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The co-occurrence of symptoms of prolonged grief and dissociation: Could there be a dissociative prolonged grief disorder subtype?

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ABSTRACT

Background: The co-occurrence of symptoms of prolonged grief (PG) and dissociation is largely unexplored. Studying heterogeneity in patterns of PG and dissociative symptoms is important to inform theorizing about, and treatment of, post-loss psychopathology. The present research aimed to examine if, among bereaved people, subgroups could be distinguished in terms of the endorsement of PG and dissociative phenomena.
Method: We performed three studies. In Study 1 ($N = 476$) and Study 2 ($N = 141$), we examined the co-occurrence of PG and peri-loss dissociation (experienced shortly after the death) in relatively recently (≤ 6 months) bereaved people. In Study 3 ($N = 258$), we examined PG and trait-like dissociation among more remotely bereaved people. Latent profile analysis was used to identify subgroups. Our aims were to identify profiles of PG and dissociation and to examine associations of emerging profiles with loss-related emotional distress, and with socio-demographic and loss-related characteristics.
Results: In Study 1 and 3, profiles were identified characterized by low, average, and high PG and dissociation. In Study 2, profiles emerged characterized by low PG and low dissociation, average PG and low dissociation, and high PG and high dissociation. Across studies, people in the most pervasive PG and dissociation profiles reported the most severe concurrent (Studies 1, 2, and 3) and prospective (Studies 1 and 2) emotional distress. People confronted with losses of partners or children and with unexpected deaths were more likely to evidence pervasive PG and dissociation.
Conclusion: PG and dissociation appear to increase and decrease in parallel. No evidence was found that subgroups existed with severe PG and no dissociation vs. severe PG and high dissociation. This runs counter to the existence of a possible "dissociative prolonged grief disorder subtype." Nonetheless, dissociation may be a target of treatment for more severely distressed mourners.

Introduction

In the field of psychotraumatology, there has been continued attention for dissociative symptoms in the aftermath of exposure to negative life events, and their role in recovery after such events. For instance, there is strong evidence that both peri-traumatic dissociation (in the moments surrounding averse events) and persistent dissociation (occurring beyond these acute moments) are associated with increased posttraumatic stress disorder (PTSD) severity following trauma exposure (Carlson, Dalenberg & McDade-Montez, 2012; Lensvelt-Mulders et al., 2008). Dissociative symptoms in the context of trauma exposure and PTSD have been theorized to reflect problems with integrating cognitive processes of attention, perception, emotion, and a sense of self-identity, which may block trauma processing by, e.g., blunting

responses to trauma-related cues and disturbing emotion regulation (e. g., Carlson et al., 2012; Wolf et al., 2012).

Research in different traumatized samples has shown that, in people with significant PTSD symptoms, subgroups exist characterized by both elevated posttraumatic stress (PTS) and dissociative symptoms (e.g., Hansen, Ross & Armour, 2017; White et al., 2022). Accordingly, in the DSM, including the most recent text revision of the fifth edition (DSM-5-TR; APA, 2022), a distinction is made between PTSD and a dissociative subtype of PTSD. This latter condition is considered present when a person meets criteria for PTSD, combined with depersonalization and/or derealization. Depersonalization refers to experiences of feeling detached or disconnected from one's mental experiences or body; derealization refers to persistent or recurrent experiences of unreality of one's surroundings (APA, 2013). It has been postulated that

this PTSD subtype is meaningfully different from PTSD in terms of prevalence, comorbidity, course, severity, and risk factors (e.g., Steuwe, Lanius & Frewen, 2012). Some have claimed that the dissociative PTSD subtype is a more severe and complex version of PTSD, requiring a specific treatment approach (Cloitre, Petkova, Wang & Lassel, 2012; but see Hoeboer et al., 2020).

Deaths of loved ones are among the most frequent averse events that people may experience. These may precipitate different forms of psychopathology, including PTSD and prolonged grief disorder (PGD), a disorder characterized by pervasive separation distress and accompanying symptoms, present to the point of distress and dysfunction (APA, 2022; Prigerson, Boelen, Xu, Smith & Maciejewski, 2021). There are differences in the nature of traumatic events and loss-events (implying confrontation with threat and separation from attachment figures, respectively) and psychological reactions seen in their aftermath (characterized by anxiety and separation distress, respectively). Arguably however, similar to traumatic events, in some people, confrontation with deaths of loved ones may activate dissociative symptoms. This is likely more so when these deaths are more sudden and more disruptive to one's self-identity (Maccallum & Bryant, 2013). In addition, just as dissociation may interfere with trauma processing, dissociation may block recovery from loss, by dampening responses to loss-related cues and interfering with the elaboration and integration of implications of the loss, thereby maintaining acute grief reactions.

Indeed, there is some evidence that dissociation experienced shortly after the death of a close person (i.e., *peri-loss dissociation*) is associated with more severe PGD (Boelen, Keijsers & Van den Hout, 2012, Boelen, 2015; Bui et al., 2013; Hasson-Ohayon, Peri, Rotschild & Tuval-Mashiach, 2017). However, the linkage between grief and dissociation is understudied and the nature of the relationship between prolonged grief (PG) and dissociation is largely unclear. Associations between group-based mean scores on indices of PG and dissociation have been examined in the aforementioned studies. But, to our knowledge, no research has yet examined whether subgroups can be distinguished based on the presence of PG and dissociative symptoms. Studying heterogeneity in patterns of PG and dissociation is important to inform theorizing and treatment related to post-loss psychopathology.

