

PROBLEM-SOLVING AND COGNITIVE SCARS IN MOOD AND ANXIETY DISORDERS: THE STING OF MANIA

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We examined the possibility that mood and anxiety disorders may “scar” problem-solving attitudes and outlook on life (e.g., erode optimistic feelings). Participants with high rates of both current and past mood and anxiety disorders were assessed. Results suggested that previous bipolar disorder might leave negative problem-solving attitudes and hopelessness scars, whereas major depression and anxiety disorders may not. These results were obtained when statistically controlling for a current diagnosis of major depression, bipolar disorder, and anxiety disorder as well as for previous manic episodes and current symptom severity. Thus past bipolar disorder was implicated in ineffective problem-solving attitudes and pessimism scars.

...desires buzz round, ...with incense and perfume, flowers and wine, and all the pleasures of life, ...until at last they produce the sting of mania.”

—Plato, *The Republic* (573A)

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The view that psychopathology may leave behind a “scar”—an impairment that did not exist premorbidly and that persists even when symptoms remit—is conceptually appealing but empirically tenuous. The central idea of this perspective is that an episode of a mental disorder *erodes* personal and psychological resources, such that upon recovery, the formerly symptomatic individual is at greater risk for future symptoms. This view has been applied primarily to depression and to the domains of personality and negative cognitive style, but with relatively little empirical support.

The link between personality and depression has received the most attention and the results are not supportive of the “scar” hypothesis. In a compelling test of the prediction that a depressive episode would change personality, Shea, Leon, Mueller, and Solomon (1996) conducted a six-year study of an originally depression-free group of participants. Those who experienced their first episode of depression during the six-year study were compared to those who remained well. Shea et al. concluded that personality change did not differ between the groups. Rohde, Lewinsohn, and Seeley (1990) also tested a scar hypothesis using a longitudinal study and similarly concluded that there was no overall change in personality after depression.

Previous research has also examined cognitive styles as potential scars left by depression. Although it is clear that both children and adults exhibit a more pessimistic/hopeless explanatory style in the midst of a depressive episode (e.g., Nolen-Hoeksema, Girgus, & Seligman, 1986), there remains ambiguity as to whether people continue to possess a hopeless style after remission. Some investigations have found that previously depressed adults exhibit a negative cognitive style post-depression (e.g., Altman & Wittenborn, 1980; Eaves & Rush, 1984), whereas others have found that cognitive style returns to normal after remission (e.g., Hamilton & Abramson, 1983; Lewinsohn, Steinmetz, Larson, & Franklin, 1981). A study of childhood predictors of depression (Nolen-Hoeksema, Girgus, & Seligman, 1992) found that cognitive styles of depressed children deteriorated (i.e., became more pessimistic/hopeless) with onset of depression and did not later ameliorate, even upon remission of symptoms. However, studies among adults (e.g., Lewinsohn et al., 1981) have not strongly supported this finding.

With respect to a different type of resource—problem-solving (in particular, interpersonal problem-solving)—Davila, Hammen, Burge, Paley, and Daley (1995) conceptualized impaired interpersonal problem-solving as a scar left by depression; accordingly, earlier depression was expected to be associated with later problem-solving deficits. However, their results revealed no relationship between depression and poor

interpersonal problem-solving. Thus, attempts to link interpersonal problem solving and earlier depression were not supported.

Fewer studies have examined the scarring effects of other disorders, such as bipolar disorder and anxiety disorders. Although several reports have confirmed that anxiety and bipolar disorders are associated with persistent negative consequences (e.g., Coryell, Scheftner, Keller, & Endicott, 1993), we are aware of only one study to specifically investigate the "scar" hypothesis, and it did not examine the cognitive processes of problem-solving or hopelessness. In a three-paneled prospective study of Air Force cadets, Schmidt, Lerew, and Joiner (2000) found that those who experienced a panic attack during the Time 1 - Time 2 interval reported more anxiety sensitivity at Time 3 (when panic symptoms had subsided) relative to cadets who experienced no panic symptoms, despite the fact that all cadets reported similar Time 1 anxiety sensitivity scores. These results suggest that anxiety sensitivity may be a scar resulting from earlier panic symptoms. However, the potential scarring effects of anxiety disorders vis à vis problem-solving and hopelessness have not been studied.

The lack of research on psychological scars from bipolar disorder may be due to a belief that genetic and biological processes are largely responsible for the etiology, course, and treatment of bipolar disorder (e.g., Goodwin & Jamison, 1990). However, recent research has demonstrated meaningful effects of bipolar patients' psychosocial environment. Thus it is important to assess potential scars resulting from anxiety and bipolar disorders.

