

BRIEF REPORTS

Group Cognitive–Behavioral Therapy for Generalized Anxiety Disorder: Treatment Outcome and Long-Term Follow-Up

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A recently developed cognitive–behavioral treatment for generalized anxiety disorder (GAD) targets intolerance of uncertainty by the reevaluation of positive beliefs about worry, problem-solving training, and cognitive exposure. As previous studies have established the treatment's efficacy when delivered individually, the present study tests the treatment in a group format as a way to enhance its cost–benefit ratio. A total of 52 GAD patients received 14 sessions of cognitive–behavioral therapy in small groups of 4 to 6 participants. A wait-list control design was used, and standardized clinician ratings and self-report questionnaires assessed GAD symptoms, intolerance of uncertainty, anxiety, depression, and social adjustment. Results show that the treatment group, relative to the wait-list group, had greater posttest improvement on all dependent variables and that treated participants made further gains over the 2-year follow-up phase of the study.

Over the past 15 years, research into nonclinical and clinical worry has led to the development of specific cognitive–behavioral treatments for generalized anxiety disorder (GAD). Our own research group has elaborated a treatment that is based on a model of GAD that has intolerance of uncertainty as its main feature (Dugas, Gagnon, Ladouceur, & Freeston, 1998). In an initial randomized clinical trial, the treatment was offered individually to 26 GAD patients (Ladouceur et al., 2000). The results showed that the treatment led to statistically and clinically significant change at posttest and that gains were maintained at 12-month follow-up.

As the treatment has now been shown to be effective, ways of rendering it more cost-effective may be considered. One way of improving the treatment's cost–benefit ratio is to administer it in a group format. The primary goal of this study is to assess the efficacy of the treatment when administered to groups of GAD patients. The first hypothesis is that participants in the treatment

condition, relative to those in the wait-list condition, will show significantly greater posttest improvement on all clinician-administered and self-report measures. The second hypothesis is that treatment gains will be maintained over the 2-year follow-up phase of the study.

Method

Participants

The sample ($N = 52$) was made up of 37 women and 15 men, all of whom were Francophone Caucasians. The mean age for the sample was 41.2 years ($SD = 9.2$), and the mean years of education was 12.9 ($SD = 2.8$). All participants had a primary diagnosis of GAD, with an average duration of 16.9 years ($SD = 15.2$). Of the 52 participants, 35 had one or more additional diagnoses, with a range of 1 to 5 comorbid disorders. The most common additional diagnoses were specific phobia, panic disorder, and social phobia.

Procedure

In response to a newspaper advertisement, 170 individuals contacted our treatment center between January 1996 and June 1998. A structured telephone interview was first used to screen out individuals who did not meet GAD diagnostic criteria. Following the telephone interview, 102 individuals were invited to our clinic for a structured diagnostic interview, the Anxiety Disorders Interview Schedule for *DSM-IV* (ADIS-IV; Di Nardo, Brown, & Barlow, 1994). All interviews were audiotaped and a second clinician listened to the recordings to assess diagnostic reliability. If both clinicians did not agree that GAD was the most severe disorder, the individual was excluded from the study. Entry criteria consisted of (a) a primary diagnosis of GAD; (b) no change in medication type or dose

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during the 8 weeks before treatment; (c) willingness to keep medication stable while participating in the study; (d) no evidence of suicidal intent; (e) no evidence of current substance abuse; and (f) no evidence of current or past schizophrenia, bipolar disorder, or organic mental disorder. Following the administration of the ADIS-IV, 40 individuals were excluded: 19 had another disorder that was as severe as GAD, 14 had another primary disorder, and 7 had subclinical GAD. The 62 remaining individuals were offered treatment and 10 refused for reasons such as being unable to fit weekly sessions into their schedule.

The 52 participants who made up the final sample were randomly allocated to group treatment ($n = 25$) or waiting list ($n = 27$). Participants in the treatment group were divided into five groups, with 4 to 6 participants per group. Treatment consisted of 14 weekly 2 hr sessions with two clinical psychologists. Participants in the wait-list condition were telephoned every 3 weeks by the clinician who had administered the ADIS-IV to monitor their state. Following the 14-week waiting period, wait-list participants were also divided into five treatment groups, with 4 to 6 participants per group. All measures were administered at pre-wait-list, pretreatment, posttreatment, and 6-, 12-, and 24-month follow-ups. At all measurement times, the ADIS-IV was administered by an independent clinician who was uninformed as to group assignment.

