
Acceptance and Commitment Therapy for Generalized Social Anxiety Disorder

A Pilot Study

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Despite the demonstrated efficacy of cognitive-behavior therapy (CBT) for social anxiety disorder (SAD), many individuals do not respond to treatment or demonstrate residual symptoms and impairment posttreatment. Preliminary evidence indicates that acceptance-based approaches (e.g., acceptance and commitment therapy; ACT) can be helpful for a variety of disorders and emphasize exposure-based strategies and processes. Nineteen individuals diagnosed with SAD participated in a 12-week program integrating exposure therapy and ACT. Results revealed no changes across a 4-week baseline control period. From pretreatment to follow-up, significant improvements occurred in social anxiety symptoms and quality of life, yielding large effect size gains. Significant changes also were found in ACT-consistent process measures, and earlier changes in experiential avoidance predicted later changes in symptom severity. Results suggest the acceptability and potential efficacy of ACT for SAD and highlight the need for future research examining both the efficacy and mechanisms of change of acceptance-based programs for SAD.

Keywords: *social anxiety disorder; acceptance and commitment therapy; experiential avoidance*

Social anxiety disorder (SAD) is an extreme fear of embarrassment or humiliation in social or performance situations and is usually characterized by avoidance of these situations. The fear often is associated with

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marked distress and impairment in several areas, including work, social life, and family life (Herbert & Dalrymple, 2005). The *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text revision; *DSM-IV-TR*; American Psychiatric Association [APA], 2000) recognizes two subtypes of SAD: generalized and specific. The generalized subtype includes those who fear multiple social situations, and the specific subtype includes those who fear one or two discrete social situations. SAD is the fourth most common psychiatric disorder in the United States (after major depression, alcohol dependence, and specific phobia), with a lifetime prevalence rate of 12.1% (Kessler, Berglund, Demler, Jin, & Walters, 2005).

Cognitive-behavioral group therapy (CBGT; Heimberg, 1991; Heimberg & Becker, 2002) is the most extensively studied treatment program for SAD. It emphasizes the cognitive factors that maintain SAD (e.g., exaggerated negative beliefs about one's performance in social situations; Clark & Wells, 1995; Rapee & Heimberg, 1997), as well as behavioral factors (e.g., avoidance of these situations). CBGT targets these maintaining factors by means of cognitive restructuring in an effort to modify negative beliefs, as well as with in vivo and simulated exposure exercises to decrease avoidance and test dysfunctional beliefs. Several studies support the efficacy of CBGT (e.g., Heimberg et al., 1998; Hope, Herbert, & White, 1995), and it is included on the list of empirically supported treatments developed by the American Psychological Association's Committee on Science and Practice (Chambless et al., 1996). Recently CBGT for SAD has been successfully adapted to an individual format (e.g., Herbert, Rheingold, Gaudiano, & Myers, 2004), and a meta-analysis has shown no difference between group and individual formats (Gould, Buckminster, Pollack, Otto, and Yap, 1997).

Results from studies examining the relative efficacy of the components of cognitive-behavior treatment (CBT) for SAD have been mixed, although few studies have demonstrated the added efficacy of cognitive restructuring to exposure alone. A meta-analysis by Gould et al. (1997) found that exposure interventions produced the largest effect sizes, either alone or in combination with cognitive restructuring. In addition, a dismantling study by Hope, Heimberg, and Bruch (1995) found that exposure alone was at least as effective as exposure plus cognitive restructuring. Previous studies also have shown that exposure therapy alone achieved cognitive changes in the same range as that achieved by using traditional cognitive restructuring techniques alone (Hope et al., 1995a; Mattia, Heimberg, & Hope, 1993; Newman, Hofmann, Trabert, Roth, & Taylor, 2004), suggesting that cognitions may not necessarily need to be changed directly through cognitive restructuring for patients to engage in exposure.

Although traditional CBTs for SAD have been shown to be efficacious, most individuals continue to demonstrate residual symptoms and impairment after treatment, and a significant percentage do not respond to treatment at all (approximately 25% of patients in some studies, such as those of Heimberg et al., 1998, and Herbert et al., 2005). Even in those patients who do respond to treatment, their scores often do not reach those of non-clinical populations and they continue to experience significant symptoms posttreatment. Few studies have examined the effect of traditional CBT on quality of life in SAD, but one study found that, although quality of life had improved by posttreatment, scores still did not approach those of nonanxious persons (Eng, Coles, Heimberg, & Safren, 2001). More recent research has shown that 12 weeks of CBT improved quality of life only in interpersonal domains but not other ones, such as personal growth (Eng, Coles, Heimberg, & Safren, 2005). Therefore, new or modified treatments may prove useful to enhance the effects of existing treatments and further improve functioning and quality of life in broader domains.

The present study developed and examined a treatment program integrating standard exposure-based treatment for SAD with acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999), a promising new model of behavior therapy that incorporates mindfulness and acceptance interventions. The ACT model holds that psychopathology is due in large part to "fusion" with distressing thoughts and feelings and the consequent struggle to control or eliminate such experiences, rather than the frequency or the content of the experiences per se. This struggle to control or eliminate such experiences is labeled *experiential avoidance* (Hayes et al., 1999). Therefore, the goal of ACT is not to modify the content or frequency of thoughts or feelings as in traditional CBT but rather to learn how to experience such events fully and nondefensively in the service of achieving personally valued goals (Herbert, 2002). Furthermore, symptom reduction per se is not the focus of ACT, although symptom reduction would be expected to occur as a result of successful treatment. At a technical level, ACT borrows strategies from standard CBT, as well as from humanistic and experiential approaches. Liberal use is made of metaphors and experiential exercises to convey core concepts of the model.

ACT also includes techniques designed to promote mindful awareness of internal experiences. Mindfulness is defined as nonjudgmental, moment-to-moment awareness of present experience (Kabat-Zinn, 1990). Mindfulness techniques recently have been incorporated into other novel CBT approaches such as dialectical behavior therapy (Linehan, Armstrong, Suarez, & Allmon, 1991) and mindfulness-based cognitive therapy for relapse prevention in major depressive disorder (Teasdale et al., 2000).

