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Extreme Response Style in Recurrent and Chronically Depressed Patients: Change With Antidepressant Administration and Stability During Continuation Treatment

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The authors examined extreme response style in recurrently and chronically depressed patients, assessing its role in therapeutic outcome. During the acute phase, outpatients with major depressive disorder (N = 384) were treated with fluoxetine for 8 weeks. Remitted patients (n = 132) entered a continuation phase during which their fluoxetine dose increased and they were randomly assigned to treatment with or without cognitive–behavioral therapy (CBT). Results showed a predictive relationship between extreme response style and clinical outcome. Patients in the medication-only group showed a significant increase in the frequency of extreme responses, whereas patients receiving CBT showed no significant change. These results are consistent with recent findings suggesting that metacognitive factors may be as important as changes in thought content when treating depression.

Keywords: fluoxetine, major depressive disorder, cognitive behavioral therapy, extreme response style

In recent years, significant attention has been paid to understanding the mechanisms by which cognitive therapy and its variants produce symptom and functional change in patients suffering from major depressive disorder (MDD; Goldapple et al., 2004; Scott et al., 2000) and how such psychotherapies may help prevent depression relapse or recurrence (G. A. Fava, Rafanelli, Grandi, Conti, & Belluardo, 1998). Abramson and colleagues' reformulated learned helplessness model of depression posits that an individual's tendency to make internal, stable, and global causal attributions for negative events and external, unstable, and specific causal attributions for positive events is a risk factor for the development of depression (Abramson, Seligman, & Teasdale, 1978). In keeping with this theory, successful treatment of an acute major depressive episode through psychotherapeutic or psychopharmacologic means results in "healthier" attributional styles (Barber & DeRubeis, 2001; T. Petersen et al., 2004; Seligman et al., 1988). The cognitive model of depression, which provides the theoretical framework for the Beckian school of cognitive therapy, assumes that dysfunctional attitudes, which resolve with successful treatment, increase vulnerability to depression (Peselow, Robins, Block, Barouche, & Fieve, 1990; Zaretsky et al., 1997).

The assumption that changes in cognitive style account for the efficacy of cognitive therapy has been challenged in recent years by new theoretical frameworks and the psychotherapeutic treatments based on them (Segal, Williams, & Teasdale, 2002). For example, Segal et al. (2002) developed Mindfulness-Based Cognitive Therapy (MBCT), a group-based psychotherapy that centers on promoting healthier ways for patients to relate to their own negative thoughts. In this treatment model, modification of thought content is not the target of intervention. Rather, patients are taught to "decenter" negative cognitive sets and view thoughts as "events in the mind" rather than as true and incontrovertible facts (Segal et al., 2002). Evidence suggests that when a patient is able to decenter, in other words, to treat thoughts as observable mental events, negative cognitive experiences are less likely to lead to a depressed state (Teasdale, Moore, et al., 2002; Teasdale, Segal, et al., 2000).

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Another promising development challenging the essential assumptions of both the reformulated learned helplessness and cognitive models of depression is the investigation of explanatory flexibility (Fresco & Craighead, in press). This line of investigation has emphasized increasing an individual's ability to make use of contextual information and adaptively adjust to situations. Thus, it is not content alteration of thoughts that is critical but the cognitive process by which individuals approach life situations. Preliminary evidence has suggested that increases in cognitive flexibility may confer a better long-term prognosis in patients suffering from depression (Fresco, Schumm, & Dobson, 2005).

In related work, Teasdale and colleagues (Teasdale, Scott, et al., 2001) found that the form of cognitive response predicted relapse and differential response to cognitive therapy. These investigators studied 158 patients who had responded to acute-phase pharmacotherapy and were randomized to continued pharmacotherapy or combined pharmacotherapy and cognitive therapy. The authors observed that the frequency with which patients endorsed extreme response categories, positive or negative, on the Attributional Style Questionnaire (ASQ; C. Peterson et al., 1982) and the Dysfunctional Attitudes Scale (DAS; Weissman & Beck, 1978) was positively correlated with negative outcome. *Content,* meaning the patient's numerical scores on these questionnaires, demonstrated no such significant relationships. The authors suggested that shifts in cognitive mode, "rather than being merely the means to the end of changing belief, may actually be the primary mechanism through which the relapse prevention effects of cognitive therapy are achieved" (Teasdale, Scott, et al., 2001, p. 354).