Measures

The ADIS-IV assesses all anxiety disorders and screens for various other disorders. To obtain a dimensional rating of GAD symptoms, we applied the 9-point Symptom Severity Scale of the ADIS-IV regardless of whether participants met diagnostic criteria for GAD. Thus the ADIS-IV was used to obtain both a categorical rating (presence/absence of GAD) and a dimensional rating (severity of GAD symptoms, regardless of diagnostic status). The Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990) includes 16 items measuring a trait-like tendency to worry. The Worry and Anxiety Questionnaire (WAQ; Dugas et al., 2001) is made up of 11 items covering *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.) diagnostic criteria for GAD. Because the PSWQ assesses the tendency to worry, only the Somatic subscale of the WAQ was retained for this study (i.e., 6 items measuring restlessness or feeling keyed up or on edge, being easily fatigued, difficulty concentrating or mind going blank, irritability, muscle tension, and sleep disturbance). The Intolerance of Uncertainty Scale (IUS; Freeston, Rhéaume, Letarte, Dugas, & Ladouceur, 1994) consists of 27 items relating to the idea that uncertainty is unacceptable, reflects badly on a person, and leads to frustration, stress, and the inability to take action. The Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988) has 21 items measuring the intensity of cognitive, affective, and somatic anxious symptoms experienced during the past week. The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) includes 21 items covering the principal depressive symptoms. Finally, the Social Adjustment Scale (SAS; Weissman & Bothwell, 1976) contains 54 items assessing adaptive functioning within various social contexts. All measures have strong psychometric qualities and, with the exception of the SAS, were used in our previous GAD treatment study (Ladouceur et al., 2000).

Therapists

Six licensed psychologists trained in cognitive-behavioral therapy shared the responsibility of treatment delivery. Mean clinical experience for therapists was 6 years (range: 2 to 12 years). All therapists were trained using the session-by-session treatment manual, and weekly supervisions were held with the study's senior authors.

Treatment

Treatment consisted of 14 weekly 2-hr sessions. It was administered in French to groups of 4 to 6 individuals. The five treatment components are described below.

Presentation of treatment rationale. The therapists first explained that one's perception and interpretation of uncertainty is an important source of worry and anxiety. Because uncertainty is pervasive in everyday life, the treatment's goal is not to eliminate participants' uncertainty, but rather to have them recognize, accept, and deal with uncertain situations. Intolerance of uncertainty was also addressed in every subsequent session of the treatment (see Dugas, 2002, for a detailed description of how intolerance of uncertainty is addressed in all treatment components).

Awareness training. In this phase of treatment, participants learned that some of their worries concerned current problems (e.g., meeting deadlines at work, interpersonal conflicts) whereas others concerned "hypothetical" situations that might or might not occur (e.g., going bankrupt, being involved in a serious accident). Between sessions, they were asked to stop what they were doing three times a day, record their immediate worries on a notepad, and note whether the worry concerned a current problem or a hypothetical situation.

Reevaluation of positive beliefs about worry. Therapists then helped participants identify their positive beliefs about worry (e.g., "my worries motivate me to get things done," "my worries prepare me for bad things that might happen"). Participants then listed arguments for and against each specific positive belief about worry. This exercise targeted intolerance of uncertainty by teaching participants to deal with the uncertainty of future events rather than trying to control them by using worry.

Problem-solving training. Problem-solving training, which was used for worries about current problems, involved five components: (a) problem orientation, (b) problem definition and goal formulation, (c) generation of alternative solutions, (d) decision making, and (e) solution implementation and verification. Patients were encouraged to proceed with the problem-solving process even when they were unsure of its outcome, thus targeting both poor problem orientation and intolerance of uncertainty.

