Exploration of the Associations Between Responses to Affective States and Psychopathology in Two Samples of People Confronted With the Loss of a Loved One

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Abstract: Adaptive regulation of positive and negative affect after the loss of a loved one may foster recovery. In two studies, using similar methods but different samples, we explored the association between positive (*i.e.*, dampening and enhancing) and negative (*i.e.*, rumination) affect regulation strategies and symptoms levels of postloss psychopathology. Study 1 used data from 187 people confronted with the death of a loved one. In study 2, the sample consisted of 134 relatives of long-term missing persons. Participants completed self-reports tapping prolonged grief, depression, posttraumatic stress symptoms, and affect regulation strategies. Hierarchical regression analyses showed that both negative and positive affect regulation strategies explained significant amounts of variance symptom levels in both samples. In line with previous work, our results suggest that negative and positive affect regulation strategies relate to postloss psychopathology. Future research should explore how both affect regulation strategies may adequately be addressed in treatment.

Key Words: Bereavement, affect regulation, missing persons, rumination, trauma

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The death of a significant other is a universal experience. Some people develop psychological complaints, including depression, posttraumatic stress disorder (PTSD), and persistent and disabling grief reactions, also referred to as prolonged grief disorder (PGD; Prigerson et al., 2009), although the vast majority does not (see, for overviews Lundorff et al., 2017; Onrust and Cuijpers, 2006).

There is evidence that negative affect regulation strategies, including rumination, are related to elevated symptom levels of PGD, depression, and PTSD after loss (Eisma et al., 2015; Morina, 2011; Nolen-Hoeksema et al., 1994). Rumination refers to repetitive thinking about the nature, causes, and consequences of negative affect (Nolen-Hoeksema et al., 2008). Nolen-Hoeksema et al. (1994) found stronger tendencies to ruminate about one's depressed mood 1 month after losing a family member to be associated with elevated depression at 6 months postloss. Another study showed a prospective link between grief-related rumination and both levels of depression and PGD in a community sample of bereaved individuals (Eisma et al., 2015).

Traditional views suggested that experiencing positive emotions postloss is an indication of psychopathology (*e.g.*, repression or denial; Bowlby, 1980; Freud, 1957; Kübler-Ross, 1973). However, it has been repeatedly shown that positive emotions after loss promote resilient

outcomes and recovery. For example, one study among conjugally bereaved individuals, using ecological momentary assessment, indicated that experiencing daily positive emotions mediated the effect of trait resilience on emotional recovery (Ong et al., 2006). Similarly, a prospective study showed that experiencing positive emotions after spousal bereavement was associated with less depression and PGD (Tweed and Tweed, 2011). Another study showed that positive facial expressions while talking about the deceased spouse 6 months postloss was inversely related to PGD levels 14 and 25 months postloss (Bonanno and Keltner, 1997).

The adaptive effects of positive affect following a stressful event, including loss, have been emphasized in the broaden-and-build theory of Fredrickson (1998, 2001). According to this theory, positive emotions broaden a person's scope of attention and thought and action tendencies, which results in building, among others, social (*e.g.*, social support networks) and psychological resources (*e.g.*, resilience; Fredrickson, 1998, 2001; Fredrickson and Branigan, 2005; Fredrickson and Levenson, 1998; Garland et al., 2010). These resources may serve as a buffer in times of adversity. For instance, in the face of the loss of a relative, the experience of positive emotions (*e.g.*, love, gratitude) may encourage the individual to engage in social activities that foster adjustment, which, in turn, may lead to the maintenance or enhancement of positive affect (*i.e.*, referred to as the "upward spiral of positive emotions" by Fredrickson, 2001). In addition, this may counter the pain and sadness associated with the loss (referred to as the "undoing hypothesis" by Fredrickson and Levenson, 1998). Suppression of positive emotions may block their effects on the recovery processes, whereas adaptive positive affect regulation strategies may help to maintain these emotions.

