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Rumination in Trauma Narratives: Gendered Implications

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Abstract

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Objective: Rumination is closely linked to both PTSD and depression in previous research, but mostly examined as a general response style. To study rumination in the context of specific traumatic event, we developed a new measure of rumination that captures the overall ruminative pattern exhibited in a specific trauma narrative, and examined relations between narrative rumination and well-being by gender.

Method: 224 undergraduate students completed narratives of traumatic event and wellbeing measures. Narratives were coded for rumination and cognitive processing.

Results: Females exhibited more narrative rumination and higher levels of depression and PTSD than males. But only males' narrative rumination positively relate to PTSD and depression symptoms. Moderating effect of narrative cognitive processing explained why the relation was absent for females. When females engaged in high cognitive processing, narrative rumination did not relate to more PTSD symptoms.

Conclusions: The new coding scheme extends previous research on rumination and wellbeing. Narrative rumination has very different implications for females and for males. Distinguishing different types of rumination in narrative is meaningful.

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Rumination in Trauma Narratives: Gendered Implications

Traumatic events can cause a great variety and amount of negative emotions and challenge the well-being of individuals affected. Narrating about negative experiences has been found to be a possible way to help individuals process these negative emotions and perform better psychologically (Pennebaker & Chung, 2011; Smyth, Hockemeyer, & Tulloch, 2008; Tuval-Mashiach et al., 2004). However, not all narrators benefit from this process (Fivush, Marin, Crawford, Reynolds, & Brewin, 2007; Lilgendahl, McLean, & Mansfield, 2013; Sales, Merrill, & Fivush, 2013). There are many studies that link narrative features to positive outcomes (Crossley, 2000; Park, 2010; Tuval-Mashiach et al., 2004; Waters, Shallcross, & Fivush, 2013), but what aspects of narrative make it less helpful to the narrator is less understood. One possibility is that when narrators ruminate rather than restructure these experiences, it may have detrimental outcomes, as has been suggested by Sales, Merrill & Fivush (2013). Thus the major objective of this research is to explore what rumination in narrative means for the psychological states of the narrator.

Post-traumatic Stress Disorder, Depression and Rumination

Studies indicate that about 82% of the U.S. population experiences one or more traumatic events in their lives (Sledjeski, Speisman, & Dierker, 2008), and among those exposed, about 8 to 18% develop post-traumatic stress disorder (PTSD) (Breslau et al., 1998; R. C. Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). According to DSM-IV criteria, about 9.7% of females and 3.6% of males reportedly experienced PTSD in their lifetime (Ronald C. Kessler,

Chiu, Demler, & Walters, 2005). PTSD is characterized by excessive fear, anxiety, altered mood, re-experiencing the event, intrusive thoughts and physical reactions (Brewin & Holmes, 2003). Researchers had formed theories from different approaches to explain why people exposed to trauma were affected in different ways. Social-cognitive models suggest that traumatic events shatter the beliefs and assumptions people previously held about the world (Janoff-Bulman, 2010), and phases of re-experiencing and avoidance occur as people try to adjust their belief system to encompass the unsettlingings posed by the event (Horowitz, 1997). Information processing theories emphasize the distinctiveness of traumatic memory, as stimuli associated with the event explicitly or implicitly link to the fear network, which puts the person in a “survival mode” (Chemtob, Roitblat, Hamada, Carlson, & Twentyman, 1988; Foa, Steketee, & Rothbaum, 1989). Emotional processing theory draws attention to the rigidity of worldviews and subjective perception of post-trauma emotions and behaviors (Foa & Rothbaum, 2001).

The stress one experiences after trauma is also a potential causal factor for depression. Major depressive disorder (MDD), characterized by persistent low mood and motivation, is often considered a result of chronic stress. MDD has a high comorbidity rate with PTSD, reported in various studies ranging from 36 to 55% (Campbell et al., 2007; Elhai, Grubaugh, Kashdan, & Frueh, 2008; R. C. Kessler et al., 1995). Gender differences in the development of the two disorders after trauma were consistently found across studies, with females about twice as likely to be affected compared to males (Breslau et al., 1998; R. C. Kessler et al., 1995). The connections between MDD and PTSD are complex. Some suggest the comorbidity can be

explained by the symptoms overlap (Brady, Killeen, Brewerton, & Lucerini, 2000) as both are characterized by large amounts of distress, and some notice the genetic and environmental risk factors that might contribute to both types of disorders (Breslau, 2009; Neria, Besser, Kiper, & Westphal, 2010). One symptom and risk factor that has been used to explain the remarkable gender differences in depression is rumination, which is also observed in PTSD (Roley et al., 2015).

Rumination is the self-focused thinking pattern that involves repetitive and circular thoughts about the causes and consequences of one's negative conditions and feelings (Nolen-Hoeksema, 1991). The rumination process, once started, exacerbates distress by limiting cognitive ability, occupying the working mind with superficial negative thoughts and memories, enhancing a pessimistic worldview, and in the long term, impairing social support (Nolen-Hoeksema, 1991; Nolen-Hoeksema & Davis, 1999). Facing traumatic events, ruminators' well-being might become more impaired than others because of their thinking pattern. They are constantly re-experiencing the event as their minds dwell on it. Indeed, studies have found that a ruminative response style is a strong predictor of PTSD symptoms after traumas such as motor vehicle accidents and natural disasters (Ehlers, Mayou, & Bryant, 1998; Murray, Ehlers, & Mayou, 2002; Nolen-Hoeksema & Morrow, 1991). In many studies, rumination mediated the gender differences in psychological well-being, which is females' higher rumination tendency explain their higher depression level (McGrath, Keita, Strickland, & Russo, 1990; Nolen-Hoeksema, Larson, & Grayson, 1999; Nolen-Hoeksema, Morrow, & Fredrickson, 1993;

Strauss, Muday, McNall, & Wong, 1997). Some explanations of females' rumination tendency involve social status (Nolen-Hoeksema et al., 1999), controllability of situation (Bandura, 2002), beliefs about emotions (Fabes & Martin, 1991), and emotional expressivity (Brody, 1993). As depression is comorbid with PTSD, and rumination is predictive of symptoms in both, further study on rumination might contribute to the understanding of the development of depression and PTSD after trauma and why they vary by gender.

The most common measure of rumination is the Ruminative Response Scale (RRS) (Nolen-Hoeksema & Morrow, 1991), which is a self-report questionnaire that asks how often one thinks or behaves as described by each item. This measurement considers rumination as a broad response style, assuming a person's rumination tendency is consistent across situations, and can be quantified by the accumulation of individual ruminative thoughts and behaviors. However, co-morbidity of PTSD, which is assumed to be based on a traumatic experience, with depression suggests that how an individual might ruminate about a particular difficult experience might be informative for understanding relations among rumination, depression and PTSD as well. In addition, not all the items in the RRS closely tap into the concept of rumination. Treynor and colleagues (2003) later revised the scale based on psychometric analysis, and subdivided the items into three categories as each relates to symptoms in various ways: brooding rumination, reflective rumination, and depressive rumination. The new model adds on to the original theory (Nolen-Hoeksema, 1987) and complicates the concept. Thus self report by consciously reflecting on previous thoughts and behaviors might not be the ideal way to capture

one's rumination level in regard to a particular traumatic event. Thus, a major objective of this study is to develop a new way of assessing rumination through using narratives of specific traumatic and stressful experiences, and to examine if a brooding ruminative and/or reflective ruminative narrative style is related to PTSD and depression outcome.

