Psychotherapy for Generalized Anxiety Disorder

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The present article describes the basic therapeutic techniques used in the cognitive-behavioral therapy (CBT) of generalized anxiety disorders and reviews the methodological characteristics and outcomes of 13 controlled clinical trials. The studies in general display rigorous methodology, and their outcomes are quite consistent. CBT has been shown to yield clinical improvements in both anxiety and depression that are superior to no treatment and nonspecific control conditions (and at times to either cognitive therapy alone or behavioral therapy alone) at both posttherapy and follow-up. CBT is also associated with low dropout rates, maintained long-term improvements, and the largest within-group and between-group effect sizes relative to all other comparison conditions.

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Early empirical attempts to evaluate the efficacy of psychological treatments for "diffuse anxiety" largely involved the deployment of relaxation training methods. Clients were taught ways of creating relaxed states through progressive muscular relaxation, biofeedback, or meditation procedures and were asked to practice these methods twice a day. They were sometimes told to practice their relaxation coping strategy any time during the day when they were becoming tense or anxious, although systematic training in exactly how to do this was not typically provided. Although research on these approaches suggested that relaxation could be helpful, the degree of clinical gain was rather limited.

Since the advent of DSM-III, increasing attention has been devoted to basic research on the nature of generalized anxiety disorder (GAD) and to the development of more sophisticated and effective psychological interventions based upon those basic research findings. The purpose of the present article is to review briefly the methods of cognitive-behavioral therapy (CBT) that have evolved over the past 20 years and summarize the extant experimental literature that has evaluated its short-term and long-term effects. The review is limited to the CBT approach because this package of psychological interventions and its elements are the only forms of psychotherapy for GAD that have been systematically investigated in controlled trials.

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CBT FOR GAD

The most typical CBT approach for GAD involves training clients to detect incipient internal and external anxiety cues and to apply new coping skills that target both the psychic and somatic symptoms of the disorder. Often, this approach also provides opportunities to rehearse these skills in imagery during the therapy session in order to increase their habit strength for applications to daily life. Below is a description of each of these commonly used elements of this form of psychotherapy.

Self-Monitoring of Anxiety

Clients are asked to begin to pay close attention in their daily lives to environmental situations that tend to trigger anxiety responses as well as to the internal (cognitive and somatic) response cues that are indicative of the initiation of developing anxiety. In therapy, the therapist instructs the client to practice doing this through the use of imagination of stressful or anxiety-provoking events or by asking the client to initiate a worry episode and to notice the thoughts, images, and feelings associated with the very beginnings of the worry process. Between sessions, clients are instructed to become more sensitive to progressively earlier cues that signal the emergence of increasingly anxious experiences in their daily lives. The sooner clients recognize that worry or other indicators of anxious responding are beginning to occur, the earlier they can intervene with their developing coping responses and the more effective those responses will be in reducing their anxiety.

Relaxation Training

GAD clients show tonically elevated muscle tension and a type of autonomic inflexibility characterized by deficient parasympathetic tone.[1–3] For these reasons, training clients in progressive muscle relaxation[4] and in a variety of additional relaxation techniques is clinically advisable. The lat-

ter commonly include slowed/paced diaphragmatic breathing, relaxing imagery, differential relaxation, and meditation. Clients are asked to practice these methods twice a day to strengthen their ability to create a relaxation response, but more importantly they are told to engage in a systematic program of applied relaxation.[5] This involves applying their relaxation response (1) whenever they detect incipient external or internal (e.g., worry) cues, (2) before, during, and after stressful events, and (3) frequently during the day even when they are not anxious. The eventual goal, in addition to acquiring a capability to reduce anxiety effectively and efficiently, is to use the cues of the absence of tranquility and of focused awareness on present-moment experience as the primary signals for re-creating the relaxed state.

Cognitive Therapy

Because anxiety always involves the perception of future threat and worry is excessive negative thinking containing inaccurate predictions that catastrophic events are likely to occur, the use of cognitive therapy methods specifically developed to address such perceptions and inaccuracies makes clinical sense. Although there are many technical aspects to cognitive therapy, its foundational method characteristically involves 4 sequential steps: (1) identification of how the client is perceiving or predicting, (2) identifying the evidence for the accuracy or inaccuracy of those cognitions, (3) generating alternative cognitions that are more accurate, and (4) making use of those more accurate ways of perceiving and predicting whenever worry or anxiety is detected.