Cognitive exposure. In the final phase of treatment, participants learned to use cognitive exposure to address worries about hypothetical situations. Participants first developed a scenario describing their worst fear and recorded the scenario on a looped tape. Participants then listened to the recording for 20 to 60 min every day (long enough to experience habituation) and continued to expose themselves until the scenario no longer provoked anxiety (typically 10 to 15 exposure sessions). To increase tolerance for uncertainty, the exposure scenarios included elements of uncertainty within threatening contexts.

Treatment Integrity

Session-by-session intervention checklists were used to assess treatment integrity. The checklists closely followed the treatment manual, including the structure of the session and the information to be presented and discussed. Treatment integrity was assessed by an advanced graduate student who listened to audiotapes from three randomly chosen sessions (21% for each of the study's 10 groups). For all groups combined, treatment integrity was 94%.

Results

Preliminary Analyses

Preliminary analyses revealed no between-group differences for demographic variables (age, gender, and years of education), clinical variables (severity and duration of GAD, number of comorbid conditions, and medication status), and study measures.

Medication

At intake, 11 participants were taking anxiolytic or antidepressant medication. At posttreatment, the number of participants taking medication had increased to 14. Over the follow-up phase of

the study, the number of participants taking medication decreased slightly (13 participants at 6-month follow-up and 10 participants at both 12- and 24-month follow-ups). There was also a shift in type of medication with more participants taking a selective serotonin reuptake inhibitor (SSRI) and less taking a benzodiazepine in later stages of the study.

Posttreatment Improvement

Treatment versus waiting list. Two participants in the treatment condition dropped out of treatment, and 2 participants in the wait-list condition withdrew from the study during the waiting period. For these 4 participants, missing posttest data were replaced by pretest scores. Alpha levels were adjusted using a modified Bonferroni procedure (see Simes, 1986). Two-way repeated measures analyses of variance (ANOVAs) showed significant Group \times Time interactions for all variables: ADIS-IV Symptom Severity Scale, $F(1, 50) = 31.79, p < .05, \eta^2 = .39$; PSWQ, $F(1, 50) = 20.57, p < .05, \eta^2 = .29$; WAQ Somatic subscale, $F(1, 50) = 21.74, p < .05, \eta^2 = .30$; IUS, $F(1, 50) = 6.92, p < .05, \eta^2 = .12$; BAI, $F(1, 50) = 17.60, p < .05, \eta^2 = .26$; BDI, $F(1, 50) = 28.39, p < .05, \eta^2 = .36$; and SAS, $F(1, 50) = 16.62, p < .05, \eta^2 = .25$. Given that 3 participants did not comply with the instruction to hold medication constant during treatment, all analyses were rerun without these participants. The results were unchanged as significant Group \times Time interactions were noted for all outcome variables. Pretest and posttest scores for both groups are presented in Table 1.

Total sample. Following post-wait-list assessments, 2 participants in the wait-list condition withdrew from the study. The 4 participants who withdrew from the study before the first treatment session (2 during the waiting period and 2 following post-wait-list assessment) were excluded from subsequent analyses. Three participants who had completed the waiting period dropped out of the study during treatment. For the 5 participants who dropped out of treatment (2 from the treatment condition and 3 from the wait-list condition), missing posttreatment scores were replaced by pretreatment scores. One-way repeated-measures ANOVAs showed significant decreases on all variables. These results were unchanged when participants who altered their medication during treatment were excluded. Pre- to posttreatment effect sizes (Cohen's d') were the following: ADIS-IV Symptom Severity Scale, $d' = 1.76$; PSWQ, $d' = 1.62$; WAQ Somatic subscale, $d' = 1.23$; IUS, $d' = 0.59$; BAI, $d' = 0.87$; BDI, $d' = 0.95$; and SAS, $d' = 0.72$.