ACT holds the potential to serve as an alternative treatment option for SAD for several reasons. First, ACT may further increase functioning and quality of life in several areas, compared with traditional CBT, given its focus on values clarification in broader domains. Second, because patients with anxiety disorders typically engage in a range of avoidance behaviors, they are cautious to engage in exposure-based treatments that target avoidance and encourage them to experience fear (Barlow & Craske, 1994). Theorists such as Eifert and Heffner (2003) have proposed that acceptance-based approaches that foster willingness to experience anxiety rather than emphasize the reduction of anxiety may increase patients' receptiveness to engage in exposure therapy. ACT may further facilitate exposure through its emphasis on values clarification and linking behavior to personally identified values and goals. Third, experimental studies by Kashdan, Barrios, Forsyth, and Steger (2006) have shown that people who reported greater experiential avoidance (i.e., less acceptance of anxiety) also reported diminished positive affective experiences, life satisfaction, meaning in life, and less frequent positive events on a daily basis. They also found that relations with positive daily experiences were stronger for experiential avoidance, compared with emotion suppression and cognitive reappraisal. Another study by Kashdan and Steger (2006) also found similar results with respect to social anxiety in that socially anxious individuals reported fewer positive events on days when they experienced greater social anxiety and tended to suppress emotions.

Although cognitive therapists are beginning to de-emphasize traditional cognitive restructuring in favor of efforts to reduce self-focused attention (e.g., Clark et al., 2003), these approaches continue to focus on symptom reduction by means of changes in beliefs as the primary therapeutic goal. The focus of ACT on experiential acceptance in the context of behavior change consistent with personal values may hold the potential to result in greater functional improvement and quality of life.

Preliminary studies have shown promising results for the efficacy of ACT in a variety of psychiatric conditions, including depression, substance abuse, chronic pain, and psychosis. Average posttreatment effect sizes (Cohen's *d*) for randomized controlled trials of ACT ranged from .55 to .99, depending on the comparison group (no treatment/treatment as usual, cognitive therapy [CT]/CBT, or another active treatment). Average follow-up effect sizes ranged from .55 to .80 (Hayes, Luoma, Bond, Masuda, & Lillis, 2006).

Researchers more recently have begun to apply ACT to anxiety disorders (e.g., Orsillo, Roemer, & Barlow, 2003; Twohig & Woods, 2004; Zettle, 2003). Only one published study to date has examined the efficacy of ACT for social anxiety symptoms (Block, 2002; Block & Wulfert, 2000). Thirty-nine college students with public speaking anxiety were semirandomly assigned to 6 weeks of ACT, CBGT, or wait-list control. Scores on social anxiety measures decreased, and willingness to engage in public speaking situations increased for both treatment groups relative to the control condition. However, only the ACT group showed significant decreases in behavioral avoidance. Although promising, this study used a nonclinical population and lacked an independent evaluator.

Some studies have begun to examine potential mechanisms of action in ACT (see Hayes et al., 2006 for a review), as the treatment proposes to work through different mechanisms, compared with traditional CBT (which proposes changes in cognitive variables, such as fear of negative evaluation in SAD; Mattick, Peters, & Clarke, 1989). Of the six core ACT processes described by Hayes et al. (2006), experiential avoidance has been the most studied. Several treatment studies have found significant associations between experiential avoidance and treatment outcome, and a few studies have found experiential avoidance to be a significant mediator between outcome and treatment condition (see Hayes et al., 2006, for a review). However, there is little research on the role of experiential avoidance in ACT for SAD specifically.

The present study sought to develop an integrated protocol of ACT plus exposure for adults diagnosed with generalized SAD and to examine its acceptability and preliminary efficacy. A comprehensive 12-session protocol was developed that included exposure exercises in the context of the ACT model (Herbert & Dalrymple, 2006). It was hypothesized that participants would demonstrate significant improvements in outcomes (e.g., symptomatology, impairment, quality of life) and that these improvements would be maintained at follow-up. Although the present study did not include a comparison condition, each participant underwent a 4-week no-treatment baseline period. We hypothesized that there would be no significant differences between baseline and pretreatment measures on the basis of previous research that showed no change over time in wait-list control conditions compared with treatment conditions (Hope et al., 1995; Mattick et al., 1989). A secondary aim was to examine the relationship between changes in process measures and treatment outcome to explore the specific timing of changes and to identify potential mechanisms of action of the treatment for future study.

Method

Participants

Participants were 19 adults (52.8% female), recruited through community media and professional referrals through a university-based anxiety clinic, who met *DSM-IV-TR* (APA, 2000) criteria for SAD, generalized subtype, on the basis of a standard structured clinical interview. The generalized subtype was operationally defined as fear and avoidance in three or more distinct social situations (Herbert et al., 2005). Exclusion criteria were as follows: a history of substance dependence within the past 6 months; mental retardation; pervasive developmental disorder; organic mental disorder; acute suicide potential; or previous participation in behavioral or CBT for SAD. Average age of the sample was 31 years ($SD = 10$). The majority was Caucasian (63.9%), single (80.6%), and employed full time (54.3%). Educational attainment was relatively high (22.2% had a graduate/professional school education, 38.9% had a college degree, and 27.8% had some college education).

Because epidemiological data have indicated high rates of Axis I comorbidity with SAD, participants with comorbid diagnoses were included in the study. However, the diagnosis of SAD was judged to be clearly primary to and of greater severity to the other diagnoses in order for inclusion. Almost half (48.6%) of participants met criteria for at least one comorbid Axis I disorder; 29.7% had a comorbid depressive disorder, and 24.3% had a comorbid anxiety disorder. In addition, 59.5% of participants met criteria for avoidant personality disorder (APD). Finally, approximately 16% of participants were taking at least one psychotropic medication. Medications were maintained at a stable dosage for the duration of the study.

Measures

Structured Clinical Interview for DSM-IV Axis I Disorders (SCID). The SCID (First, Spitzer, Gibbon, & Williams, 1996) is a widely used structured diagnostic interview for the major Axis I disorders, based on *DSM-IV* criteria. The SCID has moderate to high interrater reliability for most of the major mental disorders (Riskind, Beck, Berchick, Brown, & Steer, 1987; Williams et al., 1992).

Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II). The SCID-II (First, Spitzer, Gibbon, Williams, & Benjamin, 1994) is a

structured diagnostic interview for Axis II personality disorders, based on *DSM-IV* criteria. Only the APD section was used because of the high comorbidity between SAD and APD (Herbert, in press; Herbert, Hope, & Bellack, 1992). The SCID-II has been found to have adequate interrater reliability (First et al., 1995; Renneberg, Chambless, & Gracely, 1992). The SCID-II also has demonstrated good discriminant and concurrent validity (O'Boyle & Self, 1990; Skodol, Oldham, Rosnick, Kellman, & Hyler, 1991).

Social Phobia and Anxiety Inventory (SPAI). The SPAI (Turner, Beidel, Dancu, & Stanley, 1989) is a 45-item self-report measure that assesses clinical symptoms of SAD. The 32-item Social Phobia subscale (SPAI-SP) was used in analyses because it is a better index of social anxiety symptoms than the Difference subscale score (Herbert, Bellack, & Hope, 1991). The SPAI is an empirically validated measure of SAD, with good test-retest reliability, internal consistency, and discriminant, concurrent, and external validity (Beidel, Borden, Turner, & Jacob, 1989; Beidel, Turner, Stanley, & Dancu, 1989).

Liebowitz Social Anxiety Scale (LSAS). The LSAS (Liebowitz, 1987) is a 24-item inventory assessing fear (LSAS-F) and avoidance (LSAS-A) of several social situations. The self-report version was used in the present study. Participants rated their fear and avoidance of these situations on a 4-point Likert-type scale ranging from 0 (*no fear/avoidance*) to 3 (*severe fear/usually avoid*). The LSAS self-report version has high internal consistency, good test-retest reliability, and good discriminant and convergent validity, as well as demonstrated treatment sensitivity (Baker, Heinrichs, Kim, & Hofmann, 2002; Fresco et al., 2001).

Brief version of the Fear of Negative Evaluation Scale (Brief FNE). The Brief FNE (Leary, 1983) is a 12-item measure assessing concerns of negative evaluation by others, based on a 5-point Likert-type scale. The Brief FNE has good test-retest reliability and internal consistency (Leary, 1983), as well as good concurrent validity with other measures of social anxiety (Saluck, Herbert, Rheingold, & Harwell, 2000; Weeks, Heimberg, & Fresco, 2005).

Sheehan Disability Scale (SDS). The SDS (Leon, Olfson, Portera, Farber, & Sheehan, 1997) is a self-report measure assessing impairment of symptoms related to a psychiatric illness. The SDS assesses impairment in work, social/leisure activities, and family/home life on a 10-point Likert-type scale. It has adequate internal consistency, construct validity, and criterion-related validity (Leon, Shear, Portera, & Klerman, 1992).

Quality of Life Inventory (QOLI). The QOLI (Frisch, 1994) is a 32-item measure assessing importance and satisfaction in several domains, such as health, friendships, and work. It has good internal consistency and test–retest reliability (Frisch, Cornell, Villanueva, & Retzlaff, 1992) and possesses good convergent, discriminant, and criterion-related validity (Frisch et al., 1992). Treatment sensitivity from pre- to posttreatment has been demonstrated after 12 weeks of CBGT for SAD (Eng, Coles, Heimberg, & Safren, 2001).

Acceptance and Action Questionnaire (AAQ). The AAQ (Hayes et al., 2004) is a nine-item measure assessing emotional avoidance and inaction (e.g., “When I feel depressed or anxious, I am unable to take care of my responsibilities”). Items are rated on a 10-point Likert-type scale ranging from *never true* (1) to *always true* (10). Preliminary evidence indicates that this measure has good internal consistency, as well as good concurrent, convergent, and construct validity (Hayes et al., 2004).

Anxiety Control Questionnaire (ACQ). The ACQ (Rapee, Craske, Brown, & Barlow, 1996) is a 30-item measure assessing perception of control over emotional reactions and external events. The ACQ consists of two subscales: Events and Reactions. The Events subscale consists of items such as “There is little I can do to change frightening events,” and the Reactions subscale consists of items such as “I can usually put worrisome thoughts out of my mind easily.” The ACQ possesses good internal consistency and test–retest reliability (Rapee et al., 1996). It also possesses good convergent validity, specificity to individuals with anxiety disorders, and treatment sensitivity (Rapee et al., 1996).

Valued Living Questionnaire (VLQ). The VLQ (Wilson & Groom, 2002) is a 10-item measure assessing the importance and consistency of personal values in several domains, such as work, family, and recreation/fun. Items for each scale are rated on a 10-point Likert-type scale ranging from *not at all important/not at all consistent with my value* (1) to *extremely important/completely consistent with my value* (10). A total discrepancy score was calculated to determine the discrepancy between stated values and consistent action. Data on psychometric properties of the VLQ are limited, but preliminary research has indicated that this measure possesses good test–retest reliability (Groom & Wilson, 2003).

Clinical Global Impression Scale (CGI). The CGI (National Institutes of Mental Health, 1985) is a clinician global rating of severity and improvement on a 7-point Likert-type scale. The CGI scales have been used extensively in

clinical trials and have demonstrated good interrater reliability (Lipsitz, Mannuzza, Klein, Ross, & Fyer, 1999). A recent study adapted both CGI scales for SAD and found that the CGI Severity subscale possesses good convergent validity with measures of social anxiety, depression, impairment, and quality of life, supporting its use as a global index of severity (Zaider, Heimberg, Fresco, Schneier, & Liebowitz, 2003). In addition, the adapted CGI Improvement subscale possesses good convergent validity only with change in social anxiety symptoms, supporting its use as a symptom-specific measure of improvement for individuals with SAD.

