Palmtop Computer-Assisted Group Therapy for Social Phobia

Amy Przeworski and Michelle G. Newman
The Pennsylvania State University

This article describes the application of group computer-assisted therapy for social phobia. The computer program includes a diary function for ongoing self-monitoring of anxiety as well as guidance on the practice of relaxation, cognitive restructuring, and self-control desensitization. Although the program was originally designed to treat individuals with generalized anxiety disorder (GAD), it was hypothesized that the program also would be effective for individuals with social phobia; therefore, it was implemented in a group of individuals with a primary diagnosis of GAD or social phobia. We present the case of a client with social phobia who received six sessions of group therapy and who carried the ambulatory computer throughout this treatment. Outcome data suggest that the treatment was highly effective for this client as well as others with a diagnosis of social phobia or GAD. © 2003 Wiley Periodicals, Inc. J Clin Psychol/In Session 60: 179–188, 2004.

Keywords: computer-assisted therapy; social phobia; cost-effective therapy; cognitive behavior therapy

Despite the emergence of effective brief psychotherapies for anxiety disorders, treatment for anxiety is costly and time-consuming. One study estimated that for each client a typical course of therapy for social phobia costs $2695 and involves over 28 billable hours of therapist contact (Turner, Beidel, Spaulding, & Brown, 1995). Many individuals with social anxiety disorder cannot afford to pay for such therapy out-of-pocket and therefore go untreated. Client access to treatment is further limited by insurance restric-

The authors thank Ms. B. and the others for their enthusiastic participation in the program, and for granting the authors permission to describe their experiences to further disseminate information regarding cost-effective means of therapy. Further, we thank the assessors and therapists who have devoted the time to this pursuit. Correspondence concerning this article should be addressed to: Amy Przeworski, M.S., Department of Psychology, 226A Bruce V. Moore Building, The Pennsylvania State University, University Park, PA 16802–3103; e-mail: axp271@psu.edu.
The purpose of this article is to describe the application of a computer-assisted group CBT in which the computer plays a more central role. In this treatment, the computer not only assists clients in exposure and cognitive restructuring but also in the implementation of relaxation exercises and self-monitoring of anxiety cues. Although this computer-assisted package was originally designed for individuals with GAD, it was hypothesized that the package would be appropriate and efficacious for social phobia because of the similarities between the two diagnostic categories. Thus, we recruited both socially phobic and GAD clients for this treatment.

Computer-Assisted Therapy

The treatment package consists of cognitive restructuring, relaxation training, diaphragmatic breathing, and self-control desensitization. It has been demonstrated to be efficacious for GAD both when administered as a standard individual therapy package (Borkovec, Newman, Pincus, & Lytle, 2002) and when adapted to a computer-assisted group format (Newman et al., 1999). The package consists of six two-hour sessions of computer-assisted therapy, with the computer playing a central role in the implementation of these interventions.
assisted group therapy administered weekly for the first four sessions and every two weeks for the last two sessions. Therapy groups consisted of four to eight individuals with social phobia or generalized anxiety disorder led by an advanced graduate student.

The computer was a palmtop Hewlett Packard 200LX which unfolds into two sections, one with a keyboard and one with a screen. The computer weighs 11 oz and measures $6.3 \times 3.4 \times 1$ in. Clients were given the computer one week before therapy sessions were to begin and were instructed to carry it with them at all times. During this baseline period, the computer was programmed with a diary-only module, in which the computer sounded an alarm at 8 a.m., 12 p.m., 4 p.m., and 8 p.m. and prompted clients to respond to a series of questions regarding their current level of anxiety, highest level of anxiety in the past hour, and percentage of time spent worrying in the past hour. Another alarm sounded at 11 p.m. that prompted clients to input their average level of anxiety, highest level of anxiety experienced during the last hour, and percentage of time they spent worrying that day. During the baseline diary module, clients did not have access to the computer-treatment components.

After the baseline period, clients attended their first group-psychotherapy session, during which they were given a self-help manual describing the therapeutic techniques and their implementation using the computer. Clients were instructed to read a portion of the manual each week to introduce topics that would be covered during the subsequent therapy session.

