

# Adverse Life Events and Cognitive-Personality Characteristics in the Prediction of Major Depression and Antidepressant Response

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**Objective:** Stressful life events are known to precipitate major depression. However, it remains unclear why some individuals who experience adverse events develop depression whereas others do not, and how the occurrence of life events affects treatment outcome. Emerging models posit that the effect of adverse life events varies by cognitive-personality style. This study examines the direct and interactive effects of stressful life events and cognitive-personality style in predicting 1) episode onset in patients with DSM-IV unipolar depression versus community comparison subjects and 2) depressive symptom severity at the completion of a 6-week standard antidepressant regimen.

**Method:** Multivariate models were used to test the effects of adverse life events, cognitive-personality style, and the congruence of event type (interpersonal versus achievement) with cognitive-personality style on depressive onset and treatment outcome in 43 patients with major depression and 43 healthy comparison subjects. Cognitive-personality char-

acteristics were assessed by using Beck's measures of sociotropy (interpersonal dependency) and autonomy (need for independence and control).

**Results:** Adverse life events, sociotropy, and an autonomy factor need for control were each significantly related to depressive onset and predicted group status for 88% of the subjects. Event types affected outcome differently, and specific life event types interacted with cognitive-personality styles in predicting response to treatment. A multivariate model accounted for 65% of the variance in predicting outcome.

**Conclusions:** Adverse life events are a potent factor in predicting depression. However, cognitive-personality characteristics also confer susceptibility to depression. Better outcome is associated with occurrence of adverse interpersonal events (e.g., death of a loved one) rather than adverse achievement events (e.g., loss of job) and occurs when the event type is congruent with cognitive-personality style.

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The association between stressful life events and major depression has been clearly documented both in patient populations (1-5) and in community samples (2, 6-11). The critical issues for contemporary stress research are why some individuals who experience severe events develop adverse health outcomes, such as depression, whereas others do not and how the occurrence of life events affects our treatments for depression.

Initial attempts to predict depression by using multivariate models have found that stressful life events are a potent predictor of depression and that other risk factors independently contribute to the potential for major depression. Such factors include previous history of depression (12, 13), gender (13), age (13), genetics (12), and personality style (12). Emerging models for understanding why life events precipitate depression in some individuals and not in others posit that the effect of events varies by cognitive-personality style. Beck's cognitive theory of depression, for example, proposes that the cognitive-personality characteristics of sociotropy and autonomy act as

"vulnerability markers for depression by sensitizing individuals to certain types of negative life experiences" (14). Interactions between sociotropy (or interpersonal dependency, characterized by a high need for close relationships and concern about disapproval) (15) and negative interpersonal events (e.g., death of a loved one) have been reported to predict depression (16), as has the interaction between autonomy (characterized by a heavy emphasis on personal independence and control) (16) and negative achievement events (e.g., loss of employment) (17). Specifically, prior work has suggested that a negative experience best predicts the onset of depression when a specific type of event (e.g., a negative interpersonal event) affects a personal vulnerability (e.g., concern about disapproval) (18). Further examination of the effects of adverse life events and cognitive-personality characteristics requires consideration of these variables in the context of multiple known risk factors for depression.

The limited number of studies on the relationship of antecedent life stress to treatment response have reported

mixed findings. Two studies showed no association between pretreatment life stressors and outcome (19, 20), whereas others have found that pretreatment adverse life events were correlated both with a good treatment response (21–24) and with a poor response (25). In general, these studies have used nonstandardized treatments and have not used multivariate models to test the effects of other variables such as cognitive-personality style. Only one placebo-controlled study has examined the relationship of cognitive-personality characteristics to antidepressant response (26). This work, without examining life events, found that autonomous traits were associated with greater response to drug treatment than were sociotropic traits.

The current investigation used a multivariate approach to test how adverse life events, cognitive-personality style, and the congruence of cognitive-personality style with adverse event type were related to 1) the onset of depressive illness (through a case-control, cross-sectional design) and 2) treatment response (through a prospective design) in conjunction with other known risk factors. Of particular interest to us was the interaction of adverse life events and the cognitive-personality style autonomy, characterized by need for control, in predicting onset and response. Current work by our group has found that a reduced sense of personal control, as assessed by a measure of self-efficacy, mediates the effects of stressful life events in predicting depression (27). In addition, personal control in relation to events has long been hypothesized to be a critical factor in determining health outcomes (28, 29).

