

Self-Efficacy for Social Situations in Adolescents with Generalized Social Anxiety Disorder

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Abstract. Self-efficacy is a potentially useful concept when applied to Social Anxiety Disorder (SAD). The aims of the current study were to examine the psychometric properties of the Self-Efficacy for Social Situations Scale (SESS; Gaudiano and Herbert, 2003) and to investigate the relationship between self-efficacy and anxiety in an adolescent sample with generalized SAD. Results replicated those found in a previous adult SAD sample. The SESS showed high internal consistency and good construct and criterion-related validity. The SESS also predicted subjective anxiety and perceived performance in social role play tests after controlling for social anxiety severity. Furthermore, self-efficacy more clearly predicted self-ratings in contrast to observer ratings of performance in social role play tests. Finally, changes in social self-efficacy were strongly associated with changes in social anxiety symptoms following treatment, even after controlling for changes in fear of negative evaluation. Treatment implications for adolescent SAD are discussed.

Keywords: Social anxiety, social phobia, self-efficacy, psychometrics, behavioral role play tests, adolescence.

Introduction

As originally proposed by Bandura's (1977) social cognitive theory, self-efficacy is "the conviction that one can successfully execute the behavior required to produce the outcomes" (p. 79). In other words, self-efficacy represents one's perceived ability to perform specific behaviors. Self-efficacy beliefs have been shown in numerous studies to be associated with and predictive of a diverse array of behaviors and clinical conditions, including phobias, addictions, depression, suicide, eating disorders, social skills, athletic performance, educational and career success, stress, and health, among others (see Pajares, 1997; Bandura, 1997, for reviews). Self-efficacy expectations refer to people's *perceived* abilities, which may differ from their actual ones. Furthermore, these expectancies are domain-specific and pertain to specific tasks or situations, such that they can vary considerably depending on the context.

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Self-efficacy may be particularly important for individuals with social anxiety. Social Anxiety Disorder (SAD) is characterized by intense fear of negative evaluation and concomitant behavioral avoidance in one or more social situations (American Psychiatric Association, 2000). Leary and Atherton (1986) developed a social anxiety-specific definition of self-efficacy that they term *self-presentational efficacy expectancy*: “the subjective probability of behaving in a manner intended to convey a particular impression” (p. 257). Studies examining self-efficacy and anxiety typically report correlations in the moderate range (Schwarzer and Jerusalem, 1992). In a sample of undergraduates asked to imagine themselves in anxiety-provoking social situations, Maddux, Norton and Leary (1988) reported a correlation of $-.49$ between self-efficacy and a dispositional measure of social anxiety. In their study of undergraduate men taking part in a role play with an attractive female, Mahone, Bruch and Heimberg (1993) found that the correlation between self-efficacy and an anxiety checklist was $-.31$.

Most self-efficacy research in anxiety has utilized simple, one-item Likert-scale ratings of self-efficacy or unstandardized composites derived from other measures (e.g. Mahone et al., 1993). Few psychometrically-sound and comprehensive measures of self-efficacy have been developed that specifically pertain to individuals with SAD. Recently, Gaudiano and Herbert (2003) reported on the preliminary psychometric properties of a self-efficacy questionnaire designed to assess a person’s confidence in social situations. Results showed moderate correlations between the Self-Efficacy Scale for Social Situations (SESS) and measures of social anxiety severity (ranging from $-.36$ to $-.47$), impairment related to the disorder, and general self-efficacy in an adult sample diagnosed with generalized SAD. Furthermore, the SESS was negatively correlated with subjective anxiety ratings and positively correlated with perceived performance in social role play exercises. However, the SESS was not significantly correlated with observer ratings of participants’ social skills. Finally, the SESS was shown to be sensitive to treatment changes, as scores significantly increased after participants received cognitive behavior therapy (CBT). Changes in SESS scores predicted improvement in social anxiety symptom severity after controlling for changes in fear of negative evaluation.

Not only are few instruments designed to assess self-efficacy related to social anxiety concerns, but most of the research investigating the relationship between mood or anxiety symptoms and self-efficacy has been confined to adult samples. However, it is crucial to examine these issues in an adolescent population, as the age of onset of SAD typically is during childhood, although it is rarely identified or treated then (Dalrymple, Herbert and Gaudiano, in press). Without treatment, childhood SAD typically exhibits a worsening and chronic course that can lead to the development of comorbid disorders, such as depression, by adulthood (Kashdan and Herbert, 2001).

