

RUMINATION IN THE CONTEXT OF DIVORCE

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STATEMENT BY AUTHOR

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Abstract

This study sought to replicate prior research showing that rumination exacerbates depression and results in cognitive deficits following the loss of a loved one after a natural disaster and even during everyday stressful events. The study examined if rumination has similar correlates among 114 participants who had recently undergone a divorce or separation. Findings from previous studies were not replicated with divorce participants. Rumination does not appear to moderate the association between self-reported divorce adjustment and cognitive performance and is not associated with difficulties in divorce adjustment. Results suggest that rumination may act more as a state variable than a trait variable in the context of a divorce.

Keywords: rumination, cognitive performance, divorce, depressive symptoms

Rumination in the Context of Divorce

Humans are one of the few species known to examine their emotions and to reflect upon them. This aspect of our cognition and self-awareness is said to make humans the superior species but this ability to self reflect can also be detrimental. As people go through difficult life events they must develop their own coping mechanisms to learn to get through times of distress. Some learn to suppress their emotions and thoughts related to the stressful event; others seek out social support systems, while still others tend to ruminate. Rumination is defined as negative self-focused attention in response to distress (Lyubomirsky & Nolen-Hoeksema, 1995). According to response styles theory, rumination involves repetitively and passively focusing on symptoms of distress and the possible causes and consequences of the distress (Nolen-Hoeksema, Wisco & Lyubomirsky, 2008). Importantly, when people ruminate they do not come up with solutions to their distress or take action but instead stay fixated on their problems and negative feelings (Nolen-Hoeksema et al., 2008).

In correlational studies rumination is associated with a variety of maladaptive outcomes including negative attributions, dysfunctional attitudes, hopelessness, pessimism, self-criticism, low mastery, dependency, sociotropy, neediness, and neuroticism (Ciesla & Roberts, 2002; Nolen-Hoeksema & Davis, 1999). Rumination also plays a mediating role in the relationship between depression and neuroticism, negative attribution styles, dysfunctional attitudes, self-criticism, dependency and neediness (Nolan, Roberts & Gotlib, 1998; Spasojevic & Alloy, 2001).

In experimental studies, rumination *causes* more negative thoughts about the past, present and future in dysphoric and clinically depressed people. When dysphoric patients are induced to ruminate they retrieve more negative memories and recall negative events occurring more

frequently in their lives (Pyszczynski, Hamilton, Herring, & Greenberg, 1989). Dysphoric people in the rumination condition are also more negative, self critical, more likely to blame themselves for their current problems, and express less confidence and optimism in overcoming these problems. When presented hypothetical negative events they also choose more negatively biased and distorted interpretations of the event (Lyubomirsky, Tucker, Caldwell, & Berg, 1999).

Tendency to ruminate has been found to be a stable individual characteristic over time (Nolen-Hoeksema & Davis, 1999), and for this reason it is referred to as a ruminative response style. During a longitudinal study of recently bereaved people the intraclass correlation for the scale across 5 interviews was .75 ($p < .0001$) even though levels of depression had dropped over the 18-month period after bereavement (Nolen-Hoeksema & Larson, 1999). People tend to ruminate even after they see the detrimental effects it can have. Ruminators tend to think they are trying to understand and solve their problems (Nolen-Hoeksema, 2004) but ironically rumination actually achieves the opposite effect. Rumination prompts dysphoric participants to rate their problems as overwhelming and impossible to solve (Lyubomirsky et al., 1999). According to Davis and Nolen-Hoeksema, people who ruminate are characterized by an inflexible cognitive style (2000). They may fail to adjust their coping styles in response to evidence of its ineffectiveness because they are cognitively inflexible.

Gender differences in rumination

There is a common stereotype that woman tend to ruminate while men suppress their emotions during times of distress or depression. Several studies have substantiated this stereotype to be somewhat valid with findings which indicate woman tend to engage in rumination significantly more than men (Butler & Nolen-Hoeksema, 1994; Grant et al., 2004; Nolen-Hoeksema & Larson, 1999; Roberts, Gilboa, & Gotlib, 1998; Ziegart & Kistner, 2002).

