



Current mood-state and past depression as predictors of self-esteem and dysfunctional attitudes among adolescents

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Received 3 September 1999; received in revised form 13 March 2000

Abstract

This study investigated the roles of current mood-state and past depression in predicting self-esteem and dysfunctional attitudes in a sample of 110 adolescents who were presently non-depressed. First, the authors tested the hypothesis that lower self-esteem and more dysfunctional attitudes would be found among adolescents with more severe past depression (after statistically controlling current mood-state and gender). Second, the authors tested the mood-state hypothesis (Persons, J. B., & Miranda, J. (1992). *Cognitive Therapy and Research*, 16, 485–502; Segal, Z. V., & Ingram, R. E. (1994). *Clinical Psychology Review*, 14, 663–695) which posits that negative cognitive styles are more sensitive to the effects of current mood-state among individuals with more severe past depression. Results suggested that lower self-esteem (but not greater dysfunctional attitudes) is associated with more severe past depressive symptomatology. In contrast to the mood-state hypothesis, we found that adolescents with more severe past depression showed less (rather than greater) congruence between negative affect and both self-esteem and dysfunctional attitudes than those with less severe past depression. © 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Mood-state hypothesis; Cognitive vulnerability; Depression; Adolescents; Dysfunctional attitudes; Self-esteem

A growing body of research suggests that compared with childhood, early adolescence is associated with significant increases in the prevalence of depressive symptomatology and disorders. Lewinsohn, Duncan, Stanton and Hautzinger (1986) found that the risk for developing an initial episode of unipolar depression is very low during childhood, increases dramatically during adolescence, peaks during adulthood, and decreases during the elderly years. Moreover, in an epidemiological study conducted with 1710 adolescents, the lifetime prevalence of depressive disorders

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was 20% (Lewinsohn, Rohde, Seeley & Hops, 1991) — a finding that is comparable to prevalence rates reported in other adolescent samples (Compas, Ey & Grant, 1993; Fleming & Offord, 1990). In fact, by the age of 21, 45% of individuals in a community sample who were diagnosed with a current mood disorder already had at least one previous episode (Newman et al., 1996).

Together these findings suggest that by late adolescence, rates of depressive symptomatology and clinical depression approach levels that are observed in adult populations (Fleming & Offord, 1990). Moreover, adolescents who exhibit depressive disorders have been shown to be at an elevated risk for mood disorders, as well as psychiatric hospitalization and treatment, in adulthood (Harrington, Fudge, Rutter, Pickles & Hill, 1990). Given that the prevalence of depressive disorders increases dramatically during the teenage years compared with childhood, adolescence appears to be a critical period for understanding the nature, as well as the course of depressive feelings and symptoms. Furthermore, because many individuals report experiencing their first episode of major depression during their teen years (Newman et al., 1996), exploring depression in adolescents provides investigators with a better opportunity to examine the early stages of this often chronic and recurrent disorder.

Beck's cognitive theory (Beck, Rush, Shaw & Emery, 1979) posits that individuals who are at risk for developing depression have acquired, as a result of negative childhood experiences, stable negative cognitive styles that include negative self-schemata (manifested as low self-esteem) and rigid, irrational, beliefs (referred to as dysfunctional attitudes). According to Beck et al. (1979) these negative cognitive styles may be latent at times, but can be activated by specific circumstances that are analogous to the experiences initially responsible for embedding the negative attitude. Although this model has been extensively investigated among adults, it has only recently been explored among adolescents (for a review see Hammen, 1992). Given that this model proposes that negative cognitive styles are formed early in life and create underlying vulnerabilities to depression, adolescence seems to be a particularly important stage of life to investigate these processes.

More recently, Persons and Miranda (1992) and others (Segal & Ingram, 1994; Teasdale, 1988; Teasdale & Barnard, 1993) proposed what has come to be known as the 'mood-state hypothesis' — the idea that underlying negative cognitive styles are *latent* in those vulnerable to depression and only become accessible when these individuals experience a dysphoric mood. The mood-state hypothesis posits that negative mood primes, activates, and makes accessible negative cognitions among depression-prone individuals, which otherwise would be inaccessible in the absence of dysphoric mood. Teasdale (1988) further suggested that it is the pattern of information processing that occurs once a person is at least mildly depressed that is crucial for determining whether or not initial dysphoria escalates into a prolonged and more severe episode of depression. According to this model, individuals who are prone to depression would respond to dysphoric mood states with profound changes in their views about themselves and their lives. In other words, they would exhibit strong mood-congruent effects in terms of cognitive style. On the other hand, the mood-state hypothesis posits that non-vulnerable individuals are relatively insensitive to the effects of mood-state, and thus would exhibit weaker mood-congruent effects.