One implication of the work by Teasdale and colleagues (Teasdale, Scott, et al., 2001) is that patients may terminate treatment with very low scores on measures of depressive thinking and yet be at elevated risk for relapse if their low scores are accompanied by a thought process characterized by little metacognition. In other words, perhaps a key ingredient to preventing relapse is not just the content of a person's thoughts but also one's ability to attend to his or her own thinking. It is also possible that such metacognitive factors as decentering, explanatory flexibility, and form of response may be modified to different degrees by psychopharmacologic or psychotherapeutic treatments.

Despite these promising innovations in psychosocial interventions, patients still are treated most often for depression with antidepressant medications, which are typically prescribed by primary care physicians (Dwight-Johnson, Sherbourne, Laio, & Wells, 2000; Regier et al., 1993). Thus, it is important to understand how metacognitive factors such as cognitive mode may influence individuals' response to pharmacotherapy. Individuals with less metacognitive awareness might be expected to show a worse response to treatment. For instance, they may hold rigid definitions of treatment success or expectations for the medication (either overly optimistic or pessimistic), which may lead to premature discontinuation when the medication does not produce the anticipated or desired effects. To our knowledge, the current investigation is the first to evaluate one cognitive style—extreme responding—in patients treated with both cognitive therapy and antidepressant medications. Because both treatments were delivered in this study, we could assess any possible differential effects of each treatment modality on extreme response style.

The objective of the current study was to examine extreme response style in recurrently and chronically depressed patients participating in a two-phase clinical trial. Our first hypothesis was that individuals with more extreme responding would show less symptom improvement in response to pharmacotherapy for depression in the first phase of treatment and greater likelihood of relapse during continuation treatment. Our second hypothesis was that patients receiving cognitive–behavioral therapy (CBT) in addition to psychopharmacological continuation therapy with fluoxetine would demonstrate a significant improvement in metacognitive factors relative to patients receiving only fluoxetine continuation therapy. Specifically, we hypothesized that patients receiving CBT plus fluoxetine would show a marked reduction in the incidence of extreme responses.

Method

Participants

Three hundred eighty-four outpatients (55% female, mean age = 39.8 ± 10.6 years) with MDD were treated at the Depression Clinical and Research Program of Massachusetts General Hospital (MGH) between September 1997 and October 2002. Participants entering the acute phase of treatment included both male (n = 173) and female (n = 211) outpatients, aged 18 to 65 years, who met *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., revised; American Psychiatric Association, 1987) criteria for a current episode of MDD determined by structured clinical interview (Williams et al., 1992) and who had an initial score on the 17-item Hamilton Rating Scale for Depression (HAM-D-17; Hamilton, 1960) of 16 or higher. Participants were also required to meet at least one of the following criteria: (a) history of three or more major depressive episodes, with the prior episode no more than 2.5 years before the onset of the current episode; (b) diagnosis of the current episode as chronic (onset of continuous depressive symptoms ≥ 36 months prior to study); (c) history of poor interepisode recovery; or (d) both MDD and dysthymia. In our group, diagnostic interviews and follow-up study visits were conducted by MD- or PhD-level clinicians, each of whom specialized in the research and treatment of depressed adult outpatients. All clinicians in our group participated in a weekly research staff meeting, during which findings of research diagnostic interviews were reviewed to ensure agreement on diagnosis and illness characteristics. Recently, a formal evaluation of our group's interrater reliability for the use of the SCID-P mood module resulted in a kappa value of .80 (M. Fava et al., 2000).

Exclusion criteria included failure to respond to 60 mg of fluoxetine during any depressive episode, or *treatment resistance*, defined as failure to respond during the course of the current episode to at least one adequate antidepressant trial. *Adequacy* was defined as 6 weeks or more of treatment with either 20 mg or more of fluoxetine (or its selective serotonin reuptake inhibitor equivalent), 150 mg or more of imipramine (or its tricyclic equivalent), or 60 mg or more of phenelzine (or its monoamine oxidase inhibitor equivalent). Other exclusion criteria included pregnancy or breast-feeding, serious suicidal risk, serious or unstable medical illness, history of seizure disorder, mental disorders clearly related to a documented organic cause (e.g., stroke, dementia, etc.), substance and alcohol use disorders within the past year, schizophrenia, delusional disorder, mood congruent or incongruent psychosis, psychotic disorders not elsewhere classified, bipolar disorder, current use of other psychotropic drugs, current psychotherapy, or clinical or laboratory evidence of hypothyroidism.

Procedure

Participants provided written informed consent to a protocol approved by the MGH Institutional Review Board, Human Subjects Research Subcommittee. Participants received no payment for their participation in this

study but were reimbursed for their transportation and parking expenses. All treatments were offered free of charge.