Butler and Nolen-Hoeksema found that when given a choice females chose to engage in an emotion-related task significantly more often than did males, even when this led them to focus on an existing sad mood (1994). In a naturalistic investigation females were also more likely to evidence an emotion-focused ruminative style of coping (Butler & Nolen-Hoeksema, 1994).

Some studies even show that gender differences in rumination mediate gender differences in depression (Grant et al., 2004; Roberts et al., 1998). Once Butler and Nolen-Hoeksema controlled for levels of rumination within their study gender was no longer a potent predictor of depression (1994). This shows that rumination may help account for gender differences in depression and could explain women's greater vulnerability to depression. Therefore, we predicted that women undergoing marital separation would engage in more rumination than men.

Rumination and Cognition

Rumination takes up mental capacity and can interfere with cognitive skills. While people are ruminating and obsessing over their distress they may be less able to focus on other tasks. While depressed, cognitive skills are already impaired and rumination can exacerbate these deficits (Nolen-Hoeksema et al., 2008). In a series of experimental laboratory studies, dysphoric students in the rumination condition reported diminished concentration on academic tasks, required more time during reading and test-taking, and displayed impaired working strategies and performance (Kuhl, 1981; Strack, Blaney, Ganellen, & Coyne, 1985). However, rumination did not produce cognitive deficits in these studies when unaccompanied by depressed mood.

Specifically, ruminators have a hard time switching from poor strategies to helpful strategies during a cognitive task. People who self-reported higher levels of rumination showed more repetitive errors in the Wisconsin Card Sorting Task even after controlling for level of depression (Davis & Nolen-Hoeksema, 2000). Watkins and Brown (2002) also found that

depressed patients induced to ruminate were significantly more likely to engage in stereotyped counting responses in a random-number generation task compared to depressed patients induced to distract and non-depressed controls. Ruminators seem to be particularly impaired in their ability to inhibit previously un-useful strategies in order to adopt more optimal strategies. In this study, we predict that in conjunction with depressed mood, rumination will be related to cognitive performance deficits in adults experiencing a marital separation.

Rumination and Longitudinal Indicators of Negative Adjustment

Rumination is found to be a poor coping mechanism that intensifies and prolongs the effects of depression, enhances negative thinking, impairs problem solving, negatively impacts instrumental behavior, and erodes social support over time (Nolen-Hoeksema et al., 2008). A ruminative coping style was associated with longer and more intense periods of depression in studies of people's dysphoric reactions to the death of a loved one (Nolen-Hoeksema, Parker, & Larson, 1994), an earthquake (Nolen-Hoeksema & Morrow, 1991) and to daily stressful events (Nolen-Hoeksema & Morrow, 1993).

Studies have found that rumination can predict the duration of depressive episodes. Kuehner and Weber (1999) measured rumination levels for patients at the end of a depression treatment and found that these levels predicted which patients would be in a major depressive episode 3 months later as well as their levels of depression 3 months after they were discharged. However, rumination scores do not consistently predict the duration of depression in participants already meeting the criteria for major depression. This may be due to the evidence that people susceptible to major depression appear to be highly likely to ruminate, reducing the statistical power of rumination to predict the duration of depressive symptoms (Nolen-Hoeksema, 2000). In this study, we predict that individuals who engage in more ruminative behaviors and thoughts

will evidence higher levels of depressive symptoms, non-acceptance of marital termination, and emotional intrusion.