Interest in the role of positive affect regulation has increased with the advent of the Response to Positive Affect questionnaire (RPA; Feldman et al., 2008). The RPA is proposed to assess three strategies of how people respond to positive affect. The first strategy ("dampening") involves devaluating, suppressing, or downgrading positive affect (e.g., "When I feel happy, I remind myself these feelings won't last"). The other two strategies are coined "enhancing" strategies (also referred to as "positive rumination" in previous research, *e.g.*, Nelis et al., 2016) and include self-focused positive rumination (*e.g.*, "When I feel happy, I feel I can achieve everything") and emotion-focused positive rumination (*e.g.*, "When I feel happy, I savor that moment"). More dampening has been associated with increased levels of depression (Raes et al., 2012). Stronger endorsement of enhancing strategies has been found to be associated with lower depression levels (Nelis et al., 2015).

Several studies using the RPA in nonclinical samples found that positive affect regulation strategies are related to depression scores above and beyond brooding, concurrently (Raes et al., 2009) as well as prospectively (Raes et al., 2012, 2014). Although it has been suggested that strategies to regulate positive emotions are likely involved in recovery from loss (Folkman, 2001; Stroebe and Schut, 2001), to the best of our knowledge, this notion has never been empirically tested.

We explored to what extent negative and positive affect regulation strategies are related to psychopathology following the loss of a loved one. Therefore, we studied two different samples. The first sample constituted of people confronted with the recent death of a loved

one. The second sample consisted of people confronted with the long-term disappearance of a loved one, a type of loss that is also referred to as "ambiguous loss" (Boss, 2006). Studies on the psychological consequences of disappearances of loved ones are scarce and predominantly focus on disappearances in armed conflicts (*i.e.*, war and state terrorism; Lenferink et al., in press). In both samples, we explored to what extent positive affect regulation strategies (*i.e.*, dampening and enhancing) explained variance in PGD, depression, and PTSD above and beyond negative affect regulation strategies (*i.e.*, rumination).

STUDY 1

Methods

Participants and Procedures

We used the data of an ongoing study of 187 adults whose significant other died in the past year. Participants were recruited via announcements on Web sites providing information about grief and loss. Most of the participants were women (64.7%), aged 59.9 (SD, 12.7) years on average, and had a primary to moderate educational level (50.3%). Most experienced the death of a spouse or child (56.1%). On average, the death took place 3.9 (SD, 1.6) months earlier, in most cases (92.5%) due to a natural cause (*e.g.*, disease).

All participants signed informed consent. Ethics approval for conducting the study was obtained from a local ethics committee. Because study 1 was part of a larger research project (the Utrecht Longitudinal Study on Adjustment to Loss, see, *e.g.*, Boelen, 2017), only the measures used in the current study are described.

Measures

Prolonged grief

The 11-item PGD scale (Boelen et al., 2012) was administered to assess PGD symptom as put forth by Prigerson et al. (2009). This measure is based upon items included in the revised Inventory of Complicated Grief (ICG-r). Accordingly, items represent one separation distress symptom, nine cognitive and emotional symptoms, and one functional impairment symptom. Participants were instructed to rate how frequently they experienced each grief reaction during the preceding month on 5-point scales ranging from 1 ("never") to 5 ("always"). The item scores were summed and represented an overall PGD severity score. The PGD scale was developed and validated in the context of previous research (Boelen et al., 2012). Cronbach's alpha in the current sample was 0.92.

Depression

The seven-item depression subscale of the Hospital Anxiety and Depression Scale (HADS-D) was administered to assess depression levels (Zigmond and Snaith, 1983). Participants chose one of four answers that described how frequently they experienced the symptom during the past week (*e.g.*, "I feel as if I am slowed down"). Item scales range from 0 to 3, with higher scores representing more severe depression. The item scores were summed to form an overall depression severity score. The HADS-D has good psychometric properties (Bjelland et al., 2002). Cronbach's alpha in the current sample was 0.92.

