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Rumination, Negative Life Events, and Depressive Symptoms in a Sample of College Students

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Abstract

Major Depression is a significant public health challenge because it affects over 6% of U.S. adults annually and has a highly recurrent course (NIMH, 2014). This study aims to examine the main and interactive effects of a cognitive vulnerability to depression (i.e., rumination) and the experience of stressful life events in potential pathways to major depression. Initially non-dysphoric college students ($N = 290$) completed a measure of dispositional rumination, the Response Styles Questionnaire (RSQ), at the start of the semester (Time 1). They reported on negative life events on the Life Experiences Survey (LES) at the start and end of the semester (Time 2). Mood was assessed at both time points using the Beck Depression Inventory-Second Edition (BDI-II), the Diagnostic Inventory of Depression (DID), and the Altman Self-Rating Mania Scale (ASRMS). Contrary to the hypothesis that rumination interacts with stressful life events to predict growth in depressive symptoms over time, hierarchical regressions indicated a pattern of main effects of rumination and stressful life events in predicting depressive symptoms on the BDI-II and DID at Time 2 after controlling for symptoms at Time 1, but no significant interaction between the two variables. In secondary analyses considering sex, age, ethnicity, semester, and history of major depression as potential covariates, only history of major depression diagnosis emerged as a significant covariate and only in predicting Time 2 BDI-II symptoms. An exploratory analysis of hypomania/mania symptoms at Time 2 indicated that only Time 1 ASRMS scores significantly predicted ASRMS scores at Time 2, not rumination, stressful life events, or their interaction. Limitations of this study include a short longitudinal time period, a lack of generalizability, and reliance on self-report measures.

Introduction

This study aims to assess a potential pathway to major depression by examining the association and possible interaction of rumination and stressful life events. Other factors including sex, age, ethnicity, time of year, and history of major depression were considered in order to examine additional predictors of depressive symptoms. The following review provides background information on the following topics: depression as a significant public health issue, the relationship between rumination and depression, and stressful life events and depression in college.

Depression as a Significant Public Health Issue

According to the National Survey on Drug Use and Health in 2014 ($N = 67,500$), an estimated 6.7% (15.7 million) adults aged 18 or older in the United States had at least one major depressive episode in the past year (SAMHSA, 2014). To quantify the functional impact of major depression, the survey found that 4.3% of all adults in the United States were severely impaired by a major depressive episode in the last year based on the Sheehan Disability Scale (SAMHSA, 2014). Severe impairment, according to this study, meant a score of 7 or higher on a scale of 1 to 10 on four domains of impact: home management, work, close relationships with others, and social life. These statistics highlight the detrimental effects major depression has on an individual's life, adding more stress to their home and work life.

Results from the National Comorbidity Survey Replication (NCS-R; Kessler et al., 2003) indicate that individuals suffering from major depression often experience comorbid disorders, such as anxiety, impulse control, and substance use. The estimated lifetime rate for major depression based on the NCS-R sample ($N = 9,090$) was 16.2% (approx. 32.6-35.1 million) and

the current year rate was 6.6% (approx. 13.1-14.2 million). Of the individuals suffering from major depression, 59.2% met criteria for a comorbid anxiety diagnosis, 24.0% met a diagnosis for a comorbid substance use disorder, and 30.0% suffered from comorbid impulse control (Kessler et al., 2003). The high rate of comorbidity in individuals with major depression suggests that major depression is a serious public health concern, not only for its specific symptoms but for its high comorbidity with other disorders.

Rumination and Depression

Throughout the history of psychological research, psychologists have studied the unique ability of human beings to practice self-reflection (Nolen-Hoeksema et al., 2008). This exercise of self-reflection can be beneficial for some, as it allows for evaluating one's actions and emotions, but it can also be harmful if it becomes more negative and non-constructive. One type of self-reflection that has received a lot of attention for its potentially harmful effects is rumination. According to Nolen-Hoeksema's *Response Styles Theory*, rumination is a form of coping with negative emotions involving self-reflection and a repetitive and passive focus on one's negative emotions (Treyner et al., 2003). In this definition, rumination is more of a generalized focus on one's feelings and problems (i.e., a cognitive process) rather than specific thoughts and ideas (i.e., cognitive contents). In order to understand individual differences in rumination habits, Nolen-Hoeksema initially created the Response Styles Questionnaire (RSQ; Nolen-Hoeksema, 1995), which included 22 items that assess how often an individual engages in a variety of ruminative thoughts or behaviors in response to a depressed mood. The items ranged from responses that are focused on the self, symptoms, and the causes and possible consequences of one's depressed mood (Nolen-Hoeksema et al., 2008).

Rumination was originally studied in the context of depression because, according to the Response Styles Theory, rumination exacerbates and prolongs distress and depression by enhancing negative thinking, impeding effective problem-solving, hindering instrumental behavior, and damaging social support (Nolen-Hoeksema et al., 2008). Several studies found that rumination predicts both greater depressive symptoms as well as the onset of major depressive episodes (Just & Alloy, 1997; Kuehner & Weber, 1999; Nolan, Roberts, & Gotlib, 1998; Nolen-Hoeksema, 2000; Nolen-Hoeksema et al., 1994, 1999; Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Morrow, & Fredrickson, 1993; Roberts, Gilboa, & Gotlib, 1998; Wood, Saltzberg, Neale, Stone, & Rachmiel, 1990). For example, Kuehner and Weber (1999) assessed rumination in a cohort of 52 patients in an inpatient treatment facility for major depression during treatment, 4 weeks after discharge, and up to 4 months after discharge. They found that rumination scores at 4 weeks post-discharge predicted which patients would relapse and levels of depressive symptoms over follow-up. In another study, rumination as well as depressive and anxious symptoms were assessed in a sample of 87 college students at several time points in the semester (Sarin et al., 2005). Findings indicated that the tendency to ruminate when feeling depressed was associated with increases in anxious symptoms and depressive symptoms at several time points (Sarin et al., 2005). Findings from these studies and many more indicate a relationship between rumination and depression that warrants further research on the intricacies of this relationship and how other factors may impact it.

Negative life events have been studied as a moderator of the relationship between depression and rumination (Lyubomirsky & Nolen-Hoeksema, 1995; Monroe & Harkness, 2005; Sarason et al., 1978;). Evidence suggests that when dysphoric or clinically depressed individuals ruminate, they tend to think more negatively about events in their lives (Nolen-Hoeksema et al.,

2008). Dysphoric ruminators, people who tend to exist in a state of unease and anxiety, are more negative, self-critical, and self-blaming when they think about current problems they are facing (Nolen-Hoeksema et al., 2008). In one study, dysphoric ruminators presented with hypothetical negative life events showed more negative interpretations of the events than non-dysphoric controls (Lyubomirsky, Nolen-Hoeksema et al., 1995). The dysphoric participants in this study were split into two groups: those who were induced to focus on their negative mood and ruminate about their feelings and personal characteristics, and those who were induced to distract themselves. The participants who were induced to ruminate were more likely to endorse negative, biased interpretations of hypothetical events than those who were induced to distract themselves (Lyubomirsky, Nolen-Hoeksema et al., 1995). This has significance for the relationship between rumination and stressful life events because those who suffer from unease or anxiety and tend to ruminate about problems may have a more difficult time thinking clearly about a stressful situation.