The Present Study: Rumination and Divorce

Though there is a significant amount of research on rumination following the loss of a loved one, natural disaster, and daily stressful events, there is no research regarding rumination following a divorce. Divorce is a significant stressful event involving relational loss, which affects an alarming amount of people in today's society. Currently one in every six adults has experienced two or more divorces (Cherlin, 1992). Given how commonly divorce occurs, it is essential for us to understand the ways in which individuals cope in response to this stressor. Rumination may be one coping strategy that recently divorced individuals employ, and as such, it is important for us to understand the association between rumination and adjustment following divorce. Studies have revealed that rumination predicts anxiety, substance abuse, eating disorders and possibly self-harm in addition to depression (Nolen-Hoeksema et al., 2008). The severe negative outcomes that have been linked to rumination make it essential to understand how rumination operates within the growing population of divorced individuals.

The current study sought to determine whether rumination is associated with similar negative outcomes following divorce as have been observed following other negative events (Nolen-Hoeksema et al., 1994, Nolen-Hoeksema & Morrow, 1991, 1993). Our hypotheses were as follows:

First, given the research showing that women ruminate more than men following the loss of a loved one, we hypothesize that recently divorced women in this study will ruminate more than men.

Second, based on the documented link between rumination and cognition, we predict that

rumination will moderate the relationship between self-report of divorce adjustment and cognitive performance. Specifically, we hypothesize that the association of divorce adjustment with cognitive performance will depend on rumination (such that the greatest performance problems will be evidenced by those with high levels of rumination who are adjusting poorly to the divorce).

Finally, based on previous findings regarding the loss of a loved one (Nolen-Hoeksema et al., 1994), we hypothesize that rumination will moderate the course of self-reported psychological adjustment to divorce over time, such that people who report they are high in rumination at the initial assessment will evidence a slower improvement in divorce-related psychological adjustment.

Methods

Participants

Hypotheses were investigated in a study of 114 adults (75 females, 39 males) who had recently terminated (within the past 6 months) a long-term relationship (4 years or more) either through a divorce or a separation. Participants ranged from 19 to 63 years old ($M = 40.82$, $SD = 9.91$) and were recruited through fliers and newspaper advertisements. Willing participants were screened for eligibility in the study to ensure they had been in a long-term relationship and had recently been separated.

Measures

Divorce adjustment (DA) was measured with three separate scales: the Beck Depression Inventory (BDI), the Impact of Events Scale (IES) and the Nonacceptance of Marital Termination scale (NAMT).

Depressive symptoms. The Beck Depression Inventory (BDI-II; Beck, Ward,

Mendelsohn, Mock, & Erbaugh, 1961) is a 21-item self-report measure, which assesses the severity of depression. The scale has been shown to have high reliability and validity (Beck, Steer, & Cabin, 1988). Items are rated on a 4-point scale, with 0 indicating the absence of a symptom and 3 indicating persistent or severe expression of a symptom. The BDI is calculated with a sum score of the items between 0 and 63. Scores between 20 and 28 indicate moderate levels of depression and scores greater than 29 indicate severe levels of depression (Beck, Steer, & Brown, 1996).

Emotional intrusion. The Impact of Events Scale Revised (IES-R) is a 22-item self-report measure that assesses subjective distress caused by traumatic events (Weiss & Marmar, 1996). The questionnaire contains 7 items regarding the hyperarousal symptoms of PTSD. Respondents are asked to identify a specific stressful life event and then indicate how much they were distressed or bothered during the past seven days by each "difficulty" listed. Items are rated on a 5-point scale ranging from 0 ("not at all") to 4 ("extremely"). The scale yields a total score ranging from 0 to 88 and subscale scores can also be calculated for the Intrusion, Avoidance, and Hyperarousal subscales.

Nonacceptance of marital termination. Kiston's (1982) Acceptance of Relationship Termination Scale (AMT) consists of 11 four-point items regarding thoughts and feelings about accepting the end of a relationship (e.g. "I spend a lot of time wondering about my former partner"). The scale yields a summary score from 11 to 44, with higher scores indicating a lower acceptance of the end of the relationship or longing for one's former partner. The AMT has been a reliable assessment tool and highly correlated with depression in the context of a divorce (Kiston; Wang & Amato, 2000). Since higher scores indicate a lower acceptance to the end of the relationship, for the purposes of this investigation we refer to the construct measured by this

scale as Nonacceptance of Marital Termination (NAMT).