A number of recent studies have found support for the mood-state hypothesis in adult samples. For example, correlational studies have found that dysfunctional attitudes (Miranda & Persons, 1988; Miranda, Persons & Byers, 1990; Roberts & Kassel, 1996), self-esteem, and automatic thoughts (Roberts & Kassel, 1996) are more strongly associated with current mood-state among

previously depressed compared to never-depressed participants. Experimental studies have found that previously depressed individuals respond to depressive mood inductions with greater endorsement of dysfunctional attitudes (Miranda, Gross, Persons & Hahn, 1998), incidental memory for negative stimuli (Teasdale & Dent, 1987), and attentional disruptions (Ingram, Bernet & McLaughlin, 1994) than never-depressed participants. Most recently, Segal, Gemar, and Williams (1999) found that cognitive reactivity to a mood induction prospectively predicted relapse of episodes of depression. Together these findings suggest that dysphoric mood primes negative cognitive constructs that are otherwise latent and non-accessible in depression-prone individuals. The body of empirical work conducted with adult samples suggests that the mood-state hypothesis provides a viable model for understanding the role of negative cognitions in vulnerability to adolescent depression. However, two recent studies failed to replicate the mood-state pattern among college-age students (Brosse, Craighead & Craighead, 1999; Dykman, 1997), whereas another obtained an inconclusive pattern of results (Solomon, Haaga, Brody, Kirk & Friedman, 1998), raising the possibility that these processes might operate differently among younger persons.

The present study was designed to test two major hypotheses concerning cognitive vulnerability to depression among adolescents. First, the authors tested the hypothesis that lower self-esteem and higher levels of dysfunctional attitudes would be reported by adolescents with more severe episodes of past depressive symptomatology than by adolescents with less severe past depression. If these cognitive variables act as trait vulnerabilities to depression, depression-prone adolescents should show more negative patterns relative to never-depressed nonvulnerable adolescents. Second, in accord with the mood-state hypothesis (Persons & Miranda, 1992), the authors tested the hypothesis that self-esteem and dysfunctional attitudes would vary as a function of both history of depressive symptomatology *and* current mood-state. We posited that mood-state would be more strongly associated with negative cognitions among adolescents with more severe past depression than among adolescents with less severe past depression. To the authors' knowledge, this study is the first investigation of the mood-state hypothesis among adolescents. Dysfunctional attitudes were examined because these rigid and irrational beliefs are thought to be a core component of cognitive vulnerability, and they are the most widely examined cognitive variable in tests of the mood-state hypothesis; self-esteem was examined because of its conceptual overlap with negative self-schemata.

Although almost all prior studies that have tested the mood state hypothesis have used unidimensional measures of mood, a large body of research suggests that positive affect (PA) and negative affect (NA) are separate orthogonal constructs, and that the combination of both low PA and high NA characterizes depression (e.g., Clark & Watson, 1991). This work suggests that the combination of low PA and high NA might be particularly effective in activating negative cognitive styles among depression-prone individuals. However, the only study that directly tested this hypothesis found that whereas NA exhibited the mood-state pattern across a variety of cognitive measures, PA and the NA \times PA interaction did not (Roberts & Kassel, 1996). The present study examined mood-state in terms of NA, PA, and their interactive effects on an exploratory basis. Given the controversy concerning investigating depression in terms of severity of symptoms (which are most often subclinical) vs clinical diagnosis (e.g., Coyne, 1994; Flett, Vredenburg & Krames, 1997), past depression was analyzed both dimensionally and categorically. Dimensional scores were based on the severity of symptoms during the most depressed week of our participants'

lives, whereas past episodes of depression were based on meeting Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1994) criteria for Major Depression during participants' most depressed week. (See Measures section below for details.)

1. Method

1.1. Procedure

Participants were recruited from a rural Northeastern United States high school that included grades nine through 12 (approximate total enrolment = 700). Potential participants were informed that whichever homeroom had the highest level of participation would be awarded coupons for free pizza at a local restaurant, and students were given parental permission letters to take home. After obtaining parental permission and the participants' informed consent to participate in the study, the students were administered a battery of questionnaires in the school cafeteria during study periods by one of the authors and school personnel trained in the administration of the questionnaires. These individuals circulated throughout the cafeteria and answered students' questions when they arose. Pilot-testing suggested that participants would need approximately 35 min to complete the battery, so 40-min study periods were used.

1.2. Participants

Participants in the study included 153 adolescents. Of these participants, the present study focused on previously depressed ($n=11$) and never-depressed ($n=99$) individuals as defined below, and excluded individuals who were suffering from current depressive symptomatology.¹ These individuals were primarily Caucasian (93.6%), whereas the remainder were Native-Americans (2.7%), Hispanic-Americans (1.8%), and Other (1.8%). The mean age of these students was 16.1 years ($SD = 1.1$). The grade distribution was as follows: grade 9 (23.6%), grade 10 (25.5%), grade 11 (46.4%), and grade 12 (4.5%). Females comprised 55% of this sample.

