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Self-Focused Cognitive Styles and Bipolar Spectrum Disorders: Concurrent and Prospective Associations

Lauren B. Alloy
Temple University

Lyn Y. Abramson
University of Wisconsin–Madison

Megan Flynn, Richard T. Liu, David A. Grant, Shari Jager-Hyman, and Wayne G. Whitehouse
Temple University

We examined concurrent and prospective associations of self-focused cognitive styles with bipolar spectrum disorders. Controlling for depressive and hypomanic/manic symptoms, 125 individuals with bipolar spectrum disorders scored higher than 149 demographically similar normal controls on the rumination scale of the Response Styles Questionnaire (RSQ) and the private self-consciousness subscale of the Self-Consciousness Scale (SCS). The two groups did not differ on the distraction scale of the RSQ or the public self-consciousness and social anxiety subscales of the SCS. In addition, among the bipolar individuals, controlling for initial depressive and hypomanic/manic symptoms, rumination predicted the number but not the likelihood of onset of depressive episodes, whereas private self-consciousness predicted the likelihood of onset but not the number of hypomanic/manic episodes over a 3.5-year follow-up.

Bipolar disorders appear to form a spectrum of severity from the subsyndromal cyclothymia, to bipolar II disorder, to full-blown bipolar I disorder (e.g., Akiskal, Djenderedjian, Rosenthal, & Khani, 1977; Akiskal, Khani, & Scott-Strauss, 1979; Cassano et al., 1999; Depue et al., 1981; Goodwin & Jamison, 2007). Moreover, milder forms of bipolar disorder often progress to the more severe forms (e.g., Akiskal et al., 1977, 1979; Shen, Alloy, Abramson, & Sylvia, 2008), providing support for the spectrum

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Address correspondence to Lauren B. Alloy, Department of Psychology, Temple University, 1701 N. 13th Street, Philadelphia, PA 19122. Email: lalloy@temple.edu

concept. Despite their public health significance, high prevalence (4.4% of a nationally representative U.S. sample; Merikangas et al., 2007), and associated impairment such as lower academic achievement, erratic work history, divorce, suicide, and substance abuse (e.g., Angst, Stassen, Clayton, & Angst, 2002; Alloy et al., 2009a; Conway, Compton, Stinson, & Grant, 2006; Goodwin & Jamison, 2007; Grant et al., 2004; Nusslock, Alloy, Abramson, Harmon-Jones, & Hogan, 2008; Quackenbush, Kutcher, Robertson, Boulos, & Chaban, 1996; Strakowski, DelBello, Fleck, & Arndt, 2000), bipolar disorders are understudied compared to other mental health disorders (Hyman, 2000). Even fewer studies have focused on the "soft" bipolar conditions (i.e., cyclothymia, bipolar II) than on bipolar I disorder.

Over the past two decades, bipolar disorder investigators have shown increasing interest in psychosocial processes involved in the onset, course, and treatment of bipolar spectrum disorders (see Alloy et al., 2005; 2006a,c,d; 2009b for reviews). One approach these researchers have taken is to examine whether psychological processes shown to be important in unipolar depression extend specifically to bipolar depression and to bipolar spectrum disorders in general (see Alloy et al., 2005; 2006a,c,d; Cuellar, Johnson, & Winters, 2005; Johnson & Kizer, 2002, for reviews). In particular, researchers have applied cognitive theories of unipolar depression (e.g., Abramson, Metalsky, & Alloy, 1989; Beck, 1967, 1987; Nolen-Hoeksema, 1991) to bipolar disorder to address whether maladaptive cognitive styles similar to those seen among unipolar depressed individuals are also observed among bipolar individuals and predict the expression or course of bipolar disorder. In recent reviews of research on cognition in bipolar disorder, Alloy and colleagues (2005; 2006a,c,d; 2009b) concluded that individuals with bipolar spectrum disorders exhibit underlying cognitive patterns as negative as those of unipolar depressed persons overall, but with certain unique goal-striving, perfectionistic, autonomous, and self-critical characteristics (i.e., characteristics associated with high Behavioral Approach System sensitivity – see Alloy et al., 2009c). In addition, there is also some evidence that cognitive styles can predict the course of bipolar disorder, alone or in combination with relevant life events (see Alloy et al., 2005; 2006a,c,d; 2009b,c for reviews).

RESPONSE STYLES THEORY AND BIPOLAR SPECTRUM DISORDERS

Of particular relevance to the present investigation are theory and research regarding the role of cognitive styles involving self-focus or attention turned inward as opposed to outward in bipolar spectrum disorders. This line of research also has been characterized by an extension of work on unipolar depression to bipolar disorders. For instance, according to Nolen-Hoeksema's (1991, 1998) Response Styles Theory (RST) of unipolar depression, rumination is a stable, emotion-focused cognitive style involving the repetitive tendency to focus one's attention on depressive symptoms, as well as the causes and consequences of these symptoms. In contrast, distraction refers to a generalized tendency to divert attention away from depressed mood and to focus instead on neutral or pleasant activities. According to RST, the tendency to ruminate in response to depressed mood intensifies and prolongs depressive symptoms, ultimately increasing risk for full-blown depressive episodes, whereas the tendency to distract oneself from depressed mood leads to less intense and acute symptoms, and therefore, a lower likelihood of full-blown depression (Nolen-Hoeksema, 1991).