There has been debate about the possibility of different types of rumination that may differentially impact mood and psychopathology (Nolen-Hoeksema et al., 2008; Treynor et al., 2003). For example, Treynor et al. (2003) suggested that there are two types of rumination, reflective pondering and brooding, which differentially relate to depression. Brooding is associated with more negative self-reflection and moody thinking (e.g. “What am I doing to deserve this?”), whereas reflective pondering is more constructive and can lead to effective problem solving (e.g., “I go someplace alone to think about my feelings”) (Nolen-Hoeksema et al., 2008; Treynor et al., 2003). Evidence suggests that brooding is associated with depression concurrently and longitudinally, while reflective pondering is only associated with depression concurrently (Treynor et al., 2003). This may be because both types of rumination co-occur with

depression, but reflective pondering can be adaptive whereas brooding reinforces negative thinking and negative affect (Treynor et al., 2003). One study examined scores on the brooding and reflective pondering subscales on the Ruminative Response Scale (RRS) in several groups: those who were currently depressed, those who were in remission from depression, those who were socially anxious, and healthy controls (Joormann et al., 2006). Findings from this study indicated that those with current major depression had significantly higher brooding scores than all other groups, and the remitted depression and socially anxious groups had higher brooding scores than the control group (Joormann et al., 2006). This suggests that those with current major depression tend to engage in more brooding rumination than the general population.

Stress, Depression, and Rumination in College

The transition from high school to college can be a very stressful experience for many adolescents because of the many significant changes involved, including distance from family and friends, more responsibility both academically and socially, and peer pressure to fit in and make new friends. This psychological stress represents a serious concern for the mental well-being of college students, particularly those in their freshman year (Dyson & Renk, 2006; Morrison & O'Connor, 2005). Recent research has indicated that over 50% of college students report depressive symptoms soon after starting their college career, which suggests that the new stresses of college life may be associated with increased depressive symptoms (Morrison & O'Connor, 2005). In a study of 249 undergraduate students, Morrison and O'Connor (2005) examined the relationship between stress, rumination, anxiety, and several other problems such as insomnia and social impairment. Findings indicated that increases in stress from a full course load and upcoming deadlines predicted increases in anxiety and insomnia (Morrison & O'Connor, 2005). Similarly, in a study of 74 college first-year students, students reported more

emotional dependence on their parents and poorer social and emotional adjustment than upperclassman (Dyson & Renk, 2006). In addition, family life change stressors and college stressors predicted increases in depressive symptomology in this sample (Dyson & Renk, 2006).

In several studies examining depression and stress in college students, researchers have noted the important role that coping strategies and response styles to stress play in the association between stress and depression (Dyson & Renk, 2006; McPherson & Vise, 2013; Morrison & O'Connor, 2005; Nolen-Hoeksema et al., 2008). For example, McPherson and Vise conducted a study on stress in college, in association with coping styles and depression and anxiety. They found that college students experience high levels of stress and varying levels of depression and anxiety, related to a variety of events, including arrival at college, new financial stressors, academic pressure, and social anxiety (McPherson & Vise, 2013). In examining different styles of coping with stress, students who used emotion-focused coping, similar to rumination, showed more depressive symptoms (McPherson & Vise, 2013). Another study found that rumination scores in a sample of college students predicted onset of depressive symptoms over 18 months, which suggests that rumination in combination with the stresses of college may predict an onset of depressive symptoms (Nolen-Hoeksema et al., 2008).

A challenging research question for psychologists is how factors such as biological susceptibility and stressful life factors interact and contribute to depression (Monroe & Harkness, 2005). The diathesis-stress model proposes that a biological susceptibility to psychopathology interacts with an environmental stressor to trigger the onset of psychopathology (Morrison & O'Connor, 2005). One particular diathesis-stress model of mood disorders, the kindling hypothesis (Post, 1992), states that major life stress plays a greater role in the onset of the first onset of major depression, as compared to later recurrences of the disorder (Monroe & Harkness,

2005). According to this hypothesis, college students may be more likely than an older sample to experience an onset of depression sparked largely by life stress, because they are often in their late teens or early twenties and are less likely to have a history of multiple episodes of depression. Both the broader diathesis-stress model and the kindling hypothesis, in particular, may help to understand the onset of depressive symptoms in college students.

Study Purpose

The purpose of this study is to examine the relationship between rumination, stressful life events, and depression over the course of a semester in a college-aged sample. Specifically, this study investigates the main effects of negative life events and rumination, as well as the interaction between the two, in predicting growth in depressive symptoms over time. Students were assessed twice, once at the beginning (Time 1) and once at the end (Time 2) of an academic semester. This study provides valuable information about potential pathways for major depression and how other factors, such as history of depression, age, sex, ethnicity, and time of year (i.e., fall or spring semester of study participation), may impact depressive symptoms.

Hypothesis 1: Rumination and negative life events will each predict depressive symptoms (using the Beck Depression Inventory-Second Edition; BDI-II) at Time 2, after controlling for BDI-II depressive symptoms at Time 1. The interaction between rumination and negative life events will also predict depressive symptoms (on the BDI-II) at Time 2. Further, it is expected that these effects will persist after adjusting for history of depression at Time 1 and demographic variables (sex, age, ethnicity, fall vs. spring semester of participation).

Hypothesis 2: Rumination and negative life events will each predict depressive symptoms (using the Diagnostic Inventory for Depression; DID) at Time 2, after controlling for DID depressive symptoms at Time 1. The interaction between rumination and negative life events will

also predict depressive symptoms (on the DID) at Time 2. These effects are expected to remain after adjusting for history of depression at Time 1 and demographic variables.

In addition, this study will explore the main and interactive effects of rumination and stressful life events on growth in self-reported hypomanic/manic symptoms on the Altman Self-Rating Mania Scale (ASRMS). Unique and interactive effects as well as potential covariates will be explored (as in the two a priori hypotheses); however, no a priori hypotheses were generated for this purely exploratory secondary set of analyses given that rumination has not been examined in relation to bipolar-type depressive symptoms.

Methods

Participants

Participants in this study were undergraduate college students at the University of Vermont, aged 18 or older. During the initial session to screen for eligibility, participants were asked to sign an informed consent form and complete the Beck Depression Inventory-Second Edition (BDI-II). Participants were eligible only if they scored in the normal mood range of 0-13 on the BDI-II. The enrolled sample of students ($N = 322$; 81.1% female, 18.7% male) were predominantly young adults (ages ranged from 18-77 years, $M = 19.4$, $SD = 4.7$). Participants were primarily white (88.7% white, 3.4% Asian, 1.2% Hispanic or Latino, 0.9% African American, 0.3% American Indian, and 5.5% other). For the analyses that follow, ethnicity was categorized as white (93.9%) or other (6.1%).