## Method

### Subjects

Forty-three patients with a DSM-IV diagnosis of unipolar major depression and 43 age-, race-, and sex-matched community comparison subjects were studied. After a complete description of the study was provided, informed consent was provided by all participants.

Patients (mean age=39.3 years, SD=11.4) were referred for recruitment by local treatment centers and group practices after an initial evaluation by treating clinicians determined both the presence of nonpsychotic unipolar major depression and that antidepressant drug treatment was indicated. Potential patients were then administered the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID) (30) by a trained interviewer to establish the presence of a current major depressive episode and determine exclusionary diagnoses. Exclusion criteria were any lifetime history of mania, hypomania, psychosis, or a substance abuse history within the past 6 months. For 16 patients, the current depressive episode was their first; 27 patients were diagnosed with recurrent depression. Each patient was then prescribed a standard antidepressant drug regimen by the treating physician. All patients included in the current study completed 6 weeks of the prescribed antidepressant drug regimen. Although different standard regimens could be prescribed, selection of medications, doses, and dosing schedules were consistent with current clinical practice guidelines for treatment of nonpsychotic major depressive disorder (31, 32). As might be anticipated in this design, most patients (N=29) were prescribed selective serotonin reuptake in-

hibitors (SSRIs). However, other standard acute-phase pharmacotherapy regimens were also used: tricyclic antidepressants (N=6), an SSRI plus a tricyclic (N=3), venlafaxine (N=2), an SSRI plus lithium (N=2), and a monoamine oxidase inhibitor (N=1). The 17-item Hamilton Depression Rating Scale (33) was used to assess severity of depressive symptoms at pretreatment and at the end of 6 weeks of treatment. Entry into treatment required having a pretreatment Hamilton Depression Rating Scale score  $\geq 16$ . The Yale Depression Inventory, for which the reliability and validity of individual Hamilton Depression Rating Scale items have been previously reported (34), was used to provide a structured format for administering the Hamilton Depression Rating Scale. All patient assessments were conducted in person.

Comparison subjects (mean age=40.2 years, SD=11.6) were selected from New Haven respondents interviewed in 1981 for the Epidemiologic Catchment Area (ECA) study and tracked through the ECA mortality follow-up study in 1990 (35). Only those ECA participants who did not have a history of major depression at time of last contact were considered for matching and recruitment.

To establish a negative history for major depression or other exclusionary diagnoses in potential comparison subjects, we used a short-form version of a previously described modification of the Composite International Diagnostic Interview (36). This interview had been developed to assess the psychiatric status of community-based respondents. Blind comparisons with SCID interviews yielded a predictive value of 0.96 for screening out a lifetime diagnosis of major depression (36). Stringent application of the short-form version has shown similar results in screening out those who meet diagnostic criteria for major depression and for the other disorders listed as exclusions (37). Because of the importance of excluding comparison subjects with current major depression, the Center for Epidemiologic Studies Depression Scale (CES-D Scale) (38) was also administered to potential comparison subjects as an additional eligibility measure. A cutoff score of 16 on the CES-D Scale was used to identify nondepressed comparison subjects on the basis of prior work showing that specificity for identifying nondepressed individuals in a community sample was as high as 94% with the use of this threshold (39). Comparison subjects were administered the modified Composite International Diagnostic Interview by telephone; however, all other assessments, including the CES-D Scale, were conducted in person.

Comparison subjects were selected by random within age, sex, and race strata to match the patients with depression. Ages were matched within 4 years except for two subject pairs, who were matched within 6 and 7 years of age, respectively. Socioeconomic status was assessed using education and income level to classify respondents (40). This method allows for four possible levels of classification ranging from low, lower middle, upper middle, and high socioeconomic status. Demographic and clinical characteristics of the two study groups are provided in Table 1.