Posttraumatic stress

The Posttraumatic Diagnostic Scale (PDS) was administered to assess 17 PTSD symptoms according to the *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition*, criteria (Foa et al., 1997). Participants rated how frequently they experienced each symptom during the past month on a 4-point scale ranging from 0 ("not at all/only one time") to 3 ("5 or more times a week/almost always"). The wording that referred to "the stressful event" in the instruction and items were replaced by "the death of your loved one" (*e.g.*, "Having upsetting

thoughts or images about the death of your loved one that came into your head when you didn't want them to"). The item scores were summed to form an overall PTSD severity score. The PDS showed adequate psychometric properties (Foa et al., 1997). Cronbach's alpha in the current sample was 0.89.

Strategies to regulate positive affect

The RPA assesses strategies to regulate positive affect (Feldman et al., 2008; Raes et al., 2009). Participants rated on a 4-point scale ranging from 1 ("almost never") to 4 ("almost always") what they generally do when they feel happy, excited, or enthused. The items refer to three strategies coined "dampening" (eight items, *e.g.*, "Remind yourself these feelings won't last"), "self-focused positive rumination" (four items, *e.g.*, "Think 'I am achieving everything'"), and "emotion-focused positive rumination" (five items, *e.g.*, "Think about how happy you feel"). One item of the dampening subscale ("Think about how hard it is to concentrate") was removed from the Dutch translation of the RPA (Raes et al., 2009). Following the example of Nelis et al. (2016), we omitted another item of the "dampening" subscale (*i.e.*, "This is too good to be true") and the two positive rumination scales were combined into one subscale (*i.e.*, "enhancing"). The results of a principal component analysis in both of our samples confirmed the findings of Nelis et al. (2016). The item scores of both subscales were summed to form an overall dampening or enhancing score. The Dutch RPA showed adequate psychometric properties (Raes et al., 2009). Cronbach's alpha for the dampening subscale and enhancing subscale in the current sample was 0.69 and 0.88, respectively.

Brooding

The five-item Brooding subscale of the Ruminative Response Scale (RRS) was used to assess the tendency to ruminate (Treynor et al., 2003). Participants rated what they generally think or do when they feel sad (*e.g.*, "I think 'Why do I always react this way?'") on 4-point scales ranging from 1 ("almost never") to 4 ("almost always"). The item scores were summed to form an overall brooding severity score. The RRS has been found to have adequate psychometric properties (Treynor et al., 2003). Cronbach's alpha in the current sample was 0.71.

Statistical Analyses

First, zero-order Spearman's rho correlations were calculated to examine the association between all independent and dependent variables. Second, three separate hierarchical regression analyses were performed with symptom levels of PGD, depression, or PTSD as consecutive dependent variable. Step 1 of each regression model consisted of the sociodemographic variables that showed associations with the dependent variables in univariate testing. We used Mann-Whitney tests or Spearman's rho correlations for univariate testing. Step 2 consisted of brooding. Step 3 consisted of the two subscales of the RPA (*i.e.*, dampening and enhancing). A Bonferroni-corrected alpha level of less than 0.02 (*i.e.*, 0.05/3 because we conducted three main analyses in each sample) was considered statistically significant for the hierarchical regression analyses. Less than 5% of responses on the items of the dependent and independent variables were missing. Missing data were therefore imputed with the mean.

Sample Size Calculation

Because the current data were obtained as part of an ongoing study, there was no a priori sample size calculation based on our particular research question. However, based on a sensitivity analysis for a multiple regression analysis, to examine the R^2 increase of two predictors with seven predictors in total, 80% power, and alpha of 0.02, our sample size of 187 was sufficient to detect a small to medium effect size ($f^2 = 0.07$).

Results

Preliminary Analyses

Table 1 displays the results of univariate testing for the relatives of deceased persons. Sex, educational level, kinship to the deceased, and cause of death (but not time since loss) were significantly related to symptom levels of PGD, depression, and/or PTSD.

The affect regulation strategies were all significantly related to PGD, depression, and PTSD. Enhancing was negatively associated with all variables. The other correlations were all positively directed. Brooding was positively related to dampening ($r_s = 0.44$, $p < 0.001$) and enhancing was negatively related to brooding ($r_s = -0.31$, $p < 0.001$) and dampening ($r_s = -0.16$, $p = 0.03$).

