

## BRIEF REPORTS

# Negative Cognitive Styles, Dysfunctional Attitudes, and the Remitted Depression Paradigm: A Search for the Elusive Cognitive Vulnerability to Depression Factor Among Remitted Depressives

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Results from studies using a behavioral high-risk design and approximations to it generally have corroborated the cognitive vulnerability hypothesis of depression, whereas results from remitted depression studies typically have not. Suspecting that design features of previously conducted remitted designs likely precluded them from detecting maladaptive cognitive patterns, the authors conducted a study featuring the remitted design that has been successful in studies of a biological vulnerability for depression. Participants' current depressive symptoms, negative cognitive styles (hopelessness theory), dysfunctional attitudes (Beck's theory), and lifetime prevalence of clinically significant depression were assessed. Participants who had remitted from an episode of clinically significant depression had more negative cognitive styles, but not greater levels of dysfunctional attitudes, than did never depressed individuals.

*Keywords:* hopelessness theory, Beck's theory, cognitive vulnerability, remitted design, depression

According to Beck's theory (Beck, 1967) and hopelessness theory (Abramson, Metalsky, & Alloy, 1989), maladaptive cognitive patterns provide vulnerability to depression. Two research designs, the *remitted* depression design and the *behavioral high-risk* design, have figured prominently in testing the cognitive

vulnerability hypotheses featured in these theories. Surprisingly, studies using these two designs have generated very different results.

Initially, the majority of research relied on the remitted depression paradigm (see Just, Abramson, & Alloy, 2001, for review). The typical remitted design is cross-sectional and compares the cognitive patterns of remitted depressives with those of nondepressed controls. The key assumption underlying the remitted design is that if maladaptive cognitive patterns provide vulnerability for depression, they must be traitlike and persist beyond remission of a current depressive episode. According to this logic, any cognitive pattern not exhibited by previously depressed individuals cannot qualify as a vulnerability for depression.

Although some remitted depression studies have provided support for the cognitive vulnerability hypotheses featured in Beck's theory and hopelessness theory, the majority of studies using this design have not (see Ingram, Miranda, & Segal, 1998, and Just et al., 2001, for reviews). Most remitted studies have found that when previously depressed participants are in remission, they no longer

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exhibit the maladaptive cognitive patterns hypothesized to provide vulnerability by the cognitive theories of depression. On the basis of the outcomes from remitted depression studies, some reviewers have concluded that the cognitive vulnerability hypotheses of depression are not well supported and that maladaptive cognitive patterns are simply concomitants of, rather than vulnerabilities for, depression (see Gotlib & Neubauer, 2000, and Just et al., 2001, for reviews of conclusions drawn from these studies).

Recent tests of the cognitive vulnerability hypotheses featured in Beck's theory and hopelessness theory have used the behavioral high-risk design (Abramson et al., 2002). To test the cognitive vulnerability hypothesis with this design, one would select non-depressed individuals hypothesized to be at high versus low risk for depression on the basis of the presence or absence of maladaptive cognitive patterns and then compare the two groups on their likelihood of developing depression in the future.

In contrast to the remitted depression paradigm, the behavioral high-risk design and approximations to it have provided strong support for Beck's theory (e.g., Joiner, Metalsky, Lew, & Klocek, 1999; Lewinsohn, Joiner, & Rohde, 2001) and hopelessness theory (e.g., Lewinsohn et al., 1994; Metalsky, Joiner, Hardin, & Abramson, 1993). Highlighting this success has been the Temple-Wisconsin Cognitive Vulnerability to Depression (CVD) Project (Abramson et al., 2002; Alloy et al., 2000). In the CVD Project, high-risk participants (as operationalized by both Beck's theory and hopelessness theory) showed a greater likelihood than low-risk participants of developing *DSM-III-R* (American Psychiatric Association, 1987) or Research Diagnostic Criteria (RDC; Spitzer & Endicott, 1978) major depressive disorder, RDC minor depressive disorder, and hopelessness depression during the 2.5-year prospective follow-up.<sup>1</sup>

Despite compelling support for the cognitive theories of depression obtained with the behavioral high-risk design and prospective approximations to it, the results generated by remitted design studies have remained a blemish on an otherwise well-corroborated empirical record (see Abramson et al., 2002, for review). Hence, it is critical to understand why the remitted designs have been unsuccessful at corroborating the cognitive vulnerability hypotheses featured in Beck's theory and hopelessness theory.

