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Does worry affect adjustment to bereavement? A longitudinal investigation

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Background and objectives: Repetitive thought is a trans-diagnostic risk-factor for development of psychopathology. Research on repetitive thought in bereaved individuals has focused primarily on clarifying the role of rumination, repetitive thinking about past negative events and/or negative emotions. While detrimental effects of rumination have been demonstrated following bereavement, surprisingly few studies have aimed to clarify the role of worry, repetitive thinking about potential future negative events, in adjustment to loss. This study sought to fill this gap in knowledge. **Methods/Design:** One hundred eighty-three bereaved individuals (85.3% women) filled out questionnaires on sociodemographic and loss-related characteristics, worry, and symptom measures of depression, anxiety, and prolonged grief. After six months, 155 participants completed worry and symptom measures again. Using multiple regression analyses, concurrent and longitudinal associations between loss-related variables, worry, and symptoms of psychopathology were examined. **Results:** Main results were that worry was strongly positively associated with symptoms of anxiety, depression and prolonged grief concurrently and also predicted higher levels of anxiety, depression and prolonged grief longitudinally. **Conclusions:** Findings suggest that worry influences adjustment to bereavement negatively and may be a potential target in grief therapy, especially when aiming to reduce anxiety.

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Introduction

Repetitive thought, the process of thinking attentively, repetitively, or frequently about oneself and one's world (Segerstrom, Stanton, Alden, & Shortridge, 2003), is a trans-diagnostic risk-factor for various mental health problems (for reviews: Olatunji, Naragon-Gainey, & Wolitzky-Taylor, 2013; Watkins, 2008). Accordingly, psychological interventions have been developed to effectively reduce repetitive thinking and associated psychopathology (for a review: Querstret & Cropley, 2013). Recently, cognitive-behavior therapy was demonstrated to be effective in reducing repetitive thought and prolonged grief after bereavement (Eisma et al., 2015a). Identification of the types of repetitive thought that hamper adjustment to bereavement is important, because this knowledge may be used to improve psychological interventions for disturbed grief responses such as prolonged grief disorder (Maercker et al., 2013; Prigerson et al., 2009).

Research on repetitive thinking after bereavement has focused primarily on rumination, thinking repetitively and recurrently about causes and consequences of past negative events and/or negative emotions (Michael, Halligan, Clark, & Ehlers, 2007). Despite increasing recognition of rumination as a

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risk-factor in post-loss adjustment (for brief reviews: Eisma et al., 2014; Nolen-Hoeksema, 2001) few researchers have examined worry, a comparable but distinct form of repetitive thinking. Worry is defined as predominantly verbal thinking focused on uncertain future events with a potential negative outcome (Borkovec, Ray, & Stober, 1998). So, while rumination is mainly past-oriented, worry is primarily future-oriented (for detailed comparisons of both constructs: Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008; Stroebe, Boelen, et al., 2007).

There are good reasons to expect that the death of a loved one increases worrisome thoughts. As mentioned, worry is by definition focused on uncertain future events with a potential negative outcome (Borkovec et al., 1998). People who worry indicate that they do so in order to prevent negative future events from occurring and to increase control over uncertain situations (Freeston, Rhéaume, Letarte, Dugas, & Ladouceur, 1994). From this it would logically follow that in times of uncertainty people would be more inclined to worry (cf. Ladouceur, Gosselin, & Dugas, 2000). Since bereavement is often accompanied by many uncertain events with potentially negative outcomes, such as financial problems, relationship difficulties or health problems (e.g., Corden & Hirst, 2013; Lyngstad, 2013; Stroebe, Schut, & Stroebe, 2007), there are numerous issues to worry about (e.g., Will I manage to do the tasks the partner did previously? Will family members cope well with the loss? Will I manage to still perform my job when feeling so poorly?). As such, bereavement may lead us to worry more.