Regression Analyses

Table 2 shows the results of the hierarchical regression analyses for relatives of deceased persons. The individual variance inflation factor of each independent variable was less than 2, indicating no cause for concern about multicollinearity.

The sociodemographic variables explained 22.6% of the variance in PGD, 16.6% in depression, and 18.7% in PTSD (all p values < 0.001). In the second step of the analyses, brooding explained an additional 27.3% of the variance in PGD, 22.8% in depression, and 26.3% in PTSD (all p values < 0.001). In the third step, the enhancing and dampening subscale of the RPA explained an additional 6.6% of the variance in depression ($p < 0.001$) and 2.6% in PTSD ($p = 0.01$), but the additional variance explained in PGD did not reach statistical significance ($\Delta R^2 = 2.1$, $p = 0.02$). In the final regression models, brooding was significantly and positively related to depression and PTSD. Enhancing was significantly and inversely related to depression. Dampening was significantly and positively related to depression.

STUDY 2

Methods

Participants and Procedures

Data were available from 134 participants included in an ongoing study examining correlates and treatment of psychopathology in relatives of missing persons (Lenferink et al., 2016, 2017). People whose significant other disappeared at least 3 months earlier were eligible to participate. Data were collected through invitation letters sent by the editorial office of a Dutch television show about missing persons (26.9%), a Dutch peer support organization (22.4%), and a nongovernmental organization for victim support (15.7%). Some participants were recruited via snowball sampling (26.1%) or other ways of recruitment (*e.g.*, media attention) (9.0%). Most participants were women (66.4%) and participants were 57.8 (SD, 14.2) years old, on average. Most participants had a primary to moderate educational level (56.7%). Forty-four percent experienced the disappearance of spouse or child. On average, the disappearance took place 15.5 (SD, 17.0) years earlier. About one-third of the participants (32.8%) thought the disappearance was due to criminal act (*e.g.*, homicide or kidnapping). The 134 participants represented 89 unique cases of missing persons. A missing person was defined as "Anyone whose whereabouts is unknown whatever the circumstances of disappearance. They will be considered missing until located and their well-being or otherwise established" (Association of Chief Police Officers, 2010, p. 15).

All participants signed informed consent. Ethics approval for conducting the study was obtained from a local ethics committee. Because study 2 was part of a larger research project, only the measures used in the current study were described. See Lenferink et al. (2016) for a description of other measures used in this larger project.

TABLE 1. Association Between Independent and Dependent Variables in Relatives of Deceased Persons ($n = 187$)

	Prolonged Grief	Depression	Posttraumatic Stress
Sex, U	2774.00**	2598.00***	2222.00***
Men, median (IQR)	19.0 (14.3)	1.0 (3.3)	6.0 (8.4)
Women, median (IQR)	26.0 (16.0)	5.0 (9.0)	13.0 (13.3)
Educational level, U	7879.00*	3758.50	3615.50*
Primary to moderate, median (IQR)	25.0 (16.25)	3.5 (8.0)	10.5 (13.0)
High, median (IQR)	20.0 (16.5)	2.0 (7.3)	9.0 (13.7)
Time since death (in months), r_s	0.09	0.07	0.03
Kinship, U	2396.50***	2791.50***	2679.50***
Deceased is child/spouse, median (IQR)	28.0 (14.0)	5.0 (7.2)	12.0 (12.0)
Deceased is other, median (IQR)	18.0 (12.1)	1.0 (6.5)	5.0 (12.1)
Cause of death, U	682.50**	806.00*	812.00*
Natural, median (IQR)	23.0 (15.0)	3.0 (7.0)	9.0 (13.4)
Suicide/accident/homicide, median (IQR)	33.0 (16.0)	8.0 (8.0)	14.0 (11.0)
Brooding, r_s	0.47***	0.41***	0.47***
Dampening, r_s	0.16*	0.26***	0.20**
Enhancing, r_s	-0.28***	-0.36***	-0.26***
Prolonged grief, r_s		0.77***	0.87***
Depression, r_s			0.80***

Note. IQR, interquartile range.