Behavioral assessment. Three standardized behavioral role-play tasks (RPTs) were administered to assess behavioral performance. These tasks included (a) a dyadic role-play simulating an interaction with a confederate, (b) a triadic role play simulating a conversation with two confederates, and (c) an impromptu speech. RPTs are frequently used for behavioral assessment of social anxiety (Herbert, Rheingold, & Brandsma, 2001). Ratings of skill and anxiety were obtained from participant self-report and observer ratings conducted by assessors. There is sufficient support for the reliability and validity of social skills ratings in RPTs (Herbert et al., 2005). The RPTs were videotaped and later viewed by observers who were blind to the assessment time point. The observers rated participants' quality of social skills on a 5-point Likert-type scale ranging from 1 (*poor*) to 5 (*excellent*), on the following dimensions: verbal content, nonverbal content, paralinguistic features, and overall social skills. The assessors also rated participants' observed level of anxiety based on the Subjective Units of Discomfort Scale (SUDS; Wolpe & Lazarus, 1966), which ranges from 0 to 100. Assessors used anchors developed from previous studies (Herbert et al., 2004; Herbert et al., 2005) and were trained to a reliability of .80. Agreement between observers on these ratings was high (intraclass correlation $\alpha = .87$).

Client Satisfaction Survey. A survey was created for this study to measure treatment acceptability. Participants were asked to rate their satisfaction with the treatment and their therapist separately on 5-point Likert-type scales, ranging from 1 (*not at all satisfied*) to 5 (*completely satisfied*). Participants also were asked whether they would recommend the treatment to a friend ("yes" or "no"). Finally, they were asked to rate their agreement with statements that the treatment decreased their fear and avoidance in social situations on 5-point Likert-type scales, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Independent assessors collected the survey at posttreatment.

Treatment

Treatment was delivered in an individual format using a detailed treatment manual (Herbert & Dalrymple, 2006). All participants received twelve 1-hr weekly sessions of ACT through a university-based anxiety clinic.

Four major concepts of ACT were presented in treatment, the first of which is termed *creative hopelessness*. The primary purpose of this stage (Sessions 1 and 2) is to help participants appreciate the futility of past attempts to control their social anxiety. The next phase (beginning in Session 3) introduced acceptance or “willingness” as an alternative to controlling unwanted private events. This stage consists of allowing oneself to have unwanted thoughts or feelings while engaging in goal-directed behavior (e.g., attending a party, initiating a conversation). Exposure exercises were initiated in Session 3, continued through Session 12, and modified for more consistency with an ACT approach. For example, emphasis was placed on practicing willingness to experience anxiety while engaging in challenging social situations, rather than decreasing anxiety by the end of the exposure exercise. Mindfulness and other techniques were then introduced in the next stage (beginning in Session 4) to facilitate nonjudgmental awareness of unwanted private events and willingness to experience them without analyzing their veracity or otherwise attempting to modify them. This exercise of separating oneself from internal experiences has been termed cognitive defusion (Hayes et al., 1999). Although values and goals were discussed from the beginning of treatment, the final stage (beginning in Session 7) consisted of a more thorough clarification of participants’ values and facilitation of their ability to engage in valued actions (e.g., engaging in social interactions which will lead to more meaningful social relationships) despite perceived obstacles. All key concepts were explained through metaphors and various experiential exercises (adapted from Hayes et al., 1999). As in standard behavior therapy for SAD, role-play exercises with confederates, in-vivo exposure exercises assigned as homework, and social skills training were incorporated into treatment, beginning in the third session (Herbert et al., 2005). Each session ended with a brief review, suggested exercises to practice between sessions, and specific homework assignments.

Procedure

All procedures were approved by the local institutional review board. Potential participants underwent an initial 20-min telephone interview, in which the purpose of the study was discussed and a brief description of presenting problems was determined. Those still interested in participating were

evaluated by a trained diagnostician using the SCID and APD section of the SCID-II. Informed consent was obtained at the diagnostic assessment. Diagnosticians were advanced clinical psychology doctoral students, and were trained extensively by didactic instruction, observation of interviews by senior diagnosticians, role plays with study therapists enacting the patient role, and practice ratings of patient videotapes. All diagnoses were confirmed through a weekly review of diagnostic data by James D. Herbert, an expert in the assessment and treatment of SAD and the use of ACT in this population.

During the diagnostic interview, demographic information and baseline measures were obtained from self-report questionnaires. All participants meeting criteria for the study then underwent a standard baseline wait period of 4 weeks and then completed the videotaped RPTs. Participants were given a second questionnaire packet (pretreatment assessment) after the RPTs to complete and bring to the first session.

Once the pretreatment assessments were completed, participants received twelve 1-hr weekly individual sessions of ACT. Therapists were advanced clinical psychology doctoral students who underwent protocol training in ACT by James D. Herbert. Therapists attended an initial 3-hr workshop on the protocol, and weekly group meetings were held to provide ongoing supervision. Therapists also received individual supervision for their first client. Treatment sessions were audiotaped with participants' consent, and 10% of treatment tapes were randomly selected from all possible sessions and assessed using a treatment integrity form to determine adherence to the manual. The treatment integrity form was based on those of previous studies (Herbert et al., 2005). Sessions were reviewed by Kristy L. Dalrymple reviewed sessions to ensure that therapists discussed specific concepts relevant to ACT (e.g., mindfulness, acceptance, values clarification) and that therapists conducted exposure exercises in Sessions 3 through 12. Sessions also were evaluated to ensure that therapists did not utilize cognitive restructuring or discuss concepts relevant to cognitive therapy (e.g., that the goal of exposure is to *reduce* anxiety in social situations). Results of this review showed 100% adherence to the manual, with no errors of commission or omission.

At mid- and posttreatment, participants completed the same self-report measures and were administered the CGI Severity and Improvement scales. Participants also completed the videotaped RPTs at posttreatment. At the 3-month follow-up, the assessor interviewed participants by telephone, using the same abbreviated structured clinical interviews. Once this assessment was completed, the assessor completed the CGI scales based on information obtained from the telephone interview. Participants also completed a follow-up questionnaire packet sent by mail.

Statistical Analyses

Data were examined for treatment dropouts and missing data. Intention-to-treat analyses (using the expectation–maximization [EM] algorithm to impute missing values) were conducted as the primary analyses. We calculated the EM algorithm using SPSS Missing Value Analysis software and procedures described by Hill (1997). The EM method has been shown to be superior to the regression imputation method and is considered to be an acceptable method for imputing missing values in longitudinal data (Graham & Donaldson, 1993). We conducted Little’s chi-square test for each of the EM procedures to test the assumption that data were missing completely at random. All of these tests were not significant, suggesting that this assumption was not violated.