Consistent with RST, evidence shows that a ruminative response style is concurrently related to higher levels of depressive symptoms in adults, adolescents, and children (e.g., Abela, Brozina, & Haigh, 2002; Abela, Vanderbilt, & Rochon, 2004; Ciesla & Roberts, 2002; Kuehner & Weber, 1999; Muris, Roelofs, Meesters, & Boomsma, 2004; Nolen-Hoeksema, 1991, 1998; Schwartz & Koenig, 1996). In addition, rumination prospectively predicts increases in depressive symptoms and the onset of depressive episodes (including major depressive episodes) in adolescents and adults (e.g., Abela, Aydin, & Auerbach, 2007; Abela et al., 2002; Burwell & Shirk, 2007; Hankin, 2008; Just & Alloy, 1997; Lara, Klein, & Kasch, 2000; Nolen-Hoeksema, 2000; Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Parker, & Larson, 1994; Nolen-Hoeksema, Stice, Wade, & Bohon, 2007; Roelofs et al., in press; Schwartz & Koenig, 1996; Spasojevic & Alloy, 2001).

In contrast, the findings with respect to the theoretically adaptive correlates and consequences of distraction are less clear. Some studies in adults and youth find that distraction is concurrently associated with lower levels of negative affect or depressive symptoms (e.g., Chang, 2004; Lam, Smith, Checkley, Rijsdijk, & Sham, 2003; Lyubomirsky & Nolen-Hoeksema, 1993; Lyubomirsky, Tucker, Caldwell, & Berg, 1999; Morrow & Nolen-Hoeksema, 1990; Muris et al., 2004; Schwartz & Koenig, 1996; Ziegert & Kistner, 2002), whereas others do not (e.g., Abela et al., 2002; 2004; Just & Alloy, 1997; Kuehner & Weber, 1999; Nolen-Hoeksema & Morrow, 1993). Further, Abela et al. (2007) found that distraction predicted decreases in depressive symptoms over time in children, but several other studies did not find a prospective association between distraction and subsequent depressive symptoms (e.g., Abela et al., 2002; Just & Alloy, 1997; Schwartz & Koenig, 1996).

To date, only a few cross-sectional studies have examined the association between depressive rumination and bipolar spectrum disorders. Thomas and Bentall (2002) and Knowles, Tai, Christensen, and Bentall (2005) found a positive association between rumination and scores on the Hypomanic Personality Scale (Eckblad & Chapman, 1986), a measure of risk for bipolar disorder, and these associations were maintained after controlling for depressive symptoms. Thomas, Knowles, Tai, and Bentall (2007) and Van der Gucht, Morriss, Lancaster, Kinderman, and Bentall (2009) compared manic patients, depressed bipolar patients, remitted/euthymic bipolar patients, and healthy controls on the Response Styles Questionnaire (RSQ). Thomas et al. (2007) found that only the remitted bipolar patients reported greater rumination than the controls, whereas Van der Gucht et al. (2009) reported that bipolar patients in all episodes exhibited higher rumination than controls. Gruber, Eidelman, and Harvey (2008) reported higher levels of rumination in individuals with bipolar I disorder in a euthymic state than in healthy controls, but this group difference was no longer significant when current depressive and anxiety symptoms were statistically controlled. Similarly, Johnson, McKenzie, and McMurrich (2008) found that individuals with bipolar disorder and those with major depression both endorsed more rumination in response to negative affect on the RSQ than did individuals without mood disorders; however, these group differences were accounted for by levels of current depressive symptoms. Thus, the studies to date have consistently obtained evidence of greater concurrent depressive rumination in individuals with bipolar spectrum disorders; however, it is not yet clear whether this association is largely attributable to higher levels of depressive symptoms among the bipolar individuals. Moreover, no study to date has examined the longitudinal association between depressive rumination and prospective onsets of mood episodes in individuals with bipolar spectrum disorders. Thus, in the pres-

ent study, we examined the concurrent association between rumination and bipolar spectrum diagnoses controlling for current symptomatology, as well as whether rumination prospectively predicted the onset of depressive or hypomanic/manic episodes among bipolar spectrum individuals over and above initial symptoms.

To our knowledge, only two studies have examined the association between a distractive response style and bipolar disorder. The first of these studies (Thomas & Bentall, 2002) was guided by a long-standing theory proposing that manic states represent defense mechanisms (Abraham, 1911/1927; Dooley, 1921; Neale, 1988) against the experience of depressive symptoms. Consistent with the conceptualization set forth by Nolen-Hoeksema (1991), distraction might serve as one manifestation of such a defense mechanism in that it is characterized by ignoring sad affect and actively engaging in positive activities and stimuli. Accordingly, this response style might set individuals on a trajectory toward the experience of hypomanic or manic symptoms. Indeed, Thomas and Bentall (2002) found a significant positive association between distraction and hypomanic personality in a sample of undergraduate students. Following the same guiding logic, a second study also examined the association between distraction and hypomanic personality in a larger study of undergraduate students (Knowles et al., 2005). This study also revealed a small but significant positive association between distraction and hypomanic traits, thereby providing further impetus to examine this association concurrently and prospectively in the current study.

SELF-CONSCIOUSNESS THEORY AND BIPOLAR SPECTRUM DISORDERS

Whereas depressive rumination and distraction involve the tendency to focus attention specifically in response to one's negative affect, a more general tendency to focus attention inwardly, specifically a self-focused style, has also been associated with unipolar depression (e.g., Ingram, 1990; Smith & Alloy, 2009). That is, a self-focused style is mood state independent, whereas rumination and distraction as described in Nolen-Hoeksema's RST occur in response to negative mood (Smith & Alloy, 2009). Several theories of unipolar depression (e.g., Ingram, 1990; Lewinsohn, Hoberman, Teri, & Hautzinger, 1985; Pyszczynski & Greenberg, 1987) have suggested that a self-focused style contributes to the onset and maintenance of depression. Consistent with these theories, Musson and Alloy (1988) reviewed evidence indicating that an increase in self-focused attention mimics features observed in naturally occurring depression, such as increased preoccupation with the self, intensified negative affect, lowered self-esteem, perfectionistic self-standards, increased internal attributions for events, and increased accuracy of self-reports. Fenigstein, Scheier, and Buss (1975) developed a measure of individual differences in the disposition to be self-focused, that is, "self-consciousness"—the Self-Consciousness Scale (SCS), containing three subscales. First, private self-consciousness refers to the tendency to attend to covert aspects of oneself, such as one's thoughts, moods, and motives. Second, public self-consciousness is the tendency to focus on aspects of the self that are observable by others, such as one's grooming or behavior. The third subscale, social anxiety, involves the tendency to become uneasy or nervous when observed by others. In general, research indicates that it is private self-consciousness that is significantly positively associated with depression (Reeves, Watson, Ramsey, & Morris, 1995; Ruiperez & Belloch, 2003), even control-

ling for public self-consciousness and social anxiety (see Ingram, 1990, and Musson & Alloy, 1988, for reviews).