*$p < 0.05$.

**$p < 0.01$.

***$p < 0.001$.

TABLE 2. Results of Hierarchical Regression Analyses for Relatives of Deceased Persons ($n = 187$)

	Prolonged Grief				Depression				Posttraumatic Stress			
	B (SE)	β	ΔR²	ΔF (df)	B (SE)	β	ΔR²	ΔF (df)	B (SE)	β	ΔR²	ΔF (df)
Step 1: Sociodem.	–	–	0.23***	13.28 (3, 183)	–	–	0.17***	12.18 (3, 183)	–	–	0.19***	10.49 (4, 182)
Step 2: Brooding	1.98 (0.20)	0.54***	0.27***	98.44 (1, 181)	0.88 (0.11)	0.49***	0.23***	68.60 (1, 182)	1.55 (0.19)	0.47***	0.26***	86.41 (1, 181)
Step 3:			0.02	4.00 (2, 179)			0.07***	10.98 (2, 180)			0.03*	4.39 (2, 179)
Brooding	1.70 (0.24)	0.46***			0.60 (0.12)	0.33***			1.73 (0.19)	0.53***		
Dampening	0.20 (0.23)	0.05			0.29 (0.12)	0.16*			0.35 (0.21)	0.10		
Enhancing	–0.26 (0.10)	–0.15**			–0.19 (0.05)	–0.23***			–0.22 (0.09)	–0.14		

Note. Sociodem, sociodemographic characteristics; –, not displayed; *df*, degrees of freedom.

$*p < 0.02$ (0.05/3).
$**p < 0.01$.
$***p < 0.001$.

Measures

Prolonged grief

The Dutch translation of the 29-item ICG-r was administered to assess symptom levels of PGD and other putative markers of disturbed grief (Boelen et al., 2003). Participants rated how frequently they experienced each grief reaction during the preceding month on 5-point scales ranging from 1 ("never") to 5 ("always"). The item scores were summed to form an overall PGD severity score. The wordings that referred to "death" in the instruction and items were replaced by referring to the disappearance (*e.g.*, "Ever since he/she has been missing it is hard for me to trust people"). It is noteworthy that the original ICG-r (which was originally introduced as the Inventory of Traumatic Grief) has 30 items with 5-point scales with varying answer options, for example, from 1, "almost never," to 5, "always," and from 1, "no sense of numbness," to 5, "an overwhelming sense" (Prigerson and Jacobs, 2001). The Dutch ICG-r demonstrates adequate psychometric properties (Boelen et al., 2003). Cronbach's alpha in the current sample was 0.96.

Depression

The 30-item Inventory of Depressive Symptomatology-Self-Report (IDS-SR) was used (Rush et al., 1996). For each item, a description is given of a depressive symptom (*e.g.*, "Feeling sad"). Participants were instructed to choose one of four answers (range, 0–3) that described how frequently they experienced the symptom during the past week (*e.g.*, "I feel sad nearly all of the time"). The item scores were summed to form an overall depression severity score. The IDS-SR showed good psychometric properties (Rush et al., 1996). Cronbach's alpha in the current sample was 0.92.

Posttraumatic stress

The 20-item PTSD Checklist for *DSM-5* (PCL-5) was administered to assess symptoms of PTSD according to *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition* (*DSM-5*) criteria (Blevins et al., 2015). Participants were instructed to rate to what extent they experienced each symptom during the past month on a 5-point scale ranging from 0 ("not at all") to 4 ("extremely"). The wording that referred to "the stressful experience" in the instruction and items were replaced by "the events that are associated with the disappearance" (*e.g.*, "In the past month, how much were you bothered by repeated, disturbing, and unwanted memories of the events that are associated with the disappearance?"). The item scores were summed to form an overall PTSD severity score. The PCL-5 showed adequate psychometric properties (Blevins et al., 2015). Cronbach's alpha in the current sample was 0.95.

Affect regulation strategies

Similar to study 1, the RPA and the brooding subscale of the RRS were administered. Cronbach's alphas for the dampening subscale and the enhancing scale were 0.82 and 0.83, respectively. Cronbach's alpha of the brooding subscale was 0.77.

