DSM-IV: Lifetime Version (ADIS-IV; Di Nardo et al., 1994). The ADIS-IV-L is a widely used semistructured clinical interview that assesses current and past episodes of anxiety disorders, including SAD and GAD, and allows for the diagnosis of DSM-IV disorders by providing screening questions and probes. Clinician's Severity Ratings (CSRs) for diagnoses are made using a 9-point Likert-type scale that ranges from 0 to 8; scores of 4 or above indicate that the patient has met criteria for a DSM-IV diagnosis. The ADIS-IV-L demonstrates strong inter-rater reliability, $\kappa = .77$, as evidenced by the assessment of SAD in a sample of 362 anxiety disordered patients who were administered two independent ADIS-IV-L interviews (T. A. Brown, Di Nardo, Lehman, & Campbell, 2001). Inter-rater agreement of the ADIS-IV-L has also been found for both situational fear ratings ($r = .86$) and clinical severity ratings ($r = .80$). The ADIS-IV-L was administered to all patient participants at the AACT and UNL, and the current version of the ADIS-IV

was administered to all healthy control participants. All individuals administering the two versions of the ADIS-IV had satisfied training criteria outlined by T. A. Brown et al. (2001) and were experienced clinicians with at least masters-level training in clinical psychology.

Structured Clinical Interview for DSM-IV Axis I Disorders—Patient Edition (SCID-I/P; First et al., 1996). The SCID-I/P is a commonly used diagnostic instrument that provides clinicians with mandatory probes based upon DSM-IV diagnostic criteria, a categorical system for rating symptoms, and an algorithm for determining final diagnoses. Ventura, Liberman, Green, Shaner, and Mintz (1998) found that the SCID-I/P demonstrated 82% diagnostic accuracy in a general clinical sample when SCID-I/P raters' diagnoses were compared to consensus diagnoses (as determined by a group of trained diagnosticians); diagnostic accuracy remained very good (i.e., 83%) when reassessed one year later. Furthermore, thirty interviewers using the SCID-I/P demonstrated excellent agreement on symptoms ($\kappa = .85$) following training and maintained good agreement on symptoms ($\kappa = .76$) one year later. In addition, Ventura and colleagues found that the inter-rater reliability of SCID-I/P diagnoses was excellent regardless of whether interviewers had previous experience with structured interviews (both κs > .82). Crippa et al. (2008) also found good inter-rater agreement ($\kappa = .80$) on the diagnosis of SAD when the SCID-I/P Social Phobia module was administered to a sample of undergraduate students. Individuals administering the SCID-I/P in the current study possessed qualifications equal to those administering the ADIS-IV and had satisfied training criteria as outlined by First et al.(1996). The SCID-I/P was administered to all patients at the NYSPI.

Liebowitz Social Anxiety Scale (LSAS; Liebowitz, 1987). The LSAS is a 24-item, clinician-administered measure that uses two separate 4-point Likert-type rating scales to assess fear and avoidance in social interaction and performance situations; the rating scales range from 0 (*none*, for fear ratings; *never*, for avoidance ratings) to 3 (*severe*, for fear ratings; *usually*, for avoidance ratings). Eleven items assess fear and avoidance of social interactions, and13 items assess fear and avoidance of performance situations. The LSAS may be scored to provide a number of subscale scores, but only the total score was used in the present study. Examples of LSAS items include: *entering a room when others are already seated and talking to people in authority*. The LSAS total score has been found to demonstrate good internal consistency ($\alpha = .96$) and adequate convergent validity (all rs > .49, all ps < .001) (Heimberg et al., 1999). Discriminant validity of the LSAS is supported by findings of significantly greater correlations with social anxiety measures than with measures of general anxiety and depression (Heimberg et al., 1999). In the current study, 81.5% of the patients with principal SAD were administered the LSAS. The LSAS was used as the primary convergent measure in the present analyses, as it was specifically designed to assess social anxiety symptoms.

1.2.2. Self-report measures

Social Phobia Scale (SPS; Mattick & Clarke, 1998) **and Social Interaction Anxiety Scale** (SIAS; Mattick & Clarke, 1998). The SPS is a measure of social anxiety designed to assess public scrutiny fears; the SIAS is a measure of social anxiety designed to assess anxiety when interacting in dyads and groups. Both scales consist of 20 items rated on a 5-point

Likert-type scale with values ranging from 0 (*not at all characteristic or true of me*) to 4 (*extremely characteristic or true of me*). Examples of SPS items include: *I can get tense when I speak in front of other people and I worry about shaking or trembling when I'm watched by other people.* Examples of SIAS items include: *I find myself worrying that I won't know what to say in social situations and I am nervous mixing with people that I don't know well.* The SPS and SIAS have demonstrated strong internal consistency in clinical and undergraduate samples (all αs > .89 [SPS] and .88 [SIAS]; Heimberg et al., 1992; Mattick & Clarke, 1998), as well as strong test-retest reliability at four and 12 weeks (all *r*s > .91) in a clinical sample. The SPS and SIAS have also demonstrated strong discriminant validity, with both scales exhibiting stronger positive correlations with social anxiety measures than with measures of general distress (E. J. Brown et al., 1997; Mattick & Clarke, 1998). The SPS and SIAS have also shown excellent sensitivity to the presence of SAD (Heimberg et al., 1992) and to adequately discriminate individuals with SAD from patients with other anxiety disorders and normal controls (E. J. Brown et al., 1997; Mattick & Clarke, 1998). Given that participants in the present study were not administered the SIPS as a stand-alone item set (but were administered the SPS and SIAS), SPS and SIAS items were used to generate SIPS total and subscale scores.[2] The SIPS total score is calculated by summing the *social interaction anxiety* subscale (consisting of SIAS items 7, 10, 15, 16, and 19), the *fear of overt evaluation* subscale (consisting of SPS items 4, 6, 8, 13, 16, and 17), and the *fear of attracting attention* subscale (consisting of SPS items 12, 14, and 15). In the current study, 100% of patients with principal SAD or GAD, as well as healthy controls, were administered the SIAS and SPS.