To date, no studies have examined the relationship between the subscales of the SCS and bipolar disorder. Consequently, the present study was also the first to examine the concurrent associations between the dimensions of self-consciousness and bipolar spectrum disorders controlling for concurrent symptoms, as well as whether the dimensions of self-consciousness predict onsets of depressive or hypomanic/manic episodes among bipolar spectrum individuals prospectively over and above initial symptoms.

THE PRESENT INVESTIGATION

This study examined the cross-sectional and prospective associations of self-focused cognitive styles with bipolar spectrum disorders among participants in the Longitudinal Investigation of Bipolar Spectrum (LIBS) Disorders Project (Alloy et al., 2008, 2009c; Nusslock et al., 2007; Shen et al., 2008). We first compared a large sample of individuals with bipolar spectrum disorders to demographically similar normal controls at baseline on self-report measures of cognitive styles commonly used to assess self-focused tendencies in the unipolar depression literature, namely, the Response Styles Questionnaire (RSQ; Nolen-Hoeksema & Morrow, 1991) and the Self-Consciousness Scale (SCS; Fenigstein et al., 1975). We hypothesized that controlling for current depressive and hypomanic/manic symptoms, bipolar spectrum individuals would score higher than controls on the cognitive style dimensions of rumination, distraction, and private self-consciousness, but not on the dimensions of public self-consciousness or social anxiety.

Our second goal was to examine whether the self-focused cognitive styles assessed at Time 1 predicted the likelihood of onset and/or number of prospective hypomanic/manic and depressive episodes over follow-up among bipolar spectrum participants. Consistent with prior findings on depressive rumination as a predictor of unipolar depressive episodes, and previous findings that individuals with bipolar spectrum disorders exhibit a tendency to ruminate on both positive affect and depressive affect (Feldman, Joorman, & Johnson, 2008; Johnson et al., 2008), we hypothesized that, controlling for baseline symptoms, depressive rumination would predict the likelihood of onset and the number of episodes of major depressive and hypomanic/manic episodes prospectively among bipolar participants. Additionally, given the fact that the private self-consciousness subscale of the SCS assesses the tendency to focus on one's inner moods, thoughts, and motives in general (not just on depressive affect), we hypothesized that private self-consciousness would predict the likelihood of onset and the number of episodes of both major depressive and hypomanic/manic episodes among bipolar participants prospectively, controlling for baseline symptoms. Finally, we expected that the non-self-focused cognitive styles (RSQ distraction and SCS public self-consciousness and social anxiety) would not prospectively predict onset or number of episodes of depressive or hypomanic/manic episodes among bipolar participants.

Methods

Participants and Procedure

Participants in the present study were a subsample of participants in the larger Longitudinal Investigation of Bipolar Spectrum (LIBS) Disorders Project and were selected based on a two-phase screening procedure. In Phase I, approximately 20,500 18- to 24-year-old students at Temple University and the University of Wisconsin, were given the revised General Behavior Inventory (GBI; Depue, Krauss, Spoont, & Arbisi, 1989) to identify potential bipolar spectrum and control participants. Students who met the initial GBI criteria for either the bipolar spectrum or control groups (these criteria are explained below) were eligible for Phase II. In Phase II, 1,730 participants were given a semi-structured diagnostic interview: an expanded Schedule for Affective Disorders and Schizophrenia-Lifetime Version (exp-SADS-L; Endicott & Spitzer, 1978). Students who met the criteria of the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV; American Psychiatric Association, 1994) and/or Research Diagnostic Criteria (RDC; Spitzer, Endicott, & Robins, 1978) for bipolar II or cyclothymia were eligible for the longitudinal LIBS Project.[1] Based on the exp-SADS-L interview, control participants had no lifetime history of any Axis I psychopathology, with the exception that they could meet criteria for specific phobia. In further study recruitment, steps were taken to match the bipolar and control groups on age, gender, and ethnicity.

Of the 285 eligible bipolar and 308 eligible control participants following Phase II, 227 (79.6%) bipolar spectrum (164 bipolar II; 63 cyclothymic) and 227 (73.7%) control participants completed the Time 1 assessment of the longitudinal study. Of these individuals, 125 bipolar spectrum (98 bipolar II, 27 cyclothymic) and 149 control participants had complete data on the self-focused cognitive style measures and on the initial symptom assessment, and thus comprised the current study sample (see Table 1 for demographic characteristics). Based on statistical analysis of demographic variables, the bipolar and control groups did not differ on age, gender, or ethnicity. The current sample was representative of the Phase I screening sample on demographics and did not differ from either Phase II eligible individuals who did not participate or Time 1 participants with missing data for the present analyses on demographics, diagnosis, treatment history, or GBI scores. Further information regarding the sample may be found in Alloy et al. (2008; 2009c). Participants completed two measures of self-focused cognitive styles at Time 1, and also completed self-report measures of depressive and hypomanic/manic symptoms at an initial symptom assessment (these measures are discussed in more detail below). Bipolar spectrum individuals who completed Time 1 and the initial symptom assessment, who entered the prospective phase of the LIBS Project and who did not meet diagnostic criteria for any mood episode at Time 1 (n = 125) were included in the longitudinal analyses. During the prospective follow-up phase of the study, participants were given an expanded SADS-Change Version diagnostic interview (exp-SADS-C; Spitzer & Endicott, 1978) approximately every 4 months to assess the occurrence of mood episodes. The prospective analyses in this study were based on an average of 38.1 + 19.1 (range = 73) months of follow-up.