What then, could be the consequences of worry following bereavement? Worry has often been characterized as a cognitive or emotional avoidance process (e.g., Borkovec et al., 1998, 2004; Llera & Newman, 2014). Avoidance processes are hypothesized to play a key role in adjustment to bereavement. Specifically, avoidance of emotionally laden aspects of the loss could interfere with confrontation of loss-related thoughts and memories (i.e., exposure to the reality of the loss), which is necessary to reduce acute loss-related distress and acceptance of the loss (Boelen, van den Hout, & van den Bout, 2006; Eisma et al., 2013; Stroebe, Boelen, et al., 2007). For example, individuals may chronically worry about the consequences of a loss for their future as a means to distract themselves from distressing memories about events surrounding the death, thereby limiting exposure to these memories and prolonging acute loss-related distress (cf. Eisma et al., 2013).

Putting worry in a broader framework, the Dual Process Model of coping with bereavement (Stroebe & Schut, 1999, 2015) postulates that healthy adaptation to the death of a loved one is characterized by flexible oscillation between focusing on the loss (loss orientation) and focusing on secondary stressors (restoration orientation). Rumination (i.e., repetitive thinking about the past, the loss and the lost person), may be considered a cognitive representation of the loss orientation, whereas worry (i.e., repetitive thinking about the future) may be considered a cognitive component of the restoration orientation. If worry after bereavement is indeed focused on the secondary stressors that accompany a loss, chronic (i.e., prolonged and inflexible) worry could lead to poorer adjustment to bereavement, as this would disrupt the flexible oscillation process that facilitates adjustment. In line with both theories, worry is linked with persistence of anxiety and depressive symptoms (e.g., Calmes & Roberts, 2007; Hong, 2007) and the only study addressing worry in a bereaved sample to date showed a positive cross-sectional correlation between worry and prolonged grief symptoms (Boelen, 2010).

In summary, there are theoretical and empirical reasons to expect that worry exacerbates and maintains acute emotional responses to loss and it is clinically relevant to clarify the role of worry in adjustment to bereavement. Therefore, we set out to investigate the correlates and consequences of worry after loss of a first-degree family member. Expectations were informed by previous work on rumination. First, it was expected that bereaved adults who typically experience more distress (i.e., persons bereaved more recently, who had lost a child or partner, or experienced an unexpected or violent loss) would worry more (cf. Eisma et al., 2014; Nolen-Hoeksema, Parker, & Larson, 1994; Stroebe, Boelen, et al., 2007). Second, we predicted that worry would be positively associated with concurrent symptoms of anxiety, depression, and prolonged grief. Third, we hypothesized that worry would be associated with symptom levels of anxiety, depression, and prolonged grief over a six-month period, even when controlling for baseline symptom levels.

Methods

Procedure and participants

Research was conducted in accordance with Dutch legislation and professional ethical regulations of the World Medical Association Declaration of Helsinki. Participants were recruited through advertisements on websites of organizations for bereaved individuals and the content network of Google. Advertisements contained a link to a website specifically designed for a larger research project on coping with bereavement. On the website, people could access and online questionnaire after reading more information about the study (e.g., goals, privacy, anonymity) and filling out an informed consent form. At the end of the first survey, participants were asked if they were willing to fill out additional questionnaires and, if so, were e-mailed two questionnaires 6 and 12 months later. The current study focuses on measures administered at these latter two time-points, which for easy reference will be referred to as Time 1 (183 participants) and Time 2 (6-month follow-up: 155 participants). No differences on sociodemographic and loss-related variables and symptoms of anxiety, depression or prolonged grief were detected between participants who completed both time-points ($N = 155$) and the participants who dropped out between Time 1 and Time 2 ($N = 28$).

Table 1 displays sample characteristics. At Time 1, participants (85.2% women, Mean age: 49.4 years; SD: 12.0 years) had experienced the loss of a first-degree family member on average 16 months (Mean: 15.7; SD: 8.3) previously. A majority of the sample had lost a partner (53.0%) or parent (29.0%) due to natural causes (89.1%). Prolonged grief levels ranged from non-clinical to clinical, with a majority (58.8%) scoring above the cut-off score of 25 on the sum of 19 items of the Inventory of Complicated Grief (ICG: Prigerson et al., 1995), which are included in the revised version of this measure used in this study (ICG-R: Boelen, van den Bout, de Keijser, & Hoijtink, 2003; Prigerson & Jacobs, 2001). Participants scoring above this threshold potentially experience more problems in social, mental, emotional, and physical health than non-clinically bereaved individuals. About half

Table 1. Demographic and loss-related characteristics of the sample ($N = 183$).