Procedure

This study used data from a larger project (*Cognitive Reactivity to a Sad Mood Induction and Subsequent Depressive Symptoms* in Dr. Kelly Rohan's lab). The full study protocol

included an implicit association test, a sad mood induction, as well as a battery of psychological assessments at Time 1 (beginning of semester) and re-assessment on the mood outcome questionnaires at Time 2 (end of semester). The primary aim of the parent study was to examine the relationship between cognitive responses to a sad mood induction and subsequent depressive symptoms. Assessments at Time 1 included the Dysfunctional Attitude Scale (DAS), the Response Styles Questionnaire (RSQ), the Attributional Styles Questionnaire (ASQ), the Diagnostic Inventory of Depression (DID), the Life Experiences Survey (LES), the Altman Self-Rating Mania Scale (ASRMS), and the Seasonal Pattern Assessment Questionnaire (SPAQ). Assessments at Time 2 included the BDI-II, the DID, the ASRMS, and the LES to measure changes in mood and new life events that may have occurred during the semester. All measures that are relevant to the analysis in the present research project are described below after the schedule of measures.

Schedule of Questionnaire Measures for the Larger Study:

	Time 1 (Beginning of semester)	Time 2 (End of semester)
Beck Depression Inventory-II*	X	X
Diagnostic Inventory for Depression*	X (lifetime)	X (current)
Altman Self-Rating Mania Scale*	X	X
Dysfunctional Attitudes Scale	X	
Response Styles Questionnaire	X	
Attributional Style Questionnaire	X	
Life Experiences Survey*	X (past year)	X (semester)
Seasonal Pattern Assessment Questionnaire	X	

*Denotes a measure included in the current investigation.

Measures

Beck Depression Inventory-Second Edition (BDI-II; 5-10 min.). The Beck Depression Inventory-Second Edition (BDI-II; Beck, Steer, & Brown, 1996) is a 21-item measure of depressive symptom severity over the last 2 weeks. Each item describes a depressive symptom,

which the respondent rates on a 4-point Likert scale ranging from 0 to 3. The items are summed to produce a total BDI-II score, which indicates symptom severity ranging from 0 to 63. A score between 0 and 13 represents a normal mood (i.e., minimal depressive symptoms; Beck et al., 1996). The BDI-II has demonstrated good test-retest reliability and convergent validity (Beck et al., 1996).

Response Styles Questionnaire (RSQ; 5-10 min.). The Response Styles Questionnaire (RSQ; Nolen-Hoeksema, 1995) is a 32-item survey designed to measure and differentiate between two response styles: dispositional rumination and distraction. Participants indicate how often they engage in various responses when they are in a depressed mood, choosing a number from 0 (almost never) to 3 (almost always) on a Likert scale. Separate rumination and distraction scale score are derived by summing the items that load on each. Evidence suggests that both the rumination and distraction scales have high levels of internal consistency (Butler & Nolen-Hoeksema, 1994; Nolen-Hoeksema & Morrow, 1991) and demonstrate a significant correlation with response styles outside of a laboratory setting (Nolen-Hoeksema & Morrow, 1991).

Altman Self-Rating Mania Scale (ASRMS; 2 min.; Appendix A). The Altman Self-Rating Mania Scale is (ASRMS; Altman, Hedeker, Peterson, & Davis, 1997) is a 5-item questionnaire that measures severity of current manic/hypomanic symptoms from the past week on a 5-point Likert scale from 0 (not present) to 4 (severe). The ASRMS is an effective and reliable measure to distinguish manic from non-manic individuals (Altman et al., 2001).

Diagnostic Inventory of Depression (DID; 25 min.). The Diagnostic Inventory of Depression (DID; Zimmerman et al., 2004) is a 38-item questionnaire assessing whether an individual meets DSM-IV criteria for a current major depressive episode (MDE). Three items (the frequency of depressed mood, loss of interest in usual activities, and loss of pleasure)

represent necessary symptoms for MDE diagnosis. Nineteen items assess the severity of other symptoms that are part of the DSM-IV criteria for MDE. The rest of the items measure other symptoms often present in individuals diagnosed with MDE, including psychosocial impairment relating to depression and quality of life. For this study, two variables were generated: a categorical variable (presence or absence of a diagnosis of MDE) and a continuous variable (total symptom severity). The categorical variable was calculated based on the algorithm provided by Zimmerman et al. (2004), which is based on DSM-IV criteria and includes cutoff scores to indicate if each criterion is absent or present. The DID has demonstrated high diagnostic concordance to MDE criteria used in the Structured Clinic Interview for DSM-IV Axis I Disorders (SCID; First et al., 1995), as well as strong internal consistency, test-retest reliability, and convergent and divergent validity (Zimmerman et al., 2004).

In this study, a modified version of the DID was used at Time 1 to measure lifetime depressive symptoms, instead of symptoms experienced in the last two weeks (current). This lifetime version asked participants to respond based on the time in their life when they felt the most sad or depressed, in order to assess past history of major depression and severity of worst period of mood symptoms. This version was created based on DSM-IV criteria and by modifying the DID lifetime version for DSM-III created by Zimmerman and Coryell (1987). The older DSM-III-based version demonstrated high concordance with a structured clinical interview aimed at assessing a history of depression (sensitivity of 74% and specificity of 93%; Zimmerman & Coryell, 1987).

Life Experiences Survey (LES; 10 min.; Appendix B). The Life Experiences Survey (LES; Sarason, Johnson, & Siegel, 1978) is a self-report measure of the types of life events experienced in the past year and their perceived impact. Participants indicate which of the 57 life events

listed, including 10 items specifically related to college students, they have experienced and how the event has impacted them on a 7-point Likert scale ranging from -3 (“extremely negative”) to 3 (“extremely positive”). Independently summing the positive and negative ratings yields a positive and negative life events impact score, respectively. Sarason et al. (1978) demonstrated that the LES has high test-retest reliability over a 5 to 6-week interval for all scores (positive, negative and total; $r = .63$ and $.64$). Researchers also showed that the LES has acceptable concurrent validity, when comparing it to measures of state and trait anxiety, as well as depression (Sarason et al., 1978). In this study, Time 1 LES was used to measure baseline scores of negative life events over the past year, while Time 2 LES was modified to capture only events that occurred during the semester. For analytical purposes, only the negative impact LES score was utilized in this study to measure potentially stressful negative life events that participants have experienced.

Results

Descriptive Analysis

Nearly one-third (102/322; 31.5%) of participants met the criteria for a lifetime history of major depression based on the Time 1 DID, whereas 222/322 (68.5%) did not. However, only 3 (0.9%) participants met the criteria for a current provisional diagnosis of current major depression at Time 2 based on DID criteria, whereas the vast majority (319/322; 99.1%) did not. Means and standard deviations for all other (non-categorical) measures are presented in Table 1 (see Table 1). For the sample as a whole, mean scores for the BDI-II and the ASRMS appeared relatively stable between Time 1 and Time 2. The mean LES scores appeared to decrease slightly from Time 1 to Time 2, suggesting less perceived impact from negative life events at the start

than at the end of the semester. The mean DID score appeared to increase from Time 1 to Time 2, perhaps explained by a single outlier score of 93. The participant who scored the 93 was one of the three participants to meet criteria for a provisional diagnosis of current major depression at Time 2.

Hypothesis-Driven Data Analysis and Results

Data was cleaned and entered into IBM SPSS Statistics program for analysis. A series of regression analyses were used to test the hypotheses.