Immediately before the first therapy session, the palmtop computer also was advanced to the “triggers module” which initiated a two-day program (beginning the following morning) in which computer alarms sounded every waking hour and the client was asked to identify any physiological, cognitive, and situational anxiety cues. This module was designed to aid clients in identifying the initial signs of worry so that they could implement a coping strategy to interrupt what could potentially progress into a worry/anxiety episode. Once the triggers module was complete, the computer reverted to the alarm schedule present during baseline and provided positive feedback to clients who indicated that they were experiencing a low level of anxiety. Advancement to the triggers module also allowed clients full access to computer-therapy components (e.g., a relaxation module, a cognitive module, an imagery-retraining module, and a self-control desensitization module); during the first session, the therapist taught them how to use the computer to learn and practice therapeutic techniques.

**Relaxation Training**

The relaxation module included the following components: 16-muscle-group tense and release, 7-muscle-group tense and release, 4-muscle-group tense and release, 4-muscle-group recall, 4-muscle-group recall and counting, and counting alone. During relaxation training, the computer first prompted the client to enter an initial anxiety rating and to choose a relaxation exercise, and then provided detailed instructions on the completion of the selected relaxation exercise. The computer also was equipped with a timer, which tracked the length of time that it took clients to achieve relaxation. Figure 1 depicts an example of the sequence that the computer would present if the client chose to practice the 16-muscle-group tense and release form of progressive muscle relaxation.

**Imagery Retraining Module**

This module provided detailed instructions on vividly imagining oneself in an anxiety-provoking situation, practicing relaxation exercises upon identifying anxiety cues, and
using cognitive-restructuring to learn a more adaptive approach to the situation. Clients also were prompted to provide their pre- and postexposure anxiety levels.

**Cognitive Module**

The cognitive module is based on the three-column technique and helps the client to identify logical errors, evidence for and against the anxiety-provoking thought, the prob-

![Figure 1](https://example.com/figure1.png)
ability of the feared outcome, and alternative, more adaptive thoughts. An example of a cognitive restructuring sequence is presented in Figure 2.

**Self-Control Desensitization Module**

The self-control desensitization module instructs the client to choose an item from his or her hierarchy of anxiety-provoking situations and imagine him- or herself in the situation. Next, the client is instructed to let go of his or her anxiety and imagine coping with the situation in an adaptive way. Clients are instructed to start with items low on the hierarchy and progress to more difficult items once they no longer experience moderate to severe anxiety upon imaginal exposure to the situation.

![Diagram](Figure 2. Example of the cognitive-restructuring sequence presented by the computer.)
Clients had access to the therapeutic components of the computer program, and they completed ongoing diary ratings for the eight-week duration of therapy and an additional four weeks following the last psychotherapy session. During this time, clients were encouraged to use the computer as often as possible to practice therapeutic techniques and were informed that they would need to return the computer to the experimenter at the end of the 12-week duration of the program.

Cost-Effectiveness of Treatment

To optimize the cost-effectiveness of the GAD therapy, the original 14-session (18-hr), individual-therapy format developed by Tom Borkovec was adapted to a six-session (12-hr) group format. This adaptation, in conjunction with use of the computer, has significantly decreased the cost of this treatment and the number of therapist hours required for each client. Assuming that a group includes a minimum of four members, the number of therapy hours per client is reduced to three. Therapy for social phobia has been estimated to cost $95 per hour (Turner et al., 1995), therefore, computer-assisted group therapy for social phobia costs approximately $285 per client and yields a savings of $2410 per client. Even factoring the cost of one palmtop computer per person at $450 still leads to savings of $1960 per client. However, clients appear to be able to continue to maintain gains even after the computer is taken away. Therefore, subsequent clients can reuse the computers, further reducing the cost of computer-assisted therapy. If one palmtop computer is used by 20 people, the computer only adds $22.50 to the cost of each individual’s treatment. Using this formula, the computer-assisted group therapy saves $2387.50 per person when compared to standard individual treatment for social phobia.

Case Illustration

Client Description

Ms. B. is a 24-year-old, single, Caucasian undergraduate student in her senior year at a large state university. She is a religious Christian and states that she draws much strength from her faith. Ms. B. is active in her church, identifies the members of her church and her parents and brother as primary social supports, and spends her free time reading and participating in church activities. She reports that she is in excellent health and has no ongoing medical problems.