Narratives and Narrative Meaning-making

Narrative is a form for people to reflect on their thinking and feelings. Facing trauma, narrative could be potentially beneficial by providing a space for emotional disclosure that releases the stress caused by avoidance and inhibition (Baikie & Wilhelm, 2005; Batten, Follette, Hall, & Palm, 2003). Acknowledging the importance of the event and expressing the emotions elicited by it is a beginning for coping with the trauma. In the narrating process, people attempt to make sense of the experience and sometimes draw meanings from it. Individuals' various abilities to make meanings of the negative experience in the narrative have important implications for their well-being (Fivush, Habermas, Waters, & Zaman, 2011; Tuval-Mashiach et al., 2004; Waters et al., 2013). Many previous studies have looked for narrative variables that are indicative of meaning making, and narrative coherence and cognitive processing are the ones that were most consistent (Fivush & Baker-Ward, 2005; Park, 2010; Reese et al., 2011).

Narrative coherence evaluates how well the narrator links different parts of the story together, providing context and causal structure. It was found to positively relate to wellbeing, demonstrated as less PTSD symptoms (Peterson & Biggs, 1998), and less depression and more life satisfaction (Baerger & McAdams, 1999). Use of cognitive processing words like "reason"

and “understand” indicates the narrator is actively reflecting on and making sense of the event. In a study of college students narrating a romantic relationship breakup, Boals and Klein (2005) found less use of cognitive words related to greater avoidance of the breakup and higher level of grief. Also, when the use of cognitive processing words increase over multiple writing courses, the pattern is predictive of better physical and mental health (Knowles, Wearing, & Campos, 2011). Therefore, meaning making is an adaptive narrative process.

In clinical practice, there have been successful attempts to use narrative as therapy. Narrative exposure therapy (NET) is a short-term PTSD treatment, in which patients under guidance get imaginative exposure by narrating the traumatic event (M. Schauer, Schauer, Neuner, & Elbert, 2011). Theoretically, NET encourages the person to overcome avoidance, develop an organized recollection of the event that counteracts the intrusive and fragmentary memories (M. Schauer et al., 2011), transforms *hot implicit memory* into *cool declarative memory* (Elbert & Schauer, 2002), and ideally initiates modification of the overactive fear network (M. Schauer & Schauer, 2010). In a study testing the efficacy of NET (Neuner, Schauer, Klaschik, Karunakara, & Elbert, 2004), 43 PTSD-diagnosed Sudanese refugees were divided into three treatment groups: one received 4 sessions of NET, one received 4 sessions of supportive counseling, and the other received one session of psychoeducation. Both NET and supportive counseling groups showed significant improvement after the treatment, but in the 1-year follow up, only 29% of the NET group met diagnostic criteria for PTSD, compared to 79% in supportive counseling and 80% in the psychoeducation group. NET’s efficacy in improving

psychological well-being after trauma was confirmed in a wide range of populations, including children (S. Schaal, Elbert, & Neuner, 2009; E. Schauer, 2008), prisoners (Bichescu et al., 2005), and genocide survivors (Susanne Schaal & Elbert, 2006). Specifically, over the narrative therapy course, it was observed that as disorganized thoughts decreased and internal meaning making attempts increased over time, PTSD symptoms reduced correspondingly, which confirms narrative's beneficial role in difficult event processing and fostering meaning making (van Minnen, Wessel, Dijkstra, & Roelofs, 2002).

However, not all the results of narrating traumatic events and meaning making are promising. Importantly, the studies using narrative intervention just discussed are highly structured by a trained therapist to help individuals reconstruct beneficial narratives. In contrast, the majority of empirical research on this questions simply examines relations between spontaneous narratives and well-being in college student and community samples. As most of the narrative meaning making studies were conducted on populations for whom stressful life events are rare, Sales and colleagues (2013) were interested in implications of narrative meaning making for populations living in particularly challenging conditions. They studied an at-risk African-American adolescent female sample. The participants were asked to verbally narrate one extremely negative life event and their thoughts and feelings about it in face-to-face interviews and also completed self- reports on life history, personality, and well-being measures. Narrative measures like internal states, coherence, growth, and reflective insight were hand coded from the transcribed narratives. Contrary to the popular trend in the field, narrative variables like

cognition words, positive emotion, and reflective insights were related to more depression symptoms in this sample. The authors infer that the participants might not have the cognitive resources necessary to successfully make meaning from their experiences through narratives, and the narrative variables observed in the study reflect meaning making effort instead of meaning made. Importantly, the authors also noticed the unsuccessful effort might be similar to rumination.

Narrative Rumination

There are two studies, to our knowledge, that have explicitly examined rumination in narrative format. In one study, bereaved men narrated their feelings and how they adjusted to their partners' death in interviews (Nolen-Hoeksema, McBride, & Larson, 1997). The transcripts of interviews were divided into idea units that contain single memory, thought, or feeling, and each idea unit was coded by categories of narrative variables. Rumination, as one category, was classified by possible types of statements that reflect ruminative thoughts and behaviors, and the statements are similar to the items in the RRS. It was found that narrative rumination scores positively correlate with depression and PTSD symptoms, and negatively correlate with positive states of mind. In the other study, college students were asked to narrate stressful experiences (relationship, academic or career pursuit) everyday over a three-day writing task (Marin & Rotondo, 2015). The authors focused on comparing ruminative brooding to the positive type of self-reflection observed in narratives. For narrative variables coding, they used a similar approach as the bereaved men study; they divided whole narratives into phrases and assigned

each phrase into a narrative category. Statements about negative evaluation, cause and consequence were counted as ruminative brooding, and neutral or positive evaluation as self-reflection. They found that increases of ruminative brooding over the writing course was related to lower self-esteem one week later and lower ego identity development both one week and one month after the writing. These two studies suggest that rumination observed in free-response narratives could be a more natural, implicit way to capture rumination about a particular event compared to the conscious introspective reflection required by self-report questionnaire, but the propositional coding of rumination is still limited to picking up individual indicators of ruminative thoughts and behaviors and summarizing them, similar to the rationale of the RRS. However, rumination by definition is characterized by the repetitiveness and negativity of thinking process, which should be reflected more holistically in the narrative of the stress-producing event; propositional coding may not capture the implicit qualitative differences in patterns between brooding rumination, reflective rumination and non-rumination. In the current study, we developed a more holistic dimensional coding scheme for narrative rumination using theoretical models and grounded theory approach (Nolen-Hoeksema, 2000; Nolen-Hoeksema & Morrow, 1993; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008; Schwartz & Koenig, 1996; Treynor et al., 2003).

When done in a ruminative style, narrative might not have the promising effect suggested by the meaning making and NET literature. Ruminative narration might still have the benefit of emotional disclosure compared to the complete avoidance condition, but the ruminative

disclosure does not foster resolution and better emotional regulation after the expression, and the negative emotions expressed will feed on themselves and trap the narrator in the circle of negativity. As ruminative narratives tend to be repetitive and circular on selective aspects of the event, it would impede coherently organizing the fragmentary memories to protect the narrator from intrusive thoughts. Meaning making attempts might also be common in ruminative narrative, as rumination has a component of searching for causes and consequences by definition. But as the circular pattern prevents meaning from being made, the attempts may be unproductive and turn into dwelling on the negativity, which causes even more distress (Nolen-Hoeksema & Davis, 1999; Park, 2010).