Accordingly, the present study sought to assess potential scarring effects of mood and anxiety disorders on problem-solving attitudes and on pessimistic outlook. The documentation of such effects is theoretically and clinically important. Theoretically, scarring phenomena may explain the persistent vulnerability to and chronicity of certain disorders. They may also have implications for the malleability of problem-solving attitudes and pessimism across the life span.

Clinically, those suffering from a potentially scarring disorder may benefit from preventive rehabilitation aimed at the disorder's scar. That certain disorders may leave pessimism and problem-solving attitude scars takes on added importance given their relations to important psychological variables. For example, both pessimism and problem-solving difficulties are related to suicidality (Rudd et al., 1996). In a study of adolescents, poor problem solving skills were positively related to suicidal tendencies, depression, and anxiety, and negatively related to self-esteem and perceptions of parental care (Orbach, Mikulincer, Blumenson, Mester, & Stein, 1999). Moreover, this study revealed that problem solving attitudes distinguished among suicidal adolescents, adolescent psy-

chiatric patients, and normal adolescents. Problem-solving attitudes have also been related to overall well-being (Nezu & Nezu, 1987) and feelings of instrumentality and self-efficacy (Marcotte, Alain, & Gosselin, 1999).

Hopelessness is another integral component of mental and physical health. Kaplan, Pelcovitz, Salzinger, & Mandel (1997) posited that hopelessness is a crucial mediator between physical abuse and adolescent suicide. On a more positive note, Hinds, Birenbaum, Clarke-Steffen, & Quargnenti (1996) found that hopefulness in adolescents in the first six months of a cancer diagnosis was related to increased focus on adapting to diagnosis and treatment. Moreover, hopefulness has been proposed as mediating the link between social support and well-being (Yarcheski, Scoloveno, & Mahon, 1994).

The present investigation studied participants from a large study of suicide treatment, many of whom had past and/or current diagnoses of mood and/or anxiety disorders. Controlling for whether or not participants were assigned a *current* diagnosis of major depression, bipolar disorder, or anxiety disorder, we determined whether *past* history of these same disorders was related to current problem-solving attitudes and pessimism scores.

METHOD

PARTICIPANTS

Participants included 293 individuals (240 men, 53 women) evaluated at intake prior to entry into a study on the efficacy of a time-limited, problem-solving treatment for suicidal young adults (Rudd et al., 1996). Participants were referred from two outpatient clinics, a 20-bed inpatient facility, and an emergency room, all affiliated with a major U.S. Army Medical Center. These 293 participants represent the subset of Rudd et al.'s total sample that had complete data on the problem-solving and hopelessness measures.

Mean age was 22.24 ($SD = 2.76$ years). The proportions of the sexes (82% men) are common in military medical settings. Most participants were Caucasian (62.5%); 23.9% were African American; and 7.8% were Hispanic. The remaining participants were classified as Native American, Asian or Pacific Islander, or were not classified.

PROCEDURES

Two licensed psychologists, three licensed master's-level professionals, and one advanced-level doctoral student conducted testing and diag-

nostic interviews at intake. All staff were thoroughly trained and carefully monitored (see Rudd et al., 1996).

MEASURES

Problem-Solving Inventory (PSI, Form B; Heppner, 1988). The PSI is a 32-item self-report measure of problem-solving attitudes. Previous factor-analytic work indicates that the PSI is comprised of three factors: Problem-Solving Confidence (PSI-Con), Approach-Avoidance Style (PSI-AA), and Personal Control (PSI-PC). A total score (PSI-T) is also computed. Previous work has demonstrated good reliability (e.g., coefficient α ranged from .72 - .90), as well as adequate validity (Dixon, Heppner, Burnett, & Anderson, 1993; Heppner, 1988). For the current study, subscale α s ranged from .76 to .87, and α for the total scale was .93.

Beck Hopelessness Scale (BHS; Beck, Weissman, Lester, & Trexler, 1974). The BHS includes 20 true-false items that assess pessimistic and hopeless cognitions (e.g., "I look forward to the future with hope and enthusiasm" [reversed]). The scale's reliability and validity have been supported (e.g., Metalsky, Joiner, Hardin, & Abramson, 1993).

Millon Clinical Multiaxial Inventory (MCMI; Millon, 1983). The original MCMI is a 175-item, true-false inventory designed for use with psychiatric patients. It contains numerous scales falling into three main categories: basic personality scales, severe personality patterns, and clinical syndromes. We focused on the Anxiety, Hypomania, and Dysthymia subscales to represent current symptom severity of the relevant disorder (see O'Callaghan, Bates, Jackson, & Rudd, 1990; Piersma & Boes, 1997 for validity data on MCMI scales as indices of symptom severity).