1.3. Measures

1.3.1. Depression

The Inventory to Diagnose Depression (IDD; Zimmerman, Coryell, Corenthall & Wilson, 1986) is a 22-item questionnaire that was used to measure the severity of depressive symptomatology, as well as to determine if participants met criteria for major depressive disorder according to the DSM-IV (American Psychiatric Association, 1994). Each of these 22 items was rated in terms of both the severity of the symptom, as well as whether or not the symptom was present for two weeks or longer. Goldston, O'Hara and Schwartz (1990) reported that IDD total severity

¹ Testing the present study's two major hypotheses required that currently depressed individuals be excluded. Both of these hypotheses posit that persons who are vulnerable to depression differ from non-vulnerable individuals on cognitive characteristics outside of depressive episodes. These hypotheses can only be tested among persons who are not currently depressed.

scores correlate highly with the Beck Depression Inventory ($r=0.81$) and the Center for Epidemiological Studies — Depression Scale ($r=0.81$). When treated categorically, the IDD shows good agreement with diagnoses obtained from the Diagnostic Interview Schedule (Kappa = 0.8; Zimmerman & Coryell, 1987). In the present sample, coefficient alpha was 0.62.² The IDD-Lifetime Version (IDD-L; Zimmerman & Coryell, 1987) was used to assess participants' worst lifetime periods of depression. The IDD-L includes the same 22 items as the IDD, which were rated in terms of both severity and duration. However, the IDD-L focused on the most severely depressed week in the participant's life. The IDD-L shows adequate agreement with the DIS (Kappa = 0.6; Zimmerman & Coryell, 1987). In the present sample, coefficient alpha was 0.78.

For the purposes of the present study, the authors defined previously depressed individuals as participants whose worst lifetime episode of depression met DSM-IV criteria for major depression, based on both symptoms (five or more symptoms, including depressed mood or anhedonia) and duration (two weeks or longer). However, these individuals did not currently meet symptom criteria (regardless of duration) for major depression. In addition, following Roberts and Kassel (1996), these participants were required to score 20 or higher on the IDD-L and less than 20 on the IDD. Never-depressed adolescents had worst lifetime experiences of depression that failed to meet DSM-IV symptom criteria for major depression (regardless of duration), and they scored less than 20 on both the IDD-L and the IDD. These selection procedures are useful because they exclude individuals with briefer (less than two weeks) and milder ($IDD-L < 20$) episodes of depression. Such individuals tend to fall midway between depression-prone and non-depression-prone individuals in terms of psychological vulnerability characteristics (Roberts & Gotlib, 1997a; Roberts, Gilboa & Gotlib, 1998). As noted previously, these selection procedures also exclude currently depressed individuals.

1.3.2. *Self-esteem*

The Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1979) is a measure of global self-regard that consists of 10 items, such as 'I take a positive attitude toward myself'. Participants responded to items by using a five-point Likert scale that ranged from strongly agree (1) to strongly disagree (5). Higher scores indicated higher global self-esteem. Coefficient alpha was 0.85 in the present sample.

1.3.3. *Dysfunctional attitudes*

The Dysfunctional Attitudes Scale (DAS; Weissman & Beck, 1978) is a 40-item measure that assesses attitudes and beliefs that are thought to predispose individuals to depression. Items such as 'If others dislike you, you cannot be happy', and 'If I fail partly, it is as bad as being a complete failure' were rated on a seven-point scale, ranging from totally agree (1) to totally disagree (7). Total scores can range from 40 to 280, with higher scores indicating greater endorsement of maladaptive beliefs. Coefficient alpha was 0.87 in the present sample.

² The IDD's coefficient alpha is low compared to reliabilities reported in other studies. For example, Roberts and Kassel (1996) reported a coefficient alpha of 0.85. The following items had the smallest item-scale correlations: interest in sex (item 7) $r = -0.09$; weight gain (item 16) $r = 0.00$; suicidality (item 10) $r = 0.00$; sleep increase (item 18) $r = 0.01$; interest in usual activities (item 5) $r = 0.06$.

1.3.4. Attributional style

Although attributional style was measured with the Children's Attributional Style Questionnaire (CASQ; Kaslow, Tannebaum & Seligman, 1978), coefficient alphas were inadequate in the present sample (0.40 for the negative composite; 0.50 for the positive composite), and consequently this instrument was not included in the analyses reported below.

1.3.5. Mood-state

The Positive and Negative Affect Schedule (PANAS; Watson, Clark & Tellegen, 1988) is a 20-item instrument that was used to assess current mood-state. The Positive Affect (PA) scale is composed of 10 items such as 'interested', 'strong', and 'attentive', whereas the Negative Affect scale (NA) is composed of 10 items such as 'upset', 'guilty', and 'scared'. Participants indicated the degree to which each mood item described their current feelings using a five-point scale that ranged from 'very slightly' to 'extremely'. In the present sample, coefficient alphas were 0.80 for NA and 0.90 for PA.

