Adaptive and maladaptive rumination after loss: A three-wave longitudinal study

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Objectives. Rumination is a risk factor after bereavement, predicting higher concurrent and prospective symptom levels of complicated grief and depression in mourners. Research has shown that rumination may consist of adaptive and maladaptive subtypes, but there has been a paucity of research in this topic in the bereavement area. Therefore, we aimed to clarify whether functional and dysfunctional forms of rumination can be distinguished after loss.

Design. Two-hundred and forty-two adults, who lost a first-degree family member on average 10 months previously, filled out questionnaires at three time points with 6 months between each time point.

Methods. Multiple regression analyses, controlled for loss-related variables, neuroticism, and baseline symptoms, were run to examine associations of subtypes of depressive rumination (brooding, reflection) and grief rumination (rumination about injustice, meaning, reactions, relationships and counterfactual thinking) with concurrent and prospective symptom levels of complicated grief and depression.

Results. Overall, grief rumination explained more variance in symptom levels than depressive rumination. Other major findings were that grief rumination about injustice predicted higher concurrent and prospective symptom levels of complicated grief and higher prospective symptom levels of depression. In contrast, grief rumination about emotional reactions was related to prospective reductions in symptoms of complicated grief. Reflection was also associated with prospective reductions of complicated grief and depressive symptom levels.

Conclusions. Results indicate that adaptive and maladaptive forms of ruminative thinking can be distinguished in bereaved individuals. Therapeutic interventions for complicated grief could potentially be improved by including techniques aimed at reducing maladaptive rumination and increasing adaptive rumination.

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Practitioner points
Clinical implications
- Adaptive and maladaptive components of rumination after loss can be distinguished. They are differentially associated with concurrent and prospective symptom levels of complicated grief and depression in mourners.
- Adaptive rumination after bereavement is characterized by repetitive, self-focused thinking aimed at understanding one's depressive and loss-related emotional reactions.
- Maladaptive rumination is characterized by repetitive, self-focused thinking about injustice to the self and making passive comparisons between the current situation (in which one has experienced a loss) and unrealized alternatives.
- Psychological interventions for complicated grief may be improved by adding therapeutic techniques aimed at reducing maladaptive rumination and increasing adaptive rumination.

Cautions and limitations
- This investigation relied exclusively on self-report measures.
- Conjugally bereaved women were overrepresented in the current sample.
- Complicated grief and depression levels in the current sample ranged from non-clinical to clinical. Effects may be more pronounced in a clinical sample.

Repetitive thinking, that is, recurrently thinking about one's self, one's concerns, and one's experiences, has been the topic of a great deal of research over the past four decades (for reviews, see Mor & Winquist, 2002; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008; Watkins, 2008). The majority of this research has focused on identifying maladaptive types of repetitive thinking. In particular, rumination, defined as repetitively and recurrently thinking about negative emotions (Nolen-Hoeksema & Morrow, 1991) and/or negative events (e.g., Michael, Halligan, Clark, & Ehlers, 2007), was related to various types of psychopathology, including anxiety, depression, complicated grief, and post-traumatic stress (for reviews, see Heron-Delaney, Kenardy, Charlton, & Matsuoka, 2013; Olatunji, Naragon-Gainey, & Wolitzky-Taylor, 2013; Watkins & Moulds, 2012).

Although clinicians were early to recognize the importance of ruminative thinking in adaptation to loss (e.g., Freud, 1917/1957; Lindemann, 1944), the first large-scale studies on the consequences of rumination following bereavement were conducted in the mid-90s. These studies showed that depressive rumination, recurrently focusing on depressive symptoms and their causes and consequences, predicted increases in depression severity after the death of a family member (Nolen-Hoeksema, McBride, & Larson, 1997; Nolen-Hoeksema, Parker, & Larson, 1994), and the onset of a depressive episode after child loss even when controlling for psychiatric history and demographic variables (Ito *et al.*, 2003). Generally, these studies have supported an association between depressive rumination and loss-related mental health problems.

More recently, grief rumination (i.e., repetitive thinking about the causes and consequences of the loss and loss-related emotions) has received increasing attention (for a brief review, see Eisma *et al.*, 2014). Grief rumination is associated with and prospectively predicts increases in levels of depression, post-traumatic stress, complicated grief, and general distress in persons who have experienced the death of a first-degree family member (e.g., Boelen, van den Bout, & van den Hout, 2003; Boelen & van den Hout, 2008; Bonanno, Papa, Lalande, Zhang, & Noll, 2005; Eisma *et al.*, 2013; van der Houwen, Stroebe, Schut, Stroebe, & van den Bout, 2010). Moreover, grief rumination has been found to be a stronger predictor of complicated grief and depression severity than other forms of rumination (Eisma *et al.*, 2012, 2013). Research thus supports a role

of grief rumination in persistence of distress after bereavement and underlines the importance of differentiation between various forms of rumination in adjustment to loss.