We analyzed continuous outcome and process measures using univariate and multivariate analyses of variance, with significant results followed up by Tukey post hoc tests. Paired samples *t* tests were used to examine pre- to posttreatment changes on ratings from the videotaped RPTs. Observer ratings in the four social skills dimensions, participant self-performance ratings, and participant and observer SUDS ratings were averaged across all three RPTs. This method has been used in previous studies examining the efficacy of traditional CBT for SAD (Herbert et al., 2004; Herbert et al., 2005). Finally, we conducted exploratory analyses on processes of change using Pearson correlations and regression analysis (described later). Completer analyses also were conducted, and results were similar to the ITT analyses. Effect sizes between the completer and ITT analyses also were similar. Therefore, only the results from the ITT analyses are reported.

Results

Preliminary Analyses

Participant flow. Of the 19 participants who began treatment, 2 dropped out of treatment before the midtreatment assessment point (1 patient dropped out due to a lack of belief in the treatment rationale; the other, because of the time commitment involved). In addition, 1 participant completed treatment but did not complete the posttreatment or follow-up assessments (see Figure 1). Because there were so few treatment dropouts in relation to completers, statistical analyses could not be conducted to compare dropouts to completers on variables. However, the 2 dropouts did not appear to differ from completers on pretreatment scores or demographic characteristics.

Baseline period. We compared baseline scores with pretreatment scores using paired samples *t* tests to determine whether symptoms changed over the 4-week baseline period. No significant differences were found between baseline and pretreatment scores on self-report measures (all $ps > .05$).

Treatment acceptability. Most patients were satisfied to highly satisfied with treatment (93.8%) and with their therapist (100%). All participants reported that they would recommend this treatment to a friend, and participants mostly agreed with statements that this treatment decreased their fear ($M = 3.63$, $SD = 1.03$) and avoidance ($M = 4.13$, $SD = 0.50$) in social situations. It is interesting that a paired samples *t* test found that participants reported greater agreement with the statement that treatment decreased their avoidance, compared with their fear, $t(15) = -2.45$, $p < .05$.

Outcome Measures

Self-report. As expected, the repeated measures multivariate analysis of variance (MANOVA) from pretreatment to follow-up on the SPAI-SP, Brief FNE, LSAS-F, and LSAS-A was significant, $F(12, 159) = 5.53$, $p < .001$. Separate analyses of variance (ANOVAs) showed significant differences on all of the questionnaires (all $ps < .001$). Tukey post hoc tests were significant for the SPAI-SP ($ps < .01$), Brief FNE ($ps < .05$), LSAS-F, and LSAS-A (for both, $ps < .05$) at all time points, showing that severity of symptoms and fear of negative evaluation decreased significantly throughout treatment and follow-up. It is interesting that the scores on the LSAS-A appeared to decrease earlier than those on the LSAS-F (see Figure 2). For example, the pre- to midtreatment effect size (Cohen's *d*) for the LSAS-A was .67, compared with .23 for the LSAS-F. Furthermore, paired samples *t* tests showed significant differences between patients' scores on the LSAS-A and LSAS-F at midtreatment, posttreatment, and follow-up (all $ps < .01$).

The ANOVA on the QOLI was significant, $F(3, 54) = 9.47$, $p < .001$, with post hoc tests showing greater perceived quality of life from pretreatment to follow-up. The ANOVA on the VLQ also was significant, $F(3, 54) = 6.24$, $p < .01$, with participants reporting significantly less discrepancy between stated values and consistent action from pretreatment to follow-up. In addition, the MANOVA on the three subscales of the SDS (Work, Social, and Family) was significant, $F(9, 162) = 5.56$, $p < .001$. Separate follow-up ANOVAs were significant for the individual subscales—Work, $F(3, 54) = 17.69$, $p < .001$; Social, $F(3, 54) = 19.30$, $p < .001$; and Family, $F(3, 54) = 12.45$, $p < .001$ —with decreased impairment in all domains from pretreatment to follow-up.