Rumination. Rumination was measured using the Rumination Response Style Questionnaire (RRS) developed by Nolen-Hoeksema and Morrow (1991). In the RRS subjects are asked how often they engage in 22 ruminative behaviors or thoughts when they feel depressed (e.g. “I think about how alone I feel”). They report on a scale ranging from 0 (“never”) to 3 (“always”).

Cognitive performance. Cognitive Performance was measured using a digit-symbol coding task based off the Wechsler Adult Intelligence Scale Revised (Wechsler, 1939) subtest with the same name. The task is believed to assess cognitive ability, specifically thought processing speed. This task involves copying nine symbols that correspond to different numbers. Number of correctly copied symbols within two minutes was computed as the primary cognitive performance outcome.

Procedure

These data were part of a larger investigation of adults’ adjustment to divorce. Participants came in for two separate lab visits. The Time 2 (T2) visit occurred 3 months after the first visit (T1). Prior to each lab visit participants filled out a large questionnaire packet in which the BDI, AMT, IES and RRS were completed. Participants brought the completed packet to the laboratory visit and gave them to the researcher. During each laboratory visit the participants were escorted into the participant room and performed a stream of consciousness task (SOC) in which they were recorded as they talked continuously about anything related to their relationship separation for four minutes. The SOC task was used to induce rumination in participants with high RRS scores (indicating a ruminative response style), which would cause a worse cognitive performance on the digit-symbol coding task according to our hypothesis.

Following the SOC task, participants filled out an assessment regarding the difficulty of the task. Participants were instructed (via a script) to complete the digit-symbol coding task, which was our primary cognitive performance measure.

Data Analytic Plan

Mean scores for the RRS, BDI, AMT, and IES were calculated individually. The mean of standardized scores for the BDI, AMT, and IES was calculated and used as a composite scale of divorce adjustment, such that higher scores on the composite scale indicated poorer divorce adjustment. Research questions were analyzed using multiple regressions. Potential confounds such as age, gender, and Time 1 levels of variables (when relevant) were entered as covariates in the first step of the models.

Results

Bivariate correlations were conducted to examine associations among all study variables (see table 1). As is expected time 1 and time 2 constructs were highly correlated.

Gender Differences in Rumination

In order to evaluate our first hypothesis, we conducted an independent samples t-test with gender as the independent variable. Contrary to our hypothesis, men ($M = 2.26$, $SD = .77$) evidenced greater self-reported rumination scores at T1 than woman ($M = 2.03$, $SD = .52$). $t = 1.95$ (116), $p = .05$.

Cognitive Performance

In order to test our second study hypotheses we conducted a hierarchical multiple regression. Our first regression examined the association between rumination and cognitive performance. After controlling for participants' sex, age, length of time since separation and length of relationship on an initial step, $R^2 = .04$, $p = ns$, divorce adjustment and rumination were

entered in a second step, $\Delta R^2 = .06, p < .05$, followed by the interaction of divorce adjustment and rumination, $\Delta R^2 = .03, p = .05$. Results revealed that divorce adjustment negatively predicted digit symbol accuracy, $\beta = -0.33, p < .01$, rumination was unrelated to cognitive performance, $\beta = 0.21, p = \text{ns}$, and the interaction was positively related to digit symbol accuracy, $\beta = 0.19, p = .05$. As shown in Figure 1, the regression estimates from this model resulted in an interaction effect that was contrary to our hypothesis. Specifically, the fewest correct responses on the digit-symbol coding task were observed for participants with the highest levels of divorce adjustment (reflecting highest levels of separation related distress) and the lowest levels of self-reported rumination).