Demographic variables	
Gender (Valid *N* (%))	
Male	26 (14.3)
Female	156 (85.7)
Age in years (*M* (SD), range)	49.4 (12.0) 21–77
Educational level (Valid *N* (%))	
Secondary school	51 (27.9)
Vocational school	61 (33.3)
College/university	71 (38.8)
Loss characteristics	
Deceased person is (Valid *N* (%))	
Partner	97 (53.3)
Child	17 (9.3)
Sibling	15 (8.2)
Parent	53 (29.1)
Cause of death is (Valid *N* (%))	
Natural causes (e.g., disease, heart attack)	163 (89.1)
Accident	8 (4.4)
Murder	1 (0.5)
Suicide	11 (6.0)
Death was (Valid *N* (%))	
Expected	81 (44.3)
Unexpected	80 (43.7)
Other (i.e., both or neither)	22 (12.0)
Time since the loss in months (*M* (SD), range)	15.7 (8.3), 6–44
Anxiety symptoms (*M* (SD), range)	8.4 (4.0), 0–21
Depressive symptoms (*M* (SD), range)	7.4 (4.9), 0–20
Prolonged grief symptoms (*M* (SD), range)	45.0 (22.6), 0–116
Worry (*M* (SD), range)	47.0 (14.9), 16–78

of the participants (49.2%) scored above 7, a clinical cut-off point for depression, on the depression subscale of the Hospital Anxiety and Depression Scale (HADS: Bjelland, Dahl, Haug, & Neckelmann, 2002; Zigmond & Snaith, 1983). Penn State Worry Questionnaire (PSWQ: Meyer, Miller, Metzger, & Borkovec, 1990) scores (Mean = 47.0, SD = 14.9) were average compared to normative data from a large Dutch community sample (van der Heiden, Muris, Bos, van der Molen, & Oostra, 2009).

Measurement instruments

Sociodemographic and loss characteristics were assessed at the beginning of the original study. Worry and all symptom measures were assessed at Time 1 and Time 2.

Sociodemographic and loss characteristics

Sociodemographic characteristics (age, sex, and education level) and loss characteristics (kinship, time since the loss, cause of death, and expectedness of the loss) were registered using a self-constructed questionnaire.

Worry

Worry was assessed with the PSWQ (Meyer et al., 1990: Dutch translation: van Rijsoort, Emmelkamp, & Vervaeke, 1999). The PSWQ consists of 16 statements tapping a general tendency to engage in worry. Participants indicated to what extent these statements were typical to them on 5-point scales ranging from 1 (not at all typical to me) to 5 (very typical to me). In the present study the reliability of the PSWQ was excellent, $\alpha = .94$ (Time 1 and 2).

Anxiety and depression symptoms

Symptoms of anxiety and depression were measured with the HADS (Zigmond & Snaith, 1983: Dutch translation: Spinhoven et al., 1997). The HADS consists of an anxiety and a depression subscale, each consisting of seven statements about experiences representing anxiety and depressive symptoms, respectively. Participants indicated how often or to what extent they had these experiences in the past week on 4- point Likert scales. Internal consistency of the anxiety and depression subscales was good to excellent in this sample, $\alpha = .88$, and, $\alpha = .91$, at Time 1 and, $\alpha = .89$, and, $\alpha = .90$, at Time 2, respectively.

Prolonged grief symptoms

Symptoms of prolonged grief were measured with the ICG-R, a reliable and valid instrument to assess disturbed grief responses (Prigerson & Jacobs, 2001; Dutch translation: Boelen et al., 2003). The Dutch version consists of 29 statements representing symptoms of prolonged grief. Participants indicate how often or intensely they experienced these symptoms in the past month on a 5-point Likert scale ranging from 0 (almost never) to 4 (always). The reliability of the ICG-R was excellent in this sample, $\alpha = .95$ (Time 1), $\alpha = .95$ (Time 2).