Figure 1
Participant Flow Diagram for Study Phases

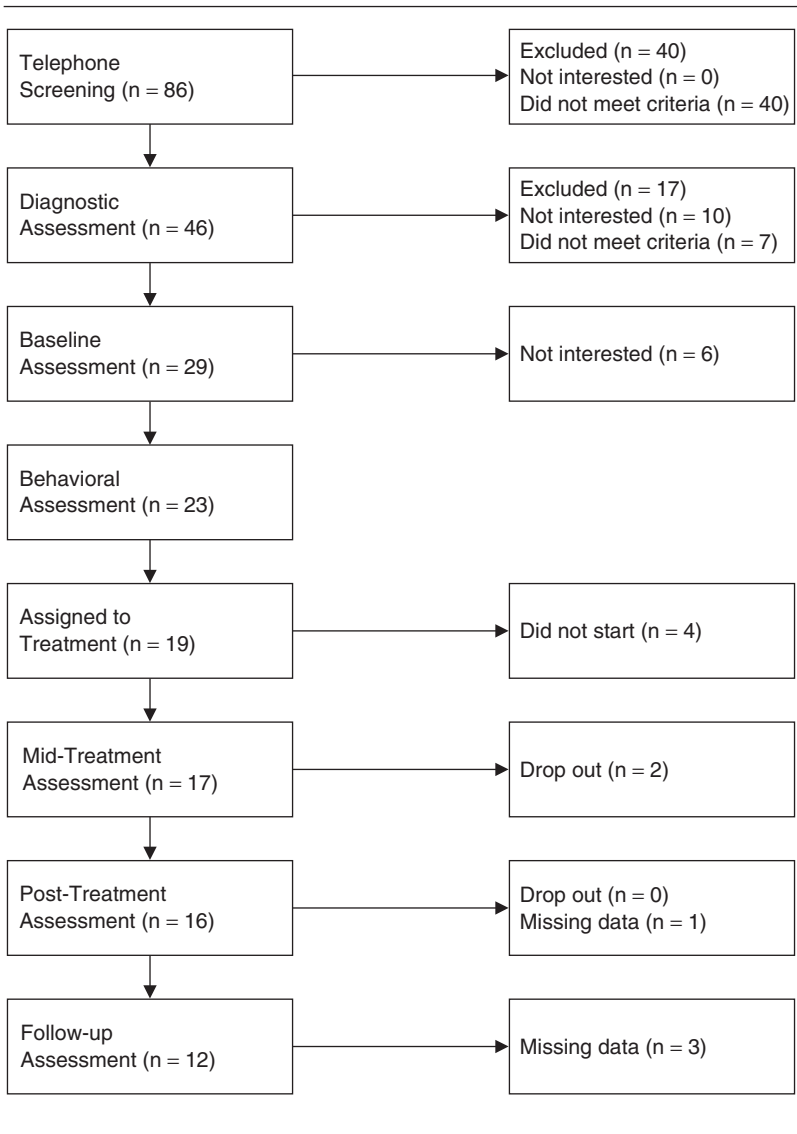
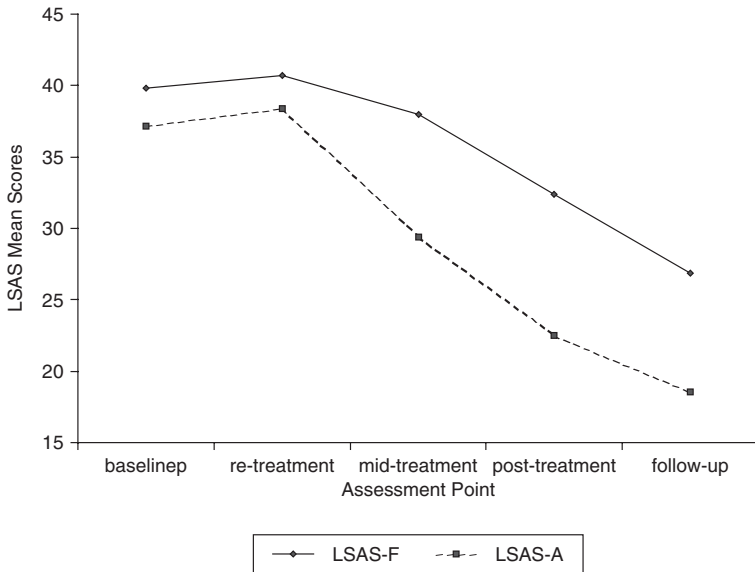


Figure 2
Baseline, Pre-, Mid-, and Posttreatment Mean Scores on the
Liebowitz Social Anxiety Scale (LSAS) Fear and Avoidance Subscales



The average effect size across all of the outcome measures was 1.00 from pre- to posttreatment and 1.29 from pretreatment to follow-up.

Clinician rated. The ANOVA on CGI Severity ratings was significant, $F(3, 54) = 103.50, p < .001$, with significantly decreased severity at all time points ($ps < .001$). The ANOVA on CGI Improvement ratings also was significant, $F(2, 36) = 11.62, p < .01$, with significant improvement from midtreatment to follow-up (see Table 1).

Behavioral assessment. Paired samples t tests on the average self-ratings of performance and SUDS ratings were significant—self-ratings, $t(18) = -6.57, p < .001$; SUDS ratings, $t(18) = 6.36, p < .001$ —with greater self-rated performance and lower SUDS ratings at posttreatment. The paired samples t test on observer ratings of social skills was significant, $t(17) = -7.70, p < .001$, with observers rating participants' social skills significantly higher at posttreatment. The t test on observed anxiety also was significant, $t(17) = 6.68, p < .001$, with observers rating participants' anxiety lower at posttreatment, compared with pretreatment (see Table 2).

Table 1
Means, Standard Deviations, Effect Sizes, and Confidence Intervals
for Effect Sizes of the Self-Report and Clinician-Rated Measures

Measure	<i>M</i>	<i>SD</i>	ES	CI
SPAI-SP				
Baseline	129.15	28.91		
Pretreatment	130.81 _a	31.26		
Midtreatment	116.17 _b	27.06		
Posttreatment	97.48 _c	32.05	1.05	0.37–1.73
Follow-up	88.17 _d	29.22	1.41	0.70–2.12
Brief FNE				
Baseline	48.63	7.07		
Pretreatment	49.95 _a	7.12		
Midtreatment	46.04 _b	7.40		
Posttreatment	40.52 _c	8.54	1.20	0.51–1.89
Follow-up	37.82 _d	7.93	1.61	0.88–2.34
LSAS-Fear				
Baseline	39.79	10.20		
Pretreatment	40.72 _a	11.30		
Midtreatment	37.97 _b	12.31		
Posttreatment	32.39 _c	11.74	0.72	0.07–1.38
Follow-up	26.83 _d	11.55	1.22	0.52–1.91
LSAS-Avoidance				
Baseline	37.16	11.51		
Pretreatment	38.36 _a	12.89		
Midtreatment	29.38 _b	13.84		
Posttreatment	22.53 _c	12.54	1.24	0.55–1.94
Follow-up	18.56 _d	12.63	1.55	0.83–2.28
QOLI				
Baseline	0.12	1.94		
Pretreatment	-0.17 _a	2.05		
Midtreatment	0.37 _b	2.35		
Posttreatment	1.46 _c	1.34	0.74	0.09–1.40
Follow-up	1.09 _c	2.26	0.43	-0.22–1.07
VLQ				
Baseline	26.16	20.02		
Pretreatment	21.20 _a	17.56		
Midtreatment	20.44 _a	26.92		
Posttreatment	5.70 _b	15.65	0.93	0.26–1.60
Follow-up	8.24 _b	21.32	0.66	0.01–1.32
SDS-Work				
Baseline	6.37	2.65		
Pretreatment	6.32 _a	2.56		
Midtreatment	5.24 _a	2.73		
Posttreatment	3.59 _b	2.49	1.08	0.40–1.76
Follow-up	2.75 _b	2.30	1.47	0.75–2.18
SDS-Social				
Baseline	7.53	1.93		
Pretreatment	7.16 _a	2.46		
Midtreatment	6.28 _b	2.42		

(continued)