Studies of repetitive thinking in mourners have mirrored the tendency of researchers to focus primarily on identifying dysfunctional forms of repetitive thought. However, in other domains, attempts have been made to distinguish adaptive from maladaptive forms of repetitive thinking (e.g., Trapnell & Campbell, 1999; Treynor, Gonzalez, & Nolen-Hoeksema, 2003; Watkins, 2008). For instance, based on motivational theories and the five-factor model of personality, Trapnell and Campbell (1999) categorized rumination and reflection as different forms of private self-attentiveness. Although, ruminative self-focus is motivated by perceived threats, losses and injustices to the self, and associated with neuroticism and depression, reflective self-focus is motivated by curiosity or epistemic interest in the self and associated with openness to experiences and positive mental health consequences. Consistent with these ideas, ruminative self-focus has been related to decreased happiness and increased levels of depression (Elliott & Coker, 2008; Takano & Tanno, 2009), increased reactivity after negative interpersonal events (Takano, Sakamoto, & Tanno, 2011), and more negative and less positive memory content (Teasdale & Green, 2004). Conversely, reflective self-focus was related to increased happiness and lower levels of depression (Elliott & Coker, 2008; Takano & Tanno, 2009), but not to reactivity after negative interpersonal events (Takano *et al.*, 2011) or memory content (Teasdale & Green, 2004).

A similar distinction between adaptive and maladaptive forms of repetitive thinking in depression was made by Treynor *et al.* (2003), who discerned 'reflection' from 'brooding', as different forms of depressive rumination on the basis of a factor analysis of the Ruminative Response Scale (RRS) of the Response Style Questionnaire (Nolen-Hoeksema & Morrow, 1991). Reflection was interpreted as 'a purposeful turning inward to engage in cognitive problem solving to alleviate one's depressive symptoms' and brooding was interpreted as 'a passive comparison of one's current situation with some unachieved standard' (Treynor *et al.*, 2003, p. 256). In support of this distinction, brooding is more strongly related to symptom levels of anxiety and depression than reflection (for a review, see Olatunji *et al.*, 2013). Brooding also predicted prospective increases in depressive symptoms, whereas reflection predicted decreases in depressive symptoms (Treynor *et al.*, 2003). Moreover, brooding, but not reflection, was related to attention biases towards depressive material in a dot-probe task (Joormann, Dkane, & Gotlib, 2006). Brooding also concurrently mediated or moderated relationships between various risk factors in depression (e.g., autobiographical memory specificity, negative cognitive styles, childhood emotional abuse, immature defence styles, passive coping) and depressive symptoms, whereas reflection did not (e.g., Debeer, Hermans, & Raes, 2009; Kwon & Olson, 2007; Lo, Ho, & Hollon, 2008; Marroquin, Fontes, Sciletta, & Miranda, 2010; Raes & Hermans, 2008).

Further support for the distinction between adaptive and maladaptive components of repetitive thinking comes from factor analyses of multiple measures of repetitive thinking (e.g., Segerstrom, Stanton, Alden, & Shortridge, 2003; Siegle, Moore, & Thase, 2004). For example, Siegle *et al.* (2004) conducted an exploratory factor analysis on various measures of ruminative coping and distinguished factors of negatively valenced rumination and more neutrally valenced reflection. Similarly, in an influential review on repetitive thinking, Watkins (2008) concluded that not only the valence of repetitive thinking is important in determining its outcomes but also of the level of construal. On the one hand, high-level construals are characterized by abstract, general, superordinate, decontextualized mental representations that convey the general gist, or meaning of events and actions. On the other hand, low-level construals are characterized by more

concrete mental representations that include subordinate, contextual, specific, and incidental details of events and actions. More abstract repetitive thinking may have negative effects on mental health by interfering with problem solving and self-regulation and by increasing negative over-generalizations about the self in response to negative events (Watkins, 2008, pp. 187–189).

A distinction between functional and dysfunctional aspects of repetitive thinking after bereavement is theoretically and clinically important, not least because such knowledge can be applied in the design and improvement of interventions aimed at reducing loss-specific distress (for a review, see Wittouck, Van Autreve, De Jaegere, Portzky, & van Heeringen, 2011). Yet, this issue has received limited attention. Some studies support the distinction between previously defined adaptive and maladaptive forms of repetitive thinking following loss. For example, in two recently bereaved samples, brooding, but not reflection, was concurrently associated with symptoms of depression and complicated grief (Eisma *et al.*, 2014). Moreover, brooding concurrently mediated relationships between potential risk factors in adjustment to loss (self-concept clarity, perceived centrality of a loss) and complicated grief symptom levels (Boelen, 2012; Boelen, Keijsers, & van den Hout, 2012). However, some inconsistent results have been reported with regard to effects of previously defined adaptive and maladaptive forms of rumination in bereavement. For example, brooding and reflection (Treynor *et al.*, 2003) and ruminative self-focus (Trapnell & Campbell, 1999) did not significantly predict prospective symptom change in depression and complicated grief, whereas a grief rumination did (Eisma *et al.*, 2012, 2013). In sum, there is some preliminary evidence that previously identified subtypes of repetitive thinking (i.e., brooding) are maladaptive after loss, whereas other subtypes (i.e., reflection) may have more benign effects. However, grief rumination appears a stronger prospective predictor of loss-related mental health than brooding and ruminative self-focus. This raises the question whether adaptive and maladaptive subtypes of grief rumination can be identified, and if so, what the defining characteristics of these forms of rumination would be.