Presenting Problems

Ms. B. presented with symptoms of social phobia including moderate to severe fear or avoidance of the following situations: attending parties, public speaking, meeting unfamiliar people, becoming the focus of attention, dating, talking to authority, refusing unreasonable requests, asking others to change their behavior, talking on the telephone, concern about negative evaluation, and asking for help or directions. She reported that these symptoms caused moderate interference in her interpersonal relationships and were present since first grade. Ms. B. reported that some of her interpersonal difficulties stemmed from her fear of novel situations. She reported that her social fears had caused difficulties in her relationships with her academic advisor and pastor because she was afraid to attend research conferences, teach Sunday school classes, and lead prayers at her church and had therefore avoided her pastor and advisor when they requested her participation in these activities.
Ms. B. also reported symptoms of past PTSD, as well as current subthreshold PTSD symptoms resulting from two sexual assaults—one as a child and one when she was 20 years of age. Ms. B. underwent individual counseling for four months and attended support groups for victims of sexual assault and molestation. However, she continued to experience physiological response to exposure to internal or external cues that reminded her of the assaults, and there were aspects of the assaults that she could not remember.

She was administered the ADIS-IV (Brown, DiNardo, & Barlow, 1994) and a battery of self-report measures at pre- and posttherapy and six-month follow-up assessments. The self-report battery consisted of the following self-report measures: the Social Phobia and Anxiety Inventory (SPAI; Turner, Stanley, Beidel, & Bond, 1989), the Social Avoidance and Distress Scale (SADS; Watson & Friend, 1969), the Fear of Negative Evaluation Scale (FNE; Watson & Friend, 1969), the State-Trait Anxiety Inventory (STAI; Spielberger, 1983), and the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961).

Course of Treatment

The computer-assisted psychotherapy group of which Ms. B was a part consisted of two individuals with a primary diagnosis of generalized anxiety disorder and two individuals with a primary diagnosis of generalized social phobia. Ms. B. attended five of the six group-therapy sessions. Although initially quiet and reserved during therapy sessions, Ms. B. became an active participant in the group. In addition to offering her own experiences as examples for the group to use in learning and practicing techniques, she made suggestions when others in the group brought up their experiences.

When recording her worry topics and the degree to which her feared outcome occurred, Ms. B. reported that her most frequent worry topics were saying something inappropriate, talking on the phone, interactions with her advisor, leading readings at church, her ability to cope with things, and daily living tasks such as requesting that phone service be connected. Ms. B.’s worry record also indicated that her feared outcome typically did not occur, and the actual outcome was better than she expected.

Outcome and Prognosis

Ms. B. expressed enthusiasm about using the computer and said that it was very helpful to have the computer when practicing techniques. She was compliant with 80% of the homework on relaxation exercises. Further, in the first two weeks of therapy, she initiated therapeutic techniques with the computer approximately 90 times to practice cognitive restructuring or engage in additional relaxation and self-control desensitization (SCD) exercises. By the third session, she initiated therapeutic techniques on the computer only 17 times, a number which remained stable for the rest of the course of therapy. This pattern may indicate that Ms. B. used the computer to learn the techniques in the first few weeks of therapy and was then able to implement them automatically and without the aide of the computer.

Self-monitoring data collected via the computer demonstrated that the percentage of time Ms. B. spent worrying and her highest levels of anxiety decreased throughout the course of treatment. Figure 3 illustrates the weekly decrease in the percentage of time Ms. B. spent worrying. Figure 4 provides a view of the weekly decrease in the highest anxiety Ms. B. experienced through the course of therapy.

Posttreatment assessment data also demonstrate a decrease in Ms. B.’s social phobia symptoms as indicated by her scores on the SPAI, SAD, and FNE at posttherapy and
6-month follow-up assessments (Table 1). Finally, Ms. B. no longer met criteria for social phobia at posttherapy and 6-month follow-up assessments.

Ms. B.’s overall anxiety level, as indicated by her score on the STAI, was within one standard deviation of the mean for a normative sample of adults between the ages of 19 and 31 years (mean = 34.79, SD = 9.22; Spielberger, 1983). Her STAI score at posttherapy and 6-month follow-up assessments decreased slightly and remained within the normative level.