There is experimental evidence that supports the idea that rumination could potentially cause PTSD symptoms. In an analogue study (Ehring, Szeimies, & Schaffrick, 2009), after watching real footage of motor vehicle accident video, participants were assigned into an abstract rumination condition where they read and dwell on a ruminative transcript produced by an accident survivor, a concrete thinking condition where a transcript with concrete thoughts was provided, or a control condition where they engage in unrelated activities. The rumination group showed longer maintenance of negative mood and arousal than the other group, and the distraction group had the most intrusive thoughts. The results suggest ruminative processing was a step forward from the complete avoidance in the distraction condition, but also made it harder for the participants to get out of the negative shadow of the event. In a study with similar design, but memory integration replacing concrete thinking condition, Zetsche and colleagues (2009)

found gender differences on intrusive memories: males in the rumination condition had significantly more intrusive memories than those in the memory integration condition, whereas the opposite was true for females. This finding is particularly interesting since most of the existing studies on rumination, depression, and PTSD observed females naturally score higher on all, and their high rumination level could partially account for their higher depression and PTSD. What males' rumination might imply and whether it is different from females' did not get attention. Many of the explanations for females' higher rumination draw on their inferior external conditions, like social status (Nolen-Hoeksema et al., 1999), and controllability of situation (Bandura, 2002), so it is logical to question what happens to males who might be in an inferior condition due to trauma exposure. Therefore, in this study we will examine narrative rumination and wellbeing with special attention to possible gender differences.

As mentioned, narrative rumination, with its search for causes and consequences, might have some overlap with meaning making measures in practice, like cognitive processing words use. It would be useful to examine narrative rumination, the maladaptive type of processing, in contrast to narrative cognitive processing, indicating the adaptive meaning making style. As they supposedly link to wellbeing measures in different directions, we examine what happens when they appear in the same narrative, and whether one will suppress the effect of the other.

Current Study

Rumination is closely linked to both PTSD and depression in previous research, but mostly examined as a general response style. To study rumination in the context of specific

traumatic events, we developed a new measure of rumination that captures the overall ruminative pattern exhibited in the narrative. We applied this new measure on a sample of college students narrating their most traumatic event.

The present study has three objectives. The first was to examine rumination in the context of a trauma narrative, and how it relate to well being outcomes. Based on existing evidence about ruminative response style, we predicted that narrative rumination would positively relate to PTSD and depression symptoms. The second objective was to test whether narrative rumination is different by gender, and if yes, would narrative rumination's relations to well being also vary. We predicted females would exhibit more narrative rumination than males, and more narrative rumination would relate to worse outcomes for both females and males. The third objective was to explore the relation between narrative rumination and narrative cognitive processing, and if a moderation effect exists. There was no direct hypothesis made, as no existing study has looked at narrative rumination and narrative cognitive processing together.

Method

Participants

224 undergraduate students (110 females, mean age=19.0, SD=1.46) participated in the larger study of narratives and well-being, from which these data were drawn. Course credit were offered for participation. 67% of the participants self-identified as Caucasian, 11.6% as Asian, 7.6% as African-American, 3.6% as Indian, 2.2% as Hispanic and 7.1% as Mixed or Other origin. All procedures were approved by the University IRB.

Procedure

One of 4 research assistants met groups of 6 to 12 participants in a campus classroom, sat them at least two seats away from each other, explained the study, and gave each of them a workbook. The workbook included a consent form, a demographics page, prompts and space for four narratives, and a battery of measures and questionnaires. The narratives and measures were counterbalanced, but the PTSD questionnaire was completed immediately after writing the narrative analyzed for this study. Participants took as much time as they need to complete the workbook, 90 to 120 minutes on average. The traumatic event writing prompt asked:

I would like for you to write about your most traumatic experience of your life. This should be an extremely emotional event that has affected you and your life. You may include the facts of the event, as well as your deepest thoughts and feelings. All of your writing will be kept confidential. Do not worry about spelling, sentence structure, or grammar. There is no time limit on your writing; you may write about this event for as long as needed.

Immediately after completing the narrative, the participant completed the Impact of Event Scale-Revised, a measure of PTSD, specific to the experience they had just written about, and they additionally completed several other measures of well-being during the session, including the Beck Depression Inventory.

Well-being Measures

Event-specific distress was assessed with *The impact of Event Scale-Revised* (IES-R). The IES-R is a 22-item scale measuring PTSD related symptoms with three subscales: Intrusion,

Avoidance, and Hyperarousal. Items are rated on a 5-point scale (0-4) for intensity of each symptom. The scale is commonly used for clinical assessment of distress related to PTSD, has high internal consistency ($\alpha = .96$) (Creamer, Bell, & Failla, 2003) and good test-retest reliability ($r = .89-.94$) (Weiss & Marmar, 1997) over 6 months.

General depression level was assessed with *Beck Depression Inventory II (BDI-II)* (Beck, Steer, & Brown, 1996). The BDI-II is a 21-item self-report measure of depression. The 21 symptoms (i.e. low mood, loss of motivation, sleep problem, etc.) came from clinical observation of depression traits. Participants rate each item on a 4-point scale according to severity of experience with the symptom. The BDI-II showed high internal consistency ($\alpha = .80$), test-retest reliability ($r = .93$), and construct validity ($r = .93$).

Narrative Coding

All the narratives were transcribed verbatim and checked for accuracy. As discussed in the introduction, two narrative variables were of interest for this study, narrative rumination and cognitive processing words. Narrative cognitive processing words were assessed by software word count, and narrative rumination was assessed with a newly developed coding scheme.

Narrative Cognitive Processing: Linguistic Inquiry and Word Count (LIWC) (Pennebaker, Francis, & Booth, 2001) was used to assess the degree of narrative cognitive processing exhibited. LIWC is a program that compares words in a given text to its built-in dictionaries and calculates the percentage of particular categories of word use in the text, in this case, the cognitive processing words (e.g. understand, realize, because, reason). The program has

demonstrated good predictive validity of many relevant measures (Pennebaker & King, 1999; Pennebaker, Mehl, & Niederhoffer, 2003).

Narrative Rumination: As described in the introduction, a new dimensional coding scheme for rumination was developed in the current study to assess the ruminative thought pattern specific to the event being narrated. Three developers discussed the core concepts of rumination based on existing theoretical models and measures (Nolen-Hoeksema, 2000; Nolen-Hoeksema & Morrow, 1993; Nolen-Hoeksema et al., 2008; Schwartz & Koenig, 1996; Treynor et al., 2003), and by examining a subset of narratives, and through this process, identified a list of distinctive observable features of narrative rumination. After refinement, the narrative rumination features were organized from low to high into a 4-point scale (see Table 1 for detailed description of the coding scheme). Once the coding scheme was finalized, two coders independently coded 45 narratives from the dataset for reliability. Good intraclass correlation was reached ($\alpha = .94$). One coder coded the rest of the narratives.