Notably, factor analyses of a newly developed instrument to measure grief rumination, the Utrecht Grief Rumination Scale (UGRS; Eisma *et al.*, 2014), showed that five factors of grief rumination can be distinguished: rumination about injustice, meaning, personal reactions, social relationships, and counterfactual thinking. Some components of grief rumination are neutrally valenced and appear related to the adaptive, reflective component of rumination. For example, grief rumination about personal reactions captures recurring attempts of bereaved individuals to gain deeper understanding of their emotional reactions to the loss (Example item: 'In the past month I tried to understand my feelings about the loss'). Other components of grief rumination are more negatively valenced and seem to represent maladaptive forms of rumination, similar to depressive brooding. For instance, grief rumination about injustice consists of repetitive comparisons of the current situation with an unrealized or unattainable alternative (Example item: 'In the past month I wondered why this had to happen to me and not someone else'). Interestingly, of all subtypes of grief rumination, rumination about injustice showed the strongest relationship with depressive brooding ($r = .53–.60$), whereas rumination about reactions was most strongly associated with depressive reflection ($r = .41–.43$; Eisma *et al.*, 2014). This suggests that it may be possible to differentiate functional from dysfunctional types of grief rumination.

In the current study, we aimed to investigate adaptive and maladaptive effects of depressive and grief rumination following loss. In order to do so, we examined the predictive value of two types of depressive rumination (i.e., brooding, reflection) and

five types of grief rumination (i.e., rumination about injustice, meaning, reactions, relationships, counterfactual thinking) on concurrent and prospective symptom levels of depression and complicated grief in a recently bereaved sample. We predicted that both depressive and grief rumination subtypes would be associated with mental health problems at baseline. However, we hypothesized that depressive brooding would predict deterioration of mental health over time, whereas reflection would predict improved mental health (cf., Treynor *et al.*, 2003). Similarly, we predicted that grief rumination about injustice would be related to worse mental health over time, while grief rumination about reactions would be predictive of better mental health.

Method

Sample and procedure

Participants were recruited through advertisements on websites for organizations for bereaved individuals and on the content network of Google. In each advertisement, a link was provided to a website specifically designed for this research project, on which people could access an online questionnaire after reading information about the study (e.g., on goals of the study, privacy, voluntariness) and providing informed consent. Research was conducted consistent with local ethical guidelines. Participants who indicated that they would like to be approached for a follow-up of this study were sent an email again after 6 months (Time 2) and 12 months (Time 3). In total, 242 people who lost a first-degree family member in the past 3 years participated. Of these participants, 183 (75.6%) filled out a questionnaire after 6 months and 155 (64.0%) filled out all three questionnaires. No significant differences were found in loss-related and demographic characteristics, rumination, or symptom levels between participants who dropped out and participants who completed all questionnaires.

Table 1 shows the sample characteristics. At baseline, the loss had occurred on average about 10 months previously ($M = 9.6$; $SD = 8.3$). Most participants (69.3%) had lost a family member less than 1 year ago. A majority had lost a partner (51.5%) or a parent (30.3%). The most frequently reported cause of death was natural (88.8%).

At the first measurement moment, the mean score on the Inventory of Complicated Grief–Revised (ICG–R; Prigerson & Jacobs, 2001) was 55.3 ($SD = 22.9$). A majority of participants (56.0%) scored higher than 25 on the original, shorter version of the ICG (Prigerson *et al.*, 1995), indicating that they potentially experienced more problems in social, mental, emotional, and physical health than non-clinically bereaved individuals. The mean score on the depression subscale of the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) was 9.7 ($SD = 5.0$). 60.3% of all participants scored above 7, a threshold for clinical levels of depression (Bjelland, Dahl, Haug, & Neckelmann, 2002). Time since loss at baseline was not significantly associated with complicated grief symptoms, $r(240) = -.12$, $p = .06$, but was negatively associated with depressive symptoms, $r(241) = -.23$, $p < .001$.

Questionnaires

Sociodemographic and loss-related characteristics

Characteristics of the participant (age, sex, and education level) and characteristics of the deceased and the loss (kinship, time since the loss, cause of death, and expectedness of the death) were measured with a self-constructed questionnaire.

Table 1. Sample characteristics (*N* = 242)

Demographic characteristics	
Sex, *N* (valid %)	
Male	31 (12.9)
Female	210 (87.1)
Age in years, *M* (*SD*)	48.7 (11.7)
Education level	
Primary school	2 (0.8)
High school	68 (28.2)
Vocational school	81 (33.6)
Higher education	90 (37.3)
Loss-related characteristics	
Deceased is, *N* (valid %)	
Partner	124 (51.5)
Parent	73 (30.3)
Child	22 (9.1)
Sibling	22 (9.1)
Cause of loss, *N* (valid %)	
Natural causes (e.g., illness, heart failure)	213 (88.8)
Accident	12 (5.0)
Suicide	14 (5.8)
Murder	1 (0.4)
Loss was, *N* (valid %)	
Expected	105 (43.4)
Unexpected	110 (45.5)
Both or neither	27 (11.1)
Time since loss in months, *M* (*SD*)	9.6 (8.3)
Loss occurred, *N* (valid %)	
Less than 1 year ago	167 (69.3)
Between 1 and 2 years ago	64 (26.6)
Between 2 and 3 years ago	10 (4.1)

Depressive rumination

The brooding and reflection subscales (five items each) of the RRS (Nolen-Hoeksema & Morrow, 1991; Treynor *et al.*, 2003) were used to assess depressive rumination. Respondents were asked to indicate how often they exhibit certain behaviour if they feel sad, blue, or depressed on a 4-point scale, ranging from almost 1 (*never*) to 4 (*almost always*). An example item of the brooding scale is: 'I think about a recent situation wishing it had gone better'. An example item of the reflection subscale is: 'I analyze recent events to understand why I feel depressed'. Research in Dutch samples has corroborated the reliability and validity of the RRS (Schoofs, Hermans, & Raes, 2010). Internal consistencies of the brooding and reflection subscales were adequate in the current sample, with α's of .75 and .79, respectively.