### Measures

Acute stressful life events were assessed for both patients and comparison subjects by means of the Structured Event Probe and Narrative Rating Interview (41, 42). This interview provides a structured method of inquiry, similar to the Life Events and Difficulties Schedule (2), from which the undesirability and severity or disruptiveness of each reported event can be rated. The Structured Event Probe and Narrative Rating Interview allows for assessment of all possible types of life events, enhances subject recall (43), and reduces variability in rating the stressfulness of events by eliciting information about the context in which events occurred (2, 43). The context is constructed to take into account the meaning of an event on the basis of the particular circumstances surrounding the event for an average individual. How-

**TABLE 1. Demographic Characteristics and Adverse Life Events During Preceding 6 Months for 43 Patients With First-Episode or Recurrent Depression and 43 Healthy Comparison Subjects**

Characteristic	Patients With Depression		Comparison Subjects		Analysis		
	N	%	N	%	$\chi^2$	df	p
Sex					0.00	1	n.s.
Male	20	47	20	47			
Female	23	53	23	53			
Race					0.00	1	n.s.
Caucasian	37	86	37	86			
Non-Caucasian	6	14	6	14			
Socioeconomic status <sup>a</sup>					6.92	2	<0.05
Lower middle	9	21	5	12			
Upper middle	22	51	14	33			
High	12	28	24	56			
Adverse life events in previous 6 months <sup>b</sup>					13.35	1	<0.001
None	24	56	39	91			
One or more	19	44	4	9			

<sup>a</sup> Status determined by education and income level (40).

<sup>b</sup> The 6-month time frame represents for the patients with depression the period before episode onset and for the comparison subjects the period before the interview.

ever, the context does not include an individual's personal reaction to an event; thus, the Structured Event Probe and Narrative Rating Interview reduces the potential to confound stressors with other variables (e.g., personality) that may prove to be risk factors (44).

Interviewers received extensive training in the use of the Structured Event Probe and Narrative Rating Interview before the onset of the study. Narrative reports of each reported life event were compiled by the interviewer and then rated, in terms of undesirability and severity, by judges (M.L.B. and S.C.J.) who were blind to subject status. Excellent interrater reliability was established across interviewers (undesirability of events, intraclass  $r=0.93$ ; severity of events, intraclass  $r=0.93$ ) and across judges (undesirability of events, intraclass  $r=0.93$ ; severity of events, intraclass  $r=0.90$ ). Life events assessed as adverse (i.e., undesirable and severe) were used in the analyses. Events were also classified as primarily interpersonal (e.g., death of a loved one) or related to achievement (e.g., loss of employment).

The patients were asked about events that occurred during the 6-month period before the onset of the current depressive episode. The comparison subjects were asked about events during the 6-month time period immediately preceding the interview. The 6-month time frame was used because it has been shown to be the optimal time period for detecting an effect of life events on subsequent depressive onset (45), and other studies have used this standard (46). The rate of adverse events for both groups is presented in Table 1.

The cognitive-personality styles of sociotropy and autonomy were assessed by using the Sociotropy-Autonomy Scale (47). The 30-item measures of sociotropy and autonomy were standardized and used as continuous variables by converting each to z scores. Prior work supports the stability of these characteristics over time (48). In addition, Sociotropy-Autonomy Scale scores were assessed at two time points (at entry into the study and at posttreatment) for 36 of the 43 patients. Scores were found to be stable over time for the 36 patients (sociotropy:  $t=-1.66$ ,  $df=35$ ,  $p=0.10$ ; autonomy,  $t=-0.48$ ,  $df=35$ ,  $p=0.63$ , two-tailed tests) as well as for 16 of these patients whose depression had remitted at the posttreatment assessment (sociotropy:  $t=-0.83$ ,  $df=15$ ,  $p=0.41$ ; autonomy:  $t=-1.61$ ,  $df=15$ ,  $p=0.12$ , two-tailed tests).

The technique developed by Hammen and colleagues (16) was used to test how the congruence between event type and cognitive-personality style predicted the onset of depression. Specifically, the term for the interaction between sociotropy and adverse interpersonal events was constructed from the sociotropy measure and a second term derived by examining the difference between the number of adverse interpersonal events and the number of adverse achievement events experienced by the subject. This second term provided a continuous measure of the preponderance of adverse interpersonal events. Similarly, the interaction between autonomy and adverse achievement events was studied by constructing a variable that used the autonomy measure and a measure of the preponderance of adverse achievement events (the difference between the number of adverse achievement events and the number of adverse interpersonal events experienced by the subject). The cognitive-personality styles and congruence with specific adverse life events for the two groups are presented in Table 2.

### Models and Statistical Tests

Models were constructed to determine the effects of adverse life events, cognitive-personality characteristics, and the congruence of cognitive-personality characteristics and event type on 1) the onset of major depression and 2) the severity of depressive symptoms at the completion of a 6-week standard antidepressant drug regimen. A case-control, cross-sectional design was used to study the first specific aim, and a prospective design was used to study the second. Within each of these specific aims, two different models were considered.