Imagery Rehearsal of Coping Skills

Remembering to apply newly learned relaxation strategies for coping with anxiety on a moment-to-moment basis is not easy. Remembering and then using in daily life the new, more accurate ways of perceiving the world that were learned in therapy sessions is also very difficult. This is especially true for GAD clients who have been habitually engaging in anxious ways of thinking and feeling, often for many years. Consequently, rehearsing the coping strategies in imagery in the therapy office is a useful way of strengthening, and therefore making more likely, the daily use of the new coping skills. Several techniques of this type have been developed for such in-session training and practice (e.g., self-control desensitization, anxiety management, and stress-inoculation). After creating a deeply relaxed state, these methods use imagery of anxiety-provoking situations and of incipient cognitive and somatic anxiety cues to initiate feelings of anxiety or worry. As soon as clients notice the actual occurrence of anxiety reactions to the images, they reinduce relaxation and shift their cognitive view of the anxious or worrisome situation to more accurate ways of perceiving, interpreting, and predicting.

Although the above imagery techniques obviously involve the use of exposure to anxiety-provoking stimuli, extinction of anxiety responses is not as central to GAD treatment as it has been in CBT applications to phobias and other anxiety disorders wherein circumscribed anxiety triggers can be readily identified. If specific situations are problematic for a GAD client, then certainly imaginal or in vivo exposure techniques can be usefully employed. However, GAD is not typically characterized by a limited set of feared situations; indeed, clients often report worrying about everything or about many minor things, in addition to their main domains of worry. Thus, skill rehearsal becomes the principal reason for imagery methods with this disorder.

CONTROLLED CLINICAL TRIALS OF CBT FOR GAD

Although several investigations[6–11] of behavioral or CBT methods have been conducted on states of general or diffuse tension and anxiety, it is unclear whether the clients participating in these investigations would have met criteria of DSM-defined GAD. Their results and the conclusions based upon them, however, are substantially in agreement with the findings of controlled trials with carefully diagnosed GAD clients that will be reviewed here.

Methodological Characteristics of GAD Outcome Investigations

Thirteen controlled psychotherapy investigations have been reported in the published literature[12–24] (2 of which[12,16] included samples of both GAD and panic disorder). To determine the degree of confidence that we can have in drawing conclusions from this set of studies, it is first crucial that we evaluate the methodological rigor with which they were conducted. Table 1 presents information on the methodology of these investigations (as well as on features of the client samples, assessment, and therapy), and these characteristics are summarized below.

All studies employed DSM criteria or Research Diagnostic Criteria for selecting participants, with the majority using the Anxiety Disorders Interview Schedule[25] as the diagnostic method. Reliability checks were conducted on the diagnoses in 8 of the investigations. Included among them were 3 studies that conducted independent diagnostic interviews on every client to ensure the absence of false positive cases, a procedure that may be very important in any investigation of GAD, given the relatively low degree of interrater agreement typical for this disorder.[26] Assessors were blinded in most of the trials, and therapists were balanced over conditions (seeing equal numbers of clients in each condition) in 8 studies, thus precluding a therapist confound in these designs. Because psychotherapy involves the application of complex techniques over a fairly lengthy period, it is methodologically important that each condition is operationally defined by detailed protocols and that independent adherence checks are conducted to ensure

Table 1. Methodological Characteristics of the 13 Psychotherapy Outcome Studies for Generalized Anxiety Disorder[a]

Methodological Feature	Composite Data
Diagnostic source	
DSM	10
RDC	2
Both	1
Diagnostic method	
ADIS	9
PSE	2
Unspecified	2
Diagnostic reliability	
Yes	3
Some	5
No	5
Blinded assessors	
Yes	9
No	2
Unknown	1
Not applicable	1
Therapists balanced over conditions	
Yes	8
No	4
Not applicable	1
Protocol manuals	
Yes	9
No	4
Adherence checks	
Yes	8
No	5
Expectancy/credibility assessed	
Yes	9
No	4
Dropout rate (overall), mean, %	14.8
Dropout rate (CBT only), mean, %	8.3
Follow-up duration,[b] mean, mo	
Full	9.3
Partial	9.1
Age, mean, y	38.6
Sex, %	
Female	65.7
Male	34.3
Chronicity, mean, y	6.8
Medicated patients allowed	
Yes	6
No	5
Unknown	2
Patients receiving medication, %	47.7
No. of sessions, mean	10.6
Length of sessions, mean, min	68.8
No. of therapists, mean	5

[a]Data from references 12–24. Values shown as number of studies unless otherwise specified. Abbreviations: ADIS = Anxiety Disorders Interview Schedule, CBT = cognitive-behavioral therapy, DSM = Diagnostic and Statistical Manual of Mental Disorders, PSE = Present State Examination, RDC = Research Diagnostic Criteria.
[b]Full follow-up (incorporating the complete assessment battery used at pretherapy and posttherapy assessments) was included in 9 studies; partial follow-up was included in 3 studies.

that only protocol-allowed techniques are used. Among the 13 investigations, 9 used such manuals of procedure, and adherence checks were conducted in 8 of these trials.