2. Results

2.1. Preliminary analyses

Table 1 presents the means and standard deviations, as well as the correlation matrix, of all variables included in the study. Consistent with a large body of work based on adult samples, PA and NA were not significantly correlated ($r=0.04$). Although NA was associated with severity of both current ($r=0.45$, $p<0.001$) and worst lifetime depressive symptoms ($r=0.26$, $p<0.01$), PA was not significantly associated with either ($r=0.06$ and 0.08 , respectively). Age was not significantly correlated with any of our measures of depressive symptoms, affect or cognition. On the other hand, there were several gender differences. Female adolescents reported lower self-esteem than males ($M=36.4$, $SD=6.0$ vs $M=40.2$, $SD=6.7$), $t(107)=3.09$, $p<0.005$, as well as greater severity of both current depressive symptoms ($M=10.1$, $SD=4.7$ vs $M=8.0$, $SD=4.8$), $t(108)=2.42$, $p<0.05$, and past symptoms ($M=15.4$, $SD=11.9$ vs $M=9.4$, $SD=10.6$),

Table 1
Means, standard deviations, and correlation matrix of all variables^a

	1	2	3	4	5	6	7	<i>M</i>	<i>SD</i>
1. Age	1.000							16.1	1.1
2. PA	0.066	1.000						26.8	9.6
3. NA	-0.094	0.037	1.000					14.5	5.1
4. IDD	-0.069	0.060	0.446****	1.000				9.2	4.8
5. IDD-L	0.085	0.088	0.261**	0.507****	1.000			12.7	11.7
6. SE	0.010	0.363****	-0.333****	-0.355****	-0.263***	1.000		38.1	6.6
7. DAS	-0.038	-0.319***	0.076	0.140	0.073	-0.399****	1.000	122.8	26.9

^a PA = positive affect; NA = negative affect; IDD = Inventory to Diagnose Depression; IDD-L = Inventory to Diagnose Depression-Lifetime; SE = self-esteem; DAS = Dysfunctional Attitude Scale. * $p<0.05$; ** $p<0.01$; *** $p<0.005$; **** $p<0.001$.

$t(108) = 2.73, p < 0.01$. Finally, there was a disproportionate number of females in the previously depressed group (81.8%) relative to the never-depressed group (51.5%), $\chi^2(n = 110, df = 1) = 3.67, p < 0.06$. Consequently, gender was statistically controlled in the regression analyses reported below.

2.2. Overview of regression analyses

Major hypotheses were tested with Setwise Hierarchical Regression Analysis (Cohen & Cohen, 1975), similar to analyses reported by Miranda et al. (1990). Separate analyses were conducted with self-esteem and dysfunctional attitudes as the dependent variable. In each analysis, Step 1 included the set of PA, NA, and gender (dummy coded with females = 0 and males = 1), in order to control for the possible confounding effects of current mood-state and gender. At Step 2, past depression was entered. This second step tests the hypothesis that previous history of depression is associated with a negative cognitive style (in particular low self-esteem and high levels of dysfunctional attitudes) after statistically controlling for possible differences in current mood-state, as well as gender. In order to test the hypothesis that current mood-state has a greater impact on previously depressed adolescents, the set of two-way interactions (PA × Past Depression; NA × Past Depression; PA × NA) was entered at Step 3. These interactions test for moderating effects of past depression on the association between cognitive style and affect. Finally, the triple interaction (PA × NA × Past Depression) was entered at Step 4 to test the moderating effect of past depression on the association between cognitive style and the combination of low PA and high NA. Separate analyses were conducted for past depression treated as either a dimensional or categorical variable (dummy coded with never-depressed persons = 0 and previously depressed persons = 1). In all cases, the assumption of homogeneity of variance was met, and all Cook's values were less than 1 (the latter suggesting that results were not driven by unduly influential data points).

2.3. Dimensional assessment of past depression

As can be seen on the left-hand side of Table 2, the set of PA, NA, and gender made a significant contribution to the prediction of self-esteem, $F(3,105) = 16.00, p < 0.001$.³ Within-set analyses indicated that PA, $pr = 0.42, p < 0.001$, NA, $pr = -0.35, p < 0.001$, and gender, $pr = 0.29, p < 0.005$, each made significant unique contributions. Adolescents with higher PA, lower NA, and male gender reported higher levels of self-esteem. Importantly, the IDD-L (treated as a continuous measure) predicted self-esteem, $pr = -0.19, p < 0.05$. Adolescents with more severe past depressive symptoms reported lower self-esteem after the main effects of PA, NA, and gender were controlled. The set-of two-way interactions just fell short of statistical significance, $p = 0.053$, though the NA × IDD-L interaction was a significant unique predictor, $pr = 0.26, p < 0.01$. On the other hand, the PA × IDD-L interaction and the NA × PA × IDD-L triple interaction were not significant.