**Risk factors for onset.** The probability of onset of a major depressive episode was modeled by using a logistic regression procedure. For model 1, the independent variables were the frequency of adverse events, the degree of sociotropy, the interaction between the degree of sociotropy and adverse interpersonal events, the degree of autonomy, and the interaction between the degree of autonomy and adverse achievement events. Patients and comparison subjects were matched on age, sex, and race; socioeconomic status was entered into the model as a control variable.

Although studies of cognitive-personality styles and event congruency have found an association between depressive symptoms and the interaction of negative interpersonal events and sociotropy, the match between autonomy and negative achievement events has been less well documented in predicting depression (17). One hypothesis for the lack of congruency between autonomy and events is that the assessment of autonomy measures more than a single cognitive-personality style (49, 50). Consequently, the values of the individual autonomy factors from the Sociotropy-Autonomy Scale in predicting depression were examined. These factors reflect an interest in preserving and increasing control over one's life (i.e., need for control), individualistic achievement, and a solitary self-focused lifestyle (49, 51, 52). Only need for control was significantly associated with depression (Wald  $\chi^2=4.98$ ,  $df=1$ ,  $p=0.03$ ). Consequently, we used this factor of the composite measure of autonomy in a second model. Model 2 was constructed from model 1 by replacing degree of autonomy with the 12-item factor need for control and by replacing the interaction between degree of autonomy and adverse achievement events with the interaction between need for control and adverse achievement events. The overall fit of each model was assessed by means of its chi-square based on the  $-2 \log L$  criterion, and the significance of individual terms within each model was assessed by means of its Wald chi-square. For each model, the degree of association between predicted probabilities and observed responses was reported as a rank correlation index  $c$ , which is a measure of the proportion of instances in which the model accurately discriminates between patients and comparison subjects (53).

**TABLE 2. Cognitive-Personality Style and Congruence With Specific Adverse Life Events for 43 Patients With First-Episode or Recurrent Depression and 43 Healthy Comparison Subjects**

Variable	Patients With Depression		Comparison Subjects		Analysis		
	Mean	SD	Mean	SD	t	df	p
Cognitive-personality style <sup>a</sup>							
Sociotropy	0.34	0.98	-0.34	0.91	3.34	84	<0.01
Autonomy	0.25	0.95	-0.25	1.00	2.34	84	<0.05
Need for control	0.42	0.87	-0.42	0.94	4.33	84	<0.001
Congruence <sup>b</sup>							
Sociotropy with adverse interpersonal events	0.07	0.64	-0.02	0.14	0.85	46	n.s.
Autonomy with adverse achievement events	0.13	0.59	-0.05	0.28	1.80	60	n.s.
Need for control with adverse achievement events	0.10	0.63	-0.05	0.28	1.45	58	n.s.

<sup>a</sup> From the Sociotropy-Autonomy Scale (47). Values represent standardized z scores.

<sup>b</sup> Continuous measure that reflects the interaction of a cognitive-personality style with the type of adverse event.

**Prediction of treatment response.** The level of depressive symptoms for patients at the end of the treatment phase of the study was analyzed by using general linear models. For model 1, the independent variables were the frequency of adverse interpersonal events, degree of sociotropy, the interaction between degree of sociotropy and adverse interpersonal events, the frequency of adverse achievement events, degree of autonomy, the interaction between degree of autonomy and adverse achievement events, episode status (first episode versus recurrent), and sex. In contrast to the onset model, events were divided into interpersonal and achievement events because preliminary analyses suggested that interpersonal events and achievement events appear to play opposite roles in predicting treatment response. Once again, model 2 was constructed from model 1 by replacing degree of autonomy with the factor need for control and by replacing the interaction between degree of autonomy and adverse achievement events with the interaction between need for control and adverse achievement events. The overall fit of each model was assessed by means of an F statistic, and the significance of each individual term within each model was assessed by means of a t statistic. Baseline Hamilton Depression Rating Scale score, age, race, socioeconomic status, and drug regimen were entered as control variables into both models. The design of the current study did not permit a comparison of response across drug types because antidepressants were prescribed on an individual basis by the treating clinician rather than by random assignment. However, drug type (SSRI, tricyclic antidepressant, SSRI plus tricyclic, or other pharmacotherapy) was entered as a control variable to account for possible differential effects by drug class in our analyses.