Statistical Analyses

The same statistical analyses were used as in study 1.

Sample Size Calculation

Based on a sensitivity analysis for a multiple regression analysis to examine the R^2 increase of two predictors with six predictors in total, 80% power, and alpha 0.02, our sample size of 134 was sufficient to detect a small to medium effect size ($f^2 = 0.09$).

Results

Preliminary Analyses

Duration of the disappearance, kinship to the missing person, and/or presumed cause of disappearance were significantly related to the indices of psychopathology. Sex and educational level were not significantly related to the indices of psychopathology (see Table 3).

All affect regulation strategies were significantly related to PGD, depression, and PTSD (see Table 3). Enhancing was negatively and dampening and brooding were positively associated with all indices of psychopathology. Brooding was positively associated with dampening ($r_s = 0.45$, $p < 0.001$). Enhancing was negatively associated with dampening ($r_s = -0.23$, $p = 0.01$) and not significantly related to brooding ($r_s = -0.13$, $p = 0.13$).

Regression Analyses

Table 4 shows the results of the hierarchical regression analyses. The individual variance inflation factor of each independent variable was less than 2, indicating no cause for concern about multicollinearity.

The sociodemographic variables explained 23.2%, 7.1%, and 8.9% of the variance in symptom levels of PGD, depression, and PTSD, respectively (all p values < 0.01). In the second step of the analyses, brooding explained an additional 33.4% of the variance in PGD, 37.6% in depression, and 46.6% in PTSD (all p values < 0.001). Adding the enhancing and dampening subscale of the RPA to the model explained and additional 2.8% of the variance in PGD ($p = 0.01$) and 3.4% ($p = 0.01$) in PTSD but did not significantly explain additional variance in depression ($p = 0.05$). In the final regression models, brooding was significantly and positively related to PGD and PTSD. Enhancing was significantly and inversely related to PGD and PTSD levels. We also ran multilevel regression analyses to account for the hierarchical structure of the data (*i.e.*, the fact that 134 participants were associated with 89 unique missing persons). These analyses yielded similar patterns of results.

DISCUSSION

The current study, using two different samples of people confronted with the loss of a loved one, explored to what extent strategies to regulate positive and negative affect are related to emotional distress associated with the loss. Positive affect regulation strategies (*i.e.*, dampening and enhancing) explained significant amounts of variance in symptom levels of depression and PTSD (and not PGD) above and beyond negative affect regulation strategies (*i.e.*, rumination) in relatives of deceased persons (*i.e.*, study 1). Study 2, among relatives of missing persons, yielded similar results, except that positive affect regulation strategies explained significant amounts of variance in symptom levels of PGD and PTSD (and not depression levels) above and beyond rumination. These findings were partly in line with previous research indicating the associations between affect regulation strategies with depression levels in non-clinical samples (Raes et al., 2009, 2012, 2014). We extended previous work by also exploring the association between affect regulation strategies and PGD and PTSD levels.

Because the current study relied on different samples (*i.e.*, relatives of recently deceased persons versus relatives of long-term missing person) and measures, we analyzed the samples separately. However, the differences in measured used may explain the differences in findings. The examined response styles represent cognitions in response to affects, which may explain why the positive affect regulation strategies explained a significant amount of variance above and beyond rumination in outcome measures containing more cognitive and affective symptoms (Raes et al., 2012). More specifically, the depression measure used in study 1 contained solely cognitive and affective symptoms and in study 2 also somatic symptoms; the PGD measure used in study 2 contained a greater variety of cognitive and affective grief reactions compared with the PGD measure used in study 1. Nevertheless, the finding that we obtained similar patterns of results across the two samples supports the generalizability of the associations across people confronted with different types of losses.