Similar results were found using the BDI as an independent divorce adjustment measure. Results showed that depressive symptoms were negatively associated with number correct in the digit-symbol coding task, $\beta = -1.04, p < .01$. Rumination by itself was not negatively associated with number correct but we ran the hierarchical interaction regression to see the interaction between the BDI and the RRS (divorce adjustment and rumination) and the interaction term was significant, $\beta = .99, p < .05$.

Longitudinal Psychological Adjustment

Our third hypothesis involved examining the prospective association between rumination and divorce adjustment. Here I tested the three indicators of divorce adjustment in separate equations. In order to evaluate the prospective association of rumination with the IES scale, I conducted a hierarchical regression where I entered Time 1 AMT, Time 1 BDI, and Time 1 IES scores on the first step of the equation, $R^2 = .40, p < .001$, followed by Time 2 AMT and Time 2 BDI on a second step, $\Delta R^2 = .17, p < .001$, with Time 1 rumination on a third step $\Delta R^2 = .02, p < .10$. Results revealed that Time 1 IES was positively associated with Time 2 IES scores, $\beta =$

0.30, $p < .05$, and that Time 2 BDI was positively associated with Time 2 IES, $\beta = 0.40$, $p < .001$.

In order to evaluate the association of Time 1 rumination on Time 2 AMT scores, I conducted a regression where Time 1 AMT, Time 1 Time 1 BDI, and Time 1 IES scores were entered on the first step of the equation, $R = .65$, $p < .001$, followed by Time 2 IES and Time 2 BDI on a second step, $\Delta R^2 = .09$, $p < .001$, with Time 1 rumination on a third step $\Delta R^2 = .00$, $p = ns$. Results revealed that Time 1 AMT was positively associated with Time 2 AMT scores, $\beta = 0.77$, $p < .001$, and that Time 2 BDI was positively associated with Time 2 AMT, $\beta = 0.28$, $p < .01$.

Finally, in order to evaluate the association of Time 1 rumination on Time 2 BDI scores, I conducted a regression where Time 1 AMT, Time 1 Time 1 BDI, and Time 1 IES scores were entered on the first step of the equation, $R^2 = .41$, $p < .001$, followed by Time 2 IES and Time 2 AMT on a second step, $\Delta R^2 = .21$, $p < .001$, with Time 1 rumination on a third step $\Delta R^2 = .00$, $p = ns$. Results revealed that Time 1 BDI was positively associated with Time 2 BDI scores, $\beta = 0.48$, $p < .001$, Time 1 AMT was negatively associated with Time 2 BDI, $\beta = -0.38$, $p < .05$, Time 2 IES was associated with Time 2 BDI, $\beta = 0.38$, $p < .001$, and that Time 1 RRS was positively associated with Time 2 AMT, $\beta = 0.28$, $p < .01$. Self-reported rumination was significantly associated with T2 IES scores after accounting for T1 BDI, NAMT and IES.

Participants who reported a greater tendency to engage in ruminative thought patterns reported greater ongoing, divorce related emotional intrusion at the 3-month follow up assessment than participants who reported lower levels of rumination. The results of this regression analysis are shown in the rightmost panel of Table 2. Contrary to our hypothesis, there was no association between T1 rumination and the T2 BDI and NAMT.

Discussion

Rumination can be a maladaptive coping mechanism, which has been prospectively linked with psychological adjustment and a variety of negative outcomes. Divorce has become a common experience within the United States and consequently it is vital to investigate the coping mechanisms used within this context. A deeper understanding of the coping mechanisms used following a divorce is essential to improve the coping process for the divorcing population. The current study aimed to investigate whether rumination was associated with similar negative effects within the context of divorce as have been evidenced following other negative events.