Table 1 (continued)

Measure	<i>M</i>	<i>SD</i>	ES	CI
Posttreatment	4.53 _c	2.50	1.06	0.38–1.74
Follow-up	3.52 _d	2.57	1.44	0.73–2.16
SDS-Family				
Baseline	4.74	2.79		
Pretreatment	5.21 _a	2.39		
Midtreatment	4.81 _a	3.02		
Posttreatment	3.07 _b	2.88	0.81	0.15–1.47
Follow-up	3.04 _b	2.87	0.82	0.16–1.48
ACQ_Reactions				
Baseline	32.27	8.56		
Pretreatment	30.00 _a	8.43		
Midtreatment	33.35 _b	8.37		
Posttreatment	37.11 _b	9.45	0.79	0.13–1.45
Follow-up	37.92 _{b,c}	8.90	0.91	0.25–1.58
ACQ-Events				
Baseline	40.68	9.59		
Pretreatment	39.32 _a	10.97		
Midtreatment	42.92 _{a,b}	7.84		
Posttreatment	46.04 _b	7.23	0.72	0.07–1.38
Follow-up	49.24 _c	7.86	1.04	0.36–1.72
AAQ				
Baseline	40.26	6.82		
Pretreatment	41.21 _a	7.74		
Midtreatment	37.61 _b	5.95		
Posttreatment	33.46 _c	8.86	0.93	0.26–1.60
Follow-up	34.92 _{b,c}	8.91	0.75	0.10–1.41
CGI-Severity				
Pretreatment	4.79 _a	0.54		
Midtreatment	4.30 _b	0.44		
Posttreatment	3.52 _c	0.67	2.09	1.30–2.88
Follow-up	2.38 _d	0.70	3.86	2.78–4.93
CGI-Improvement				
Midtreatment	3.29 _a	0.57		
Posttreatment	2.61 _b	0.94	0.87	0.21–1.54
Follow-up	1.82 _c	0.88	1.98	1.21–2.76

Note: Means with different subscripts differ significantly, and means with the same subscripts do not differ significantly. ES = effect size (mid- to posttreatment and midtreatment to follow-up for the CGI Improvement Scale, and pre- to posttreatment and pretreatment to follow-up for all other measures); CI = confidence interval; SPAI-SP = Social Phobia and Anxiety Inventory, Social Phobia subscale; Brief FNE = Brief Version of the Fear of Negative Evaluation Scale; LSAS = Liebowitz Social Anxiety Scale (Fear and Avoidance are subscales); QOLI = Quality of Life Inventory; VLQ = Valued Living Questionnaire; SDS = Sheehan Disability Scale (Work, Social, and Family are subscales); ACQ = Anxiety Control Questionnaire (Reactions and Events are subscales); AAQ = Acceptance and Action Questionnaire; CGI-S = Clinical Global Impression Severity Scale; CGI-I = Clinical Global Impression Improvement Scale.

Process Measures

The AAQ was chosen as an “ACT-consistent” process measure because it was designed to assess experiential avoidance (i.e., the opposite of acceptance), a hypothesized primary process in ACT. The ANOVA on the AAQ was significant, $F(3, 54) = 9.18, p < .001$, with post hoc tests showing less experiential avoidance from pretreatment to follow-up. The ACQ was chosen as an “ACT-inconsistent” process measure because it was designed to measure perceived control over anxiety. The MANOVA on the ACQ Reactions and Events subscales was significant, $F(6, 108) = 4.52, p < .001$, for both subscales: Reactions, $F(3, 54) = 6.15, p < .001$; Events, $F(3, 54) = 8.22, p < .001$. Tukey post hoc tests showed greater perceived control over emotional reactions and external events from pretreatment to follow-up ($ps < .05$). Overall effect sizes for the ACQ and AAQ were large (see Table 1).

Exploratory Process Analyses

Analyses were conducted to examine the relationship between changes in the process variables and treatment outcome (using the LSAS-F). Similar to a process used by Hofmann (2004), who examined cognitive mediation of treatment change in SAD, regression analyses were conducted to examine the relationship between earlier changes in the process measures and later changes in the outcome measures. Residual gain scores were used as they control for measurement error and initial differences between individuals (see Steketee & Chambless, 1992).

First, we conducted hierarchical regressions with the midtreatment to follow-up LSAS-F residual gain score as the dependent variable, the pre- to midtreatment LSAS-F residual gain score in the first block (to control for earlier changes in symptoms), and the pre- to midtreatment AAQ residual gain score in the second block. Results showed that earlier changes in the AAQ predicted later changes in symptom severity, even after controlling for earlier changes in symptoms ($\beta = -.48, p < .05$). This analysis was repeated with the pre- to midtreatment ACQ Reactions subscale residual gain score in the second block (in place of the AAQ), as this subscale of the ACQ in particular appears to be less consistent with ACT (i.e., it measures perceived control over emotional reactions). Results showed that earlier changes in the ACQ Reactions subscale did not predict later changes in symptom severity, ($\beta = .064, p > .05$). Finally, the analysis was repeated with both the AAQ and ACQ Reactions subscale in the second block. Consistent with the previous analyses, earlier changes

Table 2
Means, Standard Deviations, Effect Sizes, and Confidence Intervals
of the Effect Sizes on the Behavioral Assessment Measures

Measure	<i>M</i>	<i>SD</i>	ES	CI
Self-rating of performance				
Pretreatment	2.47	1.01		
Posttreatment	3.77*	0.72	1.48	0.76–2.20
Self-rating of SUDS				
Pretreatment	55.05	19.20		
Posttreatment	37.86*	19.04	0.90	0.23–1.57
Social skills ratings				
Pretreatment	2.17	0.48		
Posttreatment	3.11*	0.77	1.47	0.75–2.18
Observed SUDS ratings				
Pretreatment	57.59	13.09		
Posttreatment	39.19*	13.73	1.37	0.66–2.08

Note: ES = effect size; CI = confidence interval; SUDS = Subjective Units of Discomfort (Wolpe & Lazarus, 1966).

* $p < .01$.

in the AAQ predicted later changes in symptom severity after controlling for earlier changes in symptom severity *and* earlier changes in the ACQ Reactions subscale ($\beta = -.59, p < .05$).