Grief rumination

The 15-item UGRS (Eisma *et al.*, 2012, 2014) was used to measure grief rumination, repetitive and recurrent thinking about causes, and consequences of the loss and loss-related emotions. The UGRS consists of five subscales of three items each. Participants indicated how often they have experienced certain thoughts during the past month, on a

5-point Likert scale ranging from 1 (*never*) to 5 (*very often*). The subscale *Reactions* measures thoughts about personal reactions to the loss (e.g., 'How often (in the past month) did you try to analyse your feelings about this loss precisely'?). The subscale *Injustice* assesses thoughts about the unfairness of the death (e.g., 'How often did you ask yourself what you have done to deserve this'?). The subscale *Counterfactuals* measures counterfactual thoughts about the events leading up to the death (e.g., 'How often did you analyse if you could have prevented the death'?). The subscale *Meaning* assesses thoughts about the meaning and consequences of the loss (e.g., 'How often did you analyse what the personal meaning of the loss is for you'?). The subscale *Relationships* measures thoughts related to social interactions (e.g., 'How often did you think about how you would like others to react to your loss'?). Multiple studies have supported the reliability and validity of the UGRS (Eisma *et al.*, 2012, 2014). In the present sample, internal consistencies of the subscales of the UGRS were adequate to excellent, with α's ranging from .68 to .90.

Depressive symptoms

Symptoms of depression were measured with the HADS (Zigmond & Snaith, 1983). The HADS has been shown to be a reliable and valid measure of depressive symptoms in several large Dutch samples, including clinical and non-clinical samples (Spinhoven *et al.*, 1997). The HADS depression subscale consists of seven statements about experiences that tap depressive symptoms. Participants indicated how often or to what extent they have had these experiences in the past week on 4-point Likert scales. The reliability of the depression subscale was good in this sample, α = .89.

Complicated grief symptoms

Symptoms of complicated grief were measured with the ICG–R, a reliable and valid instrument to assess pathological grief responses (Prigerson & Jacobs, 2001; Dutch translation: Boelen, van den Bout, de Keijser, & Hoijtink, 2003). The Dutch version consists of 29 statements about symptoms of complicated grief. Participants indicate how often or intensely they have experienced these symptoms over the past month. Answers are given on a 5-point Likert scale ranging from 0 (*almost never*) to 4 (*always*). The reliability of the ICG–R was excellent in the current sample, α = .95.

Neuroticism

As a control variable, neuroticism, trait emotional instability, a general vulnerability factor in the development of psychopathology (Ormel, Rosmalen, & Farmer, 2004), was assessed with the neuroticism subscale of the Big Five Inventory (BFI; John & Srivastava, 1999; Dutch translation: Dennissen, Geenen, Van Aken, Gosling, & Potter, 2008). The BFI was validated in a large Internet-based Dutch community sample and showed good reliability and construct validity. Participants were asked to indicate their agreement with eight statements regarding their perceptions of themselves in various situations on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). In the current study, the internal consistency of the neuroticism subscale of the BFI was good, α = .81.

Statistical analyses

Before our main analyses, multiple regression analyses were conducted to determine which demographic and loss-related variables predicted baseline symptom levels and symptom level change in complicated grief and depression at 6 and 12 months (for a review of demographic and loss-related variables predicting mental health after loss, see Stroebe, Schut, & Stroebe, 2007). Variables that significantly predicted symptom levels or symptom change were controlled for in our main analyses. Additionally, neuroticism was included as a predictor on all analyses, in order to rule out the effects of general trait vulnerability to development of psychopathology (Ormel *et al.*, 2004). In our main analyses, hierarchical multiple regression analyses were used to assess the predictive value of subtypes of rumination on symptom levels of depression and complicated grief. Analyses on depressive and grief rumination were run separately to rule out the influence of potential overlap between rumination measures. Analyses were conducted using SPSS 20.0 (IBM Corp., Released 2011, IBM SPSS Statistics for Windows, Armonk, NY, USA).

Results

Preliminary analyses

As mentioned, we first conducted multiple regression analyses on symptom levels and symptom level change in which all demographic and loss-related variables were entered simultaneously. Time since loss and kinship predicted baseline complicated grief and depressive symptoms and symptom change at all time points, except complicated grief symptom change at 6 months. Time since loss and kinship were therefore controlled for in the main analyses on symptom levels at each time point. Cause of death was exclusively related to baseline complicated grief symptoms, but not to symptom levels at other time points, and was therefore not controlled for in our main analyses. Table 2 shows correlations between all subtypes of rumination and neuroticism. Table 3 shows correlations between subtypes of rumination and neuroticism and symptom levels of complicated grief and depression at each time point.