When examining how rumination operates within the context of a divorce, I failed to replicate the rumination findings from previous studies. Based on this, we conclude that rumination may have a different role as a coping mechanism after a marital separation than has been observed in the context of bereavement and natural disasters. Contrary to expectations, men reported a tendency to ruminate more than women following a marital separation. Prior research shows that women typically ruminate more than men (Butler & Nolen-Hoeksema, 1994; Grant et al., 2004; Nolen-Hoeksema & Larson, 1999; Roberts, Gilboa, & Gotlib, 1998; Ziegart & Kistner, 2002). Although it is plausible that men actually ruminate more following a marital separation, this finding must be considered in terms of a potential selection bias in the present study; the men who participated in this study may represent a select group of all males coping with divorce, thus providing a sample that is not representative of typical sex differences following the end of a marriage.

Second, rumination did not moderate the relationship between divorce adjustment and cognitive performance in the manner we anticipated. Among the participants who were poorly adjusted to their separation, those who self reported higher levels of rumination had significantly

more correct responses on the digit-symbol coding task. There are two possible explanations for this finding. First, rumination may not be as detrimental to cognitive performance in the context of a divorce as has been demonstrated in dysphoric participants as a whole (Kuhl, 1981; Strack, Blaney, Ganellen, & Coyne, 1985). Depression following a divorce may be temporary or situational and therefore different than dysphoric affect in general. In the case of a divorce, trying to ascertain the causes of the divorce and taking fault may be beneficial. This may not be the case in relation to dysphoric participants.

Another possible explanation for the cognitive performance effect is multicollinearity. Rumination and divorce adjustment are highly correlated, which calls into question what proportion of variance in rumination remains to predict cognitive performance after accounting for divorce adjustment. From this perspective, in the case of divorce, it is possible that rumination represents an indicator of overall divorce adjustment rather than an independent trait level predictor. The counterintuitive interaction effects observed for predicting coding accuracy call into question the wisdom of considering rumination a moderator of the association between divorce adjustment and other outcomes of interest. Furthermore, it does not seem reasonable to think that rumination assessed at the time of a divorce would be considered a predictor over-and-above other indicators of self-reported adjustment. Replication of these findings are required to determine if rumination has a less detrimental effect on cognitive performance in the context of a divorce, or if our findings were simply a result of multicollinearity (due to shared method variance).

In the prospective analyses rumination was associated with high levels of emotional intrusion at the T2 follow-up after accounting for earlier indicators of divorce related distress, but was not associated with depression or non-acceptance of marital termination. A critical

question for future research will be to understand the part of emotionally intrusive experiences that is distinct from depression and longing for reunion; the present results suggest that rumination is an independent predictor of this aspect of emotional experience.

There were some limitations regarding our current study. As previously discussed, we may have had a selection bias regarding the male participants in our study. Many males who have recently undergone a marital separation may be unwilling to talk about their experience and thus, unlikely to participate in a study of this nature. Therefore the males who chose to participate in our study may be a select group of males who are more eager to discuss their recent separation and could be more likely to engage in ruminative behaviors.

Rumination was also measured after the separation had already taken place, reducing the chances of capturing trait-level rumination. In addition the current study was a correlational design so we are unable to determine any causal links. It could be beneficial to induce rumination in an experimental design though this raises some ethical questions. Future studies in this area will benefit from assessing ruminative tendencies prior to the divorce experience, thus increasing the possibility that self-report scores reflect trait-level rumination in general rather than a state level response set as they may in the current study.

Overall, it is apparent that rumination has different effects in divorce than those observed in prior research. None of the previous findings were replicated within this study. It appears that previous findings regarding rumination cannot be assumed to operate as expected within a divorcing sample.