TABLE 3. Association Between Independent and Dependent Variables in Relatives of Missing Persons (*n* = 134)

	Prolonged Grief	Depression	Posttraumatic Stress
Sex, *U*	1919.00	1647.50	1774.50
Men, median (IQR)	63.0 (39.0)	9.0 (16.3)	13.0 (23.0)
Women, median (IQR)	63.0 (39.0)	14.0 (23.5)	19.0 (30.0)
Educational level, *U*	2064.00	1910.00	2045.00
Primary to moderate, median (IQR)	63.5 (34.0)	9.7 (18.4)	18.5 (28.0)
High, median (IQR)	61.2 (42.8)	14.0 (17.0)	14.5 (29.8)
Duration of disappearance (in years), r_s	−0.35***	−0.21*	−0.22*
Kinship, *U*	1250.50***	1693.00*	1474.50**
Missing is child/spouse, median (IQR)	76.0 (39.0)	15.0 (22.0)	23.0 (29.0)
Missing is other, median (IQR)	52.0 (30.0)	10.0 (17.0)	12.0 (26.0)
Presumed cause of disappearance, *U*	1524.00*	1799.50	1603.00
Accident/voluntarily/no presumption, median (IQR)	60.2 (36.3)	12.0 (18.3)	13.0 (27.3)
Criminal act, median (IQR)	69.5 (40.25)	12.5 (22.8)	21.5 (27.0)
Brooding, r_s	0.66***	0.69***	0.69***
Dampening, r_s	0.34***	0.28**	0.40***
Enhancing, r_s	−0.24**	−0.23**	−0.28**
Prolonged grief, r_s		0.76***	0.83***
Depression, r_s			0.83***

Note. IQR, interquartile range.

*$p < 0.05$.

**$p < 0.01$.

***$p < 0.001$.

TABLE 4. Results of Hierarchical Regression Analyses for Relatives of Missing Persons ($n = 134$)

	Prolonged Grief				Depression				Posttraumatic Stress			
	B (SE)	β	ΔR^2	ΔF (df)	B (SE)	β	ΔR^2	ΔF (df)	B (SE)	β	ΔR^2	ΔF (df)
Step 1: Sociodem.	–	–	0.23***	13.00 (3, 129)	–	–	0.07**	4.96 (2, 130)	–	–	0.09**	6.37 (2, 130)
Step 2: Brooding	4.88 (0.49)	0.61***	0.33***	98.55 (1, 128)	2.85 (0.30)	0.63***	0.38***	87.85 (1, 129)	4.00 (0.34)	0.70***	0.47***	135.32 (1, 129)
Step 3			0.03*	4.28 (2, 126)			0.03	3.19 (2, 127)			0.03**	5.19 (2, 127)
Brooding	4.68 (0.54)	0.58***			2.92 (0.33)	0.64***			3.76 (0.37)	0.66***		
Dampening	0.10 (0.46)	0.01			−0.29 (0.29)	−0.07			0.26 (0.33)	0.05		
Enhancing	−0.90 (0.31)	−0.17**			−0.49 (0.20)	−0.16			−0.68 (0.23)	−0.18**		

Note. Sociodem, sociodemographic characteristics; –, not displayed; *df*, degrees of freedom.

*$p < 0.02$ (0.05/3).

**$p < 0.01$.

***$p < 0.001$.

Rumination has been frequently identified as a maladaptive strategy to regulate negative affect postloss (Eisma et al., 2015; Morina, 2011; Nolen-Hoeksema et al., 1994). Our findings contrast with traditional grief theories suggesting that positive emotions after loss may signal denial and avoidance (Bowlby, 1980; Freud, 1957; Kübler-Ross, 1973) and accord with more recent theoretical and empirical work stressing the beneficial role of experiencing positive emotions postloss (Bonanno and Keltner, 1997; Fredrickson, 2001; Garland et al., 2010; Ong et al., 2006; Tweed and Tweed, 2011).

Our results indicate, among others, that increased use of positive thoughts about affective experience, one's own qualities, and favorable life circumstances to regulate positive affects (*i.e.*, enhancing rather than dampening of positive affect) is uniquely associated with lower levels of emotional problems after loss. This accords with different grief theories that emphasize that engagement in activities that are potentially pleasurable and the ability to experience and maintain positive affect during bereavement are important for coming to terms with loss (Folkman, 2001; Stroebe and Schut, 2001).