1. Participants who met criteria for bipolar I disorder were excluded because an aim of the LIBS Project was to examine the understudied "softer" bipolar conditions and to identify risk factors that predicted progression to bipolar I status over time.

TABLE 1. Demographic Characteristics of the Study Sample

	Bipolar Spectrum (*n* = 125)	Normal Control (*n* = 149)
Age: *M* (*SD*)	19.84 (1.64)	19.70 (1.68)
Sex (%)	62.8 Female	58.4 Female
Ethnicity (%)	61.8 Caucasian	59.1 Caucasian
	9.1 African American	7.4 African American
	3.3 Hispanic	2.7 Hispanic
	1.8 Asian	2.7 Asian
	0.8 Native American	0.0 Native American
	23.1 Other/Missing	28.2 Other/Missing

Measures

Revised General Behavior Inventory (GBI). The revised GBI (Depue et al., 1981, 1989) is a self-report screening measure used to assess chronic affective disorders in the general population. It contains 73 items that assess the frequency, intensity, and duration of core bipolar experiences as measured by two subscales: Depression (D) and Hypomania and Biphasic (HB) items combined. We used the case scoring method recommended by Depue et al. (1981, 1989) to identify potential bipolar spectrum and control participants at Phase I screening. Items on the GBI are rated on a 4-point frequency scale. Only items rated as a "3" ("often") or "4" ("very often or almost constantly") were included in the tally of the total scores on each subscale. Based on cutoffs recommended by Depue et al. (1989), participants who scored ≥ 11 on the D scale and ≥ 13 on the HB scale were identified as potential bipolar participants, whereas those who scored below these cut-offs were identified as potential normal controls. These criteria were based on the findings of Depue et al. (1989) in addition to a pilot study for the LIBS project in which these cut-offs were validated against diagnoses derived from exp-SADS-L interviews. The GBI has good internal consistency (αs = .90-.96), test-retest reliability (*r*s = .71-.74), high specificity (.99), and adequate sensitivity (.78) for bipolar spectrum conditions (Depue et al., 1981, 1989). In addition, the GBI has been validated extensively in college, psychiatric, outpatient, and offspring of bipolar I patient samples (Depue et al., 1981, 1989).

Expanded SADS-L Diagnostic Interview. The exp-SADS-L (Endicott & Spitzer, 1978) is a semi-structured diagnostic interview that assesses current and lifetime history of Axis I disorders. We expanded the original SADS-L for the LIBS Project to allow for greater accuracy and reliability in the diagnosis of bipolar spectrum disorders: (1) additional probes were included to allow for both DSM-IV and RDC diagnoses; (2) questions were added to allow for a better understanding of the nuances of episodes as well as the frequency and duration of symptoms for depression, hypomania, mania, and cyclothymia; (3) the order of the questions was altered to maximize the interview's efficiency and comprehension; and (4) sections were appended to assess eating disorders, ADHD, and acute stress disorder, additional probes were added to the anxiety disorder section, and organic rule-out and medical history sections were included. An inter-rater reliability study based on 105 jointly rated exp-SADS-L interviews yielded κs > .96 for bipolar spectrum diagnoses. Interviews were conducted by extensively trained research assistants who were blind to Phase I GBI status. Training consisted of

approximately 200 hours of reading and didactic instruction, watching videotaped interviews, role playing, discussing case vignettes, and extensive practice conducting live interviews with supervision and feedback. Consensus DSM-IV and RDC diagnoses were determined by a three-tiered standardized diagnostic review procedure involving senior diagnosticians and an expert psychiatric diagnostic consultant.

Expanded SADS-C Diagnostic Interview. The expanded SADS-C diagnostic interview was administered approximately every 4 months during the prospective follow-up. The exp-SADS-C was used to assess onsets, remissions, relapses, and recurrences of diagnosable episodes of Axis I disorders, including DSM-IV and RDC major depression (MD) and hypomanic and manic (HYP/MA) episodes, during each prospective interval. Trained interviewers were blind to participants' Phase I GBI scores and Phase II diagnostic status. The SADS-C was expanded in the same way as the SADS-L. Features of the Longitudinal Interval Follow-up Evaluation (LIFE II; Shapiro & Keller, 1979) were also incorporated into the exp-SADS-C in order to allow for systematic tracking of the course of symptoms and episodes during the follow-up period. In contrast to the LIFE II, which tracks symptoms on a weekly basis, the exp-SADS-C inquired about the presence of each symptom on a daily basis during the prospective interval. Inter-rater reliability for the exp-SADS-C in joint ratings of 60 interviews for the LIBS Project was good ($\kappa > 0.80$; Alloy et al., 2008). A validation study found that participants dated their symptoms on the exp-SADS-C with at least 70% accuracy compared to daily symptom ratings made over a 4-month interval (Alloy et al., 2008). Nusslock et al. (2007) provide further details about exp-SADS-L and SADS-C mood episode diagnoses.

Self-Report Symptom Measures. Initial levels of depressive symptoms at Time 1 were measured with the Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979) The BDI is a 21-item self-report questionnaire that assesses the severity of affective, motivational, cognitive, and somatic symptoms of depression. The BDI has been validated in student samples, and has been found to have good internal and test–retest reliabilities in both clinical and nonclinical samples (Beck, Steer, & Garbin, 1988).