The few studies conducted to date that have examined self-efficacy and mood/anxiety problems in adolescents have tended to use non-clinical samples. For example, Bandura, Pastorelli, Barbaranelli and Caprara (1999) demonstrated that both social and academic self-efficacy were predictive of long-term depressive symptoms in their prospective study of 282 Italian middle school students. In a sample of 596 adolescents recruited from a secondary school in Belgium, Muris (2002) found that social self-efficacy was negatively associated with neuroticism and anxiety/depressive symptoms.

In one of the only studies using a clinical sample of socially phobic children and adolescents (ages 7–14), Spence, Donovan and Brechman-Toussaint (1999) assessed social skills, social outcomes, cognitions, and self-evaluations of performance in individuals with SAD ($n = 27$)

and nonclinical controls ($n = 27$) who completed social and nonsocial role play tasks. The socially anxious children reported lower self-efficacy and self-ratings of performance and higher levels of negative cognitions and predictions of negative social events compared to control participants. These group differences were found in the social but not in the non-social task. The SAD group also demonstrated poorer social skills than controls. Spence and colleagues concluded that the overall pattern of results found in their child sample was consistent with that found in studies of socially anxious adults. These researchers noted that one limitation of the study was that the sample was comprised of children with a “pure” diagnosis of SAD (although they did not specify general versus specific subtype in the sample). SAD, especially in children and adolescents, is associated often with high levels of comorbidity (Verduin and Kendall, 2003), which potentially limits the generalizability of the Spence et al. findings.

In summary, social self-efficacy as applied to social anxiety relates to a person’s confidence in being able to behave in a certain manner to convey a desirable impression to others. Self-efficacy consistently has been shown to be moderately, inversely correlated with anxiety in general and social anxiety specifically. Although most research on self-efficacy and anxiety has been conducted in adult samples, preliminary research in children and adolescents has found similar results, suggesting that SAD is associated with lower self-efficacy and poorer perceived performance in social situations.

As few studies have examined self-efficacy in children and adolescents with social anxiety, the present investigation had two general aims. First, we investigated the psychometric properties of the SESS in a sample of adolescents with generalized SAD in an attempt to replicate previous results using an adult sample (Gaudiano and Herbert, 2003). We examined the relationship between SESS scores and other relevant measures, including ratings taken during a series of social role play tests. Furthermore, we hypothesized that changes in social self-efficacy would be associated with changes in symptoms after treatment based on previous findings in the adult sample. Second, we sought to extend the research by Spence et al. (1999). These researchers found that socially phobic children had lower self-efficacy and self-ratings of performance in social situations and poorer social skills compared to nonclinical controls. Based on previous research in adult samples, we hypothesized that participants’ self-efficacy would be predictive of their self-ratings of performance but not their actual performance as rated by independent observers.

Method

Participants

The sample was comprised of 50 adolescents (male = 40%; females = 60%) meeting DSM-IV (APA, 2000) criteria for SAD, generalized type. Potential participants were recruited from a major metropolitan city and surrounding communities as part of a larger clinical trial. Recruitment efforts included media announcements and referrals from social service agencies, schools, and health professionals. The majority of the sample was either Caucasian (53%) or African-American (43%), and the average age was 15 years old. Fifty-six percent of participants’ parents were married, 21% were never married, and the remaining were divorced, separated, or widowed. All adolescents were living with either one (51%) or both (49%) parents. The grade break down of the sample was as follows: junior high school = 24%; 9th and

10th grade = 32%; 11th and 12th grade = 44%. The majority of participants (60%) possessed at least one comorbid psychiatric disorder and 28% met diagnostic criteria for two or more disorders, including generalized anxiety disorder ($n = 13$), specific phobia ($n = 9$), dysthymia ($n = 8$), major depressive disorder ($n = 3$), panic disorder ($n = 2$), separation anxiety ($n = 2$), obsessive-compulsive disorder ($n = 1$), and attention deficit-hyperactivity disorder ($n = 1$).

Questionnaires

Self-Efficacy for Social Situations Scale (SESS). The SESS is a 9-item self-report measure designed to assess self-efficacy for social situations in socially anxious people (reproduced in Gaudiano and Herbert, 2003). Respondents rate each item on a 10-point Likert scale. The instrument is estimated to reflect a junior high or early high school reading level. The SESS questions were designed to tap various components of self-efficacy derived from research: self-efficacy for social skills, or the belief that one possesses the skills necessary to succeed in an anxiety-provoking situation (Bandura, 1991); self-efficacy for cognitive coping, or the belief that one can cope with bothersome thoughts and worries (Bandura, 1991; Kent and Gibbons, 1987; Clark and de Sliva, 1985); and self-efficacy for affective coping, or the belief that one can cope with distressing emotions (Arch, 1992). Items are summed to provide a total score (questions 2, 5, and 8 are reverse scored), with higher scores representing higher self-efficacy for social situations. The SESS was developed by having experts rate a larger pool of potential items in terms of their relevance to the components of self-efficacy for social situations. Pilot testing also was employed to improve item clarity and readability, and the 9-item SESS was validated in a sample of adults with generalized SAD ($n = 131$). The primary validation study showed that the SESS has evidence of high internal consistency and good content validity, convergent validity, discriminant validity, and sensitivity to changes associated with treatment in adults with generalized SAD (Gaudiano and Herbert, 2003).