Attempting to explain these discrepant results, some researchers (e.g., Persons & Miranda, 1992) have argued that the lack of priming procedures is responsible for the failure of remitted designs to corroborate the cognitive vulnerability hypotheses. According to the priming hypothesis, an individual's ability to access and report maladaptive attitudes depends on current mood state and/or recent exposure to negative life events. Although priming may contribute to detecting maladaptive cognitive patterns, the failure to prime does not seem sufficient, by itself, to reconcile the positive results from the behavioral high-risk designs with the largely negative results from the remitted designs because many of the behavioral high-risk designs (e.g., the CVD Project) and approximations to it (e.g., Joiner et al., 1999; Metalsky et al., 1993) found that even when measured in an unprimed state, cognitive vulnerabilities still predict the onset of clinically significant depression and depressive symptoms. It is worth noting, however, that the measure used to assess hopelessness theory's cognitive vulnerability construct (the Cognitive Style Questionnaire [CSQ]; Alloy et al., 2000) may contain a built-in prime (see Discussion).

Alternatively, Just et al. (2001) argued that the conclusions based on the typical remitted depression studies are not justified because they are based on the erroneous assumption that cognitive vulnerability should be an immutable trait (see also Ingram, Miranda, & Segal, 1998). Just et al. and Ingram et al. (1998) suggested that instead of being construed as immutable, cognitive vulnerability may be best described as relatively stable or plastic. Supporting the notion of plasticity, research examining prevention and treatment interventions has provided strong evidence that cognitive vulnerability can indeed change (e.g., Hollon, DeRubeis, & Evans, 1996; Seligman, Schulman, DeRubeis, & Hollon, 1999).

Given the apparent plasticity of cognitive vulnerability and the key (but erroneous) assumption underlying the remitted design (i.e., cognitive vulnerability is immutable), we suspect that design features of previously conducted remitted designs likely precluded them from discerning the maladaptive cognitive patterns that were operative in the behavioral high-risk design. Surprisingly, previously conducted remitted studies seem to have examined participants under the very conditions in which cognitive vulnerability would be likely to decrease (e.g., after treatment), even if only temporarily. To detect the elusive cognitive vulnerability factor to depression among remitted depressives, one must conduct a remitted study in which the factors that can change cognitive vulnerability are minimized. This may be accomplished by borrowing the remitted design (e.g., Gotlib, Ranganath, & Rosenfeld, 1998; Henriques & Davidson, 1990) that has been successful in studies of a biological vulnerability for depression (regional cortical asymmetries).

In this biological remitted design, the selection of the remitted depressed participants does not depend on them having received a therapeutic intervention (e.g., Gotlib et al., 1998, used a college sample; Henriques & Davidson, 1990, recruited participants by newspaper). In contrast, the selection of the remitted depressed group in remitted studies of cognitive vulnerability often has depended on their inclusion in an inpatient or outpatient treatment facility (see review by Just et al., 2001). Consistent with the cognitive vulnerability hypotheses, if treatment was successful and depression remitted, a decrease in maladaptive cognitive patterns among the remitted depressed group would not be completely unexpected. To minimize potential treatment effects, one must ensure that inclusion in the remitted group is not dependent on the participant having received treatment for depression.