Anxiety Sensitivity Index (ASI; Reiss, Peterson, Gursky, & McNally, 1986). The ASI is a 16-item self-report measure that assesses the tendency to fear anxiety- and panic-related symptoms based upon the belief that they may have catastrophic consequences; it utilizes a 5-point Likert-type rating scale that ranges from 0 (*agree very little*) to 4 (*agree very much*). Examples of ASI items include: *Unusual bodily sensations scare me* and *It scares me when my heart beats rapidly*. The majority of factor analytic investigations suggest that the ASI comprises three lower-order factors (i.e., *fear of somatic sensations*, *fear of cognitive dyscontrol*, and *fear of socially observable anxiety reactions*) that load onto a single, higher order factor (Taylor, Koch, Woody, & McLean, 1996; Zinbarg, Barlow, & Brown, 1997). The *fear of somatic sensations* and *fear of cognitive dyscontrol* subscales were used as discriminant measures in the present analyses; however, the *fear of socially observable anxiety reactions* subscale was not utilized in the present analyses, given that it was not specifically designed to assess social anxiety(Reilly et al., 2012). The ASI has demonstrated good internal consistency across both clinical and undergraduate control samples (all αs > .81; Peterson & Plehn, 1999), and good test-retest reliability in an undergraduate sample over periods of two weeks (r = .75; Reiss et al., 1986) and three years (r = .71; Maller & Reiss, 1992). ASI scores have also been found to accurately predict panic-like symptoms above and beyond trait anxiety symptoms (Reiss et al., 1986). Of note, due to clerical error, 17% of participants in the present study were administered a 15-item version of the ASI; accordingly, the score on the sixteenth ASI item (i.e., item four) for these participants was generated via mean imputation using data from the relevant subscale (i.e., *fear of somatic sensations*) to ensure that the 16-

item ASI score was well estimated for study analyses. In the current study, 55.9% of patients with principal SAD, 94.4% of patients with principal GAD, and 100% of healthy control participants were administered the ASI.

Beck Depression Inventory–II (BDI-II; Beck, Steer, & Brown,1996) The BDI-II, a revised version of the BDI-IA (Beck, Rush, Shaw, &Emery, 1979), is a 21-item self-report instrument that yields a total score and is designed to assess the severity of depressive symptoms. Items are rated on a 4-point rating scale ranging from 0 to 3. The convergent validity of the BDI-II has been supported by a strong and positive correlation (r = .68) with another measure of depression, which was significantly higher than the correlation with a measure of anxiety, also providing evidence for discriminant validity (Beck et al., 1996). Additionally, the BDI-II has demonstrated high internal consistency among outpatient (α = .92) and undergraduate (α = .93) samples (Beck et al., 1996). The BDI-II was used as a discriminant measure in all relevant analyses. Of note, some participants in the present study (i.e., 51.8%) were administered the BDI-IA, whereas others were administered the BDI-II. Accordingly, all BDI-IA raw scores were converted into BDI-II raw scores using a conversion heuristic, generated using an equipercentile equating method, provided in the BDI-II manual (Beck et al., 1996). In the current study, 97.9% of patients with principal SAD, 94.4% of patients with principal GAD, and 100% of healthy control participants were administered either the BDI-II or the BDI-IA.

Brief Fear of Negative Evaluation Scale—Straightforward Items (BFNE-S; Rodebaugh et al., 2004; Weeks et al., 2005). The BFNE (Leary, 1983) is a 12-item, self-report measure of fear and distress related to negative evaluation from others that uses a 5-point Likert-type rating scale, ranging from 1 (*not at all characteristic of me*) to 5 (*extremely characteristic of me*). Rodebaugh et al. (2004) and Weeks et al. (2005) reported that the 8 straightforwardly worded BFNE items were more reliable and valid indicators of fear of negative evaluation than the reverse-scored BFNE items in undergraduate and clinical samples. Furthermore, relative to alternative derivations of BFNE items (i.e., Carleton, Collimore, & Asmundson, 2007; Carleton, McCreary, Norton, & Asmundson, 2006; Taylor, 1993), the straightforwardly worded BFNE items appear psychometrically superior (Carleton, Collimore, McCabe, & Antony, 2011). Accordingly, only the 8 straightforward (-S) BFNE items were utilized to calculate the total score in the present analyses. Examples from the BFNE-S include: *I am afraid that others will not approve of me* and *I often worry that I will say or do the wrong things*. The BFNE-S, which was utilized as a convergent measure in the present study, demonstrates excellent internal consistency in clinical samples (α = .89; Weeks et al., 2005). The convergent validity of the BFNE-S was also supported by positive correlations between the BFNE-S score and multiple measures of social anxiety, including both clinician-administered and self-report measures (all rs > .35).The BFNE-S total score also related more strongly to a measure of social anxiety than to measures of depression and anxiety sensitivity, providing support for discriminant validity (Weeks et al., 2005). In the current study, 94.0% of patients with principal SAD and 37.2% of healthy control participants were administered the BFNE-S; none of the principal GAD patients were administered the BFNE-S. Due to the fact that the BFNE-S assesses fear of negative evaluation, a strongly related, albeit distinct, construct with regard to social anxiety, this measure was used in present analyses as a secondary convergent measure.