The study design consisted of two treatment phases. Participants were initially enrolled in an acute-phase pharmacological treatment. Treatment during the acute phase of the protocol consisted of 20 mg/day of fluoxetine for 8 weeks after a washout period of 2 weeks for antidepressants (5 weeks for fluoxetine) and 1 week for any other psychotropic medication. No participants received placebo, and no other psychotropic drugs were allowed. During the acute treatment phase, the HAM-D-17 (Hamilton, 1960) was completed at baseline and at Weeks 2, 4, 6, and 8. The details and results of the acute phase of this study have been described elsewhere (Nierenberg et al., 2000).

Remission was defined, at the end of the acute phase, as a HAM-D-17 score of 7 or lower for at least 3 weeks (Frank et al., 1991). A total of 132 patients who met the criteria for remission entered a 28-week, single-blind, continuation treatment phase (Figure 1) from January 1998 to October 2002. All remitted patients had their acute fluoxetine dose of 20 mg increased to 40 mg/day at the first continuation visit as a novel prophylactic strategy and were fully randomized to CBT + fluoxetine or fluoxetine-only treatments. The rationale for raising the fluoxetine dose for all patients was based on well-known high relapse rates consistently found in controlled trials and naturalistic studies (Solomon et al., 2000; Thase, Entsuch, & Rudolph, 2001), as well as the phenomenon of tachyphylaxis, or "poop out" of the effectiveness of any given, previously successful antidepressant trial (Solomon et al., 2005). Random number–generating software was used to assign participants to separate groups.

CBT was conducted by doctoral-level psychologists trained in a manualized treatment adapted from Beck, Rush, Shaw, and Emery (1979) and Mercier and Leahy (1992). We developed the treatment manual to specifically address residual symptoms and to improve patient coping skills. Furthermore, this treatment approach sought to enhance the quality of and adherence to treatment (Pava, McDermott, & Fava, 1996). Psychotherapy consisted of 12 weekly sessions followed by 7 biweekly sessions. Psychopharmacologists were instructed not to make cognitive or behavioral interventions (Pava, Fava, & Levensen, 1994) and followed a standard protocol for medication management visits (Fawcett, Epstein, Fiester, Elkin, & Autry, 1987).

All participants were administered the HAM-D-17 at each study visit. During the continuation phase of the study, patients were assessed by raters blind to treatment status at monthly intervals for up to 28 weeks following randomization or until a relapse occurred, defined as meeting criteria for a new episode of MDD at any continuation visit or scoring 15 or higher on the HAM-D-17 at two consecutive visits. Relapse was confirmed by a follow-up visit 1 week later with another clinician, also blind to treatment status.

The primary study endpoint for treatment outcome was depressive relapse. Follow-up (maintenance treatment phase) was continued for 80 weeks; however, Kaplan–Meier survival analysis was used for time-to-relapse or study discontinuation, with observations censored after 80 weeks, following completion of this phase of the study. The Mantel–Cox (log-rank) test was used to compare survival curves between study conditions. Unpaired *t* tests and multiple chi-square analyses were used to compare demographic and clinical characteristics between continuation-phase treatment groups.

Measures

Participants completed the ASQ (C. Peterson et al., 1982) at three time points: acute phase baseline, continuation phase baseline, and continuation phase endpoint. Three hundred twenty-three patients completed the ASQ at acute baseline. Fifty-seven of 66 (86%) patients in the fluoxetine-only continuation group and 49 of 66 (74%) patients in the CBT + fluoxetine continuation group completed the ASQ at both continuation baseline and endpoint visits. The ASQ instructs participants to make causal attributions for six hypothetical good and six hypothetical bad events (e.g., "You meet a friend who compliments you on your appearance"; "You meet a friend who acts hostile toward you"). The participant then notes what they believe is the major cause of the situation and rates each cause on a 7-point scale for three dimensions: external/internal (1 = *totally due to other people or circumstances*, 7 = *totally due to me*), unstable/stable (1 = *will never again be present*, 7 = *will always be present*), and specific/global (1 = *influences just this particular situation*, 7 = *influences all situations in my life*).