Results

The first analysis examined the hypothesis that narrative rumination is related to well being. Pearson correlations were performed for narrative measures and well being measures (see Table 2). The hypothesis was partially confirmed. Narrative rumination was positively related to PTSD, but not to depression. Notice that the PTSD measure, IES-R, asks about the distress specifically around the traumatic event narrated, while the depression measure, whereas BDI-II, asks about general depressive symptoms. In other words, participants who ruminated more in the

narratives experienced more distress because of the event narrated, but it does not mean they are generally more depressed. In line with the common comorbidity suggested in the literature, PTSD significantly correlated with depression.

The second analysis examined possible gender differences in narrative rumination and well being measures. Independent t-tests were performed on all the variables by gender. See Table 3 for results. As expected, narrative rumination, PTSD, and depression all varied significantly by gender, with females higher on all variables. As gender differences were confirmed, a third analysis was done to examine whether the correlations vary by gender.

In the third analysis, Pearson correlations were run for all variables by gender (see Table 4). The correlation between PTSD and depression held for both females and males. However, narrative rumination was positively related to both PTSD and depression for males, but not for females. In other words, the correlation between narrative rumination and PTSD found in the first analysis was mainly driven by males. Males who ruminated more in their narratives were both more distressed about the event and more generally depressed, whereas females' narrative rumination was not related to their well being. Interestingly, narrative cognitive processing was negatively related to depression, which means females that employed more cognitive processing words in their narratives were generally less depressed. Therefore, we asked whether females' use of cognitive processing suppress, or counteract the negative implications of narrative rumination by testing the interactions between narrative rumination and narrative cognitive processing.

As presented in Table 2 and Table 3, narrative cognitive processing on its own did not relate to any other variable across gender, and did not vary significantly by gender. In Table 4, there were remarkable gender differences in the correlation patterns between narrative variables and well being variables. Thus additional moderation analyses were conducted to examine if the interaction between the two narrative variables, narrative rumination and narrative cognitive processing, would bring new light to the understanding of those differences. Since the primary interest was on the gendered patterns, subsequent analyses were done by gender. To avoid the problem of multicollinearity, independent variables, narrative rumination and narrative cognitive processing, were mean centered following previous researchers' advice (Aiken, West, & Reno, 1991; McClelland & Judd, 1993). The interaction effect between rumination and cognitive processing was analyzed to explore PTSD levels. In the simple hierarchical regression analyses, the two narrative variables were entered as the first step. They accounted for a significant amount of variance in PTSD for males, $R^2 = .195$, $F(2, 98) = 11.849$, $p < .001$, but not for females, $R^2 = .042$, $F(2, 100) = 2.218$, $p = .11$. The interaction term between narrative rumination and narrative cognitive processing was added to the model in the second step, which accounted for a significant amount of variance for females, $\Delta R^2 = .063$, $\Delta F(1, 99) = 6.987$, $p < .01$, but not for males, $\Delta R^2 = .002$, $\Delta F(1, 97) = .187$, $p = .67$. Females' narrative rumination was only positively related to PTSD level when they were less engaged in narrative cognitive processing, whereas males' narrative rumination was positively related to PTSD regardless of cognitive processing level. Narrative cognitive processing moderated the correlation between narrative rumination and

PTSD for females but not for males. See Figure 1 and Figure 2 for illustrations. The same steps were followed for moderation analyses on depression. Narrative variables accounted for a significant amount of variance in depression for both genders: males $R^2 = .070$, $F(2, 104) = 3.931$, $p < .05$; females $R^2 = .068$, $F(2, 101) = 3.669$, $p < .05$. The interaction term for either gender did not contribute to a significant change in variance, males $\Delta R^2 = .029$, $\Delta F(1, 103) = 3.329$, $p = .071$, females $\Delta R^2 = .041$, $\Delta F(1, 100) = .136$, $p = .71$. Narrative cognitive processing did not moderate the relation between narrative rumination and depression across gender.

Discussion

The current study examines rumination in trauma narratives, particularly what narrative rumination might suggest about the narrators' well being, how it relates to narrative cognitive processing, and whether there are gender differences in this process. A major goal was to develop a reliable and valid way of coding rumination from narratives. Generally, narrative rumination showed characteristics similar to rumination assessed in other forms, was more common among females than males, and was related to well being. These patterns suggest that this newly developed narrative rumination coding scheme is a valid measure. Importantly, the current study also shows that narrative rumination has very different implications for each gender, in directions not expected based on the existing rumination literature. Males' narrative rumination level related to both PTSD and depression, but females' narrative rumination had no significant relation to their well being. Further interaction analysis with narrative cognitive processing brought some light to the intriguing gendered correlation patterns. For females,

narrative cognitive processing moderated the relation between narrative rumination and well being, such that narrative rumination only positively related to PTSD symptoms when narrative cognitive processing was low. The interaction was not found for males, as their narrative rumination related to well being regardless of narrative cognitive processing use. Thus, the major findings in this study focus on these gender differences.

Previous research has found that rumination is a gendered response style, consistently being more common in females (Fabes & Martin, 1991; McGrath et al., 1990; Nolen-Hoeksema, 1987). The results from the current study extended the findings of gender differences in this general response style, by demonstrating that females exhibited more rumination than males in their narratives of one particular traumatic event. Also as expected, females in this study had significantly higher PTSD and depression symptoms. The original rumination response style theory (Nolen-Hoeksema, 1987, 1991) proposed that females' higher depression and distress tendency might be a result of their ruminative response style, and in subsequent studies that examined rumination by gender, it was widely supported that rumination mediated the gender differences in depression (Johnson & Whisman, 2013; Roberts, Gilboa, & Gotlib, 1998; Spasojević & Alloy, 2001). However, in the current study, females' narrative rumination was not significantly related to well being measures, neither PTSD nor depression, and thus did not help explain their distress. This finding is in conflict with the popular rumination as mediator theory. Because narrative rumination, as expected, was indicative of distress level for males, we infer that the absent correlation in females cannot be simply attributed to the methodological

differences between narrative rumination and self-report rumination employed in previous studies.

The current findings shed light on theoretical arguments proposed to explain the gender differences in ruminative response styles. Some explanations proposed are environmental, including females' lower social status and power, inferior role in heterosexual relationships, and less control of situations (Nolen-Hoeksema et al., 1999). They coincide with the factors that supposedly drive the gender differences in depression. Therefore, the robust correlation between rumination and depression might be attributable to the heterogeneity of causal factors. Other explanations focus on females' emotional sensitivity. Females are more aware of emotional information, more likely to attend and make judgments based on emotional information, and supposedly have a more complex emotional space (Barrett, Lane, Sechrest, & Schwartz, 2000; Johnsen, Thayer, & Hugdahl, 1995). When they notice, attend, and interpret negative emotional information, they may be more likely to experience intense emotion and dwell on it in a way that resembles rumination. Indeed, in previous research, the gender difference in rumination and depressive symptoms was no longer significant when attention to emotions were statistically controlled for (Thayer, Rossy, Ruiz-Padial, & Johnsen, 2003). The present study, by asking participants to provide their deepest thoughts and feelings about a traumatic event, was explicitly demanding attention to emotions that might put males in a condition in which they are less familiar and comfortable. Unfortunately, we did not have any direct measure of attention to emotions and could not control for it in the analysis. But as males showed distress related to their

narrative rumination, a clearly emotional process, whereas females did not, we infer that the difference in familiarity with the emotional narrating process contributed to the gender differences. Because females are more familiar and comfortable with focusing on emotions, these instructions may not have caused them as much distress as it did for males.