Fear of Positive Evaluation Scale (FPES; Weeks, Heimberg, &Rodebaugh, 2008). The FPES is a 10-item instrument that uses a 10-point Likert-type rating scale, ranging from 0 (*not at all true*) to 9 (*very true*), to measure fear of positive evaluation, a cognitive component of social anxiety. The FPES has demonstrated strong internal consistency (all αs > .80), and test-retest reliability in both undergraduate (intraclass correlation coefficient = .70 over 5 weeks; Weeks, Heimberg, & Rodebaugh, 2008) and clinical (r = .80 over 4.5 months; Weeks, Heimberg, Rodebaugh, Goldin, & Gross, 2012) samples. The convergent validity of the FPES was supported by strong and positive correlations with measures of social anxiety and fear of negative evaluation (all rs > .45); additionally, the FPES exhibited a significantly stronger correlation with a measure of social anxiety than with measures of depression or worry (Weeks, Heimberg, & Rodebaugh, 2008). A series of CFAs also supported the factorial validity of the FPES in several undergraduate (e.g., see Weeks, Jakatdar, & Heimberg, 2010) and clinical (Weeks et al., 2012) samples. The FPES also accounts for significant variance in anxiety about being observed by others beyond that accounted for by an established measure of social anxiety (e.g., see Weeks, Heimberg, Rodebaugh, & Norton, 2008). In the current study, 18.7% of patients with principal SAD were administered the FPES; none of the patients with principal GAD or healthy control participants were administered the FPES. Due to the fact that the FPES assesses fear of positive evaluation, a strongly related, albeit distinct, construct with regard to social anxiety, this measure was used in present analyses as a secondary convergent measure.

1.3. Data analysis strategy

CFA was performed utilizing maximum likelihood estimation, using the structural equation modeling software program AMOS 16.0 (Arbuckle, 2007). In determining factor structure, global model fit was evaluated using the: (a) Comparative Fit index (CFI; Bentler, 1990), (b) Tucker-Lewis incremental fit index (TLI; Tucker & Lewis,1973), and (c) Root Mean Square Error of Approximation (RMSEA, Steiger & Lind, 1980). Hu and Bentler (1999) have suggested cutoffs for fit indices for evaluating the results of CFAs. Specifically, a cutoff of .95 or above on either the TLI or the CFI, combined with either a RMSEA "close to .06" (Hu & Bentler, 1999, p. 1) provides a good combination of fit indices to conclude that a structural model has adequate or better fit to the data.

2. Results

2.1. Preliminary analyses

All study variables were normally distributed. We examined whether any statistically significant gender, ethnicity, or age differences existed across the four SAD subsamples. No statistically significant differences were obtained with respect to gender, $\chi^2(3, N = 429) = 4.13$, p = .25, or age, $F(3, 421) = 2.44$, p = .06; however, there were statistically significant differences across the four SAD subsamples with respect to ethnicity, $\chi^2(3, N = 391) = 15.14$, p = .002. Specifically, non-Caucasian individuals were overrepresented in one of the SAD subsamples. That said, ethnicity was not statistically significantly associated with SIPS total or subscale scores, all ps ≥ .14. No other differences were noted; therefore, the subsamples were pooled into a larger sample of patients with principal SAD for analyses. Within

the overall sample of patients with principal SAD, the SIPS total and subscale scores exhibited tolerable levels of skewness and kurtosis (all skewness values <|0.94|, all *SE*s < .12; all kurtosis values <|0.90|, all *SE*s < .23). We also examined gender, ethnicity, and age differences within the two healthy control subsamples. No significant differences were found across the two healthy control subsamples with regard to ethnicity, $\chi^2(1, N = 85) = 1.39$, $p = .24$, age, $F(1, 84) = 1.62$, $p = .21$, or gender, $\chi^2(1, N = 86) = 1.31$, $p = .25$; as such, these two subsamples were pooled together as well.

In addition, the three overall samples (i.e., principal SAD, principal GAD, and healthy control samples) were compared to each other with regard to ethnicity, age, and gender. There were no significant differences between the principal SAD and healthy control samples with regard to ethnicity, $\chi^2(1, N = 476) = 0.01$, $p = .94$, or age, $F(1, 509) = 0.42$, $p = .52$. There was a significant gender difference, $\chi^2(1, N = 515) = 4.17$, $p = .04$. Specifically, men were overrepresented in the principal SAD sample; however, gender was not associated with the SIPS total or subscale scores in these subsamples, all *p*s > .30. In addition, no significant differences were found between the principal SAD and principal GAD samples with regard to ethnicity, $\chi^2(1, N = 426) = 0.53$, $p = .47$, or age, $F(1, 460) = 0.22$, $p = .64$. There was a significant gender difference between the two samples, $\chi^2(1, N = 465) = 9.64$, $p = .002$. Again, men were overrepresented in the principal SAD sample. Furthermore, gender was found to relate to the SIPS *fear of attracting attention* subscale, $F(1, 463) = 5.87$, $p = .016$, with women endorsing higher scores than men; for this reason, gender was accounted for in all analyses evaluating group differences on this subscale. Gender was not significantly related to scores on the SIPS *fear of overt evaluation or social interaction anxiety* subscales. Lastly, the principal GAD and healthy control samples did not differ on ethnicity, $\chi^2(1, N = 120) = 0.37$, $p = .55$, gender, $\chi^2(1, N = 122) = 2.3$, $p = .13$, or age, $F(1, 120) = 0.62$, $p = .43$.