³ One previously depressed individual had incomplete data on self-esteem, resulting in the lower degrees of freedom in this analysis than in the subsequent analyses focusing on dysfunctional attitudes.

In order to follow-up on the nature of the NA×IDD-L interaction, separate analyses were conducted for adolescents who were either high or low in past depression (based on a median split of the IDD-L). Again the mood-state hypothesis posits that self-esteem will be more strongly associated with mood among previously depressed than among never-depressed individuals. In contrast, results indicated that the negative association between NA and self-esteem was larger among those with low levels of past depression (IDD-L < 10), $\beta = -0.402$, $pr = -0.42$, $p < 0.005$, than among those with more severe past depressive symptomatology (IDD-L \geq 10), $\beta = -0.237$, $pr = -0.28$, $p < 0.05$.

As can be seen on the right-hand side of Table 2, the set of PA, NA, and gender made a significant contribution to the prediction of dysfunctional attitudes, $F(3,106) = 4.45$, $p < 0.01$. Within-set analyses indicated that only PA made a unique contribution, $pr = -0.32$, $p < 0.005$. Adolescents with higher PA reported fewer dysfunctional attitudes. In contrast to our hypothesis, the IDD-L was not a significant predictor of dysfunctional attitudes, $pr = 0.10$, $p = 0.30$. The set of two-way interactions made a significant contribution, $F(3,102) = 3.82$, $p < 0.05$, and within-set analyses indicated that only the NA×IDD-L interaction made a unique contribution, $pr = -0.31$, $p < 0.005$. Finally, the PA×NA×IDD-L interaction was not significant. Similar to the follow-up analyses reported above, the nature of the significant NA×IDD-L interaction was explored by conducting median splits on past depression and analyzing the effects of NA separately in each group. Among adolescents with less severe past depression, NA was positively associated with dysfunctional attitudes, $\beta = 0.445$, $pr = 0.45$, $p < 0.005$. In contrast, among adolescents with more severe past depression, NA was nonsignificantly *negatively* associated with dysfunctional attitudes, $\beta = -0.138$, $pr = -0.15$, $p = 0.23$. Similar to the results reported above for self-esteem,

Table 2
Hierarchical multiple regression analysis to predict self-esteem and dysfunctional attitudes: dimensional past depression

Step/predictor ^a	Self-esteem ^b				Dysfunctional attitudes ^b			
	Increment in R^2	F	t	β	Increment in R^2	F	t	β
1. Control variables	0.314****	16.00			0.112**	4.45		
PA			4.67****	0.378			3.51***	-0.322
NA			3.86****	-0.315			1.02	0.094
Gender			3.07***	0.250			0.52	0.048
2. IDD-L	0.026*	4.08		-0.171	0.009	1.07		0.101
3. Two-way interactions	0.048 $p = 0.053$	2.64			0.089*	3.82		
PA×IDD-L			1.57	0.476			0.99	-0.348
NA×IDD-L			2.69**	0.878			3.34***	-1.250
PA×NA			0.25	-0.089			1.01	0.405
4. PA×NA×IDD-L	0.003	0.46		0.723	0.000	0.00		0.069
	Cumulative $R^2 = 0.390$, Final $F = 8.00$, $p < 0.001$				Cumulative $R^2 = 0.210$, Final $F = 3.35$, $p < 0.005$			

^a PA = positive affect; NA = negative affect; IDD-L = Inventory to Diagnose Depression-Lifetime; β = standardized beta weight.

^b Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.005$; **** $p < 0.001$.

greater mood congruence was found for adolescents with less severe past depressive symptomatology compared to those with more severe past depression.⁴

2.4. Categorical assessment of past depression

As can be seen on the left-hand side of Table 3, when past depression was treated as a categorical variable based on DSM-IV criteria, it was a nonsignificant predictor of self-esteem after controlling for PA, NA, and gender, $pr = -0.13$, $p = 0.17$. Although the entire set of two-way interactions was not significant, $F(3, 101) = 1.31$, $p = 0.27$, the NA×Past Depression interaction showed a marginally significant trend in predicting self-esteem, $pr = 0.18$, $p = 0.069$. None of the other interactions, including the PA×NA×Past Depression triple interaction, approached statistical significance. In exploring the marginally significant NA×Past Depression interaction, analyses were conducted separately for adolescents with a previous episode of depression and those

Table 3
Hierarchical multiple regression analysis to predict self-esteem and dysfunctional attitudes: categorical past depression