Introducing narrative cognitive processing helps explain the gendered correlation patterns better. Narrative cognitive processing, an indicator of narrative meaning making, did not vary by gender, did not relate to any variables of interest on its own, narrative rumination, PTSD, or depression. Some studies suggest there are health benefits associated with use of cognitive processing words, but most consistently when the use of cognitive processing words increases over multiple writing days (Boals & Klein, 2005; Knowles et al., 2011; Pennebaker & Francis, 1996). As the current study had only one time point, the lack of association between narrative cognitive processing and well being measures was not very surprising. As narrative rumination did not directly correlate with narrative cognitive processing, it is arguably independent from the broad concept of narrative meaning making.

However, importantly, we found an interaction between narrative rumination and cognitive processing for females, which means females' narrative rumination was related to their level of distress, but the trend was suppressed if they used more cognitive processing words. The interaction did not exist for males. Therefore, the question becomes what the high cognitive processing females were doing differently that balances out the negative implications of rumination. Rumination plus cognitive processing made a pattern that is conceptually similar to

reflective rumination. Reflective rumination initially emerged from the revision of Ruminative Responses Scale (Treynor et al., 2003). Factor analysis revealed that items in the scale could be divided in two types: reflective rumination, characterized by “a purposeful turning inward to engage in cognitive problem solving to alleviate one's depressive symptoms” (p. 256), and brooding rumination, “a passive comparison of one's current situation to some unachieved standard” (p. 256). Importantly, in subsequent analysis they found that, although females had both more brooding and reflective rumination than males, only brooding rumination mediated the gender difference in depression. Reflective rumination correlated with higher concurrent depression symptoms, but was associated with lower depression in the long term, whereas brooding always linked to higher depression. As the concept of reflective rumination captured the overlap of narrative rumination and cognitive processing well, we infer that when participants used sufficient amounts of narrative cognitive processing, their narrative rumination resembles more of reflective rumination. Because reflective rumination is a more adaptive type of processing than brooding, it was not directly linked to distress level about the event. Males, relatively unfamiliar with the exploratory narrating mode, did not immediately exhibit the adaptive side of reflective rumination in the one time point PTSD measure was taken.

The finding about narrative cognitive processing confirmed the benefit of narrative meaning making. In the context of narrating a traumatic event, some of the participants' use of cognitive processing words was able to counteract the distress indicated by the general rumination level at a single time point. If given proper guidance and more guided narrating

opportunities, like in Narrative Exposure Therapy (Susanne Schaal & Elbert, 2006; S. Schaal et al., 2009; E. Schauer, 2008; M. Schauer et al., 2011), their narrating process could be expected to become more effective, and therefore contribute to decreases of PTSD symptoms (van Minnen et al., 2002). We suggest that when addressing stressful experiences, spontaneous narrative might not always be appropriate as individuals might fail to find the adaptive way of processing on their own and engage in brooding rumination that causes even more distress (Sales et al., 2013), but guided narrative under a developed model like NET could have promising effects.

The current study, through the development of a dimensional narrative rumination coding scheme, found a new approach to examine rumination, particularly event-specific rumination. The findings confirm that the coding scheme adequately captured the concept of interest. It is particularly meaningful as narratives provide a more implicit, non-reflective measure of coping strategies, and eliminates the self-report bias from measure like RRS. If used in longitudinal designs, the narrative rumination coding scheme could track the changes in the overarching thinking pattern that other measures counting individual thoughts and behaviors could not. One problem with the current coding scheme is that it did not distinguish reflective rumination from brooding, and with the interaction between rumination and cognitive processing found, the next step is to transform the coding scheme to encompass the two types of rumination.

The greatest limitation of this study is the absence of individual's scores on the RRS. Using an archived dataset, we were limited to the well being measures already taken. Without RRS, we could not make any direct inference about relation between narrative rumination and

general ruminative response style. Future studies on narrative rumination would absolutely need to include RRS, and address this important question. Asking for the most traumatic event, we got a wide variety of events that occurred at very different points of time. Some events occurred very early in life and some are very recent. The difference in time means some participants were drawing on fresh unsettled memories, and others were drawing on cooled distanced ones. It raises the question of whether those narratives and introspective self-reports on distress are comparable. Also some events are clinically diagnosable traumas and others are not, and very few participants' report of PTSD level or depression met diagnostic level. So we are limited in terms of making explicit statements about clinical implications. Future studies could consider examining narrative rumination in more controlled samples that were exposed to similar recent traumas. As a cross-sectional study, narrative and well being measures were only completed at one time point. The design did not allow participants to familiarize themselves with the narrative process and actually start to draw meanings from it. We could not make directional inferences about narrative rumination and distress, one leading to the other or concurrent. Longitudinal studies would allow an examination of how narrative rumination and distress change patterns unfold.

Overall, this study brought new understandings to rumination in the context of a specific traumatic event. Event-specific rumination had very different implications by gender. Narrative cognitive processing explained why and how some rumination is not indicative of distress, and supported the two distinctive types of rumination: reflection and brooding. The findings call for

attention on the adaptive type of rumination and how some people are able to make better use of it.

References

- Aiken, L. S., West, S. G., & Reno, R. R. (1991). *Multiple regression: Testing and interpreting interactions*: Sage.
- Baerger, D. R., & McAdams, D. P. (1999). Life story coherence and its relation to psychological well-being. *Narrative Inquiry, 9*(1), 69-96.
- Baikie, K. A., & Wilhelm, K. (2005). Emotional and physical health benefits of expressive writing. *Advances in Psychiatric Treatment, 11*(5), 338-346.
- Bandura, A. (2002). Social foundations of thought and action. *The health psychology reader, 94-106*.
- Barrett, L. F., Lane, R. D., Sechrest, L., & Schwartz, G. E. (2000). Sex differences in emotional awareness. *Personality and social psychology bulletin, 26*(9), 1027-1035.
- Batten, S. V., Follette, V. M., Hall, M. L. R., & Palm, K. M. (2003). Physical and psychological effects of written disclosure among sexual abuse survivors. *Behav Ther, 33*(1), 107-122.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the beck depression inventory-II*: San Antonio, TX: Psychological Corporation.
- Bichescu, D., Schauer, M., Saleptsi, E., Neculau, A., Elbert, T., & Neuner, F. (2005). Long-term consequences of traumatic experiences: an assessment of former political detainees in Romania. *Clinical practice and epidemiology in mental health, 1*(1), 17.
- Boals, A., & Klein, K. (2005). Word use in emotional narratives about failed romantic

- relationships and subsequent mental health. *Journal of Language and Social Psychology, 24*(3), 252-268.
- Brady, K. T., Killeen, T. K., Brewerton, T., & Lucerini, S. (2000). Comorbidity of psychiatric disorders and posttraumatic stress disorder. *J Clin Psychiatry, 61 Suppl 7*, 22-32.
- Breslau, N. (2009). The epidemiology of trauma, PTSD, and other posttrauma disorders. *Trauma Violence Abuse, 10*(3), 198-210. doi: 10.1177/1524838009334448
- Breslau, N., Kessler, R. C., Chilcoat, H. D., Schultz, L. R., Davis, G. C., & Andreski, P. (1998). Trauma and posttraumatic stress disorder in the community: the 1996 Detroit Area Survey of Trauma. *Arch Gen Psychiatry, 55*(7), 626-632.
- Brewin, C. R., & Holmes, E. A. (2003). Psychological theories of posttraumatic stress disorder. *Clin Psychol Rev, 23*(3), 339-376.
- Brody, L. R. (1993). On understanding gender differences in the expression of emotion. *Human feelings: Explorations in affect development and meaning*, 87-121.
- Campbell, D. G., Felker, B. L., Liu, C. F., Yano, E. M., Kirchner, J. E., Chan, D., . . . Chaney, E. F. (2007). Prevalence of depression-PTSD comorbidity: implications for clinical practice guidelines and primary care-based interventions. *J Gen Intern Med, 22*(6), 711-718. doi: 10.1007/s11606-006-0101-4
- Chemtob, C., Roitblat, H. L., Hamada, R. S., Carlson, J. G., & Twentyman, C. T. (1988). A cognitive action theory of post-traumatic stress disorder. *Journal of Anxiety Disorders, 2*(3), 253-275.