Second, it is important that participants' maladaptive cognitive patterns are assessed when they are in their natural environment (e.g., in the community; Henriques & Davidson, 1990; in colleges; Gotlib et al., 1998). In the typical remitted depression study, postepisode cognitive style is measured at discharge from an inpatient setting and temporarily may be reflecting the therapeutic environment. That is, it is possible that the effects of therapy (or even the underlying causes of spontaneous remission) may suppress or deactivate participants' usual maladaptive cognitive patterns for a limited amount of time. However, maladaptive cognitive styles exhibited during the depressive episode may reappear as the former patients experience the stresses of life outside the

<sup>1</sup> Published studies from the behavioral high-risk design featured in the CVD Project have yet to address the stress component of the cognitive vulnerability-stress model.

hospital (see Hamilton & Abramson, 1983). Thus, it is necessary that participants not be assessed until they have had ample time to become immersed again in their natural environment (e.g., remitted depressives in the Henriques & Davidson, 1990, study were symptom free for at least 1 year). We suggest that these changes in methodology will facilitate capturing the elusive cognitive vulnerability to depression factor among remitted depressives.

In sum, suspecting that design features of previously conducted remitted designs precluded them from discerning the maladaptive cognitive patterns that were operative in the behavioral high-risk design, we attempted to conduct a remitted depression study with greater sensitivity for detecting cognitive vulnerability for depression. We examined in a naturalistic setting a sample of remitted depressed college students, whose inclusion in the study did not depend on their having received treatment for depression. Participants' current depressive symptoms, lifetime prevalence of clinically significant depression, cognitive style (CSQ; hopelessness theory), and dysfunctional attitudes (Dysfunctional Attitudes Scale [DAS]; Weissman & Beck, 1978; Beck's theory) were assessed. We hypothesized that currently nondepressed individuals who had remitted from at least one past episode of clinically significant depression (i.e., remitted depressives) would exhibit greater maladaptive cognitive patterns (as defined by both Beck's theory and hopelessness theory, respectively) than individuals who had not experienced a clinically significant episode of depression in their lives.

## Method

### Participants

Participants were introductory psychology students at the University of Wisconsin—Madison. All participants were administered the CSQ, DAS, Beck Depression Inventory (BDI; Beck, Steer, & Garbin, 1988), and an expanded Schedule for Affective Disorders and Schizophrenia Lifetime (Exp-SADS-L; Endicott & Spitzer, 1978) interview. Participants were excluded from the final sample if the participant (a) was 23 years of age or older,<sup>2</sup> (b) had at any point in his or her life earned a diagnosis (based on the Exp-SADS-L interview) of schizophrenia, schizoaffective disorder, unspecified functional psychosis, mania, hypomania, or cyclothymia, (c) was currently depressed (i.e., participants who met diagnostic criteria for current RDC major or intermittent depression), or (d) had remitted from RDC major depressive disorder and had a history of treatment.<sup>3</sup> Participants in this study were a subset of a larger data set used by Haefel and colleagues (2003). Also note that the current sample and the CVD Project sample (e.g., Alloy et al., 2000) are separate, independent samples with no overlap of participants.

The final sample of 853 participants was divided into remitted and never depressed groups. One hundred thirty-five participants were remitted from clinically significant depression (i.e., RDC major depressive disorder; the remitted depressed group), and 718 participants had never experienced a bout of clinically significant depression (the never depressed group). For the remitted depression group, the average time duration between last clinically significant episode of depression and date of study participation was 495 days.

### Measures

**CSQ** (Alloy et al., 2000). The CSQ is an expanded and modified version of the Attributional Style Questionnaire (ASQ; Peterson et al., 1982). The ASQ is a well-established instrument with good reliability and validity that assesses participants' attributions for hypothetical positive and

negative events on dimensions of internality, stability, and globality. The CSQ was modified from the ASQ by increasing the number of events to 12 negative events (6 interpersonal and 6 achievement events) and by additionally including ratings (on 7-point scales) of the probable consequences of each event and the implications of each event for the self-concept. Thus, participants' inferences regarding the cause, consequence, and self-worth implications of each hypothetical negative event are assessed. Mean item scores can range from 1 to 7, with higher scores reflecting more negative cognitive styles. Internal consistency for the CSQ composite score for negative events (stability plus globality plus consequences plus self-worth implications) is good;  $\alpha = .93$  in the present study.