1.) Hypothesis 1: Rumination and negative life events will each predict depressive symptoms (using the Beck Depression Inventory-Second Edition; BDI-II) at Time 2, after controlling for BDI-II depressive symptoms at Time 1. The interaction between rumination and negative life events will also predict depressive symptoms (on the BDI-II) at Time 2. Further, it is expected that these effects will persist after adjusting for history of depression at Time 1 and demographic variables (sex, age, ethnicity, fall vs. spring semester of participation).

To test Hypothesis 1, a hierarchical regression analysis was conducted with Time 2 BDI-II score as the outcome variable, Time 1 BDI-II score and Time 1 LES negative impact of life events score entered as control variables on the first step, Time 1 RSQ rumination score and Time 2 LES negative impact of life events score entered as main effects on the second step, and the interaction term for Time 1 RSQ rumination score X Time 2 LES negative impact of life events score entered on the third step. The model was re-run adding the potential covariates (sex, age, ethnicity, semester of participation, and history of major depression on the Time 1 DID) in the first step.

Contrary to expectations, there was no significant interaction between LES negative score at Time 2 and RSQ rumination in predicting BDI-II scores at Time 2, after controlling for Time 1 LES negative scores and Time 1 BDI-II scores. (See Table 2). However, there was a significant main effect of both RSQ rumination and Time 2 LES negative scores.

The overall model (see Table 2) reached significance because at each step, $p < .05$ for the F test. The R-square values, which indicate predictive power of the model, are fairly low at each step, and the final model (at Step 3) has the highest predictive power, explaining 33.5% of the variance in Time 2 BDI-II, which is expected as Step 3 has the largest number of predictors. The main effects of LES Time 2 and rumination explained 14.4%, whereas their interaction explained only 0.6%, of the variance in Time 2 BDI-II. The unstandardized coefficients for step one and two are all positive values, meaning that as each independent variable increases by one unit, BDI-II Time 2 scores increase as well. On the third step, $B = -.008$ suggests that as the value of the interaction between LES Time 2 and RSQ increases, BDI-II Time 2 scores decrease.

This same pattern of results was consistent when the hierarchical regression was run both with and without the following covariates in the model: age, semester, sex, ethnicity, and history of major depression on the Time 1 DID. (See Table 3). Of the covariates tested, DID (categorical) Time 2 was the only significant covariate ($p < .001$).¹ Specifically, individuals with a lifetime history of major depression on the Time 1 DID were more depressed at Time 2 based on DID scores. Neither age, sex, ethnicity, nor semester emerged as significant covariates (all $ps > .05$).

¹ Upon finding DID categorical Time 1 scores as a significant covariate, further analyses were run to test for interactions of this covariate with LES at Time 2 and RSQ, respectively, in predicting BDI-II scores. No significant interactions between DID diagnostic category and either of these variables were found.

2.) Hypothesis 2: Rumination and negative life events will each predict depressive symptoms (using the Diagnostic Inventory for Depression; DID) at Time 2, after controlling for DID depressive symptoms at Time 1. The interaction between rumination and negative life events will also predict depressive symptoms (on the DID) at Time 2. These effects are expected to remain significant after adjusting for history of depression at Time 1 and demographic variables. Several potential covariates were explored in a secondary model, including presence or absence of history of major depression as assessed by Time 1 DID, demographic characteristics (sex, ethnicity with two strata: White vs. Non-white), and semester of participation (fall or spring).

Hypothesis 2 was tested using a hierarchical regression analysis with Time 2 DID total score as the outcome variable, Time 1 LES negative impact of life events score and Time 1 DID total score entered as control variables on the first step, Time 1 RSQ rumination score and Time 2 LES negative impact of life events entered as main effects on the second step, and their interaction term on the third step. The same potential covariates that were explored under Hypothesis 1 were examined here in a secondary model.

Contrary to the hypothesis, the interaction between LES Time 2 and RSQ did not significantly predict DID scores at Time 2. However, there were significant main effects of both RSQ rumination and Time 2 LES negative scores. This means that each of these independent variables help to predict DID frequency scores at Time 2, and together they uniquely explained 14.0% of the variance in Time 2 DID scores. As expected, predictive power does increase as each independent variable is added the model, but the interaction term uniquely explained only 0.1% of the variance in Time 2 DID. B-values for DID score Time 1, LES Time 1, LES Time 2, and RSQ are all positive, indicating a positive linear relationship between these independent

variables and DID frequency scores at Time 2. The B-value for the interaction between LES Time 2 and RSQ is negative ($B = -0.008$), indicating a negative linear relationship between the interaction and DID frequency scores at Time 2. None of the covariates tested, including age, sex, semester, ethnicity, and history of major depression emerged as significant predictors (all $ps > .05$).

Results for Exploratory Analyses of the Bipolar Mood Outcome (ASRMS)

The same two regression analyses that were run for the BDI-II and DID depressive symptom severity outcomes were run for the exploratory examination of the ASRMS outcome. As in the previous analyses, there was no significant interaction of rumination and negative life events; however, the main effects of rumination and negative life events were also not significant in this model. (See Table 6). Only Time 1 ASRMS score emerged as a significant predictor of Time 2 ASRMS score. The R-squared values were all low, but increased on each step, indicating a weak association that likely improves slightly due to increased number of variables in the model. The B-values for ASRMS Time 1, LES Time 1, and LES Time 2 x RSQ are all positive, indicating a positive linear association with the dependent variable, ASRMS Time 2. LES Time 2 and RSQ both have negative B-values, which suggests a negative linear association with ASRMS Time 2. Of the covariates tested, age was the only covariate that was significant. (See Table 7). Based on the B-value, age has a positive linear relationship with ASRMS Time 2 scores.

Discussion

The aim of this study was to explore the effects of negative life events and rumination, singly and in interaction, in predicting depressive symptoms over the course of a semester in a

college student sample. The primary hypothesis was that negative life events and rumination would interact to predict depressive symptoms during a semester in college. Contrary to predictions, there were no significant interactive effects; however, negative life events and rumination did have individual main effects on depressive symptoms. This pattern of results was consistent on two separate measures of depressive symptom severity, the BDI-II and the DID. The individual main effects of negative life events and rumination on depressive symptoms suggests that these factors both contribute to depressive symptoms and may be relevant mechanisms of major depressive disorder. Specifically, when an individual experiences a negative life event, he or she is more likely to develop depressive symptoms. This partially supports the diathesis-stress model, as the negative life event may be the stressor that sparks depressive symptoms in an individual already susceptible to major depression. In addition, the individual main effect of rumination on depressive symptoms partially supports the diathesis-stress model, as rumination may represent a type of thinking that makes an individual more susceptible to major depression. The fact that both of these factors predicted depressive symptoms over 3 months suggests that both rumination and negative life events play a role in the development of depressive symptoms. Contrary to the diathesis-stress model, the interaction between stress (negative life events) and a possible cognitive diathesis (i.e., rumination) did not predict growth in depressive symptoms over time. Instead, depressive symptoms were best explained by dispositional rumination and new negative life events over the semester, taken independently.

The only covariate of significance in the hierarchical regression analyses was history of major depression at Time 1 in the first model, where BDI-II score was the outcome variable. This finding indicates that those who have a history of major depression are more likely to

experience depressive symptoms in the next 3 months, as compared to those who have no history of major depression. This finding is interesting as the sample was mostly young, college-aged students who have not had as much time to experience major depression. Even in this young adult sample, those with a history of major depression were more likely to experience depressive symptoms and it was less likely that those who had not experienced depression would develop symptoms. This finding suggests that a history of major depression is a vulnerability that could help clinicians to predict or prevent depression relapse. Depression history, however, did not interact with either negative events or rumination in predicting depressive symptoms over time.