Diagnoses. Current and past diagnoses were assigned using a computerized version of the National Institute of Mental Health Diagnostic Interview Schedule (DIS), DSM-III-R version (see Blouin, Perez, & Blouin, 1988 for reliability data on the computerized DIS). We have discussed standard administration procedures, as well as reliability and validity for the current study, in previous publications (e.g., Rudd et al., 1996). In addition, Metalsky (1989) used the computerized DIS and obtained the following reliability statistics for the diagnosis of Major Depression, using trained interviewers for comparison: Sensitivity = 83.3%; Specificity = 92.3%; kappa = .82.

RESULTS

Table 1 presents the intercorrelations between the problem-solving attitudes and hopelessness variables and the diagnostic indices, and the means and standard deviations for the problem-solving attitudes and

hopelessness measures; proportions of patients per each diagnostic category are also included. Several features of Table 1 are noteworthy.

For example, as would be expected, major depression, bipolar disorder, and the selected anxiety disorders display considerable chronicity—that is, past occurrence of a disorder was clearly associated with a current diagnosis of the same disorder. Note also that the associations were not so high as to suggest redundancy between past and current disorder (i.e., there were substantial subsets of patients with a current but not a past disorder, and a past but not a current disorder)—a fact that is important for our regression analytic strategy (which is described later) that partials presence versus absence of current disorder from presence versus absence of past disorder. Co-morbidity between mood and anxiety disorders was reflected by generally significant positive correlations between past and current depression and bipolar disorder on the one hand, and past and current anxiety disorder on the other hand (past and current depression and bipolar disorder were negatively correlated, reflective of the fact that a diagnosis of bipolar disorder often obviates that of major depression).¹

Another descriptive note is that the majority of patients with current bipolar disorder displayed mixed depressive and manic symptoms.

THE RELATION OF PRESENCE VERSUS ABSENCE OF PAST DISORDER TO CURRENT PROBLEM-SOLVING ATTITUDES AND HOPELESSNESS, CONTROLLING FOR PRESENCE VS. ABSENCE OF CURRENT DISORDER

We conducted several regression analyses to evaluate the relations of past diagnoses to current problem-solving attitudes and hopelessness, controlling for whether or not participants were assigned a *current* diagnosis of major depression, bipolar disorder, or anxiety disorder. In these analyses, current diagnosis was scored as follows, for each diagnosis: 1 = disorder currently absent, 2 = disorder currently present. Similarly, past diagnosis was scored as follows, for each diagnosis: 1 = no past history of the disorder; 2 = positive past history of the disorder. Importantly, con-

1. Descriptively, it is important to note that the anxiety disorder group included a high proportion of people with social phobia (i.e., 102 of 126 participants with current diagnoses of anxiety disorder carried diagnoses of social phobia; 27 had diagnoses of agoraphobia; 19 had diagnoses of generalized anxiety disorder; and 15 had diagnoses of panic disorder; the total number of anxiety diagnoses is more than the number of anxiety disordered participants due to comorbidity). It is also important to emphasize that the pattern of findings did *not* differ when distinct anxiety disordered groups were examined.

TABLE 1. Means, Standard Deviations, and Internal Consistency Coefficients for, and Intercorrelations between, All Measures

	PSI-T	PSI-AA	PSI-CO	PSI-PC	BHS	Cur Dep	Cur Anx	Cur BP	Past Dep	Past Anx	Past BP
1. PSI-T	—										
2. PSI-AA	.92	—									
3. PSI-CO	.85	.65	—								
4. PSI-PC	.75	.57	.56	—							
5. BHS	.54	.40	.57	.48	—						
6. Cur Dep	.16	.14	.16	.10	.22	—					
7. Cur Anx	.30	.18	.30	.39	.35	.12	—				
8. Cur BP	.11	.10	.06	.16	.05	-.32	.13	—			
9. Past Dep	.07	.04	.12	.05	.16	.64	.05	-.20	—		
10. Past Anx	.19	.08	.22	.26	.19	.01	.64	.14	.01	—	
11. Past BP	.14	.05	.18	.20	.13	-.35	.12	.39	-.24	.17	—
1. Mean	108.72	54.56	33.00	21.19	8.68	N/A	N/A	N/A	N/A	N/A	N/A
2. SD	25.36	14.26	9.65	5.37	6.37	N/A	N/A	N/A	N/A	N/A	N/A
3. Proportion of patients in diagnostic category	N/A	N/A	N/A	N/A	N/A	43%	41%	12%	27%	44%	14%