**DAS** (Weissman & Beck, 1978). The DAS is a 40-item self-report questionnaire designed to assess maladaptive cognitions including concern with evaluation, perfectionistic standards of performance, causal attributions, and rigid ideas about the world. Total scores on the DAS can range from 40 to 280, with higher scores reflecting greater dysfunctional attitudes. The DAS has demonstrated reliability and validity in both student and patient samples. The DAS shows good internal consistency ( $\alpha = .88$  in the present study).

**Exp-SADS-L** (Endicott & Spitzer, 1978). An Exp-SADS-L interview was used to make current and lifetime RDC (Spitzer & Endicott, 1978) diagnoses of depression and other Axis I disorders. All project interviewers participated in an extensive interviewer training program for the administration of the Exp-SADS-L and the assignment of diagnoses modeled after ideal programs (Amenson & Lewinsohn, 1981). Interrater reliability kappas obtained were  $\geq .90$  for all study diagnoses. Further details regarding the Exp-SADS-L, interviewer training, diagnostic calibration, and diagnostic reliability may be found in Alloy et al. (2000).

**BDI** (Beck et al., 1988). The BDI was administered to assess levels of depressive symptoms. Total scores on the BDI can range from 0 to 63, with higher scores reflecting greater levels of depressive symptoms. The BDI has high internal consistency, test-retest reliability, and validity with both psychiatric and normal samples (Beck et al., 1988).

## Results

Means, standard deviations, and intercorrelations of all study measures are summarized in Table 1.

### Remitted Depressives Versus Never Depressed

An analysis of covariance (ANCOVA), with group as the independent variable (remitted depressives vs. never depressed), was performed on the CSQ and DAS, respectively. The BDI score was used as a covariate in all analyses so that greater current depressive symptomatology among remitted depressives would be unlikely to be a plausible explanation for any between-groups differences. Controlling for current BDI score, remitted depressives had significantly greater CSQ scores,  $F(1, 850) = 4.18, p = .04$ , but not DAS scores,  $F(1, 850) = 0.39, p = .53$ , than never depressed individuals. Means, standard deviations, and effect sizes for remitted and never depressed groups on CSQ, DAS, and BDI measures

<sup>2</sup> Participants older than 23 years of age were excluded from the final sample because the CSQ was designed for the typical-age college student and its content (e.g., hypothetical events about dating, parties, nothing about children, etc.) may not be appropriate for older students.

<sup>3</sup> Twenty-six remitted depressives had a history of treatment. Treatment history for 8 participants was unknown. These 34 participants (26 remitted depressives with a history of treatment plus 8 remitted depressives with an unknown history of treatment) were excluded from the final data set and analyses.

Table 1  
Means and Standard Deviations of and Intercorrelations  
Between Measures

Variable	1	2	3	4
1. Cognitive Style Questionnaire	—			
2. Dysfunctional Attitudes Scale	.47	—		
3. Beck Depression Inventory	.36	.39	—	
4. Lifetime history of RDC major depression	.10	.02	.11	—
<i>M</i>	3.62	120.70	6.06	0.16
<i>SD</i>	0.76	24.01	5.88	0.37

Note.  $N = 853$ . Mean item scores are presented for the Cognitive Style Questionnaire, whereas total scores are presented for the Dysfunctional Attitudes Scale and the Beck Depression Inventory. For lifetime history of RDC major depression, the mean represents incidence or prevalence rate. Correlations greater than or equal to .08 are significant to the .05 level. RDC = Research Diagnostic Criteria (1 = positive; 0 = negative).

are summarized in Table 2. For each analysis, two effect sizes are reported. One effect size relates to the unadjusted CSQ–DAS group means, whereas the second corresponds to the ANCOVA results and uses the adjusted means. Effect size estimates using unadjusted group means were included for easier comparison with previous remitted studies, which typically did not control for depressive symptoms.