Step/predictor ^a	Self-esteem ^b				Dysfunctional attitudes ^b			
	Increment in R^2	F	t	β	Increment in R^2	F	t	β
1. Control variables	0.314****	16.00			0.112**	4.45		
PA			4.67****	0.378			3.51***	-0.322
NA			3.86****	-0.315			1.02	0.094
Gender			3.07***	0.250			0.52	0.048
2. PD	0.012	1.92		-0.115	0.001	0.131		0.034
3. Two-way interactions	0.025	1.31			0.038	1.53		
PA×PD			0.45	-0.016			0.96	0.400
NA×PD			1.84 ^c	0.801			1.81 ^d	-0.901
PA×NA			0.52	0.178			0.31	0.120
4. PA×NA×PD	0.002	0.33		-0.713	0.001	0.09		-0.437
	Cumulative $R^2 = 0.354$, Final $F = 6.84$, $p < 0.001$				Cumulative $R^2 = 0.152$, Final $F = 2.26$, $p < 0.05$			

^a PA = positive affect; NA = negative affect; PD = categorical past depression, β = standardized beta weight.

^b Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.005$; **** $p < 0.001$,

^c $p = 0.069$.

^d $p = 0.073$.

⁴ Because measures of self-esteem and dysfunctional attitudes were significantly correlated in the present sample ($r = -0.399$), they are not entirely independent outcomes. In order to determine whether results were due to unique or shared variance between these measures, a set of parallel regression analyses were conducted in which the alternate outcome measure was statistically controlled on Step 1. For example, when self-esteem was treated as the dependent measure, dysfunctional attitudes were statistically controlled. With dysfunctional attitudes statistically controlled, the IDD-L no longer predicted self-esteem, whereas the NA×IDD-L interaction was marginally significant ($p = 0.085$). With self-esteem statistically controlled, the NA×IDD-L interaction remained a significant predictor of dysfunctional attitudes ($p < 0.05$). These analyses suggest that our effects were partially related to shared variance between these two outcome variables.

with no past episodes. Among adolescents with no previous episodes, NA was negatively associated with self-esteem, $\beta = -0.341$, $pr = -0.38$, $p < 0.001$, whereas among those with a history of depression, NA was not a significant predictor, $\beta = 0.170$, $pr = 0.21$, $p = 0.62$. Again results suggest a pattern of greater mood congruence among adolescents without a history of past depression compared to those with previous episodes.

As can be seen on the right-hand side of Table 3, categorical past depression was not a significant predictor of dysfunctional attitudes, $pr = 0.04$, $p = 0.72$. Although the entire set of two-way interactions was not significant, $F(3,102) = 1.53$, $p = 0.21$, the NA \times Past Depression interaction showed a marginally significant trend in predicting dysfunctional attitudes, $pr = -0.18$, $p = 0.073$. None of the other interactions, including the PA \times NA \times Past Depression triple interaction, approached statistical significance. Among adolescents with no previous episodes, NA was not a significant predictor of dysfunctional attitudes, $\beta = 0.142$, $pr = 0.15$, $p = 0.14$. Unexpectedly, although NA strongly predicted dysfunctional attitudes among those with a past history of depression, this relationship was opposite to that predicted. Higher NA was associated with fewer dysfunctional attitudes, $\beta = -0.816$, $pr = -0.84$, $p < 0.01$. These results suggest that the most depression-prone individuals in our sample actually displayed considerable mood-*incongruence* in terms of dysfunctional attitudes.⁵

3. Discussion

The present study sought to investigate the roles of past depression and current mood-state in predicting adolescents' current self-esteem and dysfunctional attitudes. The authors first tested the hypothesis that negative cognitions would be more pronounced among adolescents with more severe episodes of past depressive symptomatology compared to those with less severe past episodes after statistically controlling for current mood-state and gender. Second, in accord with the mood-state hypothesis (Persons & Miranda, 1992), the hypothesis that negative cognitions would be predicted by the interactive effects of current mood-state and severity of past depression was tested. In other words, the study tested the moderating effects of past depression on the association between affect and cognitive style, and predicted that dysphoric mood states would be more strongly associated with negative cognitions among adolescents with more severe previous depression than among never-depressed adolescents.