Social Phobia and Anxiety Inventory for Children (SPAI-C). The SPAI-C is a 26-item self-report measure of social anxiety symptoms. It was adapted from the adult version of the instrument (Beidel, Turner, Stanley and Dancu, 1989) and was designed to assess a range of physical/cognitive symptoms and avoidance behaviors in potentially anxiety-provoking situations. The SPAI-C possesses high internal consistency and test-retest reliability and good convergent/discriminant validity (Beidel, Turner and Fink, 1996; Beidel, Turner, Hamlin and Morris, 2000). Internal consistency in the current sample based on Cronbach's alpha was .98.

Fear Questionnaire (FQ). The FQ (Marks and Mathews, 1979) is a 15-item self-report measure, with subscales assessing social phobia, agoraphobia, and blood/injury phobia. The FQ has evidence of high test-retest reliability and internal consistency and good convergent/discriminant validity (Cox, Parker and Swinson, 1996). Internal consistencies in the current sample based on Cronbach's alpha were .72, .83, and .79 for the social phobia, blood/injury phobia, and agoraphobia subscales, respectively.

Brief Version of the Fear of Negative Evaluation Scale (Brief FNE). The Brief FNE (Leary, 1983) is a 12-item self-report measure designed to assess fear of negative evaluation by others, based on the 30 items from the original FNE (Watson and Friend, 1969). The FNE was derived theoretically to assess levels of apprehension and expectation of evaluative situations. The Brief FNE possesses evidence of high test-retest reliability and internal consistency and good

convergent validity (Leary, 1983; Saluck, Herbert, Rheingold and Harwell, 2000). Internal consistency in the current sample based on Cronbach's alpha was .78.

Social Anxiety Scale for Children-Revised (SASC-R). The SASC-R consists of 18 self-statements and 4 filler items rated on a 5-point Likert scale (La Greca and Stone, 1993). Based on results from factor analysis, the SASC-R yields the following three subscales: Fear of Negative Evaluation (FNE), Social Avoidance and Distress for New Situations (SAD-N), and General Social Avoidance and Distress (SAD-G). Subscales possess adequate internal consistency and good construct validity (Ginsburg, La Greca and Silverman, 1998). Internal consistencies in the current sample based on Cronbach's alpha were .94, .80, and .74 for the FNE, SAD-N, and SAD-G subscales, respectively.

Probability/Cost Questionnaire for Children (PCQ-C). The PCQ consists of 40 items pertaining to 20 negative nonsocial and 20 negative social events rated on a 9-point Likert scale from 0 = not at all likely/bad to 8 = extremely likely/bad (Foa, Franklin, Perry and Herbert, 1996). The scale yields four subscales: social probability, nonsocial probability, social cost, and nonsocial cost. The PCQ-C has been adapted from the original measure to be appropriate for children (Rheingold, Herbert and Franklin, 2003). It possesses high internal consistency and test-retest reliability and good construct validity (Foa et al., 1996; Rheingold et al., 2003). Internal consistency for the probability and cost scales in the current sample based on Cronbach's alpha were .91 and .94, respectively.

Beck Depression Inventory (BDI). The BDI is a 21-item self-report instrument for measuring the symptoms of depression in adults and adolescents (Beck and Steer, 1987). The BDI is widely used and numerous studies have demonstrated its reliability and validity for assessing depression in clinical and nonclinical samples (see Beck, Steer and Garbin, 1988 for a review). Internal consistency in the current sample based on Cronbach's alpha was .85.

Sheehan Disability Scale (SDS). The SDS is a self-report measure of impairment due to a psychiatric illness (Leon, Shear, Portera and Klerman, 1992). Respondents rate their impairment from symptoms in family, work, and social areas based on a 10-point Likert scale format. The measure has evidence of good criterion-related validity for impairment associated with psychiatric disorders (Leon, Olfsen, Portera, Farber and Sheehan, 1997). In the current study, the work item was reworded to assess school-related impairment instead.