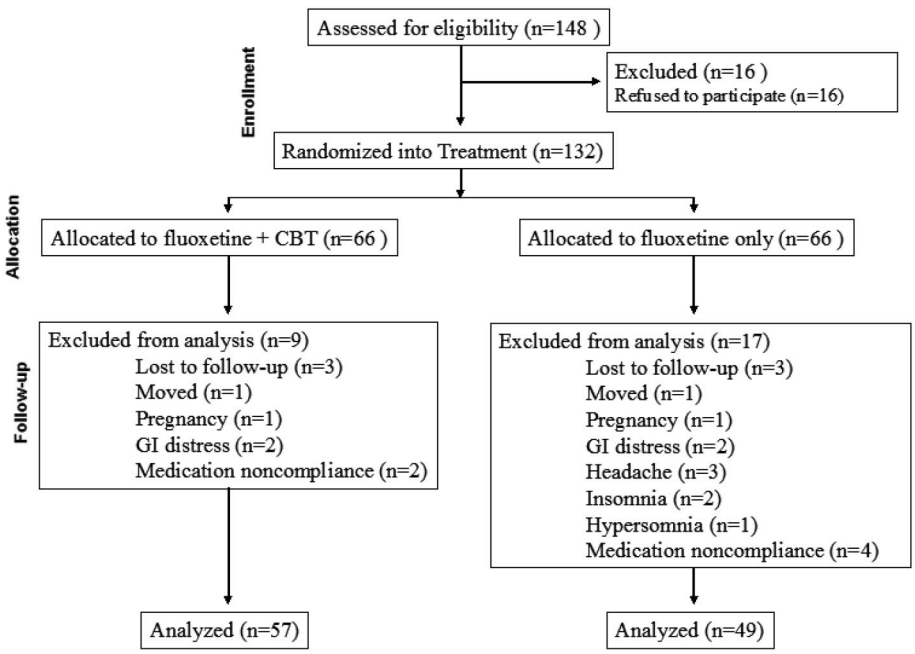

Figure 1. Flow diagram of the process through the continuation phase.

Participants also completed the DAS (Weissman & Beck, 1978) at the same three time points: acute phase baseline, continuation phase baseline, and continuation phase endpoint. The DAS consists of 40 statements to which patients respond on a 7-point scale ranging from 1 (*totally agree*) to 7 (*totally disagree*). For the current study, scores for the 11-item Need for Social Approval subscale (DAS–Approval; Imber et al., 1990; details provided by P. A. Pilkonis, personal communication, December 26, 2003) were used in analyses. The scoring method for this subscale consists of summing scores for DAS Items 7, 16, 19, 27, 28, 32, 34, 35, 38, 39, and 40 (Items 35 and 40 are reverse-scored because of wording). In keeping with Teasdale, Scott, et al. (2001), we examined this DAS subscale because of the modality-specific effect of cognitive therapy on this scale observed in previous research (Imber et al., 1990).

We used the methodology of Teasdale, Scott, et al. (2001) to determine the extent to which a patient demonstrated extreme responding to both the ASQ and DAS self-report questionnaires. Specifically, the number of times a patient endorsed a 1 or 7 to each of the ASQ items yielded 12 separate continuous variables (good vs. bad scenario × score of 1 vs. 7 × internality, stability, and globality dimensions). For the DAS–Approval subscale, the mean number of 1 or 7 responses for all items was calculated for each study group and was treated as one continuous variable.

Statistical Analyses

Degree of extreme responding as predictor of acute-phase treatment outcome. We used logistic regression to evaluate the relationship between the 13 extreme response variables and acute-phase treatment outcome status (nonresponse, response, remission). Acute baseline HAM-D-17 total score and gender were entered in the regression to control for baseline severity of depression and any gender effects.

Degree of extreme responding as predictor of continuation-phase relapse. We used logistic regression to evaluate the relationship between the 13 extreme response variables (as measured at continuation baseline) and occurrence of relapse (yes or no) during the continuation phase of treatment. Continuation baseline HAM-D-17 total score and gender were entered in the regression to control for severity of depression and any gender effects.

Comparison of continuation-phase change in degree of extreme responding between CBT + fluoxetine and fluoxetine-only groups. Analysis of covariance (ANCOVA) was used to compare change in degree of extreme responding between treatment groups. Changes in mean number of extreme responses for the ASQ and DAS–Approval extreme response variables were used as the dependent variable for this analysis. In addition, continuation baseline values for the HAM-D-17, gender, 12 ASQ extreme response variables, and mean number of extreme responses to the 11-item DAS–Approval scale were used as covariates in this analysis.