2.2. Factorial validity

To evaluate the factor structure of the SIPS in SAD patients, a confirmatory structural equation model was tested utilizing maximum likelihood estimation in the sample of patients with principal SAD based on the previously demonstrated SIPS structure (Carleton et al., 2009; Reilly et al., 2012). Specifically, the model included: (1) all five of the social interaction anxiety-oriented SIPS items loading onto a single latent factor (i.e., *social interaction anxiety*); (2) all six of the fear of overt evaluation-oriented items loading onto a single, correlated latent factor (i.e., *fear of overt evaluation*); and (3) all three of the fear of attracting attention-oriented items loading onto a single, correlated latent factor (i.e., *fear of attracting attention*). All relationships in the model were allowed to vary freely. The three-factor SIPS model was also compared to a nested single-factor model, with all SIPS items loading onto a single latent factor.

The three-factor SIPS model demonstrated good fit in the overall SAD sample (i.e., CFI = .96; TLI = .95; RMSEA = .06) and provided better fit to the data, $\chi^2(1) = 794.59$, $p < .0001$, than the single-factor solution, which demonstrated comparatively poor fit (i.e., CFI = .73; TLI = .63; RMSEA = .17). The path diagram for the three-factor SIPS model is displayed in Figure 1. All loadings from this model were statistically significant ($p < .01$). The three SIPS factors were strongly and positively correlated (all *r*s > .55, all *p*s < .001; see Fig. 1). The *fear of attracting attention* and *fear of overt evaluation* factors were especially strongly correlated;

as such, an alternative, nested, two-factor model was tested with all five of the social interaction anxiety-oriented SIPS items (i.e., from the original SIAS) loading onto a single latent factor (i.e., *social interaction anxiety*), and all nine items from the original SPS (i.e., comprising the *fear of attracting attention* and *fear of overt evaluation* subscales) loading onto a single, correlated latent factor. The two-factor model demonstrated generally adequate fit (i.e., CFI = .95; TLI = .93; RMSEA = .07); however, the three-factor model originally reported by Carleton et al. (2009) and replicated by Reilly et al. (2012) provided a significantly better fit to the data, $\chi^2(1) = 60.89$, $p < .0001$, than the two-factor solution.

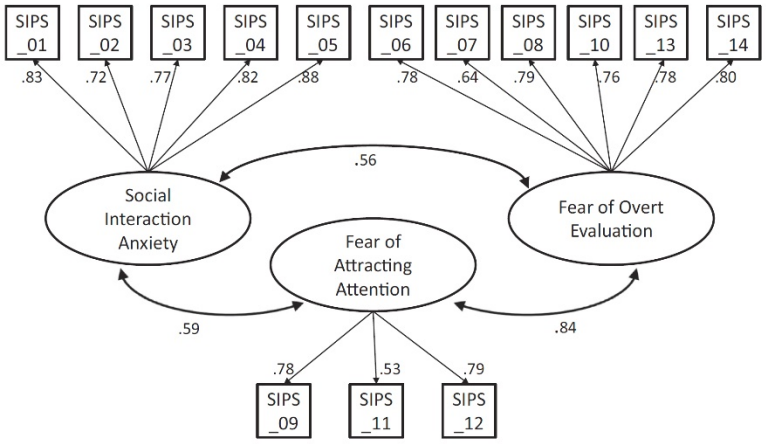

Figure 1. Completely standardized solution of the three-factor Social Interaction Phobia Scale (SIPS) model. All factor loadings are statistically significant ($p < .01$). Residual variances are not displayed for the sake of clarity; available upon request.

2.3. Internal consistency

The SIPS total score exhibited excellent internal consistency among patients with principal SAD ($\alpha = .91$), as did the *social interaction anxiety* subscale ($\alpha = .90$) and the *fear of overt evaluation* subscale ($\alpha = .89$). The fear of attracting attention subscale exhibited adequate internal consistency ($\alpha = .74$).[3] Within the sample of principal GAD patients, the SIPS total and social interaction anxiety subscale scores exhibited excellent internal consistency (both αs = .95), with the *fear of overt evaluation* subscale and the *fear of attracting attention* subscale demonstrating good ($\alpha = .89$) and acceptable ($\alpha = .76$) internal consistency, respectively. Within the healthy control sample, the SIPS total score exhibited good internal consistency ($\alpha = .87$); the *social interaction anxiety* and *fear of overt evaluation* subscales demonstrated acceptable internal consistency($\alpha = .79$ and .77, respectively); and the *fear of attracting attention* subscale demonstrated marginally adequate internal consistency($\alpha = .67$).