Behavioral role play tests

Observer ratings. Role play tests (RPTs) are commonly used in the behavioral assessment of social anxiety (Herbert, Rheingold and Brandsma, 2001). Participants completed three, 3-minute standardized role plays of social situations: 1) an interaction with a stranger; 2) an interaction with two strangers; and 3) an impromptu speech. Videotapes of the RPTs were rated by trained observers according to participants' overall social skills/performance (5-point Likert scale) and anxiety level (100-point scale). Inter-rater reliability for observer ratings was high (15% of ratings; intraclass correlation $\alpha = .96$).

Participant ratings. Participants rated their subjective anxiety about the RPTs according to the Subjective Units of Distress Scale (SUDS; Wolpe and Lazarus, 1966). SUDS ratings ranged from 0 to 100, with higher numbers indicating greater anxiety. Participants were asked to rate

their level of anxiety pre- and post-role play, as well as to report their highest level of anxiety during the task. In addition, participants provided self-ratings of their performance after each role play on a 5-point Likert scale based on the following anchor points: 1 = extremely poor, 3 = average, and 5 = extremely well.

Procedure

Potential participants were screened initially by telephone to assess their eligibility for the study. Inclusion criteria were as follows: 12 to 18 years old; literacy in English; and primary DSM-IV (APA, 2000) diagnosis of generalized SAD. Co-diagnoses were permitted as research suggests high comorbidity in this population (Kessler et al., 1994; Verduin and Kendall, 2003). Diagnostic primacy was defined as an earlier age of onset and greater current severity and impairment. Exclusion criteria were: diagnosis of mental retardation, pervasive developmental disorder, anxiety disorder due to a general medical condition, bipolar disorder, or psychotic disorder; presence of significant suicide risk; substance abuse or dependence within the past year; or an untreated/unstable medical condition (e.g. asthma) that might confuse the diagnosis of an anxiety disorder.

The Anxiety Disorders Interview Schedule for DSM-IV: Child Version (ADIS-C; Albano and Silverman, 1996) was the structured clinical interview used for diagnostic assessment. The ADIS-C is designed to assess DSM-IV mood and anxiety disorders, as well as other common disorders in children and adolescents. The ADIS-C has evidence of high inter-rater and test-retest reliability and good convergent validity (DiBartolo, Albano, Barlow and Heimberg, 1998; Wood, Piacentini, Bergman, McCracken and Barrios, 2002). Diagnosticians were advanced doctoral students in clinical psychology trained to proficiency and reliability in the assessments used. Tapes of diagnostic interviews were reviewed periodically to ensure accuracy. Weekly supervision meetings were held by the second author (J. H.), who is an expert in the assessment and treatment of SAD, to review new participant assessment results and to discuss differential diagnosis issues for all new participants.

Prior to beginning the study, consent was obtained from the parent or legal guardian and an assent form was signed by the adolescent participant in accordance with local Institutional Review Board procedures. Participants completed the assessment procedures, including the diagnostic interview, questionnaires and RPTs. The SESS was administered immediately prior to completion of the RPTs. After completing pre-treatment assessment, participants were randomized to one of three active treatment conditions as part of a larger outcome study: individual cognitive behavior therapy (CBT), group CBT, or group psychoeducational-supportive therapy (PST) for adolescent SAD. Both CBT conditions included exposure-based interventions, cognitive restructuring exercises, social skills training, and homework assignments (adapted from adult versions of the treatment; see Heimberg and Becker, 2002; Herbert et al., 2005). PST contained psychoeducation about social anxiety, supportive interventions, and social group participation. All treatments were manualized and delivered in 12 weekly sessions by advanced doctoral students in clinical psychology, who were supervised by the second author (J. H.). The same assessments were readministered at post-treatment. Complete results of the treatment outcome study will be elaborated elsewhere (Herbert, Gaudiano, Dalrymple, Rheingold and Carleton, 2006). Although no group differences were observed on symptom severity measures, the CBT groups showed superior improvement in performance and social skills ratings during the RPTs.

Results

Preliminary analyses

The mean score for the SESS in the adolescent sample was 43.8 ($SD = 14.2$). The distribution of scores was roughly normal, with no evidence of excessive skewness or kurtosis. An independent-samples t -test was computed on mean SESS scores between the current adolescent and previously reported adult sample (data taken from Gaudiano and Herbert, 2003). Results revealed that SESS scores were significantly lower in the adult sample ($M = 34.6$, $SD = 10.43$), indicating that adults possessed lower self-efficacy for social situations compared to adolescents ($t = 4.17$, $p < .001$). Furthermore, a t -test conducted on SESS scores by gender in the current sample was not significant ($p = \text{n.s.}$). Therefore, the following results were conducted using the entire adolescent sample.