Note. N = 293. PSI-T = Problem Solving Inventory—Total (Form B; Heppner, 1988); PSI-AA = Problem Solving Inventory—Approach-Avoidance Style; PSI-CO = Problem Solving Inventory—Confidence; PSI-PC = Problem Solving Inventory—Personal Control; BHS = Beck Hopelessness Scale (Beck et al., 1974); Cur = Current; Dep = Major Depression; Anx = Anxiety Disorder; BP = Bipolar Disorder; SD = Standard deviation. For diagnostic variables, 1 = disorder absent; 2 = disorder present. Correlations greater than .11 are significant at the .05 level; those greater than .14, at the .01 level.

trolling for whether or not participants experienced a *current* diagnosis allowed us to more confidently attribute any detected effects specifically to a *past* disorder.

First, we examined problem-solving attitudes as dependent variables, then hopelessness scores as dependent variables. It should be emphasized that all analyses reported next were also conducted regarding *specific* anxiety disorders (i.e., panic with or without agoraphobia, agoraphobia, social phobia, and/or generalized anxiety disorder; see Footnote 1). Results were very similar across these anxiety disorders, and thus we have collapsed across them, using a variable that reflects whether a participant experienced any of these anxiety disorders.

Problem-Solving Attitudes. As can be seen in Table 2, we constructed a regression equation as follows: Problem-Solving Total scores served as the dependent variable; current major depression, current anxiety disorder, and current bipolar disorder were simultaneously entered in a next step; and, in a second step, the set of past major depression, past anxiety disorder, and past bipolar disorder was entered. If a past disorder leaves a scar, it should be associated with current measures of the scar, even controlling for current presence of the same disorder, as well as for past and current instances of other disorders.

Table 2's findings demonstrate that, as would be expected, each of the current diagnoses was significantly related to problem-solving attitude scores, even controlling for each other. More important in the present context, among the past diagnoses, only past bipolar disorder was significantly associated with problem-solving attitude, controlling for current disorders as well as for other past disorders ($pr = .14$, $t[286] = 2.39$, $p < .01$). It appears that bipolar disorder may leave a scar on overall problem-solving attitudes, whereas major depression and anxiety disorder may not.

Analyses of problem-solving subscales indicated a very similar pattern of findings as that shown in Table 2, but only for the Confidence and Personal Control subscales. For these two subscales, all current diagnoses were significantly predictive, but among the past diagnoses, only past bipolar disorder was predictive. For the Approach-Avoidance subscale, by contrast, all current diagnoses were significantly predictive, but no past diagnoses were. It thus appears that bipolar disorder's problem-solving scar consists primarily of impairment in self-confidence and in feelings of personal control.

Next, we sought to determine whether adding a participant's number of past episodes of major depression, anxiety disorder, and bipolar disorder to the equation would affect the ability of a past diagnosis of bipolar disorder to predict current problem-solving. As seen in Table 3, current diagnoses of major depression, anxiety disorder, and bipolar

TABLE 2. Past Diagnoses Predicting Current Problem-Solving Attitude Scores (PSI Scores), Controlling for Current Diagnoses

Order of entry of set	Predictors in set	F for set	R and R ² for set	ΔR ²	t and β for within-set predictors	df	Partial Correlation (PR/pr)
1. Current Diagnoses		13.41**	.350, .122	.122		3, 289	.35
	Major Depression				2.85**, .169	289	.17
	Anxiety Disorder				4.69**, .265	289	.26
2. Past Diagnoses	Bipolar Disorder				2.23*, .132	289	.13
		2.04	.375, .141	.019		6, 286	.14
	Major Depression				-0.55, -.039	286	-.03
	Anxiety Disorder				-0.29, -.021	286	-.02
	Bipolar Disorder				2.39*, .149	286	.14

Note. PSI Scores = Problem-Solving Inventory (Form B; Heppner, 1988); ΔR² = change in R² with the addition of each step in the regression; PR = Multiple partial correlation for a set of predictors; pr = partial correlation for within-set predictors. For diagnostic variables, 1 = disorder absent; 2 = disorder present. *p < .05; **p < .01.