Maintenance of Treatment Gains

Maintenance of treatment gains was examined by conducting a growth curve analysis using the multilevel modeling program known as hierarchical linear modeling (HLM). The effect of time was assessed using participants' scores at posttest, 6-month follow-up, 12-month follow-up, and 24-month follow-up. Separate analyses were conducted for each of the study variables. The results show that the coefficient for time was nonsignificant for each of the variables except for the PSWQ (coefficient for time = $-.14, t[42] = -2.90, p < .006$) and the IUS (coefficient for time = $-.16, t[42] = -2.32, p < .026$). These findings reveal that treatment gains were maintained for all study variables and that worry and intolerance of uncertainty scores decreased during

Table 1
Means and Standard Deviations on Outcome Measures at Pretest and Posttest for the Treatment (n = 25) and Wait-List (n = 27) Groups

Variable and group	Pretest		Posttest ^a	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
ADIS-IV ^b				
Treatment	6.36	1.19	3.40	1.78
Waiting list	5.82	1.04	5.30	1.14
PSWQ				
Treatment	62.56	9.50	49.08	12.18
Waiting list	62.22	7.00	60.04	8.75
WAQ ^c				
Treatment	29.12	8.64	16.68	9.19
Waiting list	26.15	6.94	24.67	9.60
IUS				
Treatment	73.36	19.07	55.04	17.99
Waiting list	75.26	20.01	70.89	27.29
BAI				
Treatment	18.48	10.71	8.04	6.26
Waiting list	16.30	9.34	15.63	8.11
BDI				
Treatment	16.96	8.61	7.76	6.23
Waiting list	14.30	6.98	14.04	7.28
SAS				
Treatment	2.08	0.43	1.71	0.32
Waiting list	2.03	0.32	1.96	0.35

Note. ADIS-IV = Anxiety Disorders Interview Schedule; PSWQ = Penn State Worry Questionnaire; WAQ = Worry and Anxiety Questionnaire; IUS = Intolerance of Uncertainty Scale; BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory; SAS = Social Adjustment Scale.
^a Missing posttest scores replaced by pretest scores. ^b Symptom Severity Scale. ^c Somatic Subscale.

follow-up. Because 4 participants changed their medication and 7 participants received at least one session of additional psychotherapy during follow-up, all analyses were rerun without these participants. The results remained unchanged, with worry and intolerance of uncertainty scores significantly decreasing over follow-up. Table 2 presents means and standard deviations for all measures at pretreatment, posttreatment, and follow-ups.

Clinically Significant Change

The clinical significance of change was assessed by treatment response and endstate functioning, both of which were defined in ways consistent with previous studies (see Borkovec & Costello, 1993; Ladouceur et al., 2000). Treatment response was defined as a 20% change in pretreatment scores, and endstate functioning was defined as a score that was within one standard deviation of the mean of normative samples. For each participant, responder status and endstate functioning were determined by the number of measures on which the aforementioned criteria were met: criteria reached on 0 to 1 measures was low, on 2 to 4 measures was moderate, and on 5 to 7 measures was high. Table 3 presents the frequency and percentage of participants in each category of responder status and endstate functioning at posttest and each follow-up. It should be noted, however, that between 25% (at 12-month follow-up) and 40% (at 6-month follow-up) of participants meeting criteria for both high responder status and high

Table 2

Means and Standard Deviations on Outcome Measures at Pretreatment, Posttreatment and 6-, 12-, and 24-Month Follow-Ups for All Participants ($N = 48$)

Variable and group	Pretest ($N = 48$)		Posttest ($N = 48$)		6 months ($n = 42$)		12 months ($n = 41$)		24 months ($n = 39$)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
ADIS-IV ^a	5.83	1.28	3.58	1.87	2.81	1.84	3.10	1.55	2.95	1.86
PSWQ	62.08	7.98	49.19	10.81	45.21	8.51	43.73	8.87	43.28	8.12
WAQ ^b	27.63	8.36	17.33	9.69	17.52	9.86	16.10	8.42	15.32	9.93
IUS	71.98	23.28	57.29	21.56	49.86	13.24	49.50	15.25	48.56	13.46
BAI	17.19	9.47	8.92	6.76	8.68	6.60	8.37	7.61	8.03	8.44
BDI	15.92	7.97	8.33	6.70	7.60	7.26	7.12	5.95	6.62	5.44
SAS	2.02	0.39	1.74	0.34	1.69	0.33	1.64	0.30	1.70	0.30

Note. ADIS-IV = Anxiety Disorders Interview Schedule; PSWQ = Penn State Worry Questionnaire; WAQ = Worry and Anxiety Questionnaire; IUS = Intolerance of Uncertainty Scale; BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory; SAS = Social Adjustment Scale.