## Results

A comparison of the two models constructed for the probability of onset of major depression is presented in Table 3. In model 1, only adverse life events and degree of sociotropy were significantly associated with a diagnosis of depression, whereas degree of autonomy and the interaction terms between the cognitive-personality measures and event types were nonsignificant. In model 2, however, adverse life events, sociotropy, and the autonomy factor need for control were significant, whereas both interaction terms were nonsignificant. Socioeconomic status was not significant in either model 1 ( $\chi^2=1.78$ ,  $df=1$ ,  $p=0.18$ ) or model 2 ( $\chi^2=1.46$ ,  $df=1$ ,  $p=0.23$ ).

The results for predicting severity of depressive symptoms after completion of 6 weeks of antidepressant treatment displayed a different pattern than that observed in

**TABLE 3. Logistic Regression Analysis of Adverse Life Events, Cognitive-Personality Style, and Their Interaction in Predicting Onset of Major Depression in 43 Patients With First-Episode or Recurrent Depression and 43 Healthy Comparison Subjects<sup>a</sup>**

Model and Variable	Odds Ratio	Analysis <sup>b</sup>			
		c <sup>c</sup>	$\chi^2$	df	p
Model 1		0.86	38.90	6	<0.001
Frequency of adverse events	9.00		8.43	1	<0.01
Degree of sociotropy	2.80		8.77	1	<0.01
Interaction of sociotropy and adverse interpersonal events	1.72		0.43	1	n.s.
Degree of autonomy	1.73		2.26	1	n.s.
Interaction of autonomy and adverse achievement events	5.04		2.37	1	n.s.
Model 2		0.88	44.00	6	<0.001
Frequency of adverse events	9.98		7.82	1	<0.01
Degree of sociotropy	2.14		4.67	1	<0.05
Interaction of sociotropy and adverse interpersonal events	2.74		1.30	1	n.s.
Need for control	2.84		6.33	1	<0.05
Interaction of need for control and adverse achievement events	7.40		2.65	1	n.s.

<sup>a</sup> Controlling for socioeconomic status; groups matched for age, race, and sex.

<sup>b</sup> Chi-square values for the independent variables within each model represent Wald chi-square tests.

<sup>c</sup> Rank correlation index, which represents the proportion of instances in which the model accurately discriminates between the two groups.

the models for onset of depression, as illustrated in Table 4. In model 1, adverse interpersonal life events, the interaction between degree of sociotropy and adverse interpersonal events, the interaction between degree of autonomy and adverse achievement events, and male gender predicted better outcome, whereas adverse achievement events predicted a worse outcome. Degrees of sociotropy and autonomy as well as episode status were all nonsignificant. The control variables of baseline Hamilton Depression Rating Scale score ( $F=22.90$ ,  $df=1$ ,  $26$ ,  $p=0.0001$ ) and drug type ( $F=3.57$ ,  $df=3$ ,  $26$ ,  $p=0.03$ ) were significant in model 1, but socioeconomic status ( $F=0.22$ ,  $df=2$ ,  $26$ ,  $p=0.80$ ), age ( $F=0.11$ ,  $df=1$ ,  $26$ ,  $p=0.75$ ), and race ( $F=3.46$ ,  $df=1$ ,  $26$ ,  $p=0.07$ ) were nonsignificant. In model 2, adverse interpersonal life events, the interaction between degree of sociotropy and adverse interpersonal events, the interaction between need for control and adverse achievement events,



**TABLE 4. Logistic Regression Analysis of Adverse Life Events, Cognitive-Personality Style, and Their Interaction in Predicting Antidepressant Response of 43 Patients With First-Episode or Recurrent Depression After 6 Weeks of Treatment<sup>a</sup>**