Table 2. Correlations between rumination subtypes and neuroticism at baseline

	RRS reflection	UGRS injustice	UGRS reactions	UGRS counterfactuals	UGRS meaning	UGRS relationships	Neuroticism
RRS brooding	.33	.59	.40	.38	.19	.45	.55
RRS reflection		.02 ns	.30	.16	.17	.25	.21
UGRS injustice			.25	.36	.35	.37	.34
UGRS reactions				.38	.43	.45	.18
UGRS counterfactuals					.26	.29	.20
UGRS meaning						.38	.11 ns
UGRS relationships							.36

Note. RRS = Ruminative Response Scale; UGRS = Utrecht Grief Rumination Scale; *ns* = non-significant. All correlations are significant at $p < .01$ unless otherwise specified.

Table 3. Correlations between psychological variables at baseline and symptoms of complicated grief and depression at baseline (T1), after 6 months (T2), and after 12 months (T3)

	Complicated grief T1	Complicated grief T2	Complicated grief T3	Depression T1	Depression T2	Depression T3
RRS brooding	.68	.47	.42	.48	.39	.37
RRS reflection	.23	.08	.03	.12	.05	.04
		ns	ns	ns	ns	ns
UGRS injustice	.66	.60	.58	.40	.41	.39
UGRS reactions	.43	.25	.22	.25	.20	.11
						ns
UGRS counterfactuals	.45	.40	.33	.28	.22	.23
UGRS meaning	.40	.31	.33	.31	.22	.24
UGRS relationships	.49	.42	.42	.37	.33	.29
Neuroticism	.52	.43	.37	.51	.42	.42

Note. RRS = Ruminative Response Scale; UGRS = Utrecht Grief Rumination Scale; *ns* = non-significant. All correlations are significant at $p < .01$ unless otherwise specified.

Regression analyses with depressive rumination predicting concurrent symptom levels

To examine associations between subtypes of depressive rumination and concurrent symptom levels, two hierarchical multiple regression analyses were run. Independent variables were entered in three blocks: (1) relevant loss-related variables (that significantly predicted symptom levels concurrently), (2) neuroticism, (3) depressive rumination subtypes (i.e., brooding and reflection). Tables 4 and 5 show the percentages of explained

Table 4. Associations between subtypes of depressive rumination at baseline and symptoms of complicated grief at baseline (T1), after 6 months (T2), and after 12 months (T3)

	T1			T2			T3		
Complicated grief	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β
Step 1	–	–	–	401.11**	.69		273.71**	.65	
T1 symptoms						.87**			.91**
Step 2	6.03**	.09		2.01†	.01		3.86**	.03	
Time since loss			−.15**			.03			.14**
Kinship 1			.24**			.05			.00
Kinship 2			.16**			.06			.06
Kinship 3			.01			−.08†			−.12*
Step 3	114.34**	.30		0.00	.00		0.37	.00	
Neuroticism			.26**			.04			.00
Step 4	47.67**	.18		3.36*	.01		4.59*	.02	
RRS brooding			.50**			−.08†			−.13*
RRS reflection			.03			−.08*			−.10*

Note. RRS = Ruminative Response Scale; Kinship = dummy coded; Kinship 1 = partner versus parent; Kinship 2 = child versus parent; Kinship 3 = sibling versus parent.
*$p < .05$; **$p < .01$; †$p < .10$.

Table 5. Associations between subtypes of depressive rumination at baseline and symptoms of depression at baseline (T1), 6 months (T2), and 12 months (T3)

Depression	T1			T2			T3		
	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β
Step 1	–	–	–	240.64**	.57		183.20**	.55	
T1 symptoms						.75**			.71**
Step 2	9.89**	.15		2.75*	.03		4.81**	.05	
Time since loss			−.26**			.09†			.15*
Kinship 1			.30**			.13*			.15*
Kinship 2			.20**			.04			.11†
Kinship 3			.04			.00			−.05
Step 3	113.40**	.28		0.74	.00		0.69	.00	
Neuroticism			.41**			.01			.05
Step 4	7.12**	.03		1.60	.01		1.44	.01	
RRS brooding			.22**			.06			.03
RRS reflection			.01			−.09*			−.09*

Note. RRS = Ruminative Response Scale; Kinship = dummy coded; Kinship 1 = partner versus parent; Kinship 2 = child versus parent; Kinship 3 = sibling versus parent.
*$p < .05$; **$p < .01$; $^\dagger p < .10$.

variance by each step and the regression coefficients for each predictor in regression analyses predicting concurrent symptoms of complicated grief and depression.

A first model significantly predicted complicated grief symptoms, $F(7, 229) = 43.76$, $p < .001$. Depressive rumination explained 17.8% of additional variance in complicated grief symptoms. Brooding was a significant predictor of symptom levels, $\beta = .50$, $p < .001$, but reflection was not, $\beta = .03$, $p > .10$. The model predicting concurrent depressive symptoms was also significant, $F(7, 230) = 27.91$ $p < .001$. Depressive rumination predicted 3.3% of unique variance in depressive symptoms. Brooding was significantly related to symptom levels of depression, $\beta = .22$, $p < .001$, but reflection was not, $\beta = .01$, $p > .10$.