Initial levels of hypomanic/manic symptoms were assessed with the Halberstadt Mania Inventory (HMI; Alloy et al., 1999). The HMI is a 28-item self-report measure modelled after the BDI. Similar to the BDI, the HMI assesses the affective, motivational, cognitive, and somatic symptoms of (hypo)mania. The HMI asks participants to choose one of four statements graded in severity that best describes their experience: for example, "I do not feel particularly happy," "I feel happy, " "I feel so happy and cheerful it's like a high," or "I am bursting with happiness and I'm on top of the world." The HMI has good internal consistency ($\alpha = .82$), and has demonstrated convergent validity with the MMPI-Mania scale ($r = .32, p < .001$), as well as discriminant validity with the MMPI-Depression scale ($r = -.26, p < .001$) and the BDI ($r = -.12, p < .001$; Alloy et al., 1999). In addition, the HMI correlated ($r = .46$) with hypomanic symptoms rated from the exp-SADS-C interview in the LIBS Project (Alloy et al., 2008) and had an internal consistency of $\alpha = .78$. The HMI also shows expected changes as cyclothymic individuals cycle through hypomanic, euthymic, and depressed mood states (Alloy et al., 1999).

Self- and Other-Focused Cognitive Style Measures. The Response Styles Questionnaire (RSQ; Nolen-Hoeksema, & Morrow, 1991) is a 71-item self-report inventory designed to measure dispositional responses to depressed mood. Items are rated on a

4-point Likert scale ranging from 1 ("almost never") to 4 ("almost always"). It was administered at Time 1 of the LIBS Project. The RSQ includes two main subscales: the 21-item Rumination Response Scale (RRS), and the 11-item Distraction Response Scale (DRS). The RRS assessed responses to depressed mood that focused on the self (e.g., "Think about all your shortcomings, failings, faults, mistakes"), symptoms (e.g., "Think about your feelings of fatigue and achiness"), and possible causes or consequences of the depressed mood (e.g., "Analyze recent events to try to understand why you are depressed"). The RRS has been found to exhibit good test-retest reliability (Nolen-Hoeksema et al., 1994), internal consistency (Just & Alloy, 1997; Nolen-Hoeksema & Morrow, 1991) and acceptable convergent and predictive validity for depression (Nolen-Hoeksema & Morrow, 1991; Treynor, Gonzalez, & Nolen-Hoeksema, 2003).[2] The DRS assessed participants' tendencies to engage in pleasant and non-dangerous activities in response to depressed mood (e.g., "I go to a favorite place to get my mind off my feelings"). The DRS also has good internal reliability (Just & Alloy, 1997; Nolen-Hoeksema & Morrow, 1991) and acceptable convergent validity (Nolen-Hoeksema & Morrow, 1991).

The Self-Consciousness Scale (SCS; Fenigstein et al., 1975) is a 23-item self-report measure designed to assess an individual's tendency to engage in self-focused attention. It was given to participants at the Time 1 assessment of the LIBS Project. The SCS is composed of three subscales: Private Self-consciousness (10 items; concerned with attending to one's inner thoughts and feelings, such as "I reflect about myself a lot" and "I'm generally attentive to my inner feelings"), Public Self-consciousness (7 items; concerned with awareness of the self as a social object and as having an effect on others, such as "I usually worry about making a good impression" and "I'm concerned about the way I present myself"), and Social Anxiety (6 items; concerned with discomfort in the presence of others, such as "I get embarrassed very easily" and "Large groups make me nervous"). Each item on the scale is rated from "0" (extremely uncharacteristic of the participant) to "4" (extremely characteristic of the participant). Previous research has demonstrated that the SCS has adequate psychometric properties, including test-retest reliability (Carver & Glass, 1976; Fenigstein et al., 1975), and validity in a number of contexts (e.g., criterion, construct, convergent, and discriminant validity; Carver & Glass, 1976).

RESULTS

Table 2 displays the bivariate correlation matrix for all variables at Time 1. The correlations involving diagnostic group are directly relevant to the study hypotheses and are discussed below. However, several other patterns of correlations are worth noting. Higher depressive symptoms (BDI scores) at Time 1 were significantly and positively correlated with rumination, private and public self-consciousness, and social anxiety,

2. Based on a recent factor analysis of the RSQ, Treynor et al. (2003) proposed a further separation of the RRS into brooding and reflective pondering subscales, each consisting of five items. Both of these subscales have been found to demonstrate acceptable internal and test-retest reliabilities (Treynor et al., 2003). We examined brooding and reflection in our analyses and found that they did not add additional information beyond our findings for rumination as a whole. Bipolar spectrum participants scored significantly higher on both brooding and reflection than normal controls, controlling for depressive and hypomanic/manic symptoms, just as they did for rumination. However, neither brooding nor reflection predicted prospective likelihood of onset or number of episodes of major depression or hypomanic/manic episodes.

TABLE 2. Correlations Among Study Variables

	DIAG	BDI	HMI	RUM	DIST	PRI	PUB	SA
DIAG	—	.58**	.09	.64**	-.08	.40**	.24**	.20**
BDI		—	-.06	.62**	-.30**	.35**	.31**	.21**
HMI			—	-.11	.24**	-.04	-.09	-.14*
RUM				—	-.10	.45**	.33**	.29**
DIST					—	.06	-.06	.36**
PRI						—	.36**	.07
PUB							—	.28**
SA								—

Note. Correlations were rounded to the second decimal place. DIAG = Normal (0), or Bipolar spectrum (1) status; BDI = Beck Depression Inventory; HMI = Halberstadt Mania Inventory; RUM and DIST = Rumination and Distraction subscales from the Response Styles Questionnaire; PRI, PUB, and SA = Private self-consciousness, Public self-consciousness, and Social Anxiety subscales from the Self-Consciousness Scale. *$p < .05$. **$p < .01$.

and negatively correlated with distraction. Higher hypomanic/manic symptoms (HMI scores) were significantly and positively correlated with distraction and negatively correlated with social anxiety. Rumination and distraction were uncorrelated with each other, but rumination did correlate positively with private and public self-consciousness and social anxiety. Distraction correlated positively with social anxiety. Private self-consciousness was associated positively with public self-consciousness, but not with social anxiety. Public self-consciousness and social anxiety were also associated positively with each other.