Consistent with the authors' first hypothesis, this study found that self-esteem varied as a function of severity of past depressive symptoms. Adolescents with more severe symptoms of past depression reported lower self-esteem than those with less severe past episodes of depressive symptomatology. Importantly, this finding was significant even after statistically controlling for current PA, NA, and gender. These results suggest that depression-prone adolescents are characterized by relatively low self-esteem even outside of depressive episodes and dysphoric

⁵ Additional regression analyses were conducted in the manner described in footnote 4. With dysfunctional attitudes statistically controlled, the NA \times Past Depression interaction was not a significant predictor of self-esteem ($p = 0.19$), and with self-esteem controlled this interaction was not a significant predictor of dysfunction attitudes ($p = 0.23$). These results suggest that our marginally significant effects with categorical past depression were related to shared variance between these two outcome variables.

emotional states. According to cognitive theories, these negative attitudes about the self likely played a role in the development of these previous episodes of depressive symptomatology, and furthermore would contribute to vulnerability to future episodes. It is also possible that these bouts of depressive symptoms themselves led to a deterioration of self-esteem (Rohde, Lewinsohn & Seeley, 1994). However, the results of this study were only significant when past depression was treated as a dimensional variable (based on severity of worst lifetime depressive symptoms), and were not significant when past depression was treated as a categorical variable (based on DSM-IV criteria). In part, this study's categorical variable might have fared less well because of the small number of previously depressed adolescents ($n = 11$). Although not significant, categorical results were in the same direction as those based on dimensional ratings, suggesting that a larger sample size with greater statistical power would have likely led to greater concordance between these two approaches. In addition to past depression, both current NA and PA contributed to self-esteem. Adolescents with higher levels of NA and lower levels of PA reported lower self-esteem. Consistent with the results of a recent meta-analysis (Kling, Hyde, Showers & Buswell, 1999), females reported lower self-esteem than males.

On the other hand, past episodes of depressive symptomatology did not significantly predict dysfunctional attitudes when depression was treated either dimensionally or categorically. Instead, dysfunctional attitudes only varied as a function of current PA. Adolescents with lower levels of PA reported greater dysfunctional attitudes. These latter findings stand in contrast to the idea that dysfunctional attitudes are a trait marker of vulnerability to depression among adolescents, though they are consistent with the results of a number of past studies that have been unable to detect cognitive differences between previously depressed and never-depressed adolescents and children (e.g., Asarnow & Bates, 1988; Gotlib, Lewinsohn, Seeley, Rohde & Redner, 1993; McCauley, Mitchell, Burke & Moss, 1988). Although acute episodes of depression during adolescence clearly involve negative patterns of thinking (e.g., Garber, Weiss & Shanley, 1993; Kaslow, Rehm & Siegel, 1984), dysfunctional attitudes do not appear to persist beyond these acute episodes.

The mood-state hypothesis suggests that cognitive vulnerabilities to depression are latent and only become manifest under negative emotional states (Persons & Miranda, 1992; Segal & Ingram, 1994). During more euthymic emotional states these negative cognitions would be inactive, relatively inaccessible, and quite difficult to measure. Instead of being chronically accessible among depression-prone persons, dysfunctional cognitions are thought to be especially sensitive to fluctuations in emotional state. They would rise and fall with changes in mood among previously depressed persons, but would only do so to a much lesser extent (or not at all) among non-vulnerable individuals. Consequently, among previously depressed individuals, self-esteem and dysfunctional attitudes should covary strongly with current mood-state, whereas the association between mood and cognition should be weaker or even absent among never-depressed persons. In other words, previously depressed persons would be expected to demonstrate stronger mood-congruency effects than persons without a history of serious depression.

In contrast to the mood-state hypothesis, adolescents with more severe past episodes of depressive symptomatology demonstrated weaker (rather than stronger) congruence between NA and both self-esteem and dysfunctional attitudes than those with milder past episodes. Participants with more severe past depressive symptomatology failed to show mood-congruent effects, and in fact showed mood-*incongruent* effects for dysfunctional attitudes (particularly when past

depression was examined as a categorical variable based on DSM-IV criteria). Among these depression-prone adolescents, NA was negatively associated with dysfunctional attitudes — previously depressed adolescents with greater NA tended to report *fewer* dysfunctional attitudes than those with lower levels of NA. On the other hand, among adolescents with less severe past depressive symptomatology, higher levels of NA were associated with lower self-esteem and greater dysfunctional attitudes. These presumably less vulnerable participants demonstrated small to moderate sized mood-congruence effects. Although PA was a significant predictor of both self-esteem and dysfunctional attitudes, adolescents with and without past depression did not vary in the strength of these associations. Likewise the interactive effects of NA and PA did not vary across adolescents with and without past depression. In other words, the combination of low PA, high NA, and more severe past depression was not uniquely predictive of either self-esteem or dysfunctional attitudes (see Roberts & Kassel, 1996 for similar results with young adults). Importantly, these effects were consistent across both dimensional and categorical approaches to classifying past depression, although categorical approaches resulted in marginal levels of statistical significance.