Regression analyses with depressive rumination predicting prospective symptom levels

Subsequently, we examined the predictive value of baseline depressive rumination for symptom level change in complicated grief and depression after 6 (T2) and 12 months (T3). In order to do so, four hierarchical multiple regression analyses were conducted. This time, independent variables were entered in four blocks: (1) baseline symptom levels, (2) relevant loss-related variables, (3) neuroticism, and (4) depressive rumination (i.e., brooding and reflection). Tables 4 and 5 show the results of these analyses.

The model predicting T2 complicated grief symptom levels was significant, $F(8, 167) = 54.29$, $p < .001$. Only baseline symptoms and depressive rumination were significant predictors of complicated grief symptoms. Depressive rumination explained a small amount of variance (1.1%). Reflection significantly predicted symptom levels, $\beta = −.08$, $p = .03$, but brooding did not, $\beta = −.08$, $p = .08$. The model predicting T3 complicated grief symptom levels was also significant, $F(8, 139) = 41.82$, $p < .001$. All blocks significantly predicted symptom level change, except neuroticism. This time, depressive rumination explained 1.9% of variance. However, results were unexpected:

both brooding and reflection were related to decreases in symptom levels of complicated grief, $\beta = -.13$, $p = .02$ and $\beta = -.10$, $p = .03$, respectively.

Next, we examined predictors of depressive symptoms at T2 and T3. The model predicting T2 depressive symptoms was significant, $F(8, 172) = 33.31$, $p < .001$. Baseline symptoms and loss-related variables were significant predictors of depressive symptoms, but neuroticism and depressive rumination were not, with the latter block explaining only 0.7% of variance. Nevertheless, reflection was significantly related to decreases in symptom levels of depression, $\beta = -.09$, $p = .046$. Results for the model predicting T3 symptom levels were similar, $F(8, 144) = 28.17$, $p < .001$. Again, reflection predicted a reduction in depressive symptoms, $\beta = -.09$, $p = .046$. Brooding was no significant predictor in either model.

Regression analyses with grief rumination predicting concurrent symptom levels

To examine the relationship between subtypes of grief rumination and concurrent symptom levels of complicated grief and depression, two hierarchical multiple regression analyses were run, consisting of three blocks: (1) relevant loss-related variables, (2) neuroticism, (3) grief rumination (i.e., rumination about injustice, reactions, meaning, social relationships, and counterfactual thinking). Tables 6 and 7 show the results of these analyses.

The model predicting concurrent symptoms of complicated grief was significant, $F(10, 226) = 43.56$, $p < .001$. Grief rumination explained 26.3% of incremental variance in complicated grief symptoms. Rumination about injustice, $\beta = .35$, $p < .001$, rumination about relationships, $\beta = .14$, $p = .002$, and counterfactual thinking, $\beta = .19$, $p < .001$, predicted higher symptom levels. Rumination about meaning was not significantly related

Table 6. Associations between subtypes of grief rumination at baseline and symptoms of complicated grief at baseline (T1), 6 months (T2), and 12 months (T3)

	T1			T2			T3		
Complicated grief	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β
Step 1	–	–	–	399.00**	.70		272.71**	.65	
Baseline symptoms						.75**			.77**
Step 2	6.11**	.10		1.98†	.01		3.86*	.03	
Time since loss			−.14**			−.01			.11*
Kinship 1			.16**			.09†			.01
Kinship 2			.06			.07			.06
Kinship 3			.02			−.06			−.10*
Step 3	114.81**	.30		.00	.00		0.33	.00	
Neuroticism			.32**			−.02			−.05
Step 4	34.77**	.26		3.54**	.03		2.26*	.02	
UGRS injustice			.35**			.17**			.11†
UGRS reactions			.04			−.17**			−.17**
UGRS counterfactuals			.17**			.01			−.03
UGRS meaning			.06†			−.05			.06
UGRS relationships			.14**			.08†			.11*

Note. UGRS = Utrecht Grief Rumination Scale; Kinship = dummy coded; Kinship 1 = partner versus parent; Kinship 2 = child versus parent; Kinship 3 = sibling versus parent.
*$p < .05$; **$p < .01$; †$p < .10$.

Table 7. Associations between subtypes of grief rumination at baseline and symptoms of depression at baseline (T1), 6 months (T2), and 12 months (T3)

Depression	T1			T2			T3		
	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β
Step 1	–	–	–	240.07**	.57		181.49**	.55	
Baseline symptoms						.72**			.67**
Step 2	9.87**	.15		2.81*	.03		4.79**	.05	
Time since loss			−.26**			.09			.11*
Kinship 1			.26**			.12*			.15*
Kinship 2			.15**			.04			.11†
Kinship 3			.04			.00			−.04
Step 3	113.45**	.28		0.75	.00		0.69	.00	
Neuroticism			.45**			.00			.03
Step 4	4.96**	.06		1.84†	.02		.99	.01	
UGRS injustice			.07			.18**			.13*
UGRS reactions			−.04			−.06			−.11†
UGRS counterfactuals			.12*			−.06			−.01
UGRS meaning			.11*			−.03			.03
UGRS relationships			.09†			.04			.00

Note. UGRS = Utrecht Grief Rumination Scale; Kinship = dummy coded; Kinship 1 = partner versus parent; Kinship 2 = child versus parent; Kinship 3 = sibling versus parent.
*$p < .05$; **$p < .01$; †$p < .10$.

to complicated grief symptoms, $\beta = .07$, $p = .08$. Rumination about reactions was also no significant predictor, $\beta = .05$, $p > .10$.