The sample yielded an unexpectedly low number of provisional current major depression diagnoses at Time 2 ($n = 3$), rendering the initial plan (at the proposal stage) to conduct logistic regression analyses to predict diagnostic status at Time 2 not feasible. The prevalence of DID depression at Time 2 is much lower than the DID-estimated lifetime prevalence at Time 2 (about one-third of the sample). This is likely because of the short test-retest interval, spanning only about 3 months, and the eligibility criterion to be non-dysphoric at Time 1. In order to effectively study major depression onset, alternative methods would be required, such as a larger initial sample, a longer follow-up period, and allowing participants with the full range of depressive symptom severity to enter the study as long as current major depression criteria were not met at entry.

Another change to the initial aims of the study was from a focus on brooding rumination to a focus on rumination, in general. The questionnaires included in Dr. Rohan's study were not specifically designed to measure brooding rumination, but rumination versus distraction (RSQ). Researchers tend to utilize the Ruminative Response Scale (RRS; Nolen-Hoeksema & Morrow, 1991) to study brooding rumination because of the specific items that specifically measure

brooding, instead of general rumination (Treyner et al., 2003). However, in Dr. Rohan's study, the Response Styles Questionnaire (RSQ) was utilized. For the purposes of this research project, the RRS was compared to the RSQ to find parallel brooding and reflective pondering items, with the goal of utilizing the brooding items on the RSQ to measure brooding rumination. However, only 2 items matched brooding measures on the RRS and 5 items matched reflective pondering measures. The small number of brooding items on the RSQ was not adequate for a valid measure of brooding rumination in this project, so the primary aim of the project was directed towards measuring dispositional rumination instead. In future studies, researchers should use the RRS to measure brooding rumination in order to gain more insight into the specific aspects of rumination that may predict depressive symptoms.

Limitations of this study include the short time period for the longitudinal study, reliance on self-report measures, and the lack of generalizability. The time period in a semester is only a few months, which does not allow a lengthy window for many negative life events to occur, nor many changes in depressive symptoms to develop. In future studies, the time period should be longer to allow for a more accurate representation of the way in which negative life events and rumination may impact people's mood and mental state. It is possible that interactive effects of life events and rumination would emerge over a longer follow-up interval. Additionally, the subjectivity of the self-report measures in this study may have impacted the validity of the data because of social desirability bias, meaning participants may have wanted to respond in the way they believe researchers expect them to. One way in which this study could be improved in the future would be to add more objective measurements of rumination and depressive symptoms, possibly through a daily diary entry or more frequent assessments throughout the semester. For example, Genet and Siemer (2012) conducted a study examining the relationship between

rumination, daily events, and negative mood in college students, using a daily diary method for six consecutive days. The daily diary consisted of 6 items measuring unpleasant social events and 6 items measuring unpleasant achievement/academic events. Findings from this study indicated that rumination in daily life moderated the relationship between unpleasant daily events and negative mood. This study had strong ecological validity, as it assessed rumination and mood in participants' daily lives outside of a laboratory. The ecological validity of the daily diary method may help to explain the why Genet and Siemer observed an interaction between rumination and life events whereas this study did not. The diary was specifically tailored towards a college-aged sample, as compared to the LES used in this study which only includes one short section addressing school-related events.

Other methods often used to measure negative life events include a structured or semi-structured interview (Dohrenwend et al., 1993; Hammen, 1991; Paykel, 2001) as well as the Life Events and Difficulties Schedule (LEDS; Brown & Harris 1978). These measures would be useful in future studies examining rumination and negative life events, as they provide a different measure of negative life events that may capture different events or reactions to events than the LES. An advantage of a structured or unstructured interview, such as the Structured Event Probe and Narrative Rating Method for Measuring Stressful Life Events (Dohrenwend et al., 1993), is the opportunity to probe the participant for more information about a negative life event and its impact. Researchers can choose which items need to be explored further in order to more comprehensively understand the negative life events a participant has experienced, instead of only looking at the basic items on self-report checklists like the LES. The LEDS is an example of a comprehensive interview method for studying negative life events, which includes a manual with explicit rules and operational criteria to aid researchers in identifying and distinguishing

between acute and chronic stress (Brown & Harris, 1978). This method enhances standardization of measuring negative life events, as compared to self-report checklists, and takes into account biographical information of each participant to help researchers understand the unique meaning a life event has for each individual (Monroe, 2008). One study demonstrated that interviews, such as the LEDS, capture more significant life events than self-report checklists (McQuaid et al., 1992). This study indicated that only 38.5% of life events reported using a self-report checklist corresponded with events on the LEDS (Brown & Harris, 1978). This suggests that the LEDS captures a wider range of life events, providing researchers with a more comprehensive understanding of life events influencing a participant. In future studies examining the relationship between negative life events and depressive symptoms, researchers should utilize the LEDS or another interview method instead of a self-report checklist. Another limitation of this study is that the majority of the participants were white, young adult females living in Vermont, which does not extend to the general population. Future studies should address this limitation by generating larger, more diverse sample sizes in other regions.

References

- Brown, G. W., & Harris, T. (1978). Social origins of depression: A reply. *Psychological Medicine Psychol. Med.*, 8(04), 577. doi:10.1017/s0033291700018791
- Center for Behavioral Health Statistics and Quality. (2015). *Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health* (HHS Publication No. SMA 15-4927, NSDUH Series H-50). Retrieved from <http://www.samhsa.gov/data/>
- Dohrenwend, B.P., Raphael, K.G., Schwartz, S., Stueve., A, Skodol., A. (1993). The Structured Event Probe and Narrative Rating Method for measuring stressful life events. *Handbook of Stress: Theoretical and Clinical Aspects* (2 ed.). New York: Free Press. doi:10.1037/t25008-000
- Dozois, D. J. A., & Beck, A. T. (2008). *Risk Factors in Depression*. Amsterdam: Elsevier/Academic.
- Dyson, R., & Renk, K. (2006). Freshmen adaptation to university life: Depressive symptoms, stress, and coping. *Journal of Clinical Psychology*, 62(10), 1231–1244.
<http://doi.org/10.1002/jclp.20295>
- Genet, J. J., & Siemer, M. (2012). Rumination moderates the effects of daily events on negative mood: Results from a diary study. *Emotion*, 12(6), 1329-1339.
doi:<http://dx.doi.org.ezproxy.uvm.edu/10.1037/a0028070>
- Hammen C. 1991. Generation of stress in the course of unipolar depression. *Journal of Abnormal Psychology*. 100(4), 555–61
- Ingram, R. E., Steidtmann, D. K., & Bistricky, S. L. (2008). Information processing: Attention and memory. (145–169). Elsevier Academic Press (San Diego, CA, US).
<http://search.proquest.com.ezproxy.uvm.edu/psycinfo/docview/622096276/D10C6E7346E4B4APQ/1?accountid=14679>