Statistical analyses

First, we explored the relationships between loss-related variables and worry and symptoms of anxiety, depression and prolonged grief using *t*-tests, ANOVA's, correlation analyses and multiple regression analyses. Variables that were significantly associated with symptom levels at Time 1 or with symptom levels at Time 2 (whilst controlling for symptom levels at Time 1) were controlled for in the main analyses. Main analyses consisted of single and multiple regression analyses in which worry was used as a predictor of symptom levels at Time 1 and symptom levels at Time 2, while controlling for symptom levels at Time 1.

Results

Preliminary analyses

Six multiple regression analyses were conducted in which time since loss, kinship, cause of death, and expectedness of the loss were entered simultaneously to predict Time 1 symptom levels (i.e., anxiety, depression, and prolonged grief) and Time 2 symptom levels while controlling for T1 symptom levels. Kinship was associated with depressive symptoms at Time 1, $\beta_{\text{partner vs. other}} = .29$, $p = .001$, and Time 2, $\beta_{\text{partner vs. other}} = .32$, $p < .001$ and prolonged symptom levels at Time 1, $\beta_{\text{partner vs. other}} = .24$, $p = .003$, and Time 2, $\beta_{\text{partner vs. other}} = .23$, $p = .013$; $\beta_{\text{sibling vs. other}} = -.21$, $p = .021$. Time since loss was associated with prolonged grief symptoms at Time 1, $\beta = -.16$, $p = .037$. These variables were controlled for in the main regression analyses in which worry predicted Time 1 and Time 2 symptom levels. Additionally, zero-order associations between worry and symptom levels across both time-points were calculated (Table 2).

Loss characteristics and worry

Hypotheses with regard to associations between loss-variables and worry were not confirmed. Worry levels were unrelated to time since loss, $r(180) = .04$, $p = .572$, kinship (partner, child, sibling, and parent), $F(4, 177) = 0.77$, $p = .544$, cause of death (non-violent, violent loss), $t(181) = 0.16$. $p = .988$, and expectedness of the loss (expected, unexpected, both or neither), $F(2, 177) = 0.09$, $p = .923$.

Concurrent associations between worry and symptoms of psychopathology

Three hierarchical multiple regression analyses were run to examine the associations between Time 1 worry and symptom levels of anxiety, depression, and prolonged grief (Table 3). In block 1, relevant loss-related variables were entered as a predictor of symptom levels and in block 2 worry was entered as a predictor. Worry was strongly associated with anxiety, $\beta = .64$, $p < .001$, $\Delta R^2 = .41$, depression, $\beta = .41$, $p < .001$, $\Delta R^2 = .22$, and prolonged grief, $\beta = .53$, $p < .001$, $\Delta R^2 = .27$, over and above relevant loss-related variables.

Longitudinal associations between worry and symptoms of psychopathology

Three hierarchical multiple regression analyses were run to examine the associations between Time 1 worry and symptom levels of anxiety, depression, and prolonged grief at Time 2 (Table 3). In block 1, Time 1 symptom levels were entered as a predictor of symptom levels six months later, in block 2, relevant loss-related variables were entered as a predictor and in block 3 Time 1 worry was entered as a predictor. Worry was significantly associated with anxiety, $\beta = .25$, $p < .001$, $\Delta R^2 = .04$, depression, $\beta = .14$, $p = .006$, $\Delta R^2 = .01$, and prolonged grief, $\beta = .09$, $p = .039$, $\Delta R^2 = .01$, over and above Time 1 symptoms and relevant loss-related variables.[1]

Table 2. Zero-order correlations between worry and symptom levels at Time 1 and Time 2.

		Time 1			Time 2		
		Anxiety	Depression	Prolonged grief	Anxiety	Depression	Prolonged grief
Time 1	Worry	.64	.47	.51	.63	.50	.54
	Anxiety	–	.66	.67	.74	.58	.58
	Depression		–	.76	.58	.84	.72
	Prolonged grief			–	.59	.73	.90
Time 2	Worry				.68	.52	.59
	Anxiety				–	.68	.67
	Depression					–	.78
	Prolonged grief						–

All correlations are significant at $p < .001$. Time 1 = initial assessment. Time 2 = 6-month follow-up.

Table 3. Associations between worry and symptoms of anxiety, depression and prolonged grief at Time 1 and Time 2.