Model and Variable	Beta	SE	R <sup>2</sup>	F (df=16, 26)	t (df=26)	p
Model 1			0.64	2.90		<0.01
Frequency of adverse interpersonal events	-6.83	1.84			-3.71	<0.001
Degree of sociotropy	1.19	1.05			1.14	n.s.
Interaction of sociotropy and adverse interpersonal events	-4.96	1.58			-3.13	<0.01
Frequency of adverse achievement events	6.94	2.47			2.81	<0.01
Degree of autonomy	-0.28	1.16			-0.24	n.s.
Interaction of autonomy and adverse achievement events	-5.04	1.92			-2.62	<0.05
Episode status <sup>b</sup>	-3.73	1.99			-1.87	n.s.
Sex, male	-5.12	2.25			-2.27	<0.05
Model 2			0.65	3.08		<0.01
Frequency of adverse interpersonal events	-6.06	1.71			-3.55	<0.01
Degree of sociotropy	1.41	1.01			1.40	n.s.
Interaction of sociotropy and adverse interpersonal events	-8.07	1.97			-4.10	<0.001
Frequency of adverse achievement events	6.92	2.37			2.92	<0.01
Need for control	0.30	1.21			0.25	n.s.
Interaction of need for control and adverse achievement events	-5.45	1.90			-2.86	<0.01
Episode status <sup>b</sup>	-3.32	1.93			-1.72	n.s.
Sex, male	-5.44	2.22			-2.45	<0.05

<sup>a</sup> Controlling for baseline Hamilton Depression Rating Scale score, socioeconomic status, age, race, and drug type.

<sup>b</sup> First episode versus recurrent.

and being male were all significantly associated with better outcome, whereas adverse achievement events were associated with worse outcome. Degree of sociotropy, need for control, and episode status were nonsignificant. The control variables of baseline Hamilton Depression Rating Scale score ( $F=24.67$ ,  $df=1, 26$ ,  $p=0.0001$ ) and drug type ( $F=4.31$ ,  $df=3, 26$ ,  $p=0.01$ ) were significant in model 2. Socioeconomic status ( $F=0.36$ ,  $df=2, 26$ ,  $p=0.70$ ), age ( $F=0.86$ ,  $df=1, 26$ ,  $p=0.36$ ), and race ( $F=3.98$ ,  $df=1, 26$ ,  $p=0.06$ ) were nonsignificant. In both model 1 and model 2, better outcome (lower Hamilton Depression Rating Scale score) was significantly associated with more interpersonal events, fewer achievement events, and a positive match of cognitive-personality style and associated event type.

In the context of the multivariate model, men had a better treatment response than women. Differences were not found between women and men in terms of the variables that significantly predicted treatment response except for a higher occurrence of negative achievement events in men. Despite the higher occurrence of these events, which independently predicted worse outcome, men appeared to benefit more from antidepressant drug treatment. Closer examination of responders by episode status (first episode versus recurrent) indicated an interaction of sex and first versus recurrent episode status within the model. Comparing the least squares means for these groups, we found that women with recurrent depression had a significantly poorer outcome than men with first-episode ( $t=2.94$ ,  $df=25$ ,  $p=0.007$ ) or recurrent ( $t=2.28$ ,  $df=25$ ,  $p=0.03$ ) depression and a nonsignificantly worse outcome than women with first-episode depression ( $t=1.49$ ,  $df=25$ ,  $p=0.15$ ).

## Discussion

Results of the current work indicate that occurrence of adverse life events and cognitive-personality styles are risk

factors for onset of a unipolar major depressive episode. Both negative interpersonal events and achievement events were found to contribute to onset, and the model was enhanced if events were considered without regard to type (interpersonal versus achievement). Congruency between cognitive-personality style and event type in predicting onset was not found in this study. Some studies have found congruency between a sociotropic style and negative interpersonal life events in predicting depressive symptoms (16–18, 54–56), and one study supported a match between autonomy and negative achievement events (17). However, these studies of congruency almost exclusively used non-clinical study groups, most used checklist measures of life events, and none used a clinical diagnosis as an outcome. The current work differs from prior investigations in that we used a clinically diagnosed group relative to healthy comparison subjects, a comprehensive objective assessment of stress, and a multivariate model that controlled for other risk factors. Although we did not find that interactions between cognitive-personality styles and congruent stressors predicted depression, this does not preclude the possibility that there exists some other form of interplay between adverse life events, cognitive style, and depression. For example, we found that self-efficacy, a measure of perceived control over life circumstances, mediates the effect of negative stressful life events on symptoms of depression for those with prior depression (27).

The current findings are consistent with a large literature on the role of personality in precipitating major depression (e.g., references 57, 58), and the findings specifically support work by Clark and Beck (49), which showed that the cognitive-personality characteristic of sociotropy is significantly associated with depressed mood states. Results of our study indicated that depression was nine times more likely after a major adverse event and was almost three times more likely in the presence of cognitive-per-

sonality characteristics that emphasized either concern about disapproval or need for control. It is well known that major depression is not always associated with an antecedent adverse life event. The results of this study are consistent with that observation and suggest that depression might also be dependent upon one's view of the world as characterized by a cognitive-personality style.