Results

Acute- and continuation-phase treatment outcomes for this study are reported in detail elsewhere (Nierenberg et al., 2000; Perlis et al., 2002) and are summarized as follows. A total of 384 patients entered the acute phase of the study. Of the 384 patients, 193 (50.3%) responded, and 148 (38.5%) remitted (using intent-to-treat analyses); there were 43 dropouts (11.2%). The mean age at onset of the first depressive episode for all patients was 26.7 years (SD = 13.9). Of the 148 remitters in the open 20-mg fluoxetine treatment condition, 132 agreed to randomization to 40 mg fluoxetine + CBT (n = 66) or 40 mg fluoxetine only (n = 66). No statistically significant differences were found in rates of relapse, rates of discontinuation, change in symptoms, or change in well-being between the two continuation treatment groups.

Table 1 shows demographic and clinical characteristics for the CBT + fluoxetine and fluoxetine-only continuation-phase study groups. The only significant difference found between study groups was proportion of women ($p < .05$). The groups did not

Table 1
Demographic and Clinical Characteristics of Continuation-Phase Patients

	Treatment group			
	CBT + Fluoxetine (n = 66)		Fluoxetine only (n = 66)	
Characteristic	*M*	*SD*	*M*	*SD*
Age (years)	38.8	10.6	41.0	10.0
Age at first episode (years)	22.5	14.0	25.3	13.7
Duration of current episode (years)	2.8	5.1	3.7	6.1
Prior episodes (*n*)	5.6	9.2	4.4	5.9
HAM-D-17 acute baseline	19.2	3.3	18.3	2.4
HAM-D-17 continuation baseline	4.7	2.2	4.5	2.1
HAM-D-17 continuation endpoint	4.9	3.8	5.5	3.9
HAM-D-17 change during continuation	0.2	4.0	1.0	4.1
	Frequency	%	Frequency	%
Women*	42	64	30	45
Caucasian	63	95	61	92
Ever married	34	52	34	52
4+ years postsecondary education	38	58	37	56
Current GAD	7	8	13	20
Current social phobia	16	25	18	27
Current panic disorder	3	5	1	2

Note. CBT = cognitive–behavioral therapy; HAM–D-17 = 17-item Hamilton Rating Scale for Depression; GAD = generalized anxiety disorder.
* $p < .05$.

differ on any other variables, including age, duration of current episode, and number of prior episodes. Table 1 also shows HAM-D-17 scores for each continuation treatment group at acute baseline, continuation baseline, and continuation endpoint as well as change in HAM-D-17 scores during the continuation treatment phase. HAM-D-17 scores and the degree of change did not significantly differ between continuation treatment groups.

The mean number of extreme responses for the 12 ASQ extreme response variables and DAS–Approval scale are given in Table 2. Degree of extreme responding was evaluated as a predictor of acute-phase treatment outcome, while controlling for gender and acute baseline depression severity (mean acute baseline HAM-D-17 scores). We used logistic regression, using the 13 extreme response categories as independent variables (12 ASQ extreme response variables and 1 DAS–Approval extreme response variable) and acute-phase treatment outcome (nonresponse, response, remission) as the dependent variable, while controlling for depression severity (HAM-D-17 score) and gender. Because there was no theoretical rationale or empirical evidence to dictate a priori in what order to enter these variables, all were entered simultaneously in the logistic regression (Stevens, 1992). The overall regression was statistically significant ($R^2 = .64$, $p = .02$). Results for each extreme response predictor are given in Table 3.

In summary, these results suggest a significant predictive relationship between four ASQ extreme response variables—Good 1 Stable, Good 7 Stable, Bad 1 Stable, Bad 7 Stable—and acute-phase treatment outcome status. Further examination of this relationship revealed that an increased tendency to respond in an extreme manner along the stable/unstable dimension of the ASQ predicted poorer treatment outcome. Although not as strong, the DAS–Approval extreme response variable demonstrated a similar significant relationship.

As an additional analysis, we examined percentage of acute baseline extreme responses (out of all total ASQ and DAS–Approval responses) between nonresponders, responders, and remitters to acute-phase treatment. There was no overlap among the three treatment outcome groups because remitters did not include responders for the purpose of this analysis. Nonresponders, at both acute baseline and endpoint measurement points, experienced a significantly higher percentage of extreme responses when compared with both responders, $\chi^2(1, N = 183) = 3.15$, $p = .003$, and remitters, $\chi^2(1, N = 286) = 3.77$, $p = .002$. On average, nonresponders gave extreme responses to 53.4% of the items at baseline and 46.9% of the items at the end of the acute phase. In contrast, extreme responses were given by responders to 42.3% and 31.3% of the items and by remitters to 29.8% and 19.2% of the items at baseline and at the end of the acute phase, respectively. No significant differences in percentage of extreme responses were found between responders or remitters at either measurement point.