- Creamer, M., Bell, R., & Failla, S. (2003). Psychometric properties of the Impact of Event Scale - Revised. *Behav Res Ther*, *41*(12), 1489-1496.
- Crossley, M. L. (2000). Narrative psychology, trauma and the study of self/identity. *Theory & Psychology*, *10*(4), 527-546.
- Ehlers, A., Mayou, R. A., & Bryant, B. (1998). Psychological predictors of chronic posttraumatic stress disorder after motor vehicle accidents. *Journal of abnormal psychology*, *107*(3), 508.
- Ehring, T., Szeimies, A.-K., & Schaffrick, C. (2009). An experimental analogue study into the role of abstract thinking in trauma-related rumination. *Behaviour Research and Therapy*, *47*(4), 285-293. doi: 10.1016/j.brat.2008.12.011
- Elbert, T., & Schauer, M. (2002). Psychological trauma: Burnt into memory. *Nature*, *419*(6910), 883-883.
- Elhai, J. D., Grubaugh, A. L., Kashdan, T. B., & Frueh, B. C. (2008). Empirical examination of a proposed refinement to DSM-IV posttraumatic stress disorder symptom criteria using the National Comorbidity Survey Replication data. *J Clin Psychiatry*, *69*(4), 597-602.
- Fabes, R. A., & Martin, C. L. (1991). Gender and age stereotypes of emotionality. *Personality and social psychology bulletin*, *17*(5), 532-540.
- Fivush, R., & Baker-Ward, L. (2005). The Search for Meaning: Developmental Perspectives on Internal State Language in Autobiographical Memory. *Journal of Cognition and*

Development, 6(4), 455-462. doi: 10.1207/s15327647jcd0604_1

Fivush, R., Habermas, T., Waters, T. E. A., & Zaman, W. (2011). The making of autobiographical memory: Intersections of culture, narratives and identity.

International Journal of Psychology, 46(5), 321-345.

Fivush, R., Marin, K., Crawford, M., Reynolds, M., & Brewin, C. R. (2007). Children's narratives and well-being. *Cognition and Emotion*, 21(7), 1414-1434.

Foa, E. B., & Rothbaum, B. O. (2001). *Treating the trauma of rape: Cognitive-behavioral therapy for PTSD*: Guilford Press.

Foa, E. B., Steketee, G., & Rothbaum, B. O. (1989). Behavioral/cognitive conceptualizations of post-traumatic stress disorder. *Behav Ther*, 20(2), 155-176.

Horowitz, M. J. (1997). *Stress response syndromes: PTSD, grief, and adjustment disorders*: Jason Aronson.

Janoff-Bulman, R. (2010). *Shattered Assumptions: Towards a New Psychology of Trauma*. New York: Simon and Schuster.

Johnsen, B. H., Thayer, J. F., & Hugdahl, K. (1995). Affective judgment of the Ekman faces: A dimensional approach. *Journal of Psychophysiology*.

Johnson, D. P., & Whisman, M. A. (2013). Gender differences in rumination: A meta-analysis. *Personality and individual differences*, 55(4), 367-374.

Kessler, R. C., Chiu, W. T., Demler, O., & Walters, E. E. (2005). Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey

Replication. *Arch Gen Psychiatry*, 62(6), 617-627.

Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Arch Gen Psychiatry*, 52(12), 1048-1060.

Knowles, E. D., Wearing, J. R., & Campos, B. (2011). Culture and the health benefits of expressive writing. *Social Psychological and Personality Science*, 1948550610395780.

Lilgendahl, J. P., McLean, K. C., & Mansfield, C. D. (2013). When is meaning making unhealthy for the self? The roles of neuroticism, implicit theories, and memory telling in trauma and transgression memories. *Memory*, 21(1), 79-96. doi: 10.1080/09658211.2012.706615

Marin, K. A., & Rotondo, E. K. (2015). Rumination and self-reflection in stress narratives and relations to psychological functioning. *Memory*, 1-13.

McClelland, G. H., & Judd, C. M. (1993). Statistical difficulties of detecting interactions and moderator effects. *Psychological Bulletin*, 114(2), 376.

McGrath, E. E., Keita, G. P. E., Strickland, B. R., & Russo, N. F. E. (1990). *Women and depression: Risk factors and treatment issues: Final report of the American Psychological Association's National Task Force on Women and Depression*: American Psychological Association.

Murray, J., Ehlers, A., & Mayou, R. A. (2002). Dissociation and post-traumatic stress disorder:

two prospective studies of road traffic accident survivors. *The British Journal of Psychiatry*, 180(4), 363-368.

Neria, Y., Besser, A., Kiper, D., & Westphal, M. (2010). A longitudinal study of posttraumatic stress disorder, depression, and generalized anxiety disorder in Israeli civilians exposed to war trauma. *J Trauma Stress*, 23(3), 322-330. doi: 10.1002/jts.20522

Neuner, F., Schauer, M., Klaschik, C., Karunakara, U., & Elbert, T. (2004). A comparison of narrative exposure therapy, supportive counseling, and psychoeducation for treating posttraumatic stress disorder in an african refugee settlement. *J Consult Clin Psychol*, 72(4), 579-587. doi: 10.1037/0022-006X.72.4.579

Nolen-Hoeksema, S. (1987). Sex differences in unipolar depression: evidence and theory. *Psychological Bulletin*, 101(2), 259.

Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of abnormal psychology*, 100(4), 569.

Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorders and mixed anxiety/depressive symptoms. *J Abnorm Psychol*, 109(3), 504-511.

Nolen-Hoeksema, S., & Davis, C. G. (1999). " Thanks for sharing that": ruminators and their social support networks. *Journal of Personality and Social Psychology*, 77(4), 801.

Nolen-Hoeksema, S., Larson, J., & Grayson, C. (1999). Explaining the gender difference in depressive symptoms. *Journal of Personality and Social Psychology*, 77(5), 1061.