Diagnostic Group Differences on Self-Focused Cognitive Style Dimensions

Next, we proceeded to test the first hypothesis. Diagnostic group was positively and highly correlated with RSQ rumination, but not with RSQ distraction (see Table 2 for correlations). Diagnostic group was also positively correlated with the private and public self-consciousness scales and social anxiety scale from the SCS (see Table 2). However, these correlations do not control for current symptom levels. To examine diagnostic group differences in self-focused cognitive styles not attributable to associations between current levels of depressive and hypomanic/manic symptoms and self-focused cognitive styles, we conducted hierarchical regression analyses in which the various self-focused cognitive style scores were regressed onto BDI and HMI scores in Step 1 and Diagnostic Group in Step 2. Table 3 presents the results of these analyses, as well as the means and standard deviations of the self-focused cognitive style scores for each group. As hypothesized, controlling for depressive and hypomanic/manic symptoms, the bipolar spectrum group scored significantly higher than the control group on RSQ rumination and on SCS private self-consciousness. The groups marginally differed on SCS public self-consciousness, and did not differ significantly on RSQ distraction or SCS social anxiety.

TABLE 3. Diagnostic Group Differences in Self-focused Cognitive Style Dimensions Controlling for Depressive (BDI) and Hypomanic/Manic (HMI) Symptoms

	Bipolar	Normal	Group Differences		
	M (SD)	*M (SD)*	β	*t*	*p*
RSQ Rum	52.85 (11.58)	36.46 (8.01)	.436	8.28	.000
RSQ Dist	26.38 (5.61)	27.22 (5.20)	-.007	-0.09	.924
SCS Pri	27.17 (5.05)	22.84 (4.95)	.400	5.94	.000
SCS Pub	19.24 (5.16)	16.89 (4.60)	.132	1.83	.068
SCS SA	12.41 (5.45)	10.23 (5.10)	.058	0.78	.435

Note. The means (*M*) and standard deviations (*SD*) shown are not adjusted for concurrent depressive and hypomanic/manic symptoms; however, the group differences shown from the regression analyses do control for symptom levels.RSQ = Response Styles Questionnaire; Rum = Rumination subscale; Dist = Distraction subscale; SCS = Self-Consciousness Scale; Pri = Private subscale; Pub = Public subscale; SA = Social Anxiety subscale.

Self-Focused Cognitive Styles as Predictors of the Likelihood of Prospective Mood Episodes in Bipolar Individuals

To examine whether any of the self-focused cognitive style dimensions predicted the likelihood of onset of mood episodes among bipolar spectrum participants, we conducted a series of hierarchical logistic regression analyses with the occurrence (yes/no) of major depressive (MD) and hypomanic or manic (HYP/MA) episodes during the 38-month follow-up as the dependent variables. Bipolar participants currently in a mood episode at Time 1 were excluded from these analyses to ensure that episodes were truly prospective. In each logistic regression (n = 125 for these analyses), the length of follow-up (in days) was entered in Step 1, initial depressive (BDI scores) and hypomanic/manic (HMI scores) symptoms were entered together in Step 2, and a cognitive style score was entered in Step 3. We included Time 1 BDI and HMI scores as control variables to account for any effects of initial symptoms on the prospective occurrence of new mood episodes. Table 4 displays the results of these analyses.

As shown in Table 4, none of the cognitive style scores significantly predicted the likelihood of onset of MD, controlling for length of follow-up and initial depressive and hypomanic/manic symptoms. However, SCS private self-consciousness significantly predicted the likelihood of onset of HYP/MA episodes, controlling for length of follow-up and initial depressive and hypomanic/manic symptoms. Higher private self-consciousness predicted a greater likelihood of HYP/MA episode occurrence, increasing the likelihood of HYP/MA episode onset by 19%.

Self-Focused Cognitive Styles as Predictors of the Number of Prospective Mood Episodes in Bipolar Individuals

We also examined whether any of the self-focused cognitive style dimensions predicted the number of MD or HYP/MA mood episodes among bipolar spectrum participants over the 38-month follow-up by conducting a series of hierarchical multiple regression analyses with the number of MD and HYP/MA episodes during the follow-up as the dependent variables. Again, bipolar participants currently in a mood episode at

TABLE 4. Hierarchical Logistic Regressions Predicting Likelihood of MD and HYP/MA Episode Onset Controlling for Length of Follow-up and Initial Depressive (BDI) and Hypomanic/Manic (HMI) Symptoms

	RSQ Styles				SCS Styles		
	Wald	OR	CI		Wald	OR	CI
Dependent Variable: MD Onset							
RSQ Rum	0.98	1.02	0.98 – 1.07	SCS Pri	0.02	0.99	0.91 – 1.09
RSQ Dist	0.37	0.96	0.88 – 1.04	SCS Pub	2.21	1.08	0.98 – 1.18
				SCS SA	0.55	0.97	0.89 – 1.05
Dependent Variable: HYP/MA Onset							
RSQ Rum	0.47	1.02	0.96 – 1.08	SCS Pri	6.21**	1.19	1.04 – 1.37
RSQ Dist	0.10	1.00	0.89 – 1.11	SCS Pub	0.30	1.03	0.92 – 1.16
				SCS SA	1.76	1.07	0.97 – 1.19

Note. OR = Odds Ratio (Odds ratios less than 1.0 indicate a negative association between the predictor and mood episode onset); CI = Confidence Interval; MD = DSM-IV or RDC Major Depression Episode; HYP/MA = DSM-IV or RDC Hypomanic or Manic Episode; BDI = Beck Depressive Inventory; HMI = Halberstadt Mania Inventory; RSQ = Response Styles Questionnaire; Rum = Rumination subscale; Dist = Distraction subscale; SCS = Self-Consciousness Scale; Pri = Private subscale; Pub = Public subscale; SA = Social Anxiety subscale. $^{**}p < .01$.