	Time 1			Time 2		
Anxiety	ΔF	ΔR^2	β	ΔF	ΔR^2	β
Step 1	–	–		190.8**	.56	
Baseline anxiety			–			.58**
Step 2	125.0**	.41		13.0**	.04	
Worry			.64**			.25**
Depression	ΔF	ΔR^2	β	ΔF	ΔR^2	β
Step 1	–	–		364.6**	.71	
Baseline depression			–			.74**
Step 2	4.1**	.07		3.8*	.02	
Kinship 1 (partner vs. other)			.28**			.11*
Kinship 2 (child vs. other)			.09			.12*
Kinship 3 (sibling vs. other)			.02			.06
Step 3	55.9**	.23		7.9**	.01	
Worry			48**			.14**
Prolonged grief	ΔF	ΔR^2	β	ΔF	ΔR^2	B
Step 1	–	–		608.8**	.81	
Baseline prolonged grief			–			.83
Step 2	5.1**	.11		2.0	.01	
Time since loss			−.16**		–	–
Kinship 1 (partner vs. other)			.28**			.01
Kinship 2 (child vs. other)			.14*			.06
Kinship 3 (sibling vs. other)			−.05			−.07
Step 3	73.9	.27		4.4*	.01	.09*
Worry			.53**			

Note: * =p<.05, ** =p < .01. Time 1 = initial assessment. Time 2 = 6-month follow-up.

Discussion

This study explored the role of worry in adjustment to bereavement of a first-degree relative. A first notable finding was that the characteristics of the loss were not associated with worry. There appear to be two plausible explanations for this result. First, secondary stressors that accompany a loss (e.g., financial problems, health problems, relationship difficulties) may be more important determinants of worry than the loss characteristics. A second explanation may be that we used a trait measure of worry in this study. While it is plausible that people may worry more after bereavement, and a trait tendency to worry would reflect this to some extent, such a measure of worry might not adequately capture temporary changes in worry. Future research on worry after bereavement should therefore aim to assess secondary loss-related stressors and state measures of worry.

The concurrent positive associations between worry and symptom levels of anxiety and depression observed in this study are in line with results from previous research in non-bereaved samples (e.g., Calmes & Roberts, 2007; Hong, 2007). The concurrent positive association between worry and symptom levels of prolonged grief corroborates results from a previous study in bereaved individuals (Boelen, 2010). We also found evidence for longitudinal associations between worry and symptoms of anxiety, depression, and prolonged grief over a six-month period, even when controlling for initial symptom levels. While similar results have been shown for anxiety and depression in non-bereaved samples (e.g., Calmes & Roberts, 2007; Hong, 2007), the finding that worry exacerbates different types of distress after bereavement is novel and warrants further investigation. Recovery from loss at least partially depends on a person's ability to adequately respond to demands and changes brought about by the loss, and it is conceivable that individual differences in the tendency to worry affect these reactions. Notably, the effects of worry on depression and prolonged grief were small in the longitudinal analyses, and somewhat smaller than effects of grief-related rumination and depressive rumination in previous studies (R^2 typically .02 −.08, depending on study design and the number of variables that are controlled for: e.g., Eisma et al., 2012, 2013; Nolen-Hoeksema et al., 1994). However, it should be noted that trait measures of rumination and subtypes of depressive rumination

(i.e., brooding and reflection) typically show smaller longitudinal effects on depression and prolonged grief (R^2 typically .00 −.01; Eisma et al., 2012, 2013, 2015b). Conversely, the longitudinal effect of worry on anxiety symptoms appeared more robust and stronger than the effect of grief-related and depressive rumination on anxiety in one earlier investigation (R^2s < .01, Eisma et al., 2012). Worry after bereavement may therefore feed into anxiety more than into depression or prolonged grief. Perhaps this is not surprising, as worry has traditionally been linked with development and persistence of anxiety disorders and is a core symptom of Generalized Anxiety Disorder (GAD; APA, 2013).