Nolen-Hoeksema, S., McBride, A., & Larson, J. (1997). Rumination and psychological

- distress among bereaved partners. *Journal of Personality and Social Psychology*, 72(4), 855-862. doi: 10.1037/0022-3514.72.4.855
- 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.
- Nolen-Hoeksema, S., & Morrow, J. (1993). Effects of rumination and distraction on naturally occurring depressed mood. *Cognition & Emotion*, 7(6), 561-570.
- Nolen-Hoeksema, S., Morrow, J., & Fredrickson, B. L. (1993). Response styles and the duration of episodes of depressed mood. *Journal of abnormal psychology*, 102(1), 20.
- Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking Rumination. *Perspect Psychol Sci*, 3(5), 400-424. doi: 10.1111/j.1745-6924.2008.00088.x
- Park, C. L. (2010). Making sense of the meaning literature: An integrative review of meaning making and its effects on adjustment to stressful life events. *Psychological Bulletin*, 136(2), 257-301. doi: 10.1037/a0018301
- Pennebaker, J. W., & Chung, C. K. (2011). Expressive writing: Connections to physical and mental health. *Oxford handbook of health psychology*, 417-437.
- Pennebaker, J. W., & Francis, M. E. (1996). Cognitive, emotional, and language processes in disclosure. *Cognition & Emotion*, 10(6), 601-626.
- Pennebaker, J. W., Francis, M. E., & Booth, R. J. (2001). Linguistic Inquiry and Word Count (LIWC): A computerized text analysis program. *Mahwah (NJ)*, 7.

- Pennebaker, J. W., & King, L. A. (1999). Linguistic styles: language use as an individual difference. *Journal of Personality and Social Psychology, 77*(6), 1296.
- Pennebaker, J. W., Mehl, M. R., & Niederhoffer, K. G. (2003). Psychological aspects of natural language use: Our words, our selves. *Annual review of psychology, 54*(1), 547-577.
- Peterson, C., & Biggs, M. (1998). Stitches and casts: Emotionality and narrative coherence. *Narrative Inquiry, 8*(1), 51-76.
- Reese, E., Haden, C. A., Baker-Ward, L., Bauer, P., Fivush, R., & Ornstein, P. A. (2011). Coherence of personal narratives across the lifespan: A multidimensional model and coding method. *Journal of Cognition and Development, 12*(4), 424-462.
- Roberts, J. E., Gilboa, E., & Gotlib, I. H. (1998). Ruminative response style and vulnerability to episodes of dysphoria: Gender, neuroticism, and episode duration. *Cognit Ther Res, 22*(4), 401-423.
- Roley, M. E., Claycomb, M. A., Contractor, A. A., Dranger, P., Armour, C., & Elhai, J. D. (2015). The relationship between rumination, PTSD, and depression symptoms. *Journal of affective disorders, 180*, 116-121.
- Sales, J. M., Merrill, N. A., & Fivush, R. (2013). Does making meaning make it better? Narrative meaning making and well-being in at-risk African-American adolescent females. *Memory, 21*(1), 97-110. doi: 10.1080/09658211.2012.706614
- Schaal, S., & Elbert, T. (2006). Ten years after the genocide: Trauma confrontation and posttraumatic stress in Rwandan adolescents*. *J Trauma Stress, 19*(1), 95-105.

- Schaal, S., Elbert, T., & Neuner, F. (2009). Narrative exposure therapy versus interpersonal psychotherapy. A pilot randomized controlled trial with Rwandan genocide orphans. *Psychother Psychosom*, 78(5), 298-306. doi: 10.1159/000229768
- Schauer, E. (2008). *Trauma treatment for children in war: build-up of an evidence-based large-scale mental health intervention in north-eastern Sri Lanka*.
- Schauer, M., & Schauer, E. (2010). Trauma-focused public mental-health interventions: a paradigm shift in humanitarian assistance and aid work *Trauma rehabilitation after war and conflict* (pp. 389-428): Springer.
- Schauer, M., Schauer, M., Neuner, F., & Elbert, T. (2011). *Narrative exposure therapy: A short-term treatment for traumatic stress disorders*: Hogrefe Publishing.
- Schwartz, J. A. J., & Koenig, L. J. (1996). Response styles and negative affect among adolescents. *Cognit Ther Res*, 20(1), 13-36.
- Sledjeski, E. M., Speisman, B., & Dierker, L. C. (2008). Does number of lifetime traumas explain the relationship between PTSD and chronic medical conditions? Answers from the National Comorbidity Survey-Replication (NCS-R). *Journal of Behavioral Medicine*, 31(4), 341-349. doi: 10.1007/s10865-008-9158-3
- Smyth, J. M., Hockemeyer, J. R., & Tulloch, H. (2008). Expressive writing and post-traumatic stress disorder: effects on trauma symptoms, mood states, and cortisol reactivity. *Br J Health Psychol*, 13(Pt 1), 85-93. doi: 10.1348/135910707X250866
- Spasojević, J., & Alloy, L. B. (2001). Rumination as a common mechanism relating

depressive risk factors to depression. *Emotion*, 1(1), 25.

Strauss, J., Muday, T., McNall, K., & Wong, M. (1997). Response style theory revisited: Gender differences and stereotypes in rumination and distraction. *Sex Roles*, 36(11-12), 771-792.

Thayer, J. F., Rossy, L. A., Ruiz-Padial, E., & Johnsen, B. H. (2003). Gender differences in the relationship between emotional regulation and depressive symptoms. *Cognit Ther Res*, 27(3), 349-364.

Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination Reconsidered: A Psychometric Analysis. *Cognit Ther Res*, 27(3), 247-259. doi: 10.1023/A:1023910315561

Tuval-Mashiach, R., Freedman, S., Bargai, N., Boker, R., Hadar, H., & Shalev, A. Y. (2004). Coping with trauma: narrative and cognitive perspectives. *Psychiatry*, 67(3), 280-293. doi: 10.1521/psyc.67.3.280.48977

van Minnen, A., Wessel, I., Dijkstra, T., & Roelofs, K. (2002). Changes in PTSD patients' narratives during prolonged exposure therapy: a replication and extension. *J Trauma Stress*, 15(3), 255-258. doi: 10.1023/A:1015263513654

Waters, T. E. A., Shallcross, J. F., & Fivush, R. (2013). The many facets of meaning making: Comparing multiple measures of meaning making and their relations to psychological distress. *Memory*, 21(1), 111-124.

Weiss, D. S., & Marmar, C. R. (1997). The Impact of Event Scale Revised in Assessing

Psychological Trauma and PTSD—A Practitioners Handbook, Edited by Wilson JP & Keane TM. New York: Guilford Press.

Zetsche, U., Ehring, T., & Ehlers, A. (2009). The effects of rumination on mood and intrusive memories after exposure to traumatic material: An experimental study. *J Behav Ther Exp Psychiatry*, 40(4), 499-514. doi: 10.1016/j.jbtep.2009.07.001