Time 1 were excluded from these analyses to ensure that episodes were truly prospective. In each multiple regression ($n = 125$ for these analyses), the length of follow-up (in days) was entered in Step 1, initial depressive (BDI scores) and hypomanic/manic (HMI scores) symptoms were entered together in Step 2, and a cognitive style score was entered in Step 3. Again, we included Time 1 BDI and HMI scores as control variables to account for any effects of initial symptoms on the prospective occurrence of new mood episodes. Table 5 displays the results of these analyses.

As shown in Table 5, RSQ rumination significantly predicted the number of prospective MD episodes, controlling for length of follow-up and initial depressive and hypomanic/manic symptoms. A greater tendency to ruminate in response to negative affect predicted a higher number of MD episodes among bipolar participants during the follow-up period. However, none of the other cognitive style dimensions significantly predicted the number of prospective HYP/MA episodes, controlling for length of follow-up and initial depressive and hypomanic/manic symptoms.

DISCUSSION

A large body of research (e.g., Abramson et al., 1989; Beck, 1967; 1987; Nolen-Hoeksema, 1991) demonstrates that maladaptive cognitive styles, such as the tendency to make negative attributions and inferences about the self and the world, concurrently and prospectively predict unipolar depression. However, only recently have researchers begun to extend this examination to investigate whether similar maladaptive cognitive styles are also characteristic of bipolar spectrum disorders (for reviews, see Alloy et al., 2005; 2006a,c,d; in press b). We examined several types of self-focused cognitive styles to investigate whether specific dimensions of self-focused cognitions concurrently distinguish bipolar individuals from controls, and whether self-focused cognitions predict the onset and number of episodes of depressive and hypomanic/manic episodes in bipolar individuals over time. Building on findings in the unipolar

TABLE 5. Hierarchical Multiple Regressions Predicting Number of MD and HYP/MA Episodes Controlling for Length of Follow-up and Initial Depressive (BDI) and Hypomanic/Manic (HMI) Symptoms

	RSQ Styles				SCS Styles		
	β	*t*	*p*		β	*t*	*p*
Dependent Variable: Number of MD Episodes							
RSQ Rum	.197	2.15*	.033	SCS Pri	.132	1.56	.121
RSQ Dist	-.014	-0.15	.878	SCS Pub	.073	0.84	.406
				SCS SA	-.064	-0.73	.469
Dependent Variable: Number of HYP/MA Episodes							
RSQ Rum	.117	1.23	.221	SCS Pri	.027	0.31	.756
RSQ Dist	-.064	-0.71	.481	SCS Pub	.029	0.33	.744
				SCS SA	-.060	-0.66	.508

Note. MD = DSM-IV or RDC Major Depression Episode; HYP/MA = DSM-IV or RDC Hypomanic or Manic Episode; BDI = Beck Depressive Inventory; HMI = Halberstadt Mania Inventory; RSQ = Response Styles Questionnaire; Rum = Rumination subscale; Dist = Distraction subscale; SCS = Self-Consciousness Scale; Pri = Private subscale; Pub = Public subscale; SA = Social Anxiety subscale. *$p < .05$.

depression literature, we hypothesized that maladaptive self-focused cognitive styles, in the form of depressive rumination and private self-consciousness, would emerge as specific predictors of these outcome variables. Consistent with these hypotheses, the present results revealed that bipolar individuals experienced significantly higher levels of depressive rumination and private self-consciousness than controls, controlling for concurrent depressive and hypomanic/manic symptoms. Also consistent with hypotheses, depressive rumination prospectively predicted the number of major depressive episodes, and private self-consciousness prospectively predicted the likelihood of onset of hypomanic/manic episodes over the 3.5-year follow-up period. In general, the non-self-focused cognitive styles of distraction, public self-consciousness, and social anxiety did not distinguish bipolar individuals from controls, nor did they predict the onset or number of major depressive or hypomanic/manic episodes over time.

Consequences of Response Styles

A ruminative response style in response to depressed mood has been widely established as a characteristic of depressed and depression-prone adults and youth (e.g., Abela et al., 2002, 2004; Ciesla & Roberts, 2002; Kuehner & Weber, 1999; Muris et al., 2004; Nolen-Hoeksema, 1991, 1998; Roelofs et al., in press; Schwartz & Koenig, 1996), and has been preliminarily linked to bipolar spectrum disorders (Knowles et al., 2005; Thomas & Bentall, 2002; Thomas et al., 2007; Van der Gucht et al., 2009). Interestingly, one recent study demonstrated that individuals with both depressive and bipolar disorders endorsed a ruminative response style in response to depressed mood, whereas only those with bipolar disorders specifically endorsed a ruminative response style in response to positive mood (Johnson et al., 2008). Thus, it appears as though the tendency to passively dwell on the experience of mood states, both negative and positive, confers vulnerability to affective distress, perhaps via the amplification and intensification of emotional experiences. Findings from the present study reveal that this type of self-focused cognitive style in response to depressed mood is higher in bipolar individuals than in demographically similar controls. Consistent with the notion that

depressive rumination is a relatively stable vulnerability factor for depression, depressive rumination also predicted the prospective *number* of major depressive episodes experienced by bipolar individuals. Depressive rumination did not predict the likelihood of *onset* of major depressive episodes, which might be due to the fact that these individuals already experienced a prior episode of depression. Similarly, depressive rumination did not predict the onset or number of hypomanic/manic episodes. These latter findings highlight the need for future research to elucidate maladaptive cognitive styles that do contribute to the onset and course of bipolar psychopathology.