- Joormann, J., Dkane, M., & Gotlib, I. (2006). Adaptive and Maladaptive Components of Rumination? Diagnostic Specificity and Relation to Depressive Biases. *Behavior Therapy*, 37(3), 269–280. <http://doi.org/10.1016/j.beth.2006.01.002>
- Kessler, R. C., Berglund, P., Demler, O., Jin, R., Koretz, D., Merikangas, K. R., ... Wang, P. S. (2003). The Epidemiology of Major Depressive Disorder. *JAMA*, 289(23), 3095-3105. doi:10.1001/jama.289.23.3095
- Kuehner, C., & Weber, I. (1999). Responses to depression in unipolar depressed patients: an investigation of Nolen-Hoeksema's response styles theory. *Psychological Medicine*, 29, 323-1333.
- Lyubomirsky, S., & Nolen-Hoeksema, S. (1995). Effects of self-focused rumination on negative thinking and interpersonal problem solving. *Journal of Personality and Social Psychology*, 69(1), 176–190. <http://doi.org/10.1037/0022-3514.69.1.176>
- McPherson, A. V. (2012). *College Student Life and Financial Stress: An Examination of the Relation Among Perception of Control and Coping Styles on Mental Health Functioning* (Ph.D.). North Carolina State University, United States -- North Carolina. <http://search.proquest.com.ezproxy.uvm.edu/psycinfo/docview/1034725579/abstract?>
- McQuaid, J. R., Monroe, S. M., Roberts, J. R., Johnson, S. L., Garamoni, G. L., ... Frank, E. (1992). Toward the standardization of life stress assessment: Definitional discrepancies and inconsistencies in methods. *Stress Medicine*, 8(1), 47–56. doi:10.1002/smi.2460080107
- Michl, L. C., McLaughlin, K. A., Shepherd, K., & Nolen-Hoeksema, S. (2013). Rumination as a Mechanism Linking Stressful Life Events to Symptoms of Depression and Anxiety: Longitudinal Evidence in Early Adolescents and Adults. *Journal of Abnormal Psychology*, 122(2), 339–352. <http://doi.org/10.1037/a0031994>

- Miranda, R., & Nolen-Hoeksema, S. (2007). Brooding and reflection: Rumination predicts suicidal ideation at 1-year follow-up in a community sample. *Behaviour Research and Therapy*, *45*(12), 3088–3095. <http://doi.org/10.1016/j.brat.2007.07.015>
- Monroe, S. M. (2008). Modern Approaches to Conceptualizing and Measuring Human Life Stress. *Annual Review of Clinical Psychology*, *4*(1), 33–52. <http://doi.org/10.1146/annurev.clinpsy.4.022007.141207>
- Monroe, S. M., & Harkness, K. L. (2005). Life Stress, the “Kindling” Hypothesis, and the Recurrence of Depression: Considerations From a Life Stress Perspective. *Psychological Review*, *112*(2), 417–445. <http://doi.org/http://dx.doi.org.ezproxy.uvm.edu/10.1037/0033-295X.112.2.417>
- Morrison, R., & O’Connor, R. C. (2005). Predicting psychological distress in college students: The role of rumination and stress. *Journal of Clinical Psychology*, *61*(4), 447–460. <http://doi.org/10.1002/jclp.20021>
- Nolen-Hoeksema, S., & Morrow, J. (1991). A prospective study of depression and posttraumatic stress symptoms after a natural disaster: The 1989 Loma Prieta earthquake. *Journal of Personality and Social Psychology*, *61*(1), 115–121. <http://dx.doi.org/10.1037/0022-3514.61.1.115>
- Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking rumination. *Perspectives on Psychological Science*, *3*(5), 400–424. <http://doi:10.1111/j.1745-6924.2008.00088.x>
- Paykel ES. 2001. The evolution of life events research in psychiatry. *Journal of Affective Disorders*, *62*(3), 141–149. doi:10.1016/s0165-0327(00)00174-9
- Post, R. M. (1992). Transduction of psychosocial stress into the neurobiology of recurrent affective disorder. *American Journal of Psychiatry*, *149*, 999–1010.

- Sarason, I. G., Johnson, J. H., & Siegel, J. M. (1978). Assessing the impact of life changes: Development of the Life Experiences Survey. *Journal of Consulting and Clinical Psychology, 46*(5), 932–946. <http://doi.org/10.1037/0022-006X.46.5.932>
- Sarin, S., Abela, J., & Auerbach, R. (2005). The response styles theory of depression: A test of specificity and causal mediation. *Cognition & Emotion, 19*(5), 751–761. <http://doi.org/10.1080/02699930441000463>
- Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research, 27*(3), 247–259. <http://dx.doi.org.ezproxy.uvm.edu/10.1023/A:1023910315561>
- Weissman, M. M. (1996). Cross-national epidemiology of Major Depression and Bipolar Disorder. *JAMA: The Journal of the American Medical Association, 276*(4), 293. <http://doi.org/10.1001/jama.1996.03540040037030>
- Zimmerman, M., Sheeran, T., & Young, D. (2004). The Diagnostic Inventory for Depression: A self-report scale to diagnose DSM-IV major depressive disorder. *Journal of Clinical Psychology, 60*(1), 87–110. <http://doi.org/10.1002/jclp.10207>

Table 1. Descriptive statistics for all continuous measures at both time points.

	Mean	Standard Deviation	Minimum	Maximum
Time 1 ASRMS Score	4.9455	3.28533	.00	16.00
Time 2 ASRMS Score	3.3602	3.19862	.00	16.00
Time 1 BDI-II Score	5.7915	3.55503	.00	14.00
Time 2 BDI-II Score	4.7267	5.34071	.00	36.00
Time 1 DID Score	4.0586	4.52646	.00	17.00
Time 2 DID Score	17.4969	14.39826	.00	93.00
Time 1 LES Negative Score	6.7395	6.39554	.00	68.00
Time 2 LES Negative Score	4.6629	4.72635	.00	28.00
Time 1 RSQ Rumination Score	18.8727	11.32427	.00	59.00

Notes. ASRMS = Altman Self-Rating Mania Scale, BDI-II = Beck-Depression Inventory-Second Edition, DID = Diagnostic Inventory of Depression, LES = Life Experiences Survey, RSQ = Response Styles Questionnaire.

Table 2. Hierarchical regression results for predicting Time 2 depressive symptom severity on the BDI-II from the main and interactive effects of rumination and negative life events

Variable	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>R</i>	<i>R</i> ²	ΔR^2	<i>F</i>	<i>p</i>
Step 1				.430	.185	.185	28.507	< .001
BDI Time 1	.495	.093	.312					< .001
LES Time 1	.231	.060	.228					< .001
Step 2				.574	.329	.144	30.570	< .001
RSQ	.107	.027	.218					< .001
LES Time 2	.430	.074	.365					< .001
Step 3				.579	.335	.006	25.009	< .001
LES Time 2 x RSQ	-.008	.005	-.212					.141

Notes. See Table 1 for measure abbreviations. DID (categorical) Time 1 measures a lifetime history of major depression, LES Time 1 measures negative life events in the past year, RSQ measures rumination, and LES Time 2 measures negative life events over the semester.

Table 3. Hierarchical regression results for predicting Time 2 depressive symptom severity on the BDI-II from the main and interactive effects of rumination and negative life events with the addition of potential covariates to the model.