^a Symptom Severity Scale. ^b Somatic Subscale.

endstate functioning were taking medication. The percentage of participants no longer meeting GAD diagnostic criteria as assessed by the ADIS-IV was 60% at posttreatment, 88% at 6-month follow-up, 83% at 12-month follow-up, and 95% at 24-month follow-up.

Discussion

The first and second hypotheses were supported: (a) participants in the group treatment condition, compared with those in the wait-list condition, showed significantly greater posttest improve-

ment on all measures and (b) treatment gains were maintained at 6-, 12-, and 24-month follow-ups. In fact, worry and intolerance of uncertainty scores significantly decreased during the follow-up phase of the study. As for the data's clinical significance, analyses of treatment response and endstate functioning point to good outcomes and maintenance of treatment gains, even though many "recovered" patients were still taking medication at posttreatment and follow-up assessments.

In terms of treatment outcome and maintenance of treatment gains, the findings of the present study are similar to those obtained in previous clinical trials using the most effective individual cognitive-behavioral treatments reported in the literature (i.e., Borkovec & Costello, 1993; Borkovec, Newman, Pincus, & Lytle, 2002; Ladouceur et al., 2000). Although between-study comparisons must be made with caution, it appears that group and individual cognitive-behavioral therapy for GAD may be similarly effective. If group therapy is indeed as effective as individual therapy (and less costly), then group therapy might be a way to improve the cost-benefit ratio for cognitive-behavioral therapy for GAD. There may, however, be a disadvantage to group therapy for GAD: preliminary data indicate that drop-out rates may be higher in group therapy relative to individual therapy. In the present study, 5 of the 48 participants (10.4%) who attended the first therapy session dropped out over the course of treatment. In our earlier treatment study (Ladouceur et al., 2000), which tested individual cognitive-behavioral therapy for GAD, none of the 26 participants who entered therapy dropped out over the course of treatment. Given that in both studies the treatment setting was the same (the clinical training facility at Laval University), the treatment components were identical, and the main therapist was the same person, it could be argued that group cognitive-behavioral therapy for GAD, relative to individual cognitive-behavioral therapy for GAD, leads to higher drop-out rates. To properly test this hypothesis, however, one would have to compare both group and individual cognitive-behavioral therapy in the same study.

The present study is, of course, not without its limitations. First, because group cognitive-behavioral therapy was compared with a wait-list control condition, no firm conclusions can be drawn about therapy processes. A second limitation of this study involves the use of an audiotaped recording to establish diagnostic agreement at

Table 3

Frequencies and Percentages of Participants in Each Category of Responder Status and Endstate Functioning at Posttest, 6-Month Follow-Up, 12-Month Follow-Up, and 24-Month Follow-Up

No. of measures	Responder status		Endstate functioning	
	Frequency	%	Frequency	%
Posttest ^a				
0-1	8	17	7	15
2-4	11	23	10	21
5-7	29	60	31	65
6-month follow-up ^b				
0-1	2	5	2	5
2-4	13	31	14	33
5-7	27	64	26	62
12-month follow-up ^c				
0-1	1	2	1	2
2-4	13	32	13	32
5-7	27	66	27	66
24-month follow-up ^d				
0-1	0	0	1	3
2-4	11	28	10	26
5-7	28	72	28	72

Note. Criteria for both high responder status and high endstate functioning were met by 25 participants (52%) at posttreatment, 20 participants (48%) at 6-month follow-up, 24 participants (59%) at 12-month follow-up, and 24 participants (62%) at 24-month follow-up. 0-1 = low; 2-4 = moderate; 5-7 = high.

^a $N = 48$. ^b $n = 42$. ^c $n = 41$. ^d $n = 39$.

intake. A stronger approach would have been to have each assessor administer a separate standardized interview. A final limitation that should be mentioned is that reliability data were not collected on posttest and follow-up diagnostic assessments.

Despite these limitations, the findings of this study argue strongly for the efficacy of group cognitive-behavioral therapy for GAD. Many participants reported that the group therapy format was particularly useful because it helped them to feel less isolated and better understood, and it gave them the opportunity to learn from others in the group. Group cognitive-behavioral therapy, therefore, appears to have much to offer to those suffering from GAD.

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