### CSQ and DAS Subscales

To provide a more comprehensive test of the cognitive vulnerability hypotheses, we also examined CSQ and DAS subscales. The DAS loads onto two distinct factors, labeled Performance Evaluation and Approval by Others. Similarly, the CSQ is conceptually divided into Interpersonal and Achievement subscales. An ANCOVA, with group as the independent variable (remitted depressives vs. never depressed), was performed on the CSQ and

DAS subscales, respectively. Controlling for current BDI score, we discovered that participants who had remitted from a past episode of clinically significant depression had significantly greater CSQ Interpersonal subscale scores,  $F(1, 850) = 6.22, p = .01$ , but not CSQ Achievement subscale scores,  $F(1, 850) = 1.70, p = .19$ , DAS Performance Evaluation subscale scores,  $F(1, 850) = 0.86, p = .35$ , or DAS Approval by Others subscale scores,  $F(1, 850) = 0.44, p = .51$ , than never depressed individuals (see Table 2).

### Discussion

Consistent with our hypotheses, participants who had remitted from an episode of clinically significant depression had more negative cognitive styles (i.e., higher CSQ scores) than did never depressed individuals. These results support hopelessness theory's cognitive vulnerability hypothesis and corroborate those from the behavioral high-risk designs. Our results for the CSQ are important given that most remitted studies have not found differences between remitted and never depressed groups. To our knowledge, ours is the first study that has detected greater levels of negative cognitive styles among remitted depressives despite statistically controlling for current depressive symptoms (BDI scores).

Although we have highlighted changes in design features (e.g., examining college students in a naturalistic setting) that likely facilitated capturing the elusive cognitive vulnerability to depression factor among remitted depressives, two additional factors also may have contributed to our results. First, the current study may have obtained group differences because of the large sample size (i.e., increased power). To examine this possibility, we compared the effect size obtained in the current study with the effect size obtained by a typical, frequently cited remitted study (conducted by the same laboratory) that did not support hopelessness theory's cognitive vulnerability factor (Hamilton & Abramson, 1983). The effect size (Cohen's  $d$ ) for remitted and never depressed groups in

Table 2  
Means, Standard Deviations, and Effect Sizes as a Function of Group and Measure

Measure	Group	<i>M</i>	<i>SD</i>	Cohen's <i>d</i>
Beck Depression Inventory <sup>a</sup>	Remitted depressives	7.51	6.20	.29
	Never depressed	5.79	5.78	
Cognitive Style Questionnaire <sup>a</sup>	Remitted depressives	3.81	0.80	.29 (.19)
	Never depressed	3.59	0.75	
Interpersonal subscale <sup>a</sup>	Remitted depressives	3.72	0.86	.31 (.24)
	Never depressed	3.47	0.79	
Achievement subscale	Remitted depressives	3.89	0.84	.22 (.12)
	Never depressed	3.71	0.80	
Dysfunctional Attitudes Scale	Remitted depressives	121.92	25.40	.06 (–.06)
	Never depressed	120.47	23.75	
Performance Evaluation subscale	Remitted depressives	36.25	11.76	.04 (–.09)
	Never depressed	35.85	11.21	
Approval by Others subscale	Remitted depressives	41.51	9.47	.13 (.06)
	Never depressed	40.29	9.10	

Note. Higher values indicate greater negative cognitive styles, dysfunctional attitudes, and depressive symptoms on the Cognitive Style Questionnaire, Dysfunctional Attitudes Scale, and Beck Depression Inventory, respectively. Mean item scores are presented for the Cognitive Style Questionnaire, whereas total scores are presented for the Dysfunctional Attitudes Scale and the Beck Depression Inventory. Effect sizes in parentheses correspond to group differences, with the Beck Depression Inventory used as a covariate.