2.4. Convergent validity

A Bonferroni correction of $p = .05/12 = .004$ was applied to control for the number of comparisons between the SIPS total and three subscales scores and each of the three convergent measures within the overall principal SAD patient sample. The SIPS total score was

strongly and positively correlated with all SIPS subscale scores, all *r*s > .79; all *p*s < .001. In addition, statistically significant positive correlations were obtained between the SIPS total and subscale scores and both the primary (i.e., LSAS total score; all *p*s < .001) and secondary (i.e., BFNE-S and FPES total scores; all *p*s < .001) convergent measures. See Table 1.

Table 1. Zero-order correlations between the Social Interaction Phobia Scale total and subscale scores and all other study measures within the sample of patients with principal social anxiety disorder

Measure	SIPS total score	SIPS – Social interaction anxiety subscale	SIPS – Fear of overt evaluation subscale	SIPS – Fear of attracting attention subscale
Liebowitz Social Anxiety Scale	.69* (*n* = 353)	.56* (*n* = 353)	.62* (*n* = 353)	.52* (*n* = 353)
Brief Fear of Negative Evaluation Scale – Straightforward	.59* (*n* = 407)	.48* (*n* = 407)	.49* (*n* = 407)	.53* (*n* = 407)
Fear of Positive Evaluation Scale	.49* (*n* = 81)	.39* (*n* = 81)	.48* (*n* = 81)	.38* (*n* = 81)
Beck Depression Inventory – II	.43* (*n* = 424)	.36* (*n* = 424)	.36* (*n* = 424)	.40* (*n* = 424)
ASI – Fear of somatic sensation subscale	.20* (*n* = 242)	.01 (*n* = 242)	.22* (*n* = 242)	.34* (*n* = 242)
ASI – Fear of cognitive dyscontrol subscale	.24* (*n* = 244)	.08 (*n* = 244)	.21* (*n* = 244)	.40* (*n* = 244)

Note: SIPS, Social Interaction Phobia Scale; ASI, Anxiety Sensitivity Index. Alpha correction of *p* = .004 was utilized for convergent and discriminant measures separately. *p = .004.

2.5. Discriminant validity

A Bonferroni correction of *p* = .05/12 = .004 was applied to control for the number of comparisons between the SIPS total and three subscale scores and the three discriminant measures. Within the sample of principal SAD patients, the SIPS total and subscale scores related positively and significantly to depression (i.e., BDI-II scores), all *p*s < .001. The SIPS total and two of the subscale scores (i.e., the *fear of overt evaluation* and *fear of attracting attention* subscales) also related positively and significantly to somatic and cognitive concerns associated with anxiety sensitivity (i.e., ASI scores), all *p*s ≤ .001. No other relationships were statistically significant. See Table 1.

Significance tests were conducted within the sample of principal SAD patients to further evaluate the discriminant validity of the SIPS scores. Specifically, Fisher's *r* to z transformation tests (Meng, Rosenthal, & Rubin, 1992) were utilized to determine whether SIPS scores correlated significantly more strongly with the primary measure of social anxiety (i.e., LSAS scores) than with the measure of depression or the somatic and cognitive dimensions of anxiety sensitivity. With one exception, the SIPS total and all SIPS subscale scores related more strongly to the LSAS than to depression or the somatic and cognitive dimensions of anxiety sensitivity (i.e., BDI-II total, ASI somatic subscale, and ASI cognitive subscale scores, respectively; all *z*s > 2.16, all *p*s < .03). The SIPS *fear of attracting attention* subscale did not relate significantly more strongly to social anxiety than to the cognitive dimension of anxiety sensitivity, *z* = 1.47, *p* = .14.

2.6. Group differences

A one-way univariate analysis of variance was conducted to determine whether the SIPS total score was associated with diagnostic status (i.e., principal SAD, principal GAD, or healthy control). A significant omnibus group difference was obtained, $F(2, 552) = 211.73$, $p < .001$, partial $\eta^2 = 0.43$. Follow-up post hoc comparisons confirmed that SIPS total scores were significantly higher for the patients with principal SAD ($M = 30.11$, $SD = 11.84$, 95% CI [28.99, 31.23]) than for patients with principal GAD ($M = 17.78$, $SD = 13.60$, 95% CI [13.18, 22.38]) or healthy controls ($M = 3.57$, $SD = 4.31$, 95% CI [2.65, 4.49]), all ps < .001. In addition, SIPS total scores were significantly higher for the principal GAD group than for the healthy control group, all ps < .001. See Table 2.

Table 2. Means and standard deviations for the Social Interaction Phobia Scale total and subscale scores within the samples of patients with principal social anxiety disorder, patients with principal generalized anxiety disorder, and healthy controls

	M (*SD*)			
Sample	SIPS total score	SIPS – Social interaction anxiety subscale	SIPS – Fear of overt evaluation subscale	SIPS – Fear of attracting attention subscale
Principal social anxiety disorder ($n = 433$)	30.11 (11.84)	14.04 (4.67)	10.75 (6.22)	5.32 (3.15)
Principal generalized anxiety disorder ($n = 36$)	17.78 (13.60)	7.78 (5.67)	6.33 (5.78)	3.67 (3.54)
Healthy control ($n = 86$)	3.57 (4.31)	1.95 (2.17)	1.19 (1.97)	0.43 (.90)