Internal consistency

Internal consistency according to Cronbach's alpha was .82 for the 9 SESS items. Reliability coefficients of .60 or above are adequate for research purposes (Nunnally, 1978).

Construct validity

Table 1 depicts descriptive statistics and correlations between the SESS and the other study measures.¹ Construct validity was demonstrated by examining the relationship between the SESS and similar (convergent validity) and dissimilar (discriminant validity) measures. Convergent validity was examined by computing Pearson r product-moment correlation coefficients between the SESS and measures related to social anxiety. The SESS was moderately correlated with the SPAI-C, FQ Social Phobia subscale, Brief FNE, and SASC-R N-SAD and G-SAD subscales (all $ps < .05$). Lower social self-efficacy was associated with higher social anxiety symptoms as measured by these self-report scales. As predicted by Spence et al. (1999), the SESS was strongly correlated with the PCQ-C Social Cost and Probability subscales, suggesting that lower social self-efficacy was associated with predictions of a greater likelihood of negative social events and greater subjective distress associated with their occurrence. The SESS also was moderately correlated with the SDS School and Social subscales, indicating the lower social self-efficacy was associated with higher perceived impairment in these domains.

Furthermore, discriminant validity was determined by computing correlations between the SESS and symptom measures not specifically related to social anxiety. As expected, the SESS was not significantly correlated with most scales that did not pertain specifically to self-efficacy for social situations, including the FQ Agoraphobia and Blood/Injury subscales,

¹The number of individual correlations conducted in the current study increased the probability of committing a Type I error. With 20 individual correlations performed, the overall alpha level for this group of analyses would be increased slightly according to the following formula: $1 - (1 - \alpha)^k = .06$, where $\alpha = .05$ and $k =$ the number of comparisons calculated. The Bonferroni-corrected alpha formula is: $\alpha_B = \frac{\alpha}{k}$. As Bonferroni corrections possess their own limitations and increase the probability of committing a Type II error (see Perneger, 1998), results that met the traditional significance level of $p < .05$ and the Bonferroni-corrected significance level of $p < .0025$ are noted accordingly in Table 1.

Table 1. Descriptive statistics and correlations between the SESS and other study measures

Measures	<i>M</i>	<i>SD</i>	<i>r</i>	<i>n</i>
<i>Social anxiety-related scales</i>				
SESS	43.8	14.2	—	50
SPAI-C	40.1	18.2	-.62**	41
Brief FNE	40.5	10.1	-.50**	40
SASC-R FNE subscale	24.0	9.2	-.29	37
SASC-R SAD-N subscale	21.9	5.0	-.65**	37
SAD-G subscale	12.5	4.4	-.57**	37
FQ-Social Phobia subscale	18.8	9.7	-.36*	39
SDS-Social subscale	6.4	3.4	-.58**	38
SDS-School subscale	3.2	3.0	-.40*	38
PCQ-C Social Probability subscale	70.8	36.7	-.61**	38
PCQ-C Social Cost subscale	85.6	35.5	-.59**	38
<i>Non-social anxiety specific scales</i>				
FQ-Agoraphobia subscale	10.1	9.0	-.07	39
FQ-Blood-Injury Phobia subscale	10.7	10.7	.09	39
BDI	10.7	8.2	-.04	38
SDS-Family	2.4	2.6	-.07	38
PCQ-C Nonsocial Probability subscale	28.6	18.6	-.19	38
PCQ-C Nonsocial Cost subscale	64.5	32.5	-.16	38
<i>Behavioral role play test measures^a</i>				
Participant ratings				
Self-ratings of performance	2.4	.8	.37*	36
SUDS ratings	54.3	23.3	-.54**	36
Observer ratings				
Social skills ratings	2.5	.8	.36	26
Participant anxiety level	48.7	16.0	-.32	26

Note. * $p < .05$; ** $p < .001$ (**Bonferroni-corrected significance level = $p < .0025$). SESS = Self-Efficacy for Social Situations Scale; SPAI-C = Social Phobia and Anxiety Inventory for Children; Brief FNE = Brief Version of the Fear of Negative Evaluation Scale; FNE = Fear of Negative Evaluation subscale; SASC-R = Social Anxiety Scale for Children-Revised; SAD-N = Social Avoidance and Distress-New Situations subscale; SAD-G = General Social Avoidance and Distress; FQ = Fear Questionnaire; BDI = Beck Depression Inventory; PCQ-C = Probability/Cost Questionnaire for Children; SDS = Sheehan Disability Scale; SUDS = Subjective Units of Distress Scale.