TABLE 3. Past Diagnoses Predicting Current Problem-Solving Attitude Scores (PSI Scores), Controlling for Number of Past Episodes and Current Diagnoses

Order of entry of set	Predictors in set	F for set	R and R ² for set	ΔR^2	t and β for within-set predictors	df	Partial Correlation (PR/pr)
1. Number of Past Episodes	Major Depression	6.14**	.245, .060	.060	1.23, .078	3, 289	.073
	Anxiety Disorder				3.53**, .224	289	.203
	Bipolar Disorder				-.500, -.033	289	-.029
2. Current Diagnoses	Major Depression	8.23**	.384, .147	.087	2.55**, .158	6, 286	.149
	Anxiety Disorder				3.72**, .218	286	.215
	Bipolar Disorder				2.39*, .144	286	.140
3. Past Diagnoses	Major Depression	6.45**	.413, .170	.023	-.384, -.027	9, 283	-.023
	Anxiety Disorder				-.787, -.057	283	-.047
	Bipolar Disorder				2.67**, .169	283	.158

Note. PSI Scores = Problem-Solving Inventory (Form B; Heppner, 1988); ΔR^2 = change in R² with the addition of each step in the regression; PR = Multiple partial correlation for a set of predictors; pr = partial correlation for within-set predictors. For diagnostic variables, 1 = disorder absent; 2 = disorder present. * $p < .05$; ** $p < .01$.

disorder were still associated with problem solving deficits. However, once again, of the past diagnoses only bipolar disorder was associated with current problem solving abilities.

One of the most harmful aspects of bipolar disorder is its particularly episodic nature. Thus, it is possible that the relation of previous bipolar disorder to problem-solving deficits is simply a function of the severity of past or current symptoms. For example, persons with a history of bipolar disorder may report more serious *current* symptoms than other patients, or more past episodes of mania, both of which, in turn, may account for current problem-solving impairment. To examine this explanation, we conducted a set of subsidiary analyses in which we repeated the analyses described earlier, now controlling for number of previous manic episodes and for symptom severity (a continuous measure indexed by the Anxiety, Hypomania, and Dysthymia subscales of the MCMI; Millon, 1983). We found that current problem-solving impairment was indeed related to number of previous manic episodes and to symptom severity: There was a significant relation between number of previous manic episodes and more severe current problem-solving impairment ($r = .13, p < .05$) and there was a significant association between severity of current symptoms and severity of current problem-solving impairment (Multiple R for the set = $.37, p < .05$). Last, there was a relation between current symptoms on the MCMI Anxiety, Hypomania, and Dysthymia subscales and greater deficits in current problem-solving abilities (Multiple R for the set = $.37, p < .05$).

However, none of these effects fully accounted for the relation between past bipolar disorder and problem-solving impairment. The results of analyses in which the number of manic episodes was inserted into the regression equation and thus was statistically controlled revealed that the relation between past bipolar disorder and current problem-solving impairment remained ($pr = .12, t[285] = 2.04, p < .01$). Similarly, when the MCMI symptom scales were controlled, the relation between past bipolar disorder and current problem-solving impairment remained ($pr = .12, t[283] = 2.08, p < .01$). It thus appeared that the potential scarring effects of past bipolar disorder on problem-solving attitudes were not just a function of the frequency of past episodes or the current severity of one's bipolar disorder.

Hopelessness. Table 4 depicts a regression model in which we sought to assess whether past diagnosis of bipolar disorder predicts current hopelessness. Accordingly, we constructed a hierarchical regression model to predict scores on the Beck Hopelessness Scale (Beck et al., 1974). We simultaneously entered current major depression, current anxiety disorder, and current bipolar disorder at the first step; then, at the next step, we simultaneously entered past major depression, past

anxiety disorder, and past bipolar disorder. Table 4's findings show that current diagnoses of depression and anxiety were significantly related to hopelessness scores. Moreover, on Step 2, only past bipolar disorder was significantly associated with hopelessness, controlling for current disorders as well as for other past disorders ($pr = .17$, $t[286] = 2.91$, $p < .01$). Hence, it appears that bipolar disorder may leave a scar on hopelessness, whereas major depression and anxiety disorder may not.

Next we investigated whether the addition of number of past episodes of major depression, anxiety disorder, and bipolar disorder to the equation would affect the predictability of current hopelessness from past diagnosis of bipolar disorder. The results were consistent with our hypothesis that past diagnosis of bipolar disorder is a scarring agent regarding hopelessness: Current diagnoses of major depression and anxiety disorder (but not of bipolar disorder) were associated with hopelessness, but among past diagnoses, only bipolar disorder was associated with current hopelessness; see Table 5.