Note: SIPS, Social Interaction Phobia Scale; *M*, mean; *SD*, standard deviation

A multivariate analysis of covariance was then conducted in the overall sample to evaluate whether SIPS *subscale* scores were associated with diagnostic status.[4] A significant omnibus effect was obtained, $F(6, 1088) = 62.63$, $p < .001$, partial $\eta^2 = 0.26$, and each of the SIPS subscale scores was found to vary across the three groups in univariate analyses, all Fs (5, 545) ≥ 42.44, all ps < .001, all partial η^2s ≥ 0.28. Fisher's LSD post hoc tests confirmed that all three SIPS subscale scores were significantly higher for patients with principal SAD than for patients with principal GAD or the healthy control group, and that subscale scores were also higher for the group with principal GAD than for healthy controls, all ps < .001. Gender was not significantly associated with SIPS total or subscale scores, all ps > .24.

2.7. Unique predictive ability of SIPS scores

A hierarchical regression analysis was conducted in the sample with principal SAD to evaluate whether the SIPS total score accounted for variance in social anxiety above and beyond that accounted for by other measures of social anxiety-related constructs and depression. The LSAS total score was the criterion variable; the BFNE-S, FPES, and BDI-II scores and gender were entered as predictors in the first step of the regression, with the SIPS total score entered in the second step. In the first step of the regression, the BFNE-S, FPES, and BDI-II total scores and gender jointly accounted for 33.8% of the variance in

LSAS scores, R^2= .34, $F(4, 62) = 7.39$, $p < .001$, with the FPES uniquely predicting LSAS scores. In the second step of the regression, all predictors jointly accounted for unique variance in LSAS scores, R^2= .53, $F(5, 62) = 12.62$, $p < .001$,with the SIPS total score independently accounting for unique variance in LSAS scores ($\Delta R^2 = .19$; see Table 3). Thus, even when controlling for gender and depression, SIPS total scores accounted for significant variance in social anxiety-related symptoms beyond that already accounted for by measures of fears of evaluation (i.e., core cognitive components of social anxiety; e.g., see Heimberg, Brozovich, & Rapee, 2014).

Table 3. Summary of regression weights from hierarchical regression analysis examining the prediction of Liebowitz Social Anxiety Scale scores by SIPS scores controlling for gender, depression, and fears of negative and positive evaluation within the sample of patients with principal social anxiety disorder

	B	*SE B*	*β*	ΔR^2
Step 1:				.34
BFNE-S	0.67	0.42	.20	
FPES	**0.47**	**0.19**	**.35**	
Gender	0.37	4.86	.01	
BDI-II	0.33	0.27	.16	
Step 2:				.19
BFNE-S	−0.16	0.40	−.05	
FPES	0.31	0.16	.23	
Gender	−1.10	4.16	−.02	
BDI-II	0.15	0.23	.07	
SIPS	**1.07**	**0.23**	**.57**	

Note: SIPS, Social Interaction Phobia Scale; BFNE-S, Brief Fear of Negative Evaluation Scale – Straightforward; FPES, Fear of Positive Evaluation Scale; BDI-II, Beck Depression Inventory – II. Step 1 $R^2 = .34$; Step 2 $R^2 = .53$. Values in bold indicate predictors that were significant at Steps 1 and 2, respectively; $p < .05$.

2.8. Receiver operating characteristic (ROC) analyses

To identify a potential SIPS threshold score that would best differentiate (a) patients with SAD from healthy control individuals and (b) patients with SAD from patients with GAD, ROC analyses were conducted. ROC analyses yield an effect size referred to as "area under the curve" (AUC) by mapping sensitivity (i.e., accurate identification of true positives) against specificity (i.e., accurate identification of true negatives). An AUC value of 1.0 indicates perfect classification of participants according to a criterion variable, whereas a value of .50 of the AUC is indicative of chance-level prediction. In the present study, the criterion variable was diagnostic status (i.e., a diagnosis of SAD versus no diagnosis).[5]

In order to identify externally valid cutoff scores, ROC analyses were first conducted within the full principal SAD ($n = 433$) and principal GAD ($n = 36$) samples. SIPS total scores ranged from 0 to 56. Results revealed that a raw score of 11 discriminated patients with principal SAD from healthy controls, with 93.8% sensitivity and 91.9% specificity (AUC = .98). A SIPS raw score of 24 best differentiated principal SAD from principal GAD patients (AUC = .74;sensitivity: 71%; specificity: 65.7%).

In addition, a second, and more stringent, set of ROC analyses was conducted utilizing only diagnostically pure clinical samples (i.e., only SAD patients without a comorbid diagnosis of GAD, n = 339, and only GAD patients without a comorbid diagnosis of SAD, n = 18). These additional analyses were conducted in order to identify cutoff scores with which to more accurately discriminate the aforementioned patient groups from each other and from a healthy control group.[6] A raw score of 12 discriminated patients with pure SAD from healthy controls, with 92.6% sensitivity and 95.3% specificity (AUC = .98). Furthermore, a SIPS raw score of 16 best differentiated SAD from GAD patients (AUC = .90; sensitivity: 87%; specificity: 83.3%). The lower specificity of the cutoff score distinguishing SAD from GAD patients was likely due to the small sample size of GAD patients without a comorbid SAD diagnosis. The ROC curves are displayed in Figures 2 and 3.3.