Sample sizes vary due to missing data.

^aBehavioral role play test measures were based on average scores across the three tasks.

SDS Family subscale, PCQ-C Nonsocial Cost/Probability subscales, or BDI. In summary, results revealed that the SESS was related to social anxiety specifically and not to other anxiety/depression symptoms, nonsocial negative predictions, or impairment in nonsocial situations.

Criterion-related validity

The SESS, administered prior to completion of the RPTs, was moderately correlated with the average self-ratings of performance taken after each of the role plays and average SUDS

self-ratings reported during the RPTs. It was hypothesized that social self-efficacy would predict self- but not observer-rated anxiety and performance in actual social situations after controlling for the variance attributable to social anxiety severity. The SASC-R was chosen as a potential predictor because it contains subscales assessing social avoidance/distress in new situations and fear of negative evaluation, both of which are theoretically important constructs relevant to the social RPTs that participants completed. Table 2 depicts results from these regression analyses. A hierarchical multiple regression analysis was conducted entering the SASC-R FNE and SAD-N subscales first and the SESS second to predict average SUDS ratings across the RPTs. In the final model, the SESS but not the SASC-R subscales significantly predicted average SUDS ratings. In addition, a hierarchical multiple regression analysis was conducted entering the SASC-R FNE and SAD-N subscales first and the SESS second to predict average self-ratings of performance across the RPTs. In the final model, the SESS but not the SASC-R subscales significantly predicted self-ratings of performance.

The same regression analyses described above were computed substituting self-ratings for observer ratings of participants' anxiety and performance. In contrast to regressions conducted on self-ratings, the SASC-R SAD-N was predictive of observer ratings of participant anxiety ($p = .01$) and performance ($p = .05$) prior to the inclusion of the SESS. However, the SESS was not a significant predictor of observer ratings of performance ($p = .82$) or of participant anxiety level ($p = .61$) in the final models. In summary, results suggested that the SESS was a better predictor of self- compared to observer ratings of performance and anxiety.

Relationship to treatment outcome

A dependent samples *t*-test was conducted to investigate changes in social self-efficacy following treatment in a subsample of participants for which data were available. Results revealed that the difference between SESS pre-treatment ($M = 46.4$; $SD = 15.1$) and post-treatment ($M = 53.9$; $SD = 19.1$) scores was only marginally significant ($t_{15} = 1.87$, $p = .08$, $n = 16$). The effect size improvement according to Cohen's (1988) *d* statistic was .54, which represents a medium effect. The magnitude of improvement observed in the current adolescent sample was somewhat lower than the large effect found in the previous adult sample ($d = .90$; Gaudiano and Herbert, 2003).

Similar to procedures outlined by Gaudiano and Herbert (2003), a hierarchical multiple regression analysis was conducted to determine if pre- to post-treatment changes in social self-efficacy were associated with changes in social anxiety. Change on the SASC-R FNE subscale was included as an independent variable because fear of negative evaluation has been found to be a significant predictor of treatment outcome in SAD in past studies (Gaudiano and Herbert, 2003; Mattick and Peters, 1988; Mattick, Peters and Clarke, 1989). Further, the SASC-R FNE was not highly correlated with the SESS ($r = -.29$, $p > .05$), suggesting that these scales measured different constructs. The SPAI-C was chosen as the dependent variable in the regression analyses because it was the primary outcome measure used in the parent study (Herbert et al., 2006). Residual gain (RG) scores for the variables were computed based on standard procedures (Neziroglu, Stevens, McKay and Yaryura-Tobias, 2001; Steketee and