In both pharmacologic and psychotherapy trials, clinical scientists are sensitive to the fact that a potentially large portion of treatment improvement may be due to nonspecific factors. Among such factors, a client's belief in the appropriateness of the offered treatment (credibility) and his or her expectancy that therapy will help are particularly critical. It has thus become common in psychotherapy investigations to assess these variables early in therapy. If contrasted conditions are not found to be equivalent, the original reason for including a nonspecific or placebo condition has been compromised, and a major confound thus exists in the design. Specifically, any differential effects among conditions are just as likely to be due to differences in credibility or expectancy as they are to differences in the methods of the comparison conditions. Nine of the 13 investigations assessed these variables and verified equivalence of the conditions.

Dropout rates in outcome investigations become a highly significant problem for the interpretation of results if those rates are large or if they are differential between conditions. Random assignment before the initiation of a study allows the assumption that compared conditions are equivalent on the many known and unknown client variables that potentially relate to eventual outcome. To the degree that dropout occurs at all or occurs differentially, we can no longer be assured that the study possesses internal validity. In addition, external validity is compromised. The larger the attrition, the more probable these problems become. In the 13 GAD therapy studies, overall attrition was low, and CBT itself experienced the lowest dropout rates among employed conditions.

Having immediate therapeutic effects as revealed in posttherapy assessments is certainly important for demonstrating that a therapy is efficacious (i.e., contains causal ingredients beyond those contained in a contrast condition, allowing conclusions about the causal ingredients in the therapy). However, we, as well as our clients, are predominantly concerned with the maintenance of therapeutic gains. It is of significance that all 13 psychotherapy investigations included follow-up assessments (either 6 or 12 months, and so averaging 9 months), thus providing this critical information. The majority of these assessments employed the same complete assessment battery used at pretherapy and posttherapy assessments.

The clients involved in these studies were typically in their late 30s; two thirds of clients were women, and the average duration of the disorder was nearly 7 years. Six of the investigations entered medicated clients into the study, although this was usually done under the condition that they maintain their current dosage at a constant level throughout the treatment period. Among those studies, nearly half of the clients were receiving some form of psychotropic medication. Clients were seen in therapy for an average of about 11 sessions (session length being approximately 70 minutes), and an average of 5 therapists were involved in the provision of treatment.

Overall, this set of investigations is characterized by a relatively high degree of scientific rigor, strengthening our confidence in the validity of the results.

Table 2. Number of Conditions in the 13 Studies Providing Outcome Comparisons and the 11 Studies Serving as the Basis of Effect Size Calculations[a]

Condition	Outcome	Effect Size
Cognitive-behavioral	15	13
Behavior therapy or cognitive therapy comparison	10	10
Placebo or alternative therapy comparison	9	8
Waiting-list no-treatment comparison	6	4

[a]Data from references 12–24.

Number of Conditions in 4 Aggregated Comparison Groups

All 13 outcome investigations included a CBT condition, but they varied in the number and types of control conditions employed. Table 2 summarizes the actual number of conditions of various types that have been used in the GAD outcome studies, aggregated into the 4 categories described below. Because 2 investigations[13,15] did not provide data that could be subjected to effect-size calculations for meta-analysis purposes, the 2 columns display this information separately for the complete set of studies and for the 11 studies that could be included in the meta-analysis. Any group that received both cognitive therapy and some form of behavioral therapy (most commonly, relaxation) was placed in the CBT category. One investigation[18] included 3 CBT groups (alone, with pill placebo, and with diazepam), and thus there were 15 CBT conditions for review. Several studies made use of 1 or more single-component comparison conditions (e.g., cognitive therapy alone, behavioral therapy alone) as contrast groups for the CBT condition. Such single-element conditions were grouped together in Table 2 for the sake of meta-analytic comparisons of CBT to any of its components. Relatively nonspecific conditions (e.g., supportive listening psychotherapy, pill placebo) designed to serve as a placebo control were combined in a separate category together with any form of therapy other than behavioral or cognitive-behavioral treatments. The latter includes 1 study with a psychodynamic condition[23] and 2 studies[17,18] employing a probably ineffectual diazepam condition (fixed dosage, 5 mg, 3 times a day). The logic for combining these alternative therapies into the nonspecific control category is that other forms of therapy would at least provide nonspecific factors (with or without their own potential active ingredients) and would thus serve as an excellent control for placebo effects for this review. The final category included waiting-list no-treatment conditions.