A set of ancillary analyses was conducted to assess whether the covariance of number of depressive, anxiety, or bipolar episodes and of current symptoms on the MCMI Anxiety, Hypomania, and Dysthymia subscales reduced the ability of past bipolar disorder to predict current hopelessness. Results of this regression model indicate that statistically controlling for number of depressive, anxiety, and bipolar episodes did *not* diminish the relation between past bipolar disorder and current hopelessness ($pr = .14$, $t[283] = 2.35$, $p < .05$, when MCMI was entered on the first step of the regression equation).

In sum, these results suggest that bipolar disorder has scarring effects on problem-solving attitudes and on hopelessness. Additionally, these effects were *not* merely a function of the chronic, pernicious, and episodic nature of the disorder.

DISCUSSION

The results of the current article are consistent with the hypothesis that bipolar disorder may leave scars of impaired problem-solving and hopelessness, whereas major depression and anxiety disorders do not appear to affect these attitudes. We acknowledge that the effects of a past diagnosis of bipolar disorder on current problem-solving and hopelessness are statistically small; nevertheless, we believe that our results are important and exciting because they further our understanding of bipolar disorder and the existence of psychological scars.

Although we cannot conclusively state that bipolar disorder leaves psychological scars, these data suggest the possibility. Our reasoning is as follows: A relation between a psychological variable and past disorder-

TABLE 4. Past Diagnoses Predicting Current Hopelessness (BHS Scores), Controlling for Current Diagnoses

Order of entry of set	Predictors in set	F for set	R and R ² for set	ΔR ²	t and β for within-set predictors	df	Partial Correlation (PR/pr)
1. Current Diagnoses		18.13**	.398, .158	.158		3, 289	
	Major Depression				3.55**, .206	289	.08
	Anxiety Disorder				5.67**, .313	289	.21
2. Past Diagnoses	Bipolar Disorder				1.29, .075	289	.32
		10.79**	.430, .185	.027		6, 286	
	Major Depression				0.75, .052	286	.04
	Anxiety Disorder				-0.77, -.054	286	-.05
	Bipolar Disorder				2.91**, .177	286	.17

Note: BHS Scores = Beck Hopelessness Scale (Beck et al. 1974); ΔR² = change in R² with the addition of each step in the regression; PR = Multiple partial correlation for a set of predictors; pr = partial correlation for within-set predictors. For diagnostic variables 1 = disorder absent, 2 = disorder present. **p < .01.

TABLE 5. Past Diagnoses Predicting Current Hopelessness Scores, Controlling for Number of Past Episodes and Current Diagnoses

Order of entry of set	Predictors in set	F for set	R and R ² for set	ΔR ²	t and β for within-set predictors	df	Partial Correlation (PR/pr)
1. Number of Past Episodes		5.02**	.223, .050	.050		3, 289	
	Major Depression				2.98**, .189	289	.173
	Anxiety Disorder				1.39, .089	289	.082
2. Current Diagnoses	Bipolar Disorder	10.02**	.417, .174	.124	-.053, -.004	289	-.003
	Major Depression				2.65**, .162	6, 286	.155
	Anxiety Disorder				5.37**, .063	286	.303
3. Past Diagnoses	Bipolar Disorder	7.72**	.444, .197	.023	1.06, .309	286	.063
	Major Depression				.600, .042	9, 283	.036
	Anxiety Disorder				-.850, -.060	283	-.050
	Bipolar Disorder				2.78**, .171	283	.163

Note. BHS Scores = Beck Hopelessness Scale (Beck et al. 1974); ΔR² = change in R² with the addition of each step in the regression; PR = Multiple partial correlation for a set of predictors; pr = partial correlation for within-set predictors. For diagnostic variables v1 = disorder absent; 2 = disorder present. **p < .01.

der may indicate that: (a) the psychological variable represents a temporally stable *antecedent* of past disorder; (b) the psychological variable's relation to past disorder is *spurious* (e.g., actually reflective of the psychological variable's relation to current disorder); or (c) the psychological variable was a *consequence or scar* of past disorder. In itself, the correlation between a psychological variable and past disorder cannot discriminate among these three possibilities (although it should be noted that the *lack* of a correlation would argue against each possibility; see, for example, our results for past major depression and anxiety disorder).

However, a significant relation between a psychological variable and past disorder, *controlling for the existence of current disorder*, argues against the "spuriousness" view that a variable is related to past disorder only because it is related to current disorder. This is because the relation of a psychological variable to past disorder cannot be accounted for by its relation to current disorder when this latter relation is controlled.