The study also provided information on the different types of distress that are experienced after loss and their interrelationships. The size of the associations between prolonged grief, depression, and anxiety show that there are strong linear relationships between these constructs, but that there is no complete overlap. This is consistent with both factor analytic studies (Boelen, van de Schoot, van den Hout, de Keijser, & van den Bout, 2010) and studies examining comorbidity of different forms of psychopathology following loss (Simon et al., 2007) which have indicated that prolonged grief, depression, and anxiety are overlapping, yet distinguishable constructs.

The pattern of results found in this study potentially has clinical implications, although further research is needed to draw firm conclusions. Results suggest that worry may be a target in psychological treatments for disturbed grief, particularly among individuals with elevated levels of anxiety. One way of reducing worry (a cognitive/emotional avoidance strategy) could be by engaging in graded loss-exposure exercises, which have been shown to reduce rumination after bereavement (Eisma et al., 2015a). Another type of intervention that may be effective in ameliorating worry after loss is metacognitive therapy, which typically consists of a combination of relaxation exercises, behavioral experiments, and challenging beliefs about repetitive thought (van der Heiden, Muris, & van der Molen, 2012). Metacognitive therapy has been shown to be effective in treating anxiety and depression (for a review: Normann, van Emmerik, & Morina, 2014) and may also reduce prolonged grief (Wenn, O'Connor, Breen, Kane, & Rees, 2015).

This study also had a number of limitations. Higher-educated conjugally bereaved women were overrepresented in this study, which is typical for studies in the bereavement field. This may be due to both an overrepresentation of women in widowhood and a stronger tendency of women to share their feelings about the loss (Stroebe, Stroebe, & Schut, 2001). While we have no reasons to assume that the mechanisms under investigation work differently for men or people with less education, a replication in a sample with a more diverse gender and education level distribution is indicated. Similarly, it remains to be established how well these results generalize to younger individuals and people with different cultural backgrounds. Another limitation is the use of self-report questionnaires, which introduces recall bias into the measurements in this study. A related limitation is the use of a trait measure of worry which precludes an examination of the interrelationships between state worry and distress over time. The evidentiary base for the present findings should be strengthened further in future studies by collecting data across multiple time-points, ideally using more advanced methods of data collection, such as Ecological Momentary Assessment (EMA: Shiffman, Stone, & Hufford, 2008; for an example: Thielsch, Andor, & Ehring, 2015). An additional limitation is the use of a small number of predictors to explain symptom levels over time. While the results of this study are informative, the importance of worry as a cognitive factor in adjustment to bereavement should ultimately be investigated in multivariate analyses to assess its unique effects on loss-related adjustment. Lastly, in the current sample levels of psychopathology ranged from non-clinical to clinical. While this ensures variability in measures that is necessary to adequately detect linear associations (Edwards, 1976), temporal effects may be more pronounced in people who experience severe pathological grief reactions.

In summary, the current investigation is the first in-depth research into worry after bereavement. It uniquely showed that bereaved individuals who worry more experience higher levels of anxiety, depression, and prolonged grief concurrently and longitudinally. As such, it is the first study to demonstrate that worry could play a negative role in adjustment to the loss of a loved one. If

future studies corroborate and cross-validate these findings, worry might provide a promising target for grief therapy.

Note

1. There is item overlap between the PSWQ and the HADS. One item of the 7-item anxiety scale of the HADS assesses worry (item 5: "Worrying thoughts go through my mind."). Removing this item reduces the correlation between worry and anxiety a little, but not significantly (Time 1: r_{old} = .64, r_{new} = .61, $Z(181)$ = .47, p = .63/Time 2: r_{old} = .63, r_{new} = .60, $Z(151)$ = .42, p = .67), nor does it affect the outcomes of the regression analyses in which worry predicts anxiety longitudinally (ΔR^2 for worry on T2 anxiety = .04 in both analyses). Similarly, one item in the ICG-R appeared to capture worry (item 2: "I think so much about him/her that it makes it hard for me to do the things I normally do."). Removing this item from the ICG-R did not alter results with regard to the association between worry and prolonged grief symptoms; Time 1: $r_{old} = r_{new}$ = .51/Time 2: $r_{old} = r_{new}$ = .59, nor with regard to the longitudinal prediction of prolonged grief by worry (ΔR^2 for worry on T2 prolonged grief = .01 in both analyses).

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