Some psychotherapeutic approaches, such as complicated grief treatment (Shear and Gribbin Bloom, 2017) and cognitive behavioral therapy (Bryant et al., 2014), have been used to effectively target disturbed grief. Complicated grief treatment, even more explicitly than cognitive behavioral therapy, includes elements intended to strengthen positive affect, for instance retrieving positive memories and pursuing pleasurable and satisfying social relationships. Nevertheless, many grief interventions predominantly focus on alleviating negative affect with relatively little attention for savoring of positive affect (see Doering and Eisma, 2016; Boelen and Smid, 2017, for overviews). Development of additional interventions that address both negative *and* positive affect regulation strategies might yield greater treatment effects (Boelen, 2016; Carl et al., 2013). Examples of potential effective interventions are mindfulness-based interventions. Key to mindfulness-based interventions is the development of decentering awareness (Germer et al., 2013). Decentering includes the metacognitive ability to disengage from negative thoughts or feelings, by observing them as mental events in a wider context (Teasdale et al., 2002). From the perspective of the broaden-and-build theory (Fredrickson, 1998, 2001), decentering awareness may broaden one's attention, which in turn may lead to more flexible thinking styles and positive emotions (*e.g.*, compassion; Garland et al., 2010). Results from pilot studies showed the potential effectiveness of mindfulness-based treatment for reducing depression and PTSD levels among bereaved people (O'Connor et al., 2014; Thieleman et al., 2014). Future studies are needed to further explore the potential beneficial effect of this type of grief treatment.

Limitations

Several limitations of the current study should be noted. First, because of the explorative nature of our study and the small sample sizes, our findings should be interpreted with caution. Future studies should replicate our findings before firm conclusions can be drawn. Second, our cross-sectional research design precludes any causal inferences about the associations between the variables. Third, different measures were used to assess psychopathology levels in the current study, which limits the comparability of our findings between the two samples. In addition, throughout this article, we use the term *PGD* to refer to persistent and disabling grief reactions, whereas in previous studies, persistent complex bereavement disorder (PCBD; American Psychiatric Association, 2013) and complicated grief (CG; Shear et al., 2011) have also been used to denote persistent and disabling grief responses. We used the PGD scale (which has not yet been thoroughly validated and has been used only in Dutch research) and ICG-r to assess PGD severity levels. This limits the comparability between the findings obtained in the two samples and with studies using different

conceptualizations of persistent and disabling grief reactions, for instance, studies using PCBD criteria according to *DSM-5* (American Psychiatric Association, 2013) or more recently proposed guidelines (*i.e.*, diagnostic prototypes [First, 2012] for PGD in the ICD-11 [Maercker et al., 2013]; see also Mauro et al., 2017). Furthermore, although we did not intend to identify clinical cases of PGD (which would require expert clinical interviewing), participants were not all bereaved for more than 6 months and therefore could not meet the proposed time criterion for PGD (Maercker et al., 2013; Prigerson et al., 2009). Caution is therefore warranted for generalizing our findings to clinical samples.

Fourth, our study relied solely on self-reports, which may lead to an overestimation of psychopathology levels (Engelhard et al., 2007). Fifth, dependent variables (PGD, depression, and PTSD levels) were strongly correlated, which may not seem to support the use of separate statistical models. However, previous factor analytic studies showed similar high correlations among these constructs but also emphasized that these constructs are distinguishable (Boelen and van den Bout, 2005; O'Connor et al., 2010).

CONCLUSION

The current study explored positive affect regulation strategies in people exposed to the recent death or long-term disappearance of a significant other. Our findings suggest that elevated tendencies to dampen positive affect, reduced tendencies to savor positive affect, and dwelling on negative affect (*i.e.*, brooding) are associated with increased symptom levels of PGD, depression, and PTSD in two samples confronted with the loss of a loved one. Future research among clinical samples is needed to further explore adaptive and maladaptive regulation of positive affect in the onset, maintenance, and treatment of psychopathology levels postloss.

DISCLOSURE

The authors declare no conflict of interest.

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