The model predicting concurrent depressive symptoms was also significant, $F(10, 227) = 21.14$, $p < .001$. Grief rumination explained 5.7% of additional variance in depressive symptoms. Rumination about meaning and counterfactual thinking were significant predictors of depressive symptoms, with $\beta = .11$, $p = .03$ and $\beta = .12$, $p = .01$, respectively. No other significant results were found.

Regression analyses with grief rumination predicting prospective symptom levels

The predictive value of baseline grief rumination on T2 and T3 symptom levels was examined with four hierarchical multiple regression analyses, built up in four blocks: (1) baseline symptom levels, (2) relevant loss-related variables, (3) neuroticism, and (4) grief rumination subtypes. Details on these analyses are shown in Tables 6 and 7.

The model predicting T2 complicated grief symptoms yielded an overall significant effect, $F(7, 163) = 42.04$, $p < .001$. All blocks, except neuroticism, predicted unique proportions of variance. Grief rumination explained 2.8% of additional variance. Increases in symptom levels were predicted by rumination about injustice, $\beta = .17$, $p = .002$. Conversely, rumination on reactions was predictive of reductions in complicated grief symptoms, $\beta = -.17$, $p < .001$. The model predicting T3 symptom levels of complicated grief was also significant $F(11, 135) = 30.33$, $p < .001$. Each block, except neuroticism, explained additional variance. Grief rumination explained 2.4% of additional variance in complicated grief symptoms. Increases in symptom levels were predicted by rumination

about relationships, $\beta = .11$, $p = .03$. Rumination about reactions predicted decreases in complicated grief symptoms, $\beta = -.17$, $p = .002$.

Next, we investigated predictors of depressive symptoms at T2 and T3. Significant overall effects were found for the model predicting T2 symptoms, $F(11, 168) = 25.18$, $p < .001$, and the model predicting T3 symptoms, $F(11, 140) = 20.36$, $p < .001$. Only the blocks baseline symptom levels and loss-related variables were significant predictors at each time point. Nevertheless, grief rumination explained 2.1% of additional variance in depressive symptoms at T2 and 1.4% at T3. In these analyses, rumination about injustice was the only subtype of grief rumination significantly related to increases in depressive symptoms at T2, $\beta = .18$, $p = .002$, and T3, $\beta = .13$, $p = .03$.

Discussion

The aim of this study was to investigate concurrent and prospective associations between forms of depressive and grief rumination and symptom levels of complicated grief and depression in a recently bereaved sample. A first main finding was that subtypes of grief rumination were stronger predictors of loss-related distress than depressive brooding and reflection, consistently explaining more variance in symptom levels of complicated grief at each time point.[1] This accords nicely with previous research showing that general grief rumination was a stronger predictor than self-focused rumination and brooding and reflection of prospective symptom change in complicated grief and depression (Eisma *et al.*, 2012, 2013).

A second main finding of this study was that functional and dysfunctional forms of rumination after loss could indeed be distinguished. On the one hand, (depressive) reflection and grief rumination about reactions appear to represent adaptive components of ruminative coping after bereavement. These types of rumination were not concurrent predictors of symptom levels and predicted reductions in complicated grief symptom levels after 6 and 12 months. Additionally, reflection longitudinally predicted small but significant reductions in depressive symptoms over time. On the other hand, grief rumination about injustice and social relationships seem to represent maladaptive forms of rumination in bereavement. Rumination about injustice was positively related to concurrent and prospective symptom levels of complicated grief and predicted increases in depressive symptoms at 6 and 12 months. Rumination about social relationships also played a unique role in explaining adjustment to loss, being positively associated with complicated grief symptom levels concurrently and prospectively.

Results with regard to other forms of rumination were less clear-cut. Notably, brooding was only positively related to concurrent symptoms of depression and complicated grief, and predicted decreases in complicated grief symptoms after a year. Interestingly, some previous inconsistent results have been found with regard to the adaptive effects of reflection and the maladaptive effects of brooding. For instance, reflection interacted with suicide attempt history in predicting increases in suicidal ideation in suicide attempters

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[1] *Although we did not formally compare the predictive value of depressive and grief rumination subtypes in a series of multiple regression analyses in the current manuscript, the percentage of explained variance in complicated grief symptoms is consistently higher for grief rumination subtypes than for depressive rumination subtypes. In multiple regression analyses that included subtypes of depressive and grief rumination, grief rumination subtypes explained incremental variance over and above loss-related variables, neuroticism and depressive rumination subtypes in complicated grief symptoms at baseline, $\Delta F(5, 222) = 16.71$, $p < .001$, $\Delta R^2 = .12$, and complicated grief symptom change after 6 months, $\Delta F(5, 161) = 3.53$, $p < .01$, $\Delta R^2 = .03$, and after 12 months, $\Delta F(5, 133) = 2.15$, $p = .06$, $\Delta R^2 = .02$. These analyses have been added as an online supplement.*