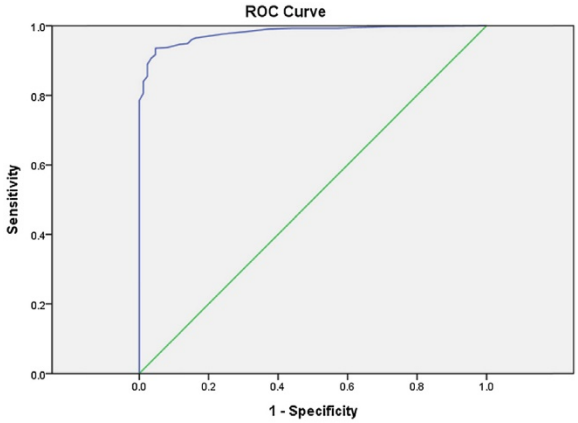

Figure 2. Receiver operating characteristic (ROC) curve for Social Interaction Phobia Scale threshold value discriminating patients with principal social anxiety disorder from healthy controls.

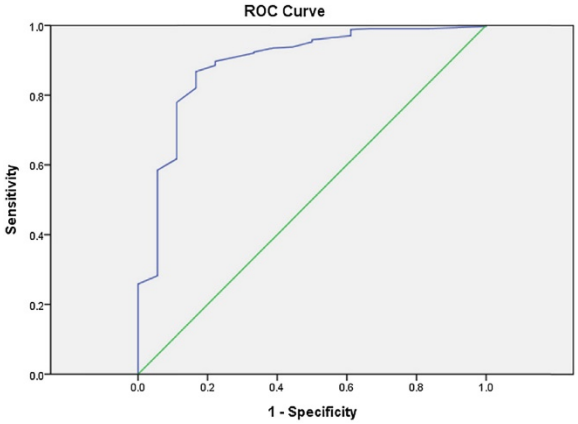

Figure 3. Receiver operating characteristic (ROC) curve for Social Interaction Phobia Scale threshold value comparing patients with pure social anxiety disorder to patients with pure generalized anxiety disorder.

3. Discussion

The present study sought to further evaluate the psychometric properties of the SIPS (Carleton et al., 2009), a recently developed measure of social anxiety that serves as a singular, condensed version of the SIAS and SPS (Mattick & Clarke, 1998). Although other short forms of the SIAS and SPS are available, further evaluation of the SIPS was warranted because previous research has found the SIPS to have enhanced utility relative to two other short forms of the SIAS and SPS (see Carleton, Thibodeau, Weeks, et al., 2014). The current study was specifically designed to assess the psychometric characteristics of the SIPS as a measure of social anxiety in a sample of patients with a principal diagnosis of SAD. The present research represents the first attempt to replicate the original three-factor model of the SIPS in a large, treatment-seeking sample of patients with SAD. In addition, two control groups (i.e., a sample of patients with a principal diagnosis of GAD and a sample of healthy control individuals) were used in the present study to evaluate whether SIPS scores are associated with a principal diagnosis of SAD and to establish cutoff scores differentiating patients with SAD from both patients with GAD and healthy controls.

Factor analyses of the SIPS supported the three-factor model initially demonstrated by Carleton et al. (2009; i.e., the *social interaction anxiety*, *fear of overt evaluation*, and *fear of attracting attention* factors) as statistically superior to a nested, single-factor model, as well as an alternative two-factor solution. Support for the multifactorial structure of the SIPS is also consistent with current cognitive-behavioral models of social anxiety, which underscore the multidimensionality of social anxiety (Clark & Wells, 1995; Heimberg, Brozovich, & Rapee, 2014). The SIPS total score exhibited excellent internal consistency among patients with principal SAD and principal GAD, as well as good internal consistency in the healthy control group. All SIPS subscale scores demonstrated at least adequate internal consistency across all samples, although the *fear of attracting attention* subscale exhibited only marginally adequate internal consistency in the healthy control sample.

In the sample of patients with principal SAD, the convergent validity of the SIPS was supported by strong and positive correlations between the SIPS total and subscale scores, an alternative measure of social anxiety, as well as measures of fears of negative and positive evaluation. Overall support for the discriminant validity of the SIPS was evidenced by the SIPS total and subscale scores relating significantly more strongly to a measure of social anxiety than to measures of depression or the somatic and cognitive components of anxiety sensitivity, except for the *fear of attracting attention* SIPS subscale. The results are largely in line with findings previously reported by Reilly et al. (2012) and thereby further support the SIPS as a valid measure of the affective and behavioral components of social anxiety.

The SIPS total and subscale scores were significantly greater for patients with principal SAD than for patients with principal GAD and healthy controls. Lastly, the total scores for the SIPS accounted for statistically significant variance in social anxiety beyond the variance accounted for by other social anxiety-related measures, even when controlling for gender and depression. Accordingly, the current results further support the SIPS as a *unique* predictor of social anxiety, apart from other established predictors. The present findings also identified two distinct SIPS cutoff scores that distinguish patients with SAD from healthy controls (i.e., a score of 12) and patients with GAD (and without comorbid

SAD; i.e., a score of 16). Given that SAD and GAD are highly comorbid disorders with overlapping symptomatology (Kessler et al., 2005), the ability of the SIPS to adequately discriminate between these two diagnostic categories is particularly useful from both research and clinical standpoints.