Degree of extreme responding was also evaluated as a predictor of continuation-phase relapse, while controlling for gender and continuation-phase baseline depression severity (mean continuation-phase baseline HAM-D-17 scores). We used logistic regression, using the 13 extreme response categories as independent variables (12 ASQ extreme response variables and 1 DAS–Approval extreme response variable) and the occurrence of relapse (yes or no) as the dependent variable, while controlling for depression severity (HAM-D-17 score) and gender. The overall regression was not statistically significant ($R^2 = .18$, $p = .68$).

Using ANCOVAs, continuation-phase extreme response change scores (for all 13 variables) between treatment groups were examined, while controlling for gender, continuation-phase baseline HAM-D-17 total score, and continuation-phase baseline scores on the 12 ASQ extreme response variables and 1 DAS–Approval extreme response variable. As Table 4 shows, statistically significant differences between treatment groups for continuation change scores were found for the DAS–Approval extreme response variable and the 4 ASQ extreme response variables that measure the stable/unstable dimension of responding. Patients in

Table 2
Mean Extreme Response

	Assessment time					
	Acute baseline		Continuation baseline		Continuation endpoint	
ASQ	CBT + fluoxetine	Fluoxetine only	CBT + fluoxetine	Fluoxetine only	CBT + fluoxetine	Fluoxetine only
Good 1 Internal	3.1	3.0	1.9	1.7	1.7	2.6
Good 7 Internal	1.3	0.9	1.4	0.6	1.2	1.0
Bad 1 Internal	1.4	1.6	0.9	0.7	0.7	0.8
Bad 7 Internal	2.9	2.6	1.2	1.1	1.0	1.0
Good 1 Stable	2.1	2.0	1.4	1.5	1.5	2.9
Good 7 Stable	3.8	3.6	2.2	2.0	1.9	2.7
Bad 1 Stable	2.6	2.5	1.4	0.9	1.6	1.7
Bad 7 Stable	2.4	2.7	1.1	1.2	1.0	1.9
Good 1 Global	2.2	2.4	1.3	1.4	1.9	2.2
Good 7 Global	2.8	2.5	2.0	1.9	2.1	2.7
Bad 1 Global	2.5	2.6	1.7	1.9	2.0	2.3
Bad 7 Global	3.2	3.0	1.5	1.3	1.7	2.2
DAS–Approval 1 or 7 Responses	6.2	6.9	3.0	2.7	2.8	4.3

Note. ASQ = Attributional Style Questionnaire; CBT = cognitive–behavioral therapy; DAS–Approval = Dysfunctional Attitudes Scale Need for Approval subscale.

Table 3
ASQ and DAS Extreme Response Predictions of Acute-Phase Treatment Outcome

Variable	R^2	*p*	OR	95% CI
ASQ				
Good 1 Internal	.44	.173	1.361	1.075, 1.512
Good 7 Internal	.51	.129	1.236	1.057, 1.394
Bad 1 Internal	.37	.310	1.191	1.685, 1.271
Bad 7 Internal	.21	.472	1.163	1.048, 1.332
Good 1 Stable	.67	.003*	2.791	2.411, 3.176
Good 7 Stable	.71	.001*	3.061	2.878, 3.279
Bad 1 Stable	.68	.002*	2.882	2.654, 3.216
Bad 7 Stable	.56	.019*	2.544	2.367, 2.728
Good 1 Global	.33	.372	1.241	1.112, 1.476
Good 7 Global	.48	.164	1.411	1.236, 1.628
Bad 1 Global	.46	.193	1.288	1.184, 1.436
Bad 7 Global	.41	.244	1.232	1.184, 1.417
DAS–Approval	.52	.041*	2.348	2.147, 2.617

Note. ASQ = Attributional Style Questionnaire; DAS–Approval = Dysfunctional Attitudes Scale Need for Approval subscale; OR = odds ratio; CI = confidence interval.
*$p < .05$.

the fluoxetine-only group reported an increase in the number of extreme responses during the continuation treatment phase (ASQ stable/unstable variables and DAS–Approval variable). Patients in the CBT + fluoxetine group showed either fewer or only slightly increased extreme responses for these 5 variables during the same time period. Continuation change score differences between groups were not found to be statistically significant for the other 8 extreme response variables.