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Figure 1. *Two-way Interaction Effect Between Rumination and Divorce Adjustment in the Prediction of Cognitive Performance*

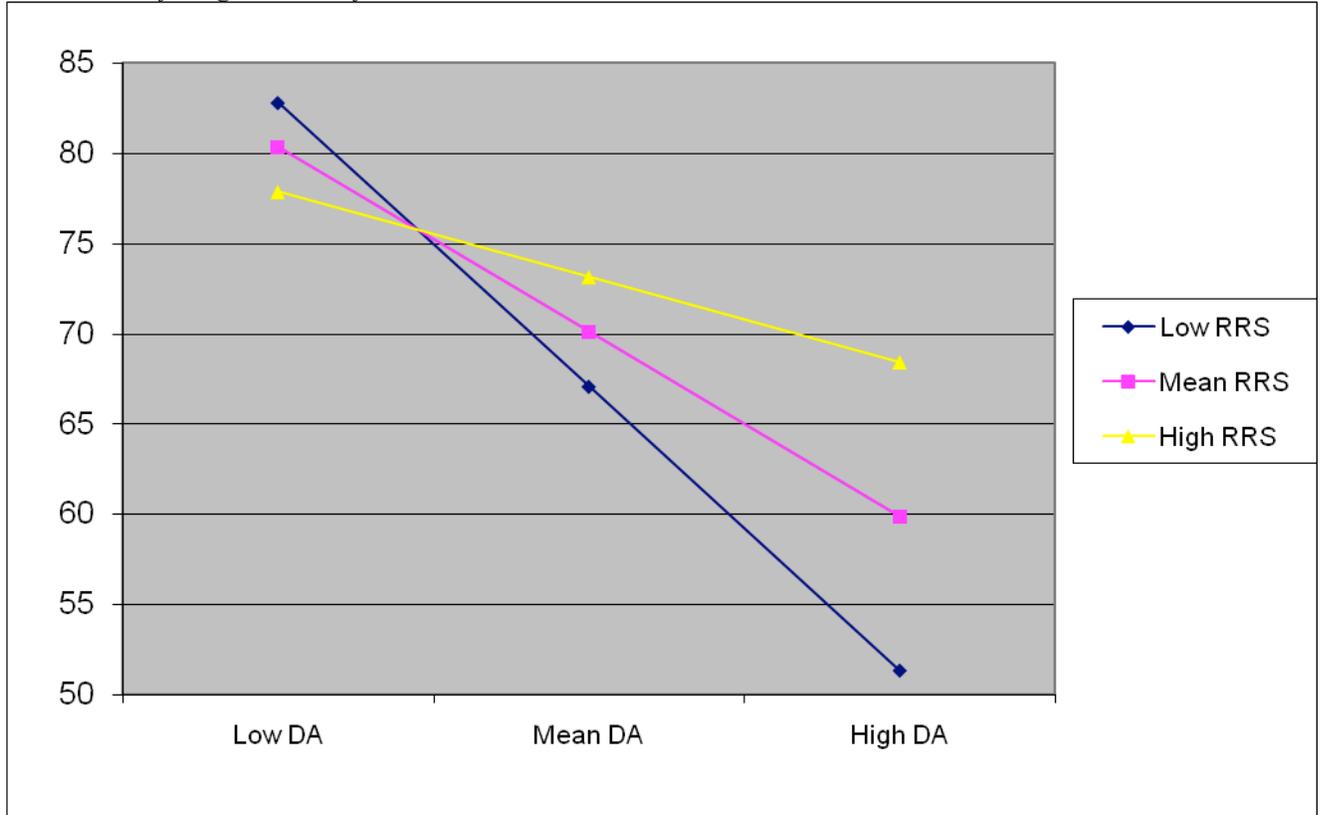


Table 2. Hierarchical Linear Regressions for Divorce Adjustment Variables and Rumination

Outcome	T2 Depression		T2 Non-acceptance		T2 Impact of Events	
	ΔR^2	β	ΔR^2	β	ΔR^2	β
<u>Step 1</u>	.41***		.65***		.40***	
T1 BDI		.48***		-.01		.20
T1 AMT		-.38*		.73***		-.07
T1 IES		-.09		.10		.36*
<u>Step 2</u>	.01		.00		.04*	
T1 RRS		.12		.05		.25*

† = $p < 0.10$, * $p < .05$; ** $p < .01$; *** $p < .001$.