A distraction response style did not distinguish bipolar individuals from controls, nor did it emerge as a prospective predictor of the onset or number of hypomanic/manic episodes, which differs from two studies finding positive associations between distraction and hypomanic personality (Knowles et al., 2005; Thomas & Bentall, 2002). However, consistent with hypotheses, distraction also did not emerge as a prospective predictor of the onset or number of depressive episodes, which is consistent with the historically equivocal findings concerning associations among distraction and affective distress (e.g., Abela et al., 2002, 2004; Just & Alloy, 1997; Kuehner & Weber, 1999; Nolen-Hoeksema & Morrow, 1993; Schwartz & Koenig, 1996). Despite the conceptual rationale that distracting oneself from focusing on negative moods might be an adaptive strategy, in reality, the efficacy of distraction in actually relieving affective distress is likely to depend on a wide range of factors, some of which might be under personal control and others unable to be altered. That is, when conditions can be changed in order to alleviate depressed mood, distraction might allow individuals to direct resources toward engagement in problem solving and other adaptive coping mechanisms. In contrast, when distressing situations extend beyond personal control, distraction might not allow individuals to manage and process emotional distress. It will be valuable to examine these various possibilities in future research.

Consequences of Self-Consciousness

Self-Consciousness Theory mirrors Response Styles Theory in that it also proposes that a self-focused cognitive style confers vulnerability to, and exacerbates, affective distress. However, in contrast to Response Styles Theory, self-consciousness is not assessed in response to emotion-specific states and instead involves a more general self-focused cognitive style. Consistent with hypotheses, private self-consciousness was significantly higher in bipolar individuals than in controls, and prospectively predicted the likelihood of onset of hypomanic/manic episodes during the 3.5-year follow-up period. Thus, consistent with previous research (Johnson et al., 2008), the present study suggests that the tendency to repetitively focus on emotional experiences has the potential to augment and intensify both positive and negative moods, thereby conferring vulnerability to both euphoria and dysphoria. However, private self-consciousness did not predict the number of hypomanic/manic episodes that subsequently occurred. This might suggest that private self-consciousness in and of itself does not uniquely contribute to euphoric mood states, and that it operates in conjunction with other characteristics of bipolar-prone individuals (e.g., high Behavioral Approach System sensitivity) or environmental experiences (e.g., goal striving or goal-attainment life events) to predict the frequency and recurrence of hypomanic/manic episodes. Also contrary to hypotheses, private self-consciousness did not predict the onset or number of depressive episodes over time. Although similar to rumination in its focus

on the experience of affective states, the Private Self-consciousness scale also contains items that may be viewed as potentially adaptive components of self-awareness, such as being attentive to inner feelings and sensitive to changes in mood. Accordingly, it is understandable that attentiveness specifically to depressed mood (i.e., ruminative response style), in contrast to private self-consciousness, emerged as a predictor of depressive experiences over time.

We did not expect that public self-consciousness or social anxiety would be significantly higher in bipolar individuals than in controls, or that these more externally oriented dimensions of self-consciousness would predict the onset or number of depressive or hypomanic/manic episodes over time. For the most part, these predictions held true. The single exception was that bipolar individuals endorsed marginally higher levels of Public Self-consciousness than did controls. The public self-consciousness subscale involves a preoccupation with interpersonal presentation and behavior (e.g., concern about what others think), which may be relevant to the interpersonal environments of bipolar individuals. Perhaps individuals who experience dramatic fluctuations in mood, both into the euphoric and dysphoric realm, create erratic and unpredictable climates in their interpersonal relationships, causing them to be more inclined to self-evaluate their performance in interpersonal domains. Overall, though, the lack of statistically significant relationships between public self-consciousness or social anxiety and the onset and number of either depressive or hypomanic/manic episodes contributes to a more refined perspective on the associations between repetitive, self-focused cognitive style and affective psychopathology. Specifically, it is self-focused repetitive thinking about covert aspects of the self, such as mood states and emotional experiences, as opposed to self-focused repetitive thinking about aspects of the self that are observable by others, that pertain to maladaptive cognitive styles witnessed in depressive and bipolar disorders.

Study Limitations

Several limitations of this study should be noted. First, the study sample consisted of undergraduates, which although ethnically and socioeconomically diverse, may not be representative of community or clinical samples. Replication of our findings in a community sample with bipolar spectrum disorders and in samples with more severe bipolar I disorder is important. However, bipolar II and cyclothymia tend to be understudied relative to bipolar I disorder, and are often risk factors for the progression to bipolar I disorder (e.g., Shen et al., 2008), suggesting the value of the present study as well. Second, self-focused cognitive styles were assessed with self-report instruments only. Although the self-report measures chosen for this study are reliable and valid assessments of these styles, future tests of associations between self-focused cognitions and bipolar disorder may benefit from use of task-based measures of self-focus and experimental manipulations of self-focus as well.

Conclusions and Future Directions

This study was novel in its simultaneous examination of two types of self-focused cognitive styles, and its extension of theories of maladaptive cognitive styles as risk factors for both depressive and bipolar psychopathology. Additional strengths include

its prospective, longitudinal design and stringent analytic approach, in which all analyses controlled for baseline depressive and hypomanic/manic symptoms. It will be important for future research to replicate these findings, as well as to examine mechanisms through which maladaptive cognitive styles contribute to the onset and course of bipolar spectrum disorders, as such findings will valuably inform intervention and prevention endeavors.

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