Variable	<i>B</i>	<i>SE B</i>	β	<i>R</i>	<i>R</i> ²	ΔR^2	<i>F</i>	<i>p</i>
Step 1				.518	.268	.268	11.398	< .001
Gender	-1.361	1.303	-.093					.122
Age	.100	.065	.092					.116
Ethnicity	.273	4.162	.197					.826
Semester	.520	.663	.046					.434
DID (categorical) Time 1	2.829	.722	.013					< .001
BDI-II Time 1	.476	.093	.314					< .001
LES Time 1	.137	.066	.066					.037
Step 2				.622	.387	.119	15.164	< .001
RSQ	.057	.028	.206					.001
LES Time 2	.398	.075	.334					< .001
Step 3				.625	.391	.003	13.779	< .001
LES Time 2 x RSQ	-.006	.006	-.169					.275

Notes. See Table 1 for measure abbreviations and Table 2 for an explanation of the constructs measured by each scale. Gender is dummy coded as 0 = female, 1 = male. Ethnicity is dummy coded as 0 = white, 1 = other. Semester is dummy coded as 0 = fall, 1 = spring, DID (categorical) measures lifetime history of major depression and is dummy coded as 0=no history of MDD, 1=history of MDD.

Table 4. Hierarchical regression results for predicting Time 2 depressive symptom severity on the DID from the main and interactive effects of rumination and negative life events

Variable	<i>B</i>	<i>SE B</i>	β	<i>R</i>	<i>R</i> ²	ΔR^2	<i>F</i>	<i>p</i>
Step 1				.371	.138	.138	19.530	< .001
DID (score) Time 1	.908	.206	.282					< .001
LES Time 1	.433	.173	.159					.013
Step 2				.527	.278	.140	23.374	< .001
LES Time 2	1.290	.211	.407					< .001
RSQ	.258	.082	.196					.002
Step 3				.528	.279	.001	18.686	< .001
LES Time 2 x RSQ	-.008	.016	-.078					.633

Notes. See Table 1 for measure abbreviations and Table 2 for an explanation of the constructs measured by each scale. DID (score) measures depressive symptoms.

Table 5. Hierarchical regression results for predicting Time 2 depressive symptom severity on the DID from the main and interactive effects of rumination and negative life events with the addition of potential covariates to the model.

Variable	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>R</i>	<i>R</i> ²	ΔR^2	<i>F</i>	<i>p</i>
Step 1				.432	.187	.187	7.156	< .001
Gender	-2.461	1.303	-.062					.324
Age	.171	.065	.058					.347
Ethnicity	.994	4.162	.017					.778
Semester	2.614		.087					.167
DID (categorical) Time 1	4.109		.130					.196
DID (score) Time 1	.740		.231					.024
LES time 1	.401		.142					.031
Step 2				.564	.318	.131	11.168	< .001
LES Time 2	1.259	.216	.391					< .001
RSQ	.224	.082	.177					.007
Step 3				.564	.318	< .001	10.016	< .001
LES Time 2 x RSQ	.005	.016	.047					.774

Notes. See Table 1 for measure abbreviations, Table 2 for an explanation of the constructs measured by each scale, and Table 3 for coding of covariates.

Table 6. Hierarchical regression results for predicting Time 2 hypomanic/manic symptom severity on the ASRMS from the main and interactive effects of rumination and negative life events.

Variable	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>R</i>	<i>R</i> ²	ΔR^2	<i>F</i>	<i>p</i>
Step 1				.286	.082	.082	11.107	<.001
ASRMS Time 1	.270	.058	.284					< .001
LES Time 1	.017	.035	.030					.623
Step 2				.291	.085	.003	5.755	< .001
LES Time 2	-.047	.050	-.068					.349
RSQ	-.002	.018	-.006					.923
Step 3				.296	.088	.003	4.755	< .001
LES Time 2 x RSQ	.003	.004	.144					.380

Notes. See Table 1 for measure abbreviations, Table 2 for an explanation of the constructs measured by each scale,

Table 7. Hierarchical regression results for predicting Time 2 hypomanic/manic symptom severity on the ASRMS from the main and interactive effects of rumination and negative life events with the addition of potential covariates to the model.

Variable	<i>B</i>	<i>SE B</i>	β	<i>R</i>	<i>R</i> ²	ΔR^2	<i>F</i>	<i>p</i>
Step 1				.365	.133	.133	4.793	< .001
Gender	.455	.567	.052					.423
Age	-.100	.042	-.154					.017
Ethnicity	-.679	.802	-.054					.398
Semester	-.231	.430	-.035					.591
DID (categorical) Time 1	-.431	.463	-.062					.353
ASRMS Time 1	.301	.063	.304					< .001
LES Time 1	.027	.041	.044					.510
Step 2				.367	.133	.001	3.735	< .001
LES Time 2	-.029	.053	-.040					.590
RSQ	-.003	.020	-.010					.883
Step 3				.367	.135	< .001	3.346	< .001
LES Time 2 x RSQ	.000	.004	-.005					.977

Notes. See Table 1 for measure abbreviations, Table 2 for an explanation of the constructs measured by each scale, and Table 3 for coding of covariates.

Appendix A

Appendix: Altman Self-Rating Scale for Mania (ASRM)

Name _____ Date _____ Score _____

Instructions

1. On this questionnaire are groups of five statements; read each group of statements carefully.
2. Choose the one statement in each group that best describes the way you have been feeling for the past week.
3. Circle the number next to the statement you picked.
4. *Please note:* The word "occasionally" when used here means once or twice; "often" means several times or more; "frequently" means most of the time.

-
- 1) 0 I do not feel happier or more cheerful than usual.
 - 1 I occasionally feel happier or more cheerful than usual.
 - 2 I often feel happier or more cheerful than usual.
 - 3 I feel happier or more cheerful than usual most of the time.

- 4 I feel happier or more cheerful than usual all of the time.
- 2) 0 I do not feel more self-confident than usual.
 - 1 I occasionally feel more self-confident than usual.
 - 2 I often feel more self-confident than usual.
 - 3 I feel more self-confident than usual most of the time.
 - 4 I feel extremely self-confident all of the time.
- 3) 0 I do not need less sleep than usual.
 - 1 I occasionally need less sleep than usual.
 - 2 I often need less sleep than usual.
 - 3 I frequently need less sleep than usual.
 - 4 I can go all day and night without any sleep and still not feel tired.
- 4) 0 I do not talk more than usual.
 - 1 I occasionally talk more than usual.
 - 2 I often talk more than usual.
 - 3 I frequently talk more than usual.
 - 4 I talk constantly and cannot be interrupted.
- 5) 0 I have not been more active (either socially, sexually, at work, home, or school) than usual.
 - 1 I have occasionally been more active than usual.
 - 2 I have often been more active than usual.
 - 3 I have frequently been more active than usual.
 - 4 I am constantly active or on the go all the time.

Appendix B

The Life Experiences Survey

Listed below are a number of events which sometimes bring about change in the lives of those who experience them and which necessitate social readjustment. *Please check those events which you have experienced in the recent past and indicate the time period during which you have experienced each event.* Be sure that all check marks are directly across from the items they correspond to.