Furthermore, we suggest that the "antecedent" explanation, although not wholly ruled out by our design, is less plausible than the "scar" explanation. First, in light of the nature of bipolar disorder (e.g., high genetic loading, lack of efficacy of psychosocial treatment, pernicious and enduring functional impairment; Coryell et al., 1993), it is easier to imagine that a psychosocial impairment would result from, rather than precede, bipolar disorder. Second, when the analyses in Tables 2 and 4 were repeated but differed in that past diagnoses were inserted into the regression equation before current diagnoses (instead of vice-versa, as seen in Tables 2 and 4), past bipolar disorder was associated with problem-solving impairment (PSI scores) and hopelessness (BHS scores), but current bipolar disorder was not. Thus, if problem-solving impairment was an antecedent to bipolar disorder, problem-solving impairment and hopelessness should be similarly related to past and current diagnosis (because the impairment preceded both diagnoses). However, this was not the case.

Moreover, an examination of the correlation between past and current bipolar disorder diagnoses revealed only a moderate association ($r = .39$), which indicates that each diagnosis contains enough unique statistical variance to differentially predict the dependent measures after controlling for the other. Accordingly, the comparison of regression models that vary the order of entry of past and current bipolar diagnoses as described above is quite informative. Therefore, with prudence, we believe that the current results suggest—or are at least consistent with—a scarring effect of bipolar disorder on problem-solving attitudes and hopelessness.

LIMITATIONS

Before discussing some implications of our findings, we first note the limitations of the present study. First, past diagnoses were dependent on patients' retrospective reports of past symptoms, as well as on the validity of the computerized DIS. In their review of the relevant literature, Brewin, Andrews, and Gotlib (1993) concluded that claims of general unreliability as a function of retrospective reports are unwarranted and that people with psychiatric diagnoses are as likely as others to provide accurate retrospective reports. Several empirical studies have found that retrospective reports of psychopathology, as well as such occurrences as early abuse experiences and life events, are reasonably valid (e.g., Holmshaw & Simonoff, 1996; Widom & Morris, 1997). Similarly, the computerized DIS possesses reasonable validity data (Metalsky, 1989; Rudd et al., 1996). Nonetheless, behavioral measures of problem-solving skills or of behaviors related to hopelessness would have contributed nicely to the current investigation. Thus, until our results are replicated, cautious interpretation is encouraged.

Second, in addition to the self-report nature of the data, we should also note that the data are cross-sectional. Measurement of problem-solving and hopelessness attitudes prior to the onset of (or change in) bipolar, anxiety, or depressive disorders would have furthered our understanding of the temporal sequence of these psychological disorders to problem-solving and hopelessness attitudes. We encourage and await future studies of this sort, as they will make a strong addition to our understanding of scarring effects.

Third, our results were obtained on a specialized sample, military personnel experiencing suicidal symptoms. We thus caution that the generalizability of our findings to other populations is undetermined. However, it should be remembered that our findings regarding major depression converge with others (e.g., Shea et al., 1996) in showing that depression does *not* leave psychosocial scars. Furthermore, our sample possessed the advantage of having high rates of and variability in diagnoses of past and current mood and anxiety disorders, which made for stringent tests of the idea that one particular past diagnosis was associated with current problem-solving attitude and hopelessness, even when other current and past diagnoses were statistically controlled.

Another consideration with respect to the participant sample is that the anxiety-disordered group consisted mostly of people with current diagnoses of social phobia (see Footnote 1), which may limit the generalizability of the findings to other anxiety disorders. To address this possibility, we repeated analyses for each anxiety disorder diagnosis, and the same pattern of findings emerged across these disorders. However,

these analyses contained relatively low numbers of nonsocial phobic anxiety-disordered patients and thus should be viewed cautiously.

Fourth, the current results are limited to two potential scars of psychopathology, problem-solving attitudes and hopelessness. Our data do not speak to the possibilities that mood or anxiety disorders may leave other scars or that other forms of psychopathology may leave problem-solving attitude and pessimism scars. Moreover, given the aforementioned association between current depressive episodes and hopelessness, along with similar findings for problem-solving abilities and current depression (e.g., Heppner & Anderson, 1985; Nezu, 1987), it is perhaps not surprising that problem-solving attitudes and hopelessness were not uniquely predicted by past depression. In fact, a recent study (Dixon, 2000) found that college students who rated themselves higher in problem-solving skills at Time 1 exhibited lower depression scores (M BDI = 12) at Time 2, relative to students who initially rated themselves as ineffective problem-solvers and who later exhibited moderate to severe depressive symptoms (M BDI = 20). This finding adds to previous research suggesting that problem-solving skills uniquely predicted future depression (Nezu & Ronan, 1988). These studies, taken together with the present report, suggest that poor problem-solving may be an antecedent—and not a scar—of depression.