Research investigating cognitive-personality features that are comparable to sociotropy is limited. However, the concept of dependent personality is consistent with that of sociotropy and has been shown to be a risk factor for depression (57, 58). Also, the related concept of rejection sensitivity, which has been incorporated into DSM-IV as a symptom of atypical depression, is defined as "a long-standing pattern of extreme sensitivity to perceived interpersonal rejection." Thus, it is clear by definition that this behavioral pattern actually would predate the onset of depression and might likely contribute to a depressive onset as well as describe a subtype. Further, two studies that examined interpersonal sensitivity (59, 60) both indicated that depressed participants had elevated scores on an interpersonal awareness factor, a factor that approximates the need for approval feature of sociotropy.

The finding that need for control was associated with depression was of particular interest to us because theoretical formulations and empirical studies have suggested that perceived lack of control over life circumstances is a critical component in the etiology of depression (28). Exposure to uncontrollable (versus controllable) stress has been found to result in behavioral and neurobiological effects consistent with depressive states in animal studies (29, 61, 62) and human investigation (63). Although the actual mechanisms by which these cognitive-personality styles may contribute to depressed states is not known, some have begun to theorize that believing one cannot control the effects of untoward events induces hopelessness, which is likely to be a proximal cause of depressive onset (64–66).

In predicting treatment response, adverse interpersonal and achievement events appeared to play opposite roles in that interpersonal events were associated with better outcome, and achievement events were associated with worse outcome. The relationship of specificity of event type to outcome has not been previously studied, and so this finding cannot be compared to prior work. It would be of interest to know whether such specificity might account for at least some of the variability in previous reports regarding the effect of stressors on treatment outcome. One speculation regarding this finding is that those with more negative interpersonal events have larger social networks, and such individuals can avail themselves of support even in the context of negative interpersonal events emanating from that network. Such support may aid in ameliorating or coping with negative interpersonal events and, thus, facilitate antidepressant treatment.

The interaction, or congruency, of cognitive-personality style and event type predicted better outcome when individuals with higher degrees of sociotropy experienced negative interpersonal events and when those with a greater need for control experienced negative achievement events. Prior reports on the relationship of pretreatment life stressors to treatment outcome have not studied these interactions. Because this congruency predicts better outcome, it seems a particularly useful finding to pursue. One speculation regarding this finding is that a congruent event may be better understood as a personal vulnerability to depression, thus facilitating remedial cognitive and behavioral strategies that the patient may initiate in combination with antidepressant treatment.

Despite support for our findings, there are limitations to the current investigation. The examination of risk factors for depressive onset was conducted by means of a cross-sectional study and would be enhanced by a prospective examination of the relationship of cognitive-personality styles to depressive onset. Selection, assessment, and follow-up of nondepressed individuals for the purpose of identifying subsequent cases of diagnosed major depression would be costly and require a very large sample. Nevertheless, a prospective study would provide a more definitive test of cognitive-personality characteristics as a risk factor for depression. In addition, the effect of other variables implicated in the onset of depression and in response to treatment, such as social support, coping, and early trauma (67), were not included in our multivariate model. Future multivariate models should consider these variables and further investigate the effects of gender on outcome. In the context of the multivariate model that predicted outcome, women were found to have a worse response to 6 weeks of antidepressant pharmacotherapy after controlling for other factors related to outcome. More specifically, women with recurrent depression had a significantly poorer outcome than men with either first-episode or recurrent depression as well as a nonsignificantly worse outcome than women with first-episode depression. Finally, our data did not permit examination of whether treatment response was affected by the interaction of drug type by gender. Consideration of this interaction is warranted in future work, since there are emerging data that suggest that response to antidepressant drug type may vary by gender (68).

Multivariate models are needed to understand the complex interplay of factors that contribute to the development of major depression. The current findings indicate that it remains important to examine cognitive-personality characteristics as direct predictors of depression within such models. Cognitive-personality styles are learned patterns that are stable and long-lasting but potentially amenable to change (49). If cognitive-personality styles are modifiable risk factors, then preventive interventions directed at altering styles that pose a risk for depression could be developed. Our data also suggest that specific in-

terventions, aimed at either reducing exposure to certain types of stressors or facilitating compensatory styles of coping in response to those stressors, might be particularly helpful for those at risk after certain types of events (69).

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