Discussion

The goal of the current study was to examine extreme response style in recurrently and chronically depressed outpatients who participated in a two-phase clinical trial. Our first set of analyses investigated whether degree of extreme responding on two self-report questionnaires—the ASQ and DAS—was predictive of acute clinical outcome. Our second analysis investigated whether degree of change in extreme responding differed significantly between CBT plus medication and medication-only patient groups during the continuation treatment phase. Findings indicated that extreme response style for the stable/unstable attributional dimension of the ASQ significantly predicted outcome of the acute treatment phase. Specifically, baseline scores reflecting extreme responding on the stable/unstable attributional dimension predicted decreased likelihood of full depression remission at the end of 8 weeks of treatment with antidepressant medication. This effect was independent of the effects of gender or baseline differences in severity of depression symptoms.

In contrast, no significant differences were found for the other two attributional dimensions (global/specific and internal/

Table 4
Change Value in Mean Extreme Responses Across Continuation Treatment Groups

	Treatment group				
Variable	CBT + fluoxetine	Fluoxetine only	*F*	*p*	Cohen's *d*
ASQ					
Good 1 Internal	−0.2	0.9	2.221	.068	.405
Good 7 Internal	−0.2	0.4	1.438	.331	.263
Bad 1 Internal	−0.2	0.1	0.537	.652	.098
Bad 7 Internal	−0.2	−0.1	0.257	.866	.047
Good 1 Stable	8.1	1.4	2.777	.026*	.587
Good 7 Stable	−0.3	0.7	2.688	.031*	.491
Bad 1 Stable	0.2	0.8	2.451	.048*	.447
Bad 7 Stable	−0.1	0.7	2.533	.039*	.462
Good 1 Global	0.6	0.8	0.187	.876	.034
Good 7 Global	0.1	0.8	2.044	.068	.373
Bad 1 Global	0.3	0.4	0.160	.888	.029
Bad 7 Global	0.2	0.9	2.051	.074	.374
DAS–Approval	−0.2	1.6	2.974	.0004*	.543

Note. ASQ = Attributional Style Questionnaire; DAS–Approval = Dysfunctional Attitudes Scale Need for Approval subscale.
*$p < .05$.

external). Unlike the other two ASQ dimensions, the stable/unstable dimension pertains to respondents' predictions about the future, specifically predictions about the likelihood of future change. An extreme response on this dimension would be that the situation's cause "will never again be present" or "will always be present," whereas a more moderate, balanced response might indicate that the situation's cause may or may not continue to be present in the future. This latter response suggests that a willingness to anticipate the possibility of change is balanced by an acceptance that things may stay the same. Perhaps this ability to tolerate the inherent, but necessarily uncertain, changeability of future circumstances is part of an adaptive cognitive "set" that helps patients recover from a depressive episode. Such an explanation would be consistent with Fresco's concept of explanatory flexibility (cf. Fresco & Craighead, in press; Fresco et al., 2005). These results are also consistent with the idea that form of thinking (i.e., the ability to think in balanced rather than absolutist, dichotomous terms) may be more important than specific thought content (Teasdale, Scott, et al., 2001).

The same predictive relationship was found between extreme response style and poor acute-phase treatment outcome on the DAS–Approval variable. The DAS asks respondents to indicate the degree to which they agree or disagree with statements such as "My value as a person greatly depends on what others think of me." Our results indicate that participants who responded that they totally agreed or totally disagreed with this statement, and others like it, were significantly less likely to achieve remission from their depressive episodes. Once again, the ability to maintain a balanced perspective, in this case about the relative importance of approval from other people as it affects one's sense of self-confidence and self-worth, appears to confer significant benefit on depression outcomes.

Both prior to treatment and at the study's endpoint, the responses of patients classified as nonresponders to acute treatment with fluoxetine contained significantly higher percentages of extreme response scores than did those of patients classified as responders or remitters. It is possible that fluoxetine nonresponders in this study possessed lower levels of metacognition both before and after treatment with an antidepressant and, therefore, were more vulnerable to remaining depressed. Also lending support to this idea is that patients who eventually responded or remitted from depressive episodes demonstrated fewer extreme responses at study baseline than did patients whose depression did not respond to treatment.

As our group has previously reported (Perlis et al., 2002), no significant differences in rates of depression relapse were found between fluoxetine-only and CBT + fluoxetine patient groups at the end of the continuation phase. It is possible that the study design, which included an increase in the dosage of fluoxetine for all patients at the outset of the continuation phase, accounts for this outcome (Perlis et al., 2002). In addition, it is possible that this increased dosage of medication may have produced a limited range in treatment outcomes, thus hampering the ability to detect a relationship between the extreme responding variables and relapse during the continuation phase.