The process of detecting a psychological “scar” deserves note, given the complicated nature of the idea and the potential specificity between scars and various disorders. One possibility is that scars different from those tested here result from depression and anxiety disorders. For example, there are well-established links between interpersonal difficulties and depression (see Joiner & Coyne, 1999 for a review) and between hemispheric lateralization and depressive tendencies (see Davidson, 2000). Accordingly, researchers may not have yet assessed scars left by depressive or anxiety disorders at the appropriate levels (e.g., at dyadic or neurological levels). Another possibility is that the association between psychological disorders such as anxiety and depression and subsequent scars is indirect or nonlinear. Regardless, past anxiety and depression do not appear to predict in a straightforward manner problem-solving or hopelessness attitudes. The idea that scars of various disorders may operate at different levels or via different pathways suggests exciting possibilities for future research.

Thus, the notion that psychological disorders create a permanent impairment is inherently intriguing and also inherently complex. Accordingly, we acknowledge that our results are consistent with—but do not indubitably show—evidence of scars resulting from past bipolar disorder. Moreover, our analytical procedures tested a rather direct, straightforward model of possible scarring effects, one that was most appropri-

ate for the current hypothesis but that may have failed to uncover scars with a more complex relationship to past depressive or anxiety disorders.

IMPLICATIONS

We turn now to the study's implications and encourage that they be viewed in the context of the aforementioned limitations. What is it about past bipolar disorder that may leave problem-solving attitude and hopelessness scars? Two potential answers deserve attention in future research. Children with bipolar disorder have been characterized as particularly impulsive, labile, belligerent, and sometimes aggressive (Bowring & Kovacs, 1992); perhaps these features interfere with the development of good problem-solving attitudes. A related possibility is that correlates of bipolar disorder, such as attention-deficit hyperactivity disorder, conduct disorder, and later substance abuse (e.g., Biederman, Faraone, Mick, & Wozniak, 1996), play a role in forming psychological scars.

Second, people with a past history of bipolar disorder may feel particularly demoralized about coping with the disorder. As compared to anxiety disorders, and (arguably) to major depression, bipolar disorder is treatment-refractory and wreaks particular havoc on social, professional, financial, and personal resources (Coryell et al., 1993). Accordingly, "social, psychological, and financial resource depletion" may be an apt description of the scar left by past bipolar disorder, which is consistent with our finding that the problem-solving scar consists primarily of low confidence and lack of personal control.

Future research should address which facets of bipolar disorder affect problem-solving and hopelessness. One link may be in our findings that only the Confidence and Personal Control subscales of the PSI were predicted by past bipolar diagnosis. There also exists a link between hopelessness and personal feelings of control and predictability (e.g., Alloy, Kelly, Mineka, & Clements, 1990) that indicates people who do not think that they can control outcomes (even if the outcomes are, in fact, uncontrollable) are likely to develop a pessimistic or hopeless outlook. Accordingly, it is possible that the variable nature of bipolar disorder—and feelings of not being able to control one's psychological state—lead to feelings of hopelessness and poor problem-solving. Research by Frank et al. (1999) supports this idea in finding that bipolar patients benefit greatly from stable routines and, further, that life disruptions contribute to poorer outcomes. For bipolar patients, deficits in problem-solving may also extend to interpersonal relationships: Simoneau, Miklowitz, and Saleem (1998) found that problematic interactions between bipolar

patients and a family member were revealed in problem-solving discussions.

Clinically, a preventative-rehabilitation regimen for those with current bipolar disorder (or perhaps even those who are at high genetic risk for bipolar disorder), as well as for adults with histories of bipolar disorder, should be considered. A program aimed at fostering good problem-solving and optimism may help in general adaptation (conjointly with medication), and may prevent the development of a scar and thus of future negative outcomes, including suicidality, with which impaired problem-solving and pessimism are associated.

In conclusion, we examined the potential scarring effects of mood and anxiety disorders on participants' outlooks and problem-solving attitudes. Unlike major depression and anxiety disorders, past bipolar disorder was implicated in leaving problem-solving attitude and pessimism scars. We encourage other researchers to assess other types of scars—emotional, behavioral, neurological, physiological, or other cognitive scars—and to include additional disorders in their analyses. Our data suggest that mania's "sting" may thus be both painful and persistent, rendering the sufferer vulnerable to future impairment and distress through scarred problem-solving attitudes and outlook.

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