Combined Outcomes From Individual Investigations

Table 3 describes the basic outcome findings from each of the 13 GAD investigations at both posttherapy and follow-up assessments involving whatever principal measures of anxiety were employed to evaluate outcome. In summary, CBT was statistically superior (1) to no treatment at posttherapy in every investigation containing this comparison, (2) to nonspecific or alternate treatment conditions in 82% of such comparisons at posttherapy and in 78% of the comparisons at follow-up, and (3) to behavioral or cognitive components in 20% and 43% of comparisons at posttherapy and follow-up assessments, respectively. No follow-up information exists for no-treatment conditions, because clients in these groups were routinely provided psychotherapy after the posttherapy evaluation period. In such studies, however, CBT always showed long-term maintenance of, or increases in, its original therapeutic gains. (For the sake of comparison with pharmacologic investigations, mean scores on the Hamilton Rating Scale for Anxiety for CBT at pretherapy, posttherapy, and follow-up were 21.53, 8.49, and 8.60, respectively.)

Effect Sizes

The above findings were based on statistical tests reported within each study on the variety of anxiety outcome measures that were employed to assess outcome. For the sake of effect size calculations among the 11 trials reporting the necessary statistical information, the 5 most commonly used anxiety and depression outcome measures were selected. These included 3 anxiety scales (assessor severity ratings of overall GAD symptomatology [0- to 8-point scales[12]], the Hamilton Rating Scale for Anxiety,[27] and the State-Trait Anxiety Inventory–Trait version[28]) and 2 depression measures (the Hamilton Rating Scale for Depression[29] and the Beck Depression Inventory[30]).

Within-group effect sizes. Table 4 presents within-group effect sizes (averaged across measures and across groups contained within each condition category) for each type of condition at both posttherapy and follow-up, separately for anxiety and depression measures. Effect sizes in this case were calculated using the following formulas for degree of therapeutic change: (posttherapy score – pretherapy score)/pretherapy standard deviation and (follow-up score – pretherapy score)/pretherapy standard deviation. CBT resulted in the largest effect sizes among all types of conditions on both anxiety and depression measures at both assessment periods. Nonspecific and alternative treatments generally were associated with the next largest effect sizes, followed by the single-component conditions and then waiting-list no-treatment. The latter condition displayed virtually no change from pretherapy to posttherapy.

Between-group effect sizes. Table 5 presents between-group effect sizes comparing the group of CBT conditions with each group of control conditions at both posttherapy and follow-up, separately for anxiety and depression measures. Effect size in this case was calculated using the following formula (exemplified for posttherapy differences)

Table 3. Outcomes at Posttherapy and Follow-Up for the 13 GAD Psychotherapy Studies[a]

Study	Posttherapy Outcome	Follow-Up Outcome
Barlow et al[12]	CBT > NT	Gains maintained
Blowers et al[13]	CBT > PL and NT	Gains maintained (CBT > PL)
Borkovec et al[14]	CBT > BT	Inadequate information
Butler et al[15]	CBT > NT	Gains maintained
Borkovec and Mathews[16]	CBT = BT_1 = BT_2	Gains maintained (CBT = BT_1 = BT_2)
Power et al[17]	CBT > PL and diazepam	Inadequate information
Power et al[18]	3 CBT > PL and diazepam	Gains maintained (3 CBT > PL and diazepam by clinically significant change index)
Butler et al[19]	CBT > BT and NT	Gains maintained (CBT > BT)
White et al[20]	CBT = CT = BT = PL > NT	Active therapy gains maintained; PL gains not maintained (CBT = CT = BT = PL)
Barlow et al[21]	CBT = CT = BT > NT	Inadequate information
Borkovec and Costello[22]	CBT = BT > PL	Gains maintained (CBT > BT and PL)
Durham et al[23]	CBT = BT > PT	Gains maintained (CBT > BT and PT)
Stanley et al[24]	CBT = PL	Gains maintained (CBT = PL)
Summary		
CBT vs NT	CBT > NT (6/6 comparisons)	CBT gains routinely maintained
CBT vs PL or non-BT treatment	CBT > PL or non-BT treatment (9/11 comparisons)	CBT > PL or non-BT treatment (7/9 comparisons)
CBT vs BT or CT	CBT > BT or CT (2/10 comparisons)	CBT > BT or CT (3/7 comparisons)

[a]Abbreviations: BT = behavior therapy, CBT = cognitive-behavioral therapy, CT = cognitive therapy, NT = waiting-list no-control condition, PL = placebo or nonspecific therapy condition, PT = psychodynamic treatment.

for the degree of difference in therapeutic change between contrasted conditions: (posttherapy score for CBT – posttherapy score for the comparison condition)/ pooled posttherapy standard deviation. After these effect sizes were calculated for each contrast on each measure within a study, they were averaged across anxiety (or depression) measures and across studies containing the same comparison groups. (For the sake of comparisons with pharmacologic trials that routinely use the Hamilton scales for assessing anxiety and depression, effect sizes for the Hamilton measures alone are provided in Table 5 parenthetically.)