We have previously reported (T. Petersen et al., 2004) that improvements in ASQ content scores during acute pharmacotherapy were maintained for the CBT + fluoxetine patient group but not for the fluoxetine-only group. As an extension of that study, we examined change in frequency of extreme responding during the continuation phase in the present study and found significant differences in form of thought between the groups. Patients in the medication-only group showed a significant increase in number of extreme responses on the stable/unstable attributional dimension of the ASQ and on the DAS–Approval over the course of the continuation phase. In contrast, patients receiving CBT in addition to medication did not show a significant increase in frequency of extreme responses during this same period. Had the follow-up period of the study been longer, it would have been possible to observe whether the increase in extreme responses among the medication-only patients was a precursor to an increase in rates of depression recurrence for this group.

Although we will need to wait for future studies to know whether increases in extreme responding are a precursor of depressive relapse or recurrence, these continuation-phase findings do suggest a role for CBT in helping patients change their relationships to their own thinking, as well as the content of their thoughts. This would allow patients to reduce their levels of black-and-white thinking in favor of a more balanced thought process. Such results are consistent with the current trend in psychotherapies such as MBCT (Segal, Williams, & Teasdale, 2002) and Dialectical Behavior Therapy (Linehan, 1993) that emphasize nonjudgmental, present-moment awareness, balanced thinking, and the ability to accept and synthesize contradictory ideas as key components of psychological health.

The limitations of the current study deserve mention. First, for some subset of patients, an extreme cognitive style may concurrently activate with a worsening of depressive symptoms and may not be present when in a euthymic state. In this case, an extreme cognitive style may not prove useful in predicting long-term treatment outcome or course of illness; rather, such a style may be merely a manifestation of depressive illness that is ameliorated with successful treatment. Unfortunately, premorbid measures of extreme response style were not available for the patients in this study. For another subset of patients, it is possible that both psychopharmacologic and psychotherapeutic treatments may reduce extreme thinking temporarily, but that such a cognitive style reemerges after acute-phase treatment. One possible explanation for this reemergence is that psychotherapeutic treatments may be withdrawn prematurely (i.e., immediately after attainment of response or remission). Recent research (Fava, 1999; Fava, Ruini, & Rafanelli, 2005) has suggested that sequential administration of antidepressant and psychotherapeutic treatments, with the latter administered after acute-phase medication response, may be more protective against relapse and recurrence. This protection may be explained by maintenance of healthy changes in cognitive style.

There are potential limitations in the generalizability of these findings. In the present study, patients were selected for inclusion on the basis of the chronic or recurrent nature of their depression. Other studies reporting effects of extreme responding also used samples with more chronic forms of depression (Beevers, Keitner, Ryan, & Miller, 2003; Teasdale, Scott, et al., 2001). It is interesting that individuals with more chronic depression (three or more episodes) have been shown to reap the greatest benefit from MBCT (Ma & Teasdale, 2004; Teasdale, Segal, et al., 2000), which, as noted previously, is designed to enhance metacognitive awareness of depressogenic cognitive processes. It is possible that individuals with chronic depression have more ingrained and rigid

thought patterns, such as categorical thinking, captured by the extreme responding variable in the present study. Furthermore, there is evidence that more chronic forms of depression differ in important ways from less chronic forms in terms of clinical features and response to treatment (Klein & Santiago, 2003; McCullough, 2003). Thus, future studies with participants with a broader range of depression severity and chronicity would help determine whether categorical thinking is uniquely characteristic of chronic or recurrent depression.

Beyond the issue of severity and chronicity of depression, exclusion criteria for our study were typical of most clinical trials and may result in a patient sample that is not representative of most patients seen in nonacademic practice settings. Larger scale effectiveness trials, such as STAR*D (www.star-d.org), will help elucidate the role of such cognitive variables in predicting treatment outcome and the long-term course of illness.

Because investigation of the form versus the content of cognitions related to depression remission and relapse is a relatively new area of study, it will be important for future investigators to refine the methodology for measuring extreme responses and other forms of metacognition. Such refinements should include premorbid assessments, clinician- and family-rated measures of such variables, and lengthier posttreatment follow-up periods. An inference underlying the present study is that extreme responding on the ASQ and DAS reflects rigid, categorical thinking process. This inference should be tested empirically in future studies by assessing the association of extreme responding on these measures with observational measures of categorical thinking and related constructs, including metacognitive awareness (Teasdale, Moore, et al., 2002). Such future studies could also examine the degree to which extreme responding is susceptible to social desirable response bias, a possibility that we could not rule out in the present study. In addition, future studies using repeated assessment of extreme responding should consider using alternative forms of self-report measures when available to reduce potential practice effects. In this way, more rigorous evaluation of the predictive relationship between improved metacognition and sustained depression remission can be achieved.

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