The discrepancy between the cutoff score of 21 that differentiated a clinical from a non-clinical sample identified by Carleton et al. (2009) and the cutoff scores identified in the present study can be accounted for by differences in non-clinical sample characteristics. That is, the non-clinical sample used by Carleton and colleagues was an unselected sample of undergraduate students, whereas the non-clinical sample used in the current study consisted of nonanxious, healthy controls (i.e., participants who did not meet diagnostic criteria for any psychological disorders). Indeed, it appears that a greater degree of social anxiety existed within the non-clinical sample used by Carleton and colleagues relative to the non-clinical sample of the present study, thereby resulting in differences in identified cutoff scores.[7] Future research should continue to evaluate and optimize cutoff scores for the SIPS for additional comparison populations, so that researchers may utilize reported cutoff scores that are best suited to their particular research questions.

Limitations of the present study may inform the direction of future research. First, the current sample was largely ethnically homogenous, being composed predominantly of Caucasian individuals within the United States; therefore, future studies should seek to extend the psychometric evaluation of the SIPS across various ethnic groups. Second, the current investigation evaluated the SIPS within samples of individuals who were enrolled in various clinical trials. However, the exclusionary criteria utilized in the present study were minimal and likely only served to exclude individuals who would have been excluded from clinical treatment in typical clinical settings (e.g., individuals who were substance dependent or at imminent risk of self-harm). Third, given that the present study utilized only a clinical control group composed of patients with principal GAD, future studies should seek to examine the psychometric properties of the SIPS in patients with SAD in relation to patients with other anxiety disorders or depressive disorders. Fourth, future studies also need to evaluate the SIPS as a stand-alone measure in clinical samples to extend previous findings regarding the psychometric validity of the SIPS (e.g., Reilly et al., 2012). In addition, given the small sample sizes of the principal GAD patient group and healthy control group, future research should seek to further evaluate the measurement invariance of the SIPS by including larger clinical as well as non-clinical control samples. Lastly, given that abbreviated versions of the SIAS/SPS, other than the SIPS, have been put forth (see Fergus et al., 2012; Kupper &Denollet, 2012; Peters et al., 2012), future research should seek to investigate the relative validity of the SIPS and these newer measures (e.g., see Carleton, Thibodeau, Weeks, et al., 2014).

The current study evaluated the psychometric properties of the SIPS in a large sample of treatment-seeking patients with principal SAD and replicated the previously demonstrated SIPS factor structure in a sample from the United States. The results support the SIPS as a psychometrically valid and factorially sound measure of social anxiety. The present study also established cutoff scores discriminating patients with SAD from patients with GAD, and extended previous findings concerning the optimal cutoff score with which

to differentiate SAD patients from healthy controls. Taken together, the results of the current study continue to support the SIPS as a reliable, practical, and informative assessment instrument for use in clinical samples.

Notes

1. Carleton and colleagues used the revised 19-item (as opposed to the original 20-item) SIAS in their investigation. The 19-item SIAS is the published version endorsed by Mattick and Clarke (1998).
2. It is important to highlight that previous research conducted by Reilly et al. (2012) demonstrated that SIPS items are as factorially sound when administered as a stand-alone measure or within the context of the SIAS and SPS scales; further, other recent research evaluating construct stability across variable item presentation formats (e.g., see Carleton, Thibodeau, Osborne, & Asmundson, 2012; Carleton, Thibodeau, Osborne, Taylor, & Asmundson, 2014) demonstrated that differences in item presentation had minimal effect on item endorsement or response patterns. Taken together, it is unlikely that the generation of SIPS scores from SIAS/SPS items resulted in any differential participant responding.
3. Due to the fact that only three items load onto the *fear of attracting attention* subscale, the lower internal consistency was not unexpected, given that shorter subscales exhibit lower internal consistency than do longer subscales (e.g., see Miller, 1995).
4. Gender was used as a covariate in the present analysis to account for our previous finding that gender related significantly to the SIPS *fear of attracting attention* subscale. Additionally, the SIPS total score was not included in this analysis due to inherent multicollinearity.
5. SIPS subscale scores were not utilized in the hierarchical regression or ROC analyses; the SIPS total score, given that it is a more comprehensive index of social anxiety symptoms and yields a greater range of possible scores than subscale scores, was a more appropriate and reliable variable to: (a) serve as a criterion variable in hierarchical regression analyses and (b) classify SAD patients in the ROC analyses.
6. Given that SAD and GAD are commonly comorbid within populations of anxiety disorder patients (Grant et al., 2005), patients with comorbid SAD and GAD were included in all analyses that involved evaluation of both patient groups in order to enhance the generalizability of our reported findings. Patients with secondary SAD and GAD were only excluded from one of the ROC analysis in the present study, to enhance statistical precision for distinguishing between those patients with only SAD from those patients with only GAD. However, the ROC results for this analysis while retaining patients with secondary SAD and GAD were nevertheless encouraging. Both sets of results are reported for the sake of comprehensiveness.
7. A one-sample *t*-test confirmed that the mean SIPS total score of the healthy control sample utilized in the present investigation ($M = 3.57$) was significantly lower than the mean SIPS total score of the non-clinical sample examined by Carleton et al. (2009; $M = 13.23$), $t(85) = -20.79$, $p < .001$. The result of this analysis indicates that the more conservative cutoff scores identified by the present investigation are attributable to differences in sampling procedures across these studies.

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