Table 1. *Narrative Rumination Coding Scheme*

Narrative Rumination	Rumination is the repetitive self-focused thinking about one's negative feelings and conditions. Degree of narrative rumination is classified according to the level of repetitiveness, self-focus, and severity of the negative feelings.
0	<ul style="list-style-type: none"> • A detailed description of the event itself or factual account of circumstances • No hint of repetitive negative thoughts • Stating strong reactions or emotions in the moment or objectively stating the impact of the event is still a score of 0 <p>Example: "This was one of the most traumatic event in my life. It was b/c it was the first car accident I have been in. I used to see stuff on the news how people died in car accident, therefore I was scared."</p>
1	<ul style="list-style-type: none"> • Some hints of repetitive or intrusive thoughts that are hard to controlled, could be expressed by: <ul style="list-style-type: none"> - Confusion, having difficulty understanding the event and its impact, keep questioning the conditions and people involved - Fear, developed fear from a negative memory that has lasting impact - Anger or hatred, still harboring strong negative emotions for the person(s) that supposedly caused the event • Score of 1 is <i>distinct</i> from higher score by: <ul style="list-style-type: none"> - The account of negative thought adheres to the event, does not lead to a chain of other negative thoughts or feelings, does not take over the theme of the narrative - The negative thought is not about the self <p>Example: "When I was younger I always asked my mom if her and my dad would ever get divorced and she said no. To actually hear it was likely to happen made me very insecure w/ my family situation.... I wasn't able to get emotional to the extent of crying mainly b/c I was so shocked and angry that my mom didn't tell me herself."</p>
2	<ul style="list-style-type: none"> • Clear presence of repetitive negative thoughts, talking about one thing triggers a chain of negative thoughts, one thought building upon another in a consecutive sequence • Score of 2 can be reached through one or more of the following pathways: <ul style="list-style-type: none"> - Negative evaluation of the self, could be in the form of self-esteem impaired by the event, feeling of being judged by others, feeling shame or guilt - Contradictory emotions, making distinctively different statements about emotional reactions to the event, e.g. "no emotions are elicited ... any mention of Rocky's death elicited harsh emotions" - Refusing to formally acknowledge the impact of the event, and/or refusing

	<p>help from others, while the narrator is clearly impacted</p> <ul style="list-style-type: none"> - Other common rumination symptoms, e.g. thinking they do not deserve the negative condition, isolating themselves to think about the problems, wishing things have gone better, getting physical symptoms because of the thinking, etc. • For lasting events, escalating reactions and feelings are good indicators for score of 2 or higher • Language describing the duration or/and severity of the impact is important indicator for a score of 2 or higher, e.g. frequently, always, constantly, completely, still, extreme, etc. <p>Example: “I felt that everyone at college was judgmental and had no intentions of getting to know me. It was a feeling of complete loneliness. It soon turned into a feeling of hate for the people around me.”</p>
3	<ul style="list-style-type: none"> • Highly repetitive, self-focused, and impairing negative thoughts • Score of 3 can be reached through exhibiting some pathways with high intensity, or exhibiting many pathways: <ul style="list-style-type: none"> - Any presence of racing or circular negative thoughts that is poorly connected, hard to follow is enough to get a score of 3 - Negative evaluation of the self, could be in the form of self-esteem impaired by the event, feeling being judged by others, feeling shame or guilt, being self-conscious for the negative thinking - Contradictory emotions, making distinctively different statements about emotional reactions to the event - Other common rumination symptoms, e.g. thinking they do not deserve the negative condition, isolating themselves to think about the problems, wishing things have gone better, getting physical symptoms because of the thinking, etc. • Extreme choice of language throughout the narrative is good indicator for score of 3 • Coming to an abrupt resolution at the end does not take it to a lower score <p>Example: “I have problems trusting others and feel emotionally unattached frequently. Sometimes, I question the fact of whether or not I will even be able to engage in a meaningful long-term relationship and I constantly fear growing old and dying alone. Furthermore, I have issues with my self-confidence- I constantly wonder who knows or even suspects ... and find myself walking around campus with my eyes down and afraid of someone judging me.”</p>

Table 2. *Pearson Correlations between Narrative and Wellbeing Variables.*

	1	2	3	4
1 Rumination	-			
2 Cognitive processing	.117	-		
3 PTSD	.340***	-.009	-	
4 Depression	.041	-.047	.327***	-

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3. *Gender Differences of Narrative and Wellbeing Variables.*

	Females	Males	<i>t</i>	<i>p</i>
Narrative Variables				
Rumination	1.25(1.03)	.95(1.09)	2.10	.037*
Cognitive processing	6.74(2.22)	6.21(2.50)	1.64	.103
Wellbeing Variables				
PTSD	6.01(2.15)	4.97(2.35)	3.36	.001**
Depression	12.44(10.29)	8.70(6.88)	3.18	.002**

Note: * $p < .05$, ** $p < .01$

Table 4. *Pearson Correlations between Narrative and Wellbeing Variables by Gender.*

	Females				Males			
	1	2	3	4	1	2	3	4
1 Rumination	-				-			
2 Cognitive processing	.152	-			.061	-		
3 PTSD	.175	-.087	-		.455***	-.005	-	
4 Depression	-.159	-.233*	.314**	-	.252**	.132	.293***	-

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Figure 1. *Moderation Analysis of Cognitive Processing on Relation between Narrative Rumination and PTSD: Females.*

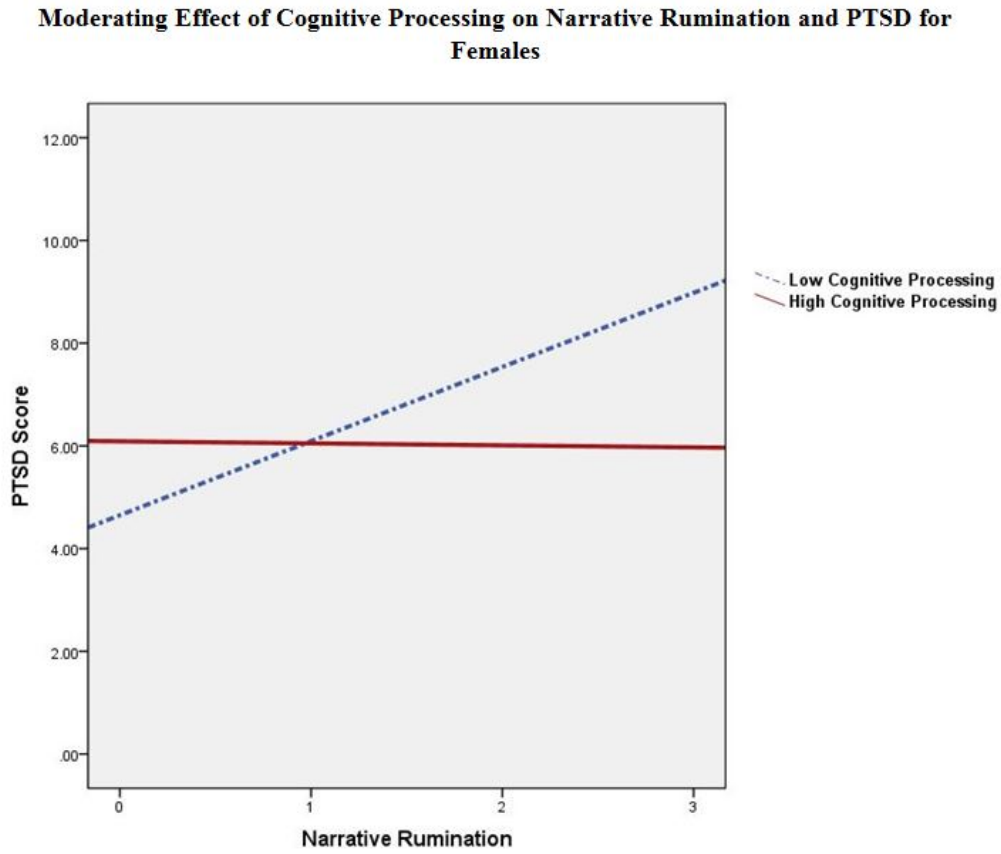


Figure 2. *Moderation Analysis of Cognitive Processing on Relation between Narrative Rumination and PTSD: Males.*