Table 4. Mean Within-Group Effect Sizes at Posttherapy and Follow-Up for Commonly Used Measures of Anxiety and Depression[a]

	Anxiety		Depression	
Condition	Posttherapy	Follow-Up	Posttherapy	Follow-Up
Cognitive-behavioral therapy	2.48	2.44	1.14	1.22
Behavioral or cognitive therapy	1.72	1.71	1.02	0.88
Placebo or alternative therapy	2.09	2.00	0.78	1.05
Waiting-list no-treatment condition	0.01	…	0.14	…

[a]Data from references 12–24. Measures of anxiety comprised assessor severity rating, the Hamilton Rating Scale for Anxiety, and the State-Trait Anxiety Inventory trait subscale; measures of depression comprised the Hamilton Rating Scale for Depression and the Beck Depression Inventory. Symbol: … = not available.

Table 5. Mean Between-Group Effect Sizes at Posttherapy and Follow-Up for Commonly Used Measures of Anxiety and Depression[a]

	Anxiety		Depression	
Condition	Posttherapy	Follow-Up	Posttherapy	Follow-Up
CBT versus BT and CT alone	0.26 (0.39)	0.54 (0.59)	0.26 (0.13)	0.45 (0.66)
CBT versus placebo or alternative therapy	0.71 (0.86)	0.30 (0.41)	0.66 (0.42)	0.21 (0.25)
CBT versus waiting-list no-treatment condition	1.09 (1.22)	…	0.92 (0.41)	…

[a]Data from references 12–24. Measures of anxiety comprised assessor severity rating, the Hamilton Rating Scale for Anxiety (HAM-A), and the State-Trait Anxiety Inventory trait subscale; measures of depression comprised the Hamilton Rating Scale for Depression (HAM-D) and the Beck Depression Inventory. HAM-A and HAM-D scores alone are shown in parentheses. Abbreviations: BT= behavior therapy, CBT = cognitive-behavioral therapy, CT = cognitive therapy. Symbol: … = not available.

Across the types of measures and assessment periods, CBT surpassed its single-component conditions with a small-to-moderate range of effect sizes, was superior to conditions controlling for the placebo effect with a small-to-large effect size range, and exceeded no-treatment conditions with a large effect size.[31] Of note is the fact that the differential effect size for CBT increased from posttherapy to follow-up assessments on both anxiety and depression measures compared with its single-component therapies. The opposite trend can be seen in its contrast to placebo control conditions. However, this is most likely due to the fact that clients receiving nonspecific conditions more frequently seek out and obtain further pharmacologic or psychotherapeutic intervention after the therapy period, and before the follow-up assessment, than has been the case for clients in CBT groups.[22] (Inspection of the parenthetical Hamilton measures indicates basically the same pattern of results, except that posttherapy depression effect sizes favoring CBT are smaller in comparison with each of the 3 contrast groups than was the case when all anxiety or depression measures were averaged.)

CONCLUSIONS

Psychotherapy trials for GAD have a relatively recent history, partly because the characteristics of the disorder (especially the absence of circumscribed, anxiety-provoking stimuli) did not lend themselves readily to the exposure techniques that were being found to be efficacious for other anxiety disorders. Despite the existence of a relatively small set of controlled outcome investigations, these studies are characterized by strong designs and methodologies, routine follow-up evaluations to assess maintenance of change, and surprisingly consistent results. These results indicate that CBT produces greater immediate and long-term therapeutic improvements in both anxiety and depression than no-treatment and nonspecific control conditions and periodically superior effects relative to either cognitive therapy or behavior therapy alone.

Such conclusions come from both review of the individual studies and from within-group and between-group effect size comparisons. Low dropout rates indicate that the therapy is acceptable to many clients seeking treatment for this disorder, that the internal validity of the investigations has not been compromised, and that external validity is strong. Finally, in a rare report in which additional diagnoses were assessed after therapy,[32] effective treatment for GAD was found to produce a dramatic reduction in the number of comorbid conditions remaining at posttherapy and 12-month follow-up. It appears that successful treatment of GAD by CBT methods may provide therapeutic conditions that can eliminate many comorbid problems.

Drug name: diazepam (Valium and others).

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