Also, for each item checked below, *please indicate the extent to which you viewed the event as having either a positive or negative impact on your life at the time the event occurred. That is, indicate the type and extent of impact that the event had.* A rating of -3 would indicate an extremely negative impact. A rating of 0 suggests no impact either positive or negative. A rating of $+3$ would indicate an extremely positive impact.

Section 1

	0 to 6 mo	7 mo to 1 yr	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
1. Marriage			-3	-2	-1	0	+1	+2	+3
2. Detention in jail or comparable institution			-3	-2	-1	0	+1	+2	+3
3. Death of spouse			-3	-2	-1	0	+1	+2	+3
4. Major change in sleeping habits (much more or much less sleep)			-3	-2	-1	0	+1	+2	+3

	0 to 6 mo	7 mo to 1 yr	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
5. Death of close family member :									
a. mother			-3	-2	-1	0	+1	+2	+3
b. father			-3	-2	-1	0	+1	+2	+3
c. brother			-3	-2	-1	0	+1	+2	+3
d. sister			-3	-2	-1	0	+1	+2	+3
e. grandmother			-3	-2	-1	0	+1	+2	+3
f. grandfather			-3	-2	-1	0	+1	+2	+3
g. other (specify)			-3	-2	-1	0	+1	+2	+3
6. Major change in eating habits (much more or much less food intake)			-3	-2	-1	0	+1	+2	+3
7. Foreclosure on mortgage or loan			-3	-2	-1	0	+1	+2	+3
8. Death of close friend			-3	-2	-1	0	+1	+2	+3
9. Outstanding personal achievement			-3	-2	-1	0	+1	+2	+3
10. Minor law violations (traffic tickets, disturbing the peace, etc.)			-3	-2	-1	0	+1	+2	+3
11. <i>Male</i> : Wife/girlfriend's pregnancy			-3	-2	-1	0	+1	+2	+3
12. <i>Female</i> : Pregnancy			-3	-2	-1	0	+1	+2	+3
13. Changed work situation (different work responsibility, major change in working conditions, working hours, etc.)			-3	-2	-1	0	+1	+2	+3
14. New job			-3	-2	-1	0	+1	+2	+3
15. Serious illness or injury of close family member :									
a. father			-3	-2	-1	0	+1	+2	+3
b. mother			-3	-2	-1	0	+1	+2	+3
c. sister			-3	-2	-1	0	+1	+2	+3
d. brother			-3	-2	-1	0	+1	+2	+3
e. grandfather			-3	-2	-1	0	+1	+2	+3
f. grandmother			-3	-2	-1	0	+1	+2	+3
g. spouse			-3	-2	-1	0	+1	+2	+3
h. other (specify)			-3	-2	-1	0	+1	+2	+3
16. Sexual difficulties			-3	-2	-1	0	+1	+2	+3
17. Trouble with employer (in danger of losing job, being suspended, demoted, etc.)			-3	-2	-1	0	+1	+2	+3
18. Trouble with in-laws			-3	-2	-1	0	+1	+2	+3
19. Major change in financial status (a lot better off or a lot worse off)			-3	-2	-1	0	+1	+2	+3
20. Major change in closeness of family members (increased or decreased closeness)			-3	-2	-1	0	+1	+2	+3
21. Gaining a new family member (through birth, adoption, family member moving in, etc.)			-3	-2	-1	0	+1	+2	+3
22. Change of residence			-3	-2	-1	0	+1	+2	+3
23. Marital separation from mate (due to conflict)			-3	-2	-1	0	+1	+2	+3
24. Major change in church activities (increased or decreased attendance)			-3	-2	-1	0	+1	+2	+3

	0 to 6 mo	7 mo to 1 yr	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
25. Marital reconciliation with mate			-3	-2	-1	0	+1	+2	+3
26. Major change in number of arguments with spouse (a lot more or a lot less arguments)			-3	-2	-1	0	+1	+2	+3
27. <i>Married male</i> : Change in wife's work outside the home (beginning work, ceasing work, changing to a new job, etc.)			-3	-2	-1	0	+1	+2	+3
28. <i>Married female</i> : Change in husband's work (loss of job, beginning new job, retirement, etc.)			-3	-2	-1	0	+1	+2	+3
29. Major change in usual type and/or amount of recreation			-3	-2	-1	0	+1	+2	+3
30. Borrowing more than \$10,000 (buying home, business, etc.)			-3	-2	-1	0	+1	+2	+3
31. Borrowing less than \$10,000 (buying car, TV, getting school loan, etc.)			-3	-2	-1	0	+1	+2	+3
32. Being fired from job			-3	-2	-1	0	+1	+2	+3
33. <i>Male</i> : Wife/girlfriend having abortion			-3	-2	-1	0	+1	+2	+3
34. <i>Female</i> : Having abortion			-3	-2	-1	0	+1	+2	+3
35. Major personal illness or injury			-3	-2	-1	0	+1	+2	+3
36. Major change in social activities, e.g., parties, movies, visiting (increased or decreased participation)			-3	-2	-1	0	+1	+2	+3
37. Major change in living conditions of family (building new home, remodeling, deterioration of home, neighborhood, etc.)			-3	-2	-1	0	+1	+2	+3
38. Divorce			-3	-2	-1	0	+1	+2	+3
39. Serious injury or illness of close friend			-3	-2	-1	0	+1	+2	+3
40. Retirement from work			-3	-2	-1	0	+1	+2	+3
41. Son or daughter leaving home (due to marriage, college, etc.)			-3	-2	-1	0	+1	+2	+3
42. Ending of formal schooling			-3	-2	-1	0	+1	+2	+3
43. Separation from spouse (due to work, travel, etc.)			-3	-2	-1	0	+1	+2	+3
44. Engagement			-3	-2	-1	0	+1	+2	+3
45. Breaking up with boyfriend/girlfriend			-3	-2	-1	0	+1	+2	+3
46. Leaving home for the first time			-3	-2	-1	0	+1	+2	+3
47. Reconciliation with boyfriend/girlfriend			-3	-2	-1	0	+1	+2	+3
<i>Other recent experiences which have had an impact on your life. List and rate.</i>									
48. _____			-3	-2	-1	0	+1	+2	+3
49. _____			-3	-2	-1	0	+1	+2	+3
50. _____			-3	-2	-1	0	+1	+2	+3

	0 to 6 mo	7 mo to 1 yr	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
Section 2: Student Only									
51. Beginning a new school experience at a higher academic level (college, graduate school, professional school, etc.)			-3	-2	-1	0	+1	+2	+3
52. Changing to a new school at same academic level (undergraduate, graduate, etc.)			-3	-2	-1	0	+1	+2	+3
53. Academic probation			-3	-2	-1	0	+1	+2	+3
54. Being dismissed from dormitory or other residence			-3	-2	-1	0	+1	+2	+3
55. Failing an important exam			-3	-2	-1	0	+1	+2	+3
56. Changing a major			-3	-2	-1	0	+1	+2	+3
57. Failing a course			-3	-2	-1	0	+1	+2	+3
58. Dropping a course			-3	-2	-1	0	+1	+2	+3
59. Joining a fraternity/sorority			-3	-2	-1	0	+1	+2	+3
60. Financial problems concerning school (in danger of not having sufficient money to continue)			-3	-2	-1	0	+1	+2	+3