<sup>a</sup> Scores for the remitted depressed group and the never depressed group are significantly different at  $p < .05$ .

the current study was .29, whereas the effect size in the Hamilton and Abramson (1983) remitted study was .11. The effect size obtained by Hamilton and Abramson is consistent with the range of effect sizes obtained in previously conducted remitted studies that also failed to detect heightened levels of negative attributional styles among remitted depressives (Dohr, Rush, & Bernstein, 1989:  $n = 41$ , Cohen's  $d = .17$ ; Fennell & Campbell, 1984:  $n = 143$ , Cohen's  $d = .23$ ; Lewinsohn, Steinmetz, Larson, & Franklin, 1981: Effect sizes could not be calculated because standard deviations were not reported; Wilkinson & Blackburn, 1981:  $n = 30$ , Cohen's  $d = -.62$ ). Although the Fennell and Campbell (1984) effect size was somewhat greater than that found by Hamilton and Abramson, all effect sizes were smaller than those of the current study, and the Wilkinson and Blackburn (1981) effect was in the reverse direction. These comparisons suggest that the statistically significant group difference on the CSQ in the current study was not simply the result of a larger sample size, although our increased power may have contributed to detecting it.

When interpreting the effect size from the current study, it is important to remember that from a developmental perspective, the participants were in the process of making the transition from late adolescence to young adulthood. Many of the participants in the remitted depressed group actually experienced their depressive episode during high school when cognitive vulnerability still is in considerable flux developmentally (e.g., Hankin & Abramson, 2002). For example, Hankin and Abramson (2002) reported that the 2-year retest reliability of high school adolescents' negative cognitive style is .51. Thus, we might have obtained a larger effect size had we used an older sample in which negative cognitive styles had consolidated to a greater degree prior to the depressive episode.

Second, the current study used the CSQ to measure the cognitive vulnerability factor featured in hopelessness theory, whereas previous remitted studies used the ASQ. The ASQ measures one of the three inferential styles (inferences about cause) composing the cognitive vulnerability factor featured in hopelessness theory. In contrast, the CSQ assesses all three components (cause, consequence, and self-worth) and has six additional negative event scenarios. Given these differences between the CSQ and ASQ, it is possible that the use of the CSQ rather than the ASQ also contributed to detecting the elusive cognitive vulnerability to depression factor among remitted depressives.

In contrast to our findings for hopelessness theory, the vulnerability factor featured in Beck's theory was not supported. It is surprising that we failed to find group differences on the DAS because our optimized design minimized factors that could decrease cognitive vulnerability and our sample size provided adequate power to detect group differences. One explanation for why remitted depressives exhibited elevations on the CSQ, but not the DAS, is that negative cognitive styles may more consistently confer vulnerability to depression than do dysfunctional attitudes (see Abramson et al., 2002).

A second explanation for the discrepancy between our results for hopelessness theory and Beck's theory is a lack of priming for the DAS (Persons & Miranda, 1992). Although behavioral high-risk designs (e.g., Abramson et al., 2002; Lewinsohn et al., 2001) generally have corroborated Beck's cognitive vulnerability hypothesis when using the DAS in an unprimed state, it remains a possibility that the DAS is a more consistent and reliable measure

of cognitive vulnerability when primed. We have argued elsewhere (Abramson et al., 2002) that the CSQ provides a built-in prime. The CSQ provides the participant with hypothetical situations that serve as references from which questions are to be answered, whereas the DAS does not. For each hypothetical situation, participants are asked to vividly imagine the situation happening to them (i.e., prime themselves) and make inferences about cause, consequence, and self. The DAS does not provide this built-in priming mechanism but rather asks participants to make ratings about statements without a contextual situation on which to rely. We did not include a priming manipulation for the DAS in the current study to examine our hypothesis that design features of previous designs led to null results. By using an unprimed DAS, as featured in prior remitted studies that failed to detect cognitive vulnerability, we could better determine whether our methodological changes would contribute to capturing Beck's cognitive vulnerability factor among remitted depressives. However, our results suggest that priming may be necessary for the DAS to detect Beck's cognitive vulnerability construct among remitted depressives (Persons & Miranda, 1992).

## Conclusion

Our goal in conducting this remitted depression study is not to resurrect this design as an optimal research strategy. Instead, our goal is to show that when a remitted depression study minimizes the factors that can change cognitive vulnerability, it obtains results consistent with those from behavioral high-risk designs. Using an optimized design, the CSQ, and a larger sample, our study was able to capture the elusive cognitive vulnerability to depression factor among remitted depressives.

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