Clinical Issues and Summary

The use of computers can dramatically improve client access to what would otherwise be a very expensive, but efficacious, treatment. Computer programs have been demonstrated to be efficacious in the implementation of CBT for anxiety disorders (for a review, see Newman et al., 2003) and result in a savings of approximately $2387.50 per client when compared with standard individual therapy for social phobia.

Reliance on the computer to practice therapy techniques may decrease the number of therapist contact hours, thereby reducing the burden on clinicians and allowing them to treat greater numbers of clients without sacrificing treatment efficacy. The use of computers also may enhance the quality of clients’ practice of techniques outside of session by providing detailed instructions on their proper use. Further, because the computer
collects data regarding initiation and termination of techniques, homework compliance can be assessed more accurately.

Our clinical experiences and ongoing research support the use of computer-assisted group therapy in the treatment of individuals with social phobia. Although the treatment package was originally designed for GAD, it was efficacious in reducing the symptoms of social phobia. Ms. B. no longer met criteria for social phobia at posttherapy and 6-month follow-up assessments. Ms. B. also expressed enthusiasm about the use of the computer, and frequently used it to practice coping skills and therapeutic techniques.

One limitation of the treatment package was that the computer program was designed for GAD, not social phobia. The computer alarm system could be equipped with questions which more closely assess social anxiety, such as fear of negative evaluation and worry associated specifically with social situations. This could provide a more accurate view of the treatment effectiveness in reducing social phobia symptoms as well as improve the specificity of the client’s self-monitoring of anxiety cues.

In addition, therapy should examine the efficacy of computer-assisted therapy with clients who have comorbid Axis I and II diagnoses. Ms. B. had no comorbid diagnoses nor were her symptoms of trait anxiety elevated; therefore, it is unclear whether the computer package would be efficacious in reducing comorbid conditions such as major depressive disorder or other anxiety disorders.

Finally, the use of the computer may provoke fear in individuals who are not computer savvy or clients who do not wish to divulge that they are in therapy. These concerns may be easily addressed by inviting the client to discuss his or her fears and brainstorming about ways to allay these fears. Individuals who have not used a computer before may be concerned about their ability to utilize the computer as an integral component of their therapy; however, a demonstration of the ease with which the computer may be used to practice techniques may quickly alleviate these fears.

Further, some clients may have concerns regarding how to explain their use of the computer and its alarms without divulging that they are participating in computer-assisted therapy. It is important to discuss this issue with clients for them to feel completely at ease using the computer in public. Clients who have participated in our program have often told others that the computer is their electronic calendar and is beeping to remind them of an appointment or meeting. Other clients have told people that they are participating in a research study that examines the use of a new computer. It is important to emphasize to the client that he or she should carry the computers at all times to gather the most accurate self-monitoring data and to facilitate the practice of therapeutic techniques in response to anxiety cues. The computer alarm schedule may be tailored to fit

<table>
<thead>
<tr>
<th>Measures</th>
<th>Pretherapy</th>
<th>Posttherapy</th>
<th>6-Month Follow-Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAI-SP</td>
<td>70</td>
<td>46</td>
<td>29</td>
</tr>
<tr>
<td>SADS</td>
<td>11</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>FNE</td>
<td>21</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>STAI-Trait</td>
<td>38</td>
<td>34</td>
<td>30</td>
</tr>
<tr>
<td>BDI</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. SPAI = Social Phobia and Anxiety Inventory Schedule; SADS = Social Avoidance and Distress Scale; FNE = Fear of Negative Evaluation Scale; STAI-Trait = State-Trait Anxiety Inventory; BDI = Beck Depression Inventory.
the individual needs of the client; therefore, it is important to discuss the client’s schedule and concerns regarding the alarms beeping at inopportune times.

It also is necessary to emphasize that individuals participating in computer-assisted therapy should not share their computers with friends and family or the data collected by the computer will not accurately reflect their symptom picture and homework compliance. Individuals participating in our program have frequently stated that they share the techniques that they have learned with their family members and friends, who also may experience anxiety or may have been engaging in behaviors that help to maintain the client’s anxiety symptoms. It is important that clients do not allow their significant others to utilize the computers at these times or the therapist may not rely on the computer data to help guide the therapy. Therapists and clients should engage in an open dialogue about ways in which clients may share the techniques that they have learned with significant others without compromising the accuracy of their computer data.

Select References/Recommended Readings