Discussion

The present study was a pilot trial of a newly developed treatment program incorporating ACT and exposure therapy in a sample of adults with generalized SAD. Participants found the treatment to be highly acceptable, and of note, they also reported greater agreement with the statement that the treatment resulted in decreases in avoidance compared to fear in social situations. This is consistent with the ACT model, in which individuals are encouraged to engage in valued behaviors without first having to reduce anxiety (Hayes et al., 1999). Although symptom reduction is not the primary focus of ACT, results showed significant improvement from pretreatment to follow-up on self-report measures of social anxiety symptoms, which would be expected as patients decreased their use of avoidance-based coping. Results from the LSAS are particularly consistent with ACT, as greater and earlier changes occurred on the Avoidance subscale, compared with the Fear subscale. Furthermore, patients reported increased

functioning and quality of life, as well as greater consistency between behaviors and stated values, from pretreatment to follow-up.

Effect sizes for the outcome self-report measures were large, with an average pre- to posttreatment effect size of 1.00 and an average pretreatment to follow-up effect size of 1.29. These effect sizes are similar to those obtained by previous studies that have examined CBT for SAD. For example, previous studies have found pre- to posttreatment LSAS effect sizes ranging from .50 to .76 (e.g., Heimberg et al., 1998). Similar (and not necessarily larger) effect sizes compared with those for traditional CBT were expected, as ACT targets functioning and quality of life rather than symptom reduction per se.

Eng et al. (2001) found that, although quality of life improved over the course of CBT, scores still did not reach those of a nonanxious population. The present study showed a pre- to posttreatment QOLI effect size of .74, compared with a pre-post effect size of .49 in the Eng et al. study. Furthermore, the posttreatment QOLI mean of the present study ($M = 1.46$) nearly came within one standard deviation of the normative mean in an undergraduate sample ($M = 2.63$, $SD = 1.11$; Frisch et al., 1992). These preliminary results suggest that ACT may have the potential to further increase quality of life. Future studies are needed to directly compare improvements in quality of life between ACT and CBT.

A second aim of this study was to examine changes in process variables over the course of treatment. Results showed that participants reported less experiential avoidance over time. This is consistent with previous research on ACT for anxiety disorders, such as Block (2002), who found decreased experiential avoidance and increased willingness to experience anxiety during a public speaking exposure exercise. Furthermore, not only were changes in experiential avoidance related to outcome, but also *earlier* changes in experiential avoidance were associated with *later* changes in outcome, even after controlling for earlier changes in symptoms *and* earlier changes in perceived control over emotions. These results provide preliminary support that experiential avoidance should continue to be examined as a potential mechanism of change in ACT.

On the ACQ, participants reported greater perceived control over emotional reactions and external events over time. This is consistent with results obtained by Block (2002), who also found greater perceived control over emotional reactions and external events. Increased perceived control over external events is consistent with ACT and exposure therapies in general, given the emphasis on decreasing avoidance of situations and engaging in valued actions. On initial consideration, results from the ACQ Reactions subscale appear to be contradictory to the focus and proposed mechanisms

of ACT. For example, metaphors in ACT, such as the Polygraph Metaphor (Hayes et al., 1999, p. 123), emphasize the futility of attempts to control internal experiences and suggest that control of anxiety is the problem, not the solution. However, changes on the ACQ may have been a reflection of overall treatment improvement, as many measures change over time as a result of receiving treatment. It is important to note that, although the ACQ Reactions subscale changed significantly over time, earlier changes in this subscale were not associated with later changes in outcome, unlike the more ACT-consistent variable of experiential avoidance.

The present study possessed several strengths, such as multimodal assessments, independent evaluators, and treatment integrity checks. However, some potential limitations should be considered. The sample size was small, therefore limiting the generalizability of the results. Nevertheless, significant results were obtained on every measure with this modest sample, and the magnitude of results was at least as large as that found in studies of CBT for SAD.

Another potential limitation was lack of a wait-list control group. To control for nontreatment-related changes in symptoms, participants underwent a 4-week baseline period before beginning treatment. There were no significant differences from baseline to pretreatment, indicating that spontaneous recovery is an unlikely explanation for improvement, consistent with previous findings (e.g., Davidson, Hughes, George, & Blazer, 1994; Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992). The present study also did not include a comparison condition. Therefore, nonspecific factors (e.g., support, novelty effects) cannot be ruled out as an explanation for improvement, and formal treatment mediation analyses on the process measures could not be conducted. It also is not known whether the results from the present study can be attributed specifically to ACT or how these results would compare with traditional CBT protocols in a head-to-head comparative trial. However, the effect sizes from the present study were similar to other studies utilizing CBT for SAD. In addition, the few studies that have conducted direct comparisons of ACT and CBT (Block, 2002; Branstetter, Wilson, Hildebrandt, & Mutch, 2004; Zettle & Hayes, 1986; Zettle & Rains, 1989) have found between-condition effect sizes of .73 at posttreatment and .83 at follow-up in favor of ACT, thus indicating that ACT is worthy of further investigation.

Although good completion rates were observed in the present study, there was significant loss of data to follow-up. However, similar results were obtained between the ITT and completer analyses. Finally, the independent evaluators who completed the clinician-rated measures were not blind to the assessment time point. However, the present study used several

modes of assessment, including self-report measures, clinician-rated measures, and behavioral assessments. Results across these different assessment strategies were consistent with one another and converged to show improvement over the course of treatment, thereby ruling out rater bias as a likely explanation for the improvement on clinician ratings.

CBT is an empirically supported treatment for generalized SAD. However, a significant percentage of participants still do not respond to existing CBT treatments. Therefore, there is a need for other interventions that can decrease social anxiety-related behavioral and experiential avoidance and increase quality of life, especially for those who may not respond to traditional CBT. The present study was a pilot study that supported the acceptability and preliminary efficacy of ACT plus exposure for generalized SAD. However, we did not address the specific efficacy of ACT for SAD relative to established treatments. The outcome results of this pilot trial, along with results of a process measure that is largely consistent with the ACT model, suggest that ACT for SAD is worthy of further investigation in larger trials.

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