The results of this study suggest that these depression-prone adolescents were less sensitive to the effects of negative mood states than their less vulnerable counterparts. It is possible that these adolescents tightly regulated the impact that negative moods were having on their self-representations and attitudes, and actually compensated for dysphoric moods with more positive cognitions. Such findings challenge and stand in opposition to recent models that predict that depression-prone persons' cognitive styles are highly reactive to dysphoric moods (e.g., Segal & Ingram, 1994; Roberts & Monroe, 1999). If these findings with adolescents were replicated, they would suggest that the mood-state model needs to incorporate a developmental perspective, particularly given that the two other failures to replicate involved younger samples of college students (Brosse et al., 1999; Dykman, 1997). Along such lines, Teasdale's (1988) idea that mental networks linking negative mood states and negative cognitions are built through repeated experiences with depression suggests that mood-activated dysfunctional cognitions play an increasingly important role with each subsequent recurrence. Mood-activated negative cognitions might play less of a role in initial episodes of depression that occur early in life, whereas older individuals with recurrent episodes of depression might have provided a much better opportunity for finding support for the mood-state hypothesis.

Importantly, the authors' failure to find support for the mood-state hypothesis seems to be not simply the consequence of difficulties in finding mood-congruency effects among the previously depressed (as suggested above), but that we also found mood-congruency effects among those without a past history of depression. In this regard, significant associations between NA and our cognitive measures among adolescents without a history of significant depression were generally obtained. Likewise two other recent studies (Brosse et al., 1999; Dykman, 1997) failed to replicate the mood-state hypothesis — not because of difficulty finding mood congruence among previously depressed participants, but because mood congruence effects were equally strong among never-depressed participants; both previously depressed *and* never-depressed individuals showed strong associations between mood and dysfunctional attitudes. It is possible that given our relatively young sample, a number of individuals reporting relatively low levels of past depression were in fact depression-prone; they simply had not yet experienced their first serious episode. Such 'misclassification' would have the effect of increasing the level of dysfunctional cognition

displayed by the never-depressed adolescents, and thereby, making it more difficult to demonstrate differences between these participants and previously depressed participants. However, the fact that individuals with brief past episodes of depression (less than two weeks) were not included in the never-depressed group reduces the likelihood of this possibility. As noted in the methods section, these individuals had been excluded from the study because previous research has found that they tend to fall midway between previously depressed and never-depressed individuals on various vulnerability characteristics.

In contrast to the cognitive models explored in the present study, it could be argued that an overarching dimension of personality, such as neuroticism, was responsible for individual differences in our measures of past depression, NA, and negative cognitive style (see Roberts & Gotlib, 1997b; Watson & Clark, 1984). In other words, despite these measures having different labels, scores on each of these instruments simply might reflect a single personality dimension involving moodiness, distress, somatic symptoms, and gloomy negativistic thoughts and attitudes. In contrast, the cognitive model assumes that affect, cognition, and past depressive episodes are conceptually and empirically separate constructs that are causally associated with each other. In fact, the mood-state hypothesis posits that the association between NA and negative cognitive style varies across individuals as a function of their risk for depressive episodes. The present data were consistent with the view that these are related, but separate constructs. The correlations between our measures of self-esteem, past depression, and NA ranged between $|0.09$ and 0.33], whereas the correlations between our measures of dysfunctional attitudes, past depression, and NA ranged from $|0.07$ to 0.26]. However, given that this study was based on cross-sectional data with self-report instruments, we need to remain cautious about such possibilities. As discussed below, stronger tests of the mood-state hypothesis would come from studies that experimentally manipulate NA and test whether cognitive reactivity prospectively predicts relapse of depressive episodes.

One limitation of this study was its somewhat small sample size ($n = 110$). As noted earlier, the sample size of our previously depressed group (defined through DSM-IV criteria) was particularly small ($n = 11$), and may in part explain why dimensional ratings of past depression showed stronger associations with self-esteem and dysfunctional attitudes than categorical ratings did. We hope that the present study inspires future research based on larger samples with greater statistical power. Given the limitations of self-report measures of depression (Coyne, 1994), it also would be important for future studies to use structured diagnostic interviews in classifying participants' depression histories. Such work could explore the degree to which repeated episodes of depression, and time since the most recent episode, affect relations between mood state and cognition. It also would be useful for future studies to experimentally manipulate mood-state in adolescents with and without a history of depression. Such studies would be able to assess actual *shifts* in adolescents' self-esteem and dysfunctional attitudes in response to mood changes (e.g., Miranda et al., 1998; Segal et al., 1999). Time-series analysis of repeated daily assessments of mood and cognition could also be used in investigating these types of affective and cognitive fluctuations. The mood-state hypothesis would predict that depression-prone individuals would show stronger day-by-day associations between mood and cognition than those who were depression-resistant. Longitudinal work also could test whether or not individuals whose cognitions are more reactive to mood-state are more likely to develop future episodes of depression (see Segal et al., 1999 for a recent example).

Acknowledgement

Preparation of this article was supported in part by a National Institute of Mental Health Grant RO3MH60325-01 and a National Alliance for Research in Schizophrenia and Depression Young Investigator Award to the first author.

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