Table 2. Predictors of anxiety and performance in behavioral role play tests

Predictors	Criterion ^a	$R^2 \Delta$	β	t	p
<i>Regression #1:</i> Self-ratings of anxiety (SUDS)					
Step #1					
SASC-R FNE	$F \Delta_{2,30} = 2.00, p = .15$	.12	.08	.36	.72
SASC-R SAD-N			.29	1.37	.18
Step #2					
SASC-R FNE	$F \Delta_{1,29} = 8.59, p = .00^*$	.20	.09	.49	.63
SASC-R SAD-N			-.08	-.36	.72
SESS			-.58	-2.93	.00*
<i>Regression #2:</i> Self-ratings of performance					
Step #1					
SASC-R FNE	$F \Delta_{2,30} = 1.65, p = .21$	.09	-.30	-1.38	.18
SASC-R SAD-N			-.03	-.14	.89
Step #2					
SASC-R FNE	$F \Delta_{1,29} = 4.33, p = .04^*$	.12	-.31	-1.51	.14
SASC-R SAD-N			.26	1.04	.31
SESS			.44	2.08	.04*
<i>Regression #3:</i> Observer ratings of participant anxiety					
Step #1					
SASC-R FNE	$F \Delta_{2,23} = 3.85, p = .04^*$	.25	-.23	-1.00	.33
SASC-R SAD-N			.61	2.65	.01*
Step #2					
SASC-R FNE	$F \Delta_{1,22} = 0.06, p = .82$	.00	-.23	-.96	.35
SASC-R SAD-N			.58	2.08	.05*
SESS			-.05	-.24	.82
<i>Regression #4:</i> Observer ratings of performance					
Step #1					
SASC-R FNE	$F \Delta_{2,30} = 3.49, p = .04^*$	.23	-.02	-.08	.94
SASC-R SAD-N			-.47	-2.01	.05*
Step #2					
SASC-R FNE	$F \Delta_{2,30} = 0.27, p = .61$	.01	-.03	-.11	.91
SASC-R SAD-N			-.39	-1.41	.17
SESS			.12	.52	.61

Note. * $p < .05$. SUDS = Subjective Units of Distress; SASC-R = Social Anxiety Scale for Children-Revised; FNE = Fear of Negative Evaluation subscale; SAD-N = Social Avoidance and Distress for New Situations subscale; SESS = Self-Efficacy for Social Situations Scale.

^aBehavioral role play test measures were based on average scores across the three tasks.

Chambless, 1992).² Pre- to post-treatment residual change scores on the SASC-R FNE were entered first, followed by change on the SESS to predict change on the SPAI-C. In the first step, SASC-R FNE change did not predict SPAI-C change ($p = .62, n = 16$). In the second step,

²Residual gain (RG) score transformation: $RG = (Z_1 - Z_2) \times r_{12}$; where Z_1 and Z_2 are the z-transformed pre- and post-treatment scores, respectively; and r_{12} is the correlation coefficient between pre and post scores (Steketee and Chambless, 1992). It should be noted that results were similarly significant when raw change scores were used instead.

SESS change ($\beta = -.72, t = 3.45, p < .01$) but not SASC-R FNE change ($p > .05$) predicted SPAI-C change ($F_{\Delta 1, 13} = 11.90, p < .01, R^2_{\Delta} = .47$).

Discussion

The current study was one of the first to systematically investigate the relationship between self-efficacy and aspects of social anxiety in a clinical sample of adolescents. The psychometric properties of the SESS in the current adolescent sample were similar to those found in a previous adult sample (Gaudiano and Herbert, 2003). The reliability of the SESS as assessed by internal consistency was high. As expected, the SESS was moderately, inversely associated with measures of social anxiety. However, the SESS was not significantly correlated with theoretically unrelated measures assessing non-social anxiety related symptoms (e.g. blood/injury phobia, agoraphobia, and depression), impairment, or negative cognitions. Furthermore, social self-efficacy predicted both subjective anxiety and perceived performance after controlling for baseline social anxiety severity and fear of negative evaluation. These results suggest that self-efficacy explains unique variance beyond that attributable to symptom severity in social anxiety-provoking performance situations. As expected, participants' social self-efficacy was more predictive of self- in contrast to observer ratings of performance in social role plays. Finally, change in social self-efficacy was related to change in social anxiety symptoms after controlling for change in fear of negative evaluation, similar to findings in the previous adult sample (Gaudiano and Herbert, 2003).

Results from the current study replicated the previous findings using the SESS in an adult sample (Gaudiano and Herbert, 2003) with only a few differences. In both samples, the SESS showed evidence of reliability, content and construct validity, and sensitivity to changes associated with treatment. However, the previous adult sample had significantly lower mean SESS scores, indicating that they possessed lower social self-efficacy than adolescents. This finding is not surprising, as course of illness studies of individuals with generalized SAD suggest that overall social anxiety severity increases with age (Dalrymple et al., in press). In addition, fear of negative evaluation was not associated with outcome in the current adolescent sample, in contrast to results found in previous studies using adult treatment samples (Mattick et al., 1989).