over and above depressive symptoms, but brooding did not (Surrence, Miranda, Marroquín, & Chan, 2009). Although other null results have been found (e.g., Joormann *et al.*, 2006), brooding has – to the best of our knowledge – not previously been linked with adaptive outcomes. Of note is that brooding showed positive zero-order associations with complicated grief symptom levels at each time point, but the relationship between brooding and complicated grief symptoms after 12 months became negative after controlling for baseline symptoms.[2] Although such suppressor effects should be interpreted with caution if found on only one occasion (Wiggins, 1973), they have been found to be replicable and to convey meaningful information (Paulhus, Robins, Trzesniewski, & Tracy, 2004). Since this is the first time the effect of brooding was investigated over an extended interval in a bereaved sample, it may imply brooding could have small positive long-term effects on adjustment to the death of a loved one. However, more research is clearly needed to replicate these findings. Finally, both rumination about the meaning of the loss and counterfactual thinking appear to be benign forms of grief rumination, being only concurrently related to symptom levels.

In summary, adaptive types of rumination in this study (i.e., reflection, rumination on reactions) were characterized by neutrally valenced, relatively concrete, self-focused thinking aimed at understanding depressive and loss-related emotional reactions. Conversely, the form of rumination most consistently related to negative effects on mental health, rumination on injustice, was characterized by negatively valenced, relatively abstract, self-focused thinking about injustice and passive comparisons of the current situation with unrealized alternatives. This appears to correspond with earlier research aiming to delineate functional and dysfunctional forms of self-focused attention (Trapnell & Campbell, 1999; Treynor *et al.*, 2003). Moreover, this pattern of results appears to be consistent with dominant theories suggesting that both valence (Nolen-Hoeksema *et al.*, 2008) and level of construal (Watkins, 2008) are important in understanding effects of repetitive thinking.

However, where rumination subtypes fall on these dimensions clearly does not explain all results. Although most subtypes of grief rumination (except rumination about injustice) are neutrally valenced, only rumination about reactions was related to positive outcomes and rumination about relationships was even related to increases in complicated grief symptoms. Similarly, whereas grief rumination subtypes vary on the dimension abstractness, a relatively abstract form of grief rumination, rumination about meaning (i.e., thinking repetitively about the meaning and consequences of the loss-event), did not predict deterioration of mental health over time. Finally, and most notably, depressive brooding is both negatively valenced and abstract, but failed to predict increases in symptom levels over time and even predicted an increase in complicated grief symptoms after a year.

A potential explanation for these findings could be that the content-specificity of rumination also plays a role in determining its outcomes. Since rumination may be a self-regulation strategy aimed at reducing relevant discrepancies between the current situation and unrealized alternatives (Martin & Tesser, 1996), it seems logical that individuals ruminate most about the discrepancies that are most salient to them. For instance, depressed individuals will ruminate about the often unclear causes and consequences of their depressed mood (Nolen-Hoeksema *et al.*, 2008), whereas rumination about a traumatic event is predominantly focused on the causes and

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[2] *Removing all other predictors (loss-related variables, neuroticism, reflection) except baseline symptoms in the regression model in which depressive rumination predicted complicated grief levels at T3 did not alter the direction and significance of the association between brooding and complicated grief at T3.*

consequences of this negative life event (Michael *et al.*, 2007), and rumination in social anxiety is focused on concerns about performance in social situations (Mellings & Alden, 2000). Since most discrepancies experienced by mourners are intrinsically linked with the loss experience, it seems logical that grief rumination about the injustice of the loss is a more frequently engaged in and is a stronger predictor of mental health after bereavement than brooding. A different yet related argument is that grief rumination may be a better predictor than depressive rumination, because all mourners have experienced a loss, but not all mourners experience elevated levels of depression.

Finally, this study had a number of limitations. First, we relied exclusively on self-report measures. Other methods, such as structured interviews (e.g., Michael *et al.*, 2007), may have yielded more detailed information on the adaptive and maladaptive characteristics of rumination in mourners. Second, as is common in bereavement research, conjugally bereaved women were overrepresented in our sample. While this may be due to a general overrepresentation of women in widowhood, it could also be the result of a stronger need of women to share their emotional experiences (Stroebe, Stroebe, & Schut, 2001). Although women generally ruminate more than men (e.g., Butler & Nolen-Hoeksema, 1994), we currently have no reasons to assume that associations between rumination and symptom levels are different for men and women. Third, we conducted this study in a sample of bereaved individuals with non-clinical to clinical complicated grief and depression levels. While the major advantage of this approach is that it rules out a potential restriction of range that limits the size of associations (Edwards, 1976), research in a bereaved sample with more severe symptom levels may yield larger effects.

Despite these limitations, this research has provided insight into the effects of rumination in adjustment to bereavement. It has confirmed the importance of a distinction of grief-specific and depressive rumination following loss. Moreover, it has illustrated that functional and dysfunctional forms of rumination can potentially be distinguished in bereaved individuals. If future research confirms these findings, this could have implications for clinical practice. Specifically, therapeutic interventions for complicated grief (Wittouck *et al.*, 2011) could benefit from including therapeutic techniques aimed at reducing maladaptive rumination (for a review, see Querstret & Cropley, 2013), and increasing adaptive rumination.

Acknowledgement

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Supporting Information

The following supporting information may be found in the online edition of the article:

Table S1. Associations between subtypes of depressive rumination and grief rumination on symptoms of complicated grief at baseline (T1), 6 months (T2), and 12 months (T3).