Spence et al. (1999) found that socially anxious children had lower expectations for performance in an evaluative task and were rated as being less socially competent than nonanxious children. In the current study, self-efficacy predicted self-rated performance in social role play tasks but not observer ratings of performance. One explanation for the discrepancy in findings between the observer and self-ratings of performance may relate to the high levels of self-focused attention often found in socially anxious individuals. For example, research has shown that socially phobic individuals are more likely to report negative self-evaluative thoughts than anxious or nonpatient controls during social situations (Spence et al., 1999; Stopa and Clark, 1993). Coles, Turk and Heimberg (2002) found that, relative to non-anxious controls, participants with SAD were more likely to recall information after completing social role plays from an "observer" compared to a "field" perspective, which suggests high self-evaluation. Therefore, the combination of low self-efficacy and high self-focused attention may lead socially anxious individuals to exhibit distorted perceptions of their performance in social situations.

Schwarzer and Jerusalem (1992) propose a theoretical model linking self-focused attention, self-efficacy and anxiety. They argue that self-efficacy mediates the relationship between self-focused attention and worry to influence behavior. A study by Mahone et al. (1993) of undergraduate men who completed a social anxiety-provoking role play lends some support to Schwarzer and Jerusalem's model. These researchers found that higher levels of negative self-evaluative thoughts were associated with lower ratings of self-efficacy for making a favorable impression, which in turn were predictive of higher levels of subjective anxiety at the end of the conversation. More recently, Kashdan and Roberts (2004) found that increasing the self-focused nature of a role play task produced lower social self-efficacy in individuals high in social anxiety.

Social self-efficacy may hold important treatment implications for adolescents with SAD. Bandura (1977) argued that mastery experiences are the most effective means of improving a person's self-efficacy. Such experiences are essential components of cognitive behavior therapy (CBT) programs designed for this population, which emphasize the use of exposure- and cognitive-based interventions for feared social situations (Heimberg and Becker, 2002; Kashdan and Herbert, 2001). Gaudiano and Herbert (2003) found that social self-efficacy significantly increased after adults received CBT for SAD, and improvements in self-efficacy predicted improvements in social anxiety symptoms. Similar to findings in the adult sample, changes in social self-efficacy predicted treatment outcome in the current adolescent sample. All of the treatments provided to participants in the current study (including the psychoeducational-supportive therapy) contained opportunities for social interactions and positive mastery experiences. Furthermore, Leary and Atherton (1986) suggest that it is important for social practice exercises to be biased somewhat to ensure a positive outcome so that individuals can gain a sense of mastery from these experiences, thereby increasing their self-efficacy for future situations. Some researchers argue that training targeted at improving social skills and promoting prosocial behavior may be a particularly important component of CBT for SAD (Foa, Franklin and Kozak, 2001). In a recent randomized-controlled trial, Herbert and colleagues (2005) demonstrated that social skills training increased the effectiveness of group CBT for generalized SAD, which also consisted of exposure and cognitive restructuring components. Finally, cognitive interventions that target self-focused attentional biases may prove beneficial as well. In a sample of adults with SAD, Clark and colleagues (2003) found that those randomized to a form of cognitive therapy that emphasized the correction of self-focused biases showed greater improvements than patients in fluoxetine plus self-exposure or placebo plus self-exposure conditions.

The lack of a non-social anxiety comparison group limits the interpretability and generalizability of the present findings. Nevertheless, it should be noted that the current results are similar to those found in studies of socially anxious adults and adolescents using nonclinical and/or other clinical comparison groups (e.g. Spence et al., 1999). Another limitation of the study is that outcome data for the three treatment groups were combined in analyses due to the small sample size. Therefore, it was not possible to determine if one of these treatments was better than the others for improving social self-efficacy. As such little data are available on the topic of self-efficacy in adolescents with social phobia, we believe that the current study produced interesting results that require further replication and extension. Finally, the overall sample size in the current study was relatively modest, especially for certain subanalyses. However, few previous studies have collected data on adolescents with generalized SAD, especially in large numbers, due to difficulties recruiting such patients. Furthermore, results

found using the current adolescent sample were very similar to those found in the primary validation study of the SESS using a larger adult sample with SAD.

To our knowledge, this study is the first to investigate systematically social self-efficacy in adolescents with generalized SAD. Results from the current study replicated previous findings using the SESS in a clinical sample of adults. As hypothesized based on prior research in adult samples, social self-efficacy predicted subjective anxiety and perceived performance in social role play tests. Furthermore, self-efficacy was related more to self- than observer ratings. Finally, change in self-efficacy was associated with treatment outcome in adolescents with SAD. Future studies should include nonclinical and non-socially anxious psychiatric controls to confirm the specificity of these findings for individuals with SAD. Investigations into the potential role of self-focused attention may provide further clarification of the relationship between self-efficacy and social anxiety, as well as provide a potential target for intervention.

Acknowledgements

This research was supported in part by National Institute of Mental Health Grant R01 MH052232 (PI: J. Herbert).

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