Accordingly, the overarching aim of the current research was to provide greater insight into the association between PG and dissociative phenomena. More specifically, using latent profile analysis (LPA) and data from three bereaved samples, we examined if, among people confronted with deaths of loved ones, subgroups could be distinguished in terms of the endorsement of PG and dissociative symptoms. LPA allows to group individuals into homogeneous subgroups based on designated variables and, as such, is ideally suitable for studying heterogeneity in bereaved populations (Hagenaars & McCutcheon, 2002).

We performed three studies, focusing both on recently and more remotely bereaved people, using data from three studies conducted by our research group. Specifically, in Study 1 and 2, we examined the co-occurrence of PG and peri-loss dissociation, in two samples of relatively recently (≤6 months) bereaved people. In PTSD, (and in PGD alike) dissociative symptoms are theorized to be connected with, and to increase following, exposure to averse events (Carlson et al., 2012). Therefore, it was deemed relevant to examine if heterogeneity in the presentation of PG and dissociation already manifested early in the wake of bereavement. Moreover, since early PG and associated symptomatology are predictive of protracted post-loss psychopathology (e.g., Boelen & Lenferink, 2022; Boelen, Smid, Mitima-Verloop, De Keijser & Lenferink, 2019), examining patterns of early PG and dissociation was considered relevant for the timely identification of people at risk for persistent problems. In Study 3, we examined the co-occurrence of PG and trait-like dissociative symptoms reported by more remotely (>6 months since loss) bereaved people. This allowed us to examine if a discrete dissociative subgroup existed among people who were beyond the acute period of grief. In line with much research on the dissociative PTSD subtype (Hansen et al., 2017; White et al., 2022), in all studies we focused on putative markers of depersonalization and derealization (and not other dissociative phenomena).[1]

Drawing from literature on dissociation and PTSD (e.g., Wolf et al., 2012), we assumed that there were at least two alternative hypotheses concerning the relationship between PG and (peri-loss) dissociation. First, it was possible that elevated PG and dissociative symptoms would be present in a subgroup of bereaved people. That is, in the recently bereaved samples (Study 1 and 2), subgroups might exist with severe PG and severe peri-loss dissociation. In the remotely bereaved (Study 3) it was possible that, analogue to the subtype model of PTSD, a subgroup existed that experienced high levels of both PG *and* dissociation, next to a group displaying elevated PG only. Second, alternatively, it was possible that dissociative symptoms in the context of grief are general indicators of PG severity and, as such, increase or decrease in parallel with increases or decreases in PG symptoms.

A further aim of this research was to examine associations of emerging subgroups with indices of loss-related distress. In Study 1, we examined if emerging subgroups differed in terms of summed scores on PG symptoms assessed concurrently and three years later. In Study 2, we examined differences in summed PG item-scores assessed concurrently and one year later. Complementing Study 1, we also examined associations with PTS severity, assessed concurrently and at follow-up. In Study 3, we examined differences in subgroups in terms of concurrently assessed PG and PTS levels only. Drawing from evidence that dissociation reflects more severe trauma responses (Carlson et al., 2012) and preliminary findings of an association between PG and dissociation (e.g., Hasson-Ohayon et al., 2017), we expected that, if subgroups emerged characterized by both severe PG and dissociation, indices of emotional distress would be higher in these groups.

Our last aim was to characterize emerging subgroups in terms of socio-demographic characteristics (including age, sex, education) and characteristics of the loss (including the unexpectedness of the death, relationship to the deceased, and time elapsed since the loss). Given the lack of research in this area, we had no specific expectations regarding this aim. Yet, based on preliminary evidence that sudden, unexpected deaths lead to more dissociation and PG compared to non-sudden losses (Boelen, 2015), we anticipated that people confronted with such deaths would have a greater chance of being included in subgroups characterized by elevated PG and dissociation.

Study 1

Participants and procedure

Study 1 was based on data from $N = 476$ people, confronted with a loss up to 6 months ago, recruited for a project on early predictors of post-loss psychopathology (see e.g., Boelen et al., 2019). Participants were recruited via a funeral service company. As part of a customer satisfaction survey, bereaved people who had used the company's services were invited to participate in a survey; 1307 responded positively and were directed to a secured online survey; 552 people completed the survey of which 476 had lost someone up to 6 months ago. Approximately three years later, we approached this group with a request to complete questionnaires again; 251 did so. The ethics board of the faculty of social sciences of Utrecht University approved the study

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[1] Our focus on depersonalization and derealization is consistent with the literature on the dissociative PTSD subtype postulating that these two phenomena distinguish "dissociative" PTSD from "ordinary" PTSD (White et al., 2022). This approach ignores that positive dissociative symptoms can exist alongside these negative dissociative symptoms. In fact, re-experiencing symptoms—hallmark symptoms of PTSD—can be conceptualized as positive dissociative symptoms. Therefore, the whole distinction between PTSD and the dissociative PTSD subtype can be seen as somewhat arbitrary (cf. Nijenhuis, 2017).

(FETC-17/067).

Measures

To measure PGD symptoms, we used a modified version of the Traumatic Grief Inventory Self Report (TGI-SR; Boelen & Smid, 2017). The TGI-SR assesses symptoms of Persistent Complex Bereavement Disorder as defined in DSM-5 (APA, 2013) and PGD according to earlier definitions. Items (originally worded in the past tense and referring to grief in the past month) were reformulated into the present tense (e.g., "I have trouble to accept the loss") because for some participants the loss occurred very recently. Participants rated to what extent items applied to them on five-point scales, with anchors 1 = not at all, 2 = a little, 3 = somewhat, 4 = quite much, and 5 = very much. For the current study, we selected 10 items mapping onto the DSM-5-TR criteria for PGD (see Table 1 and Supplementary Table 1 for item mapping). The internal consistency (alpha) of the 10 PGD items used in the study was 0.92 at timepoint 1 (T1) and 0.92 at timepoint 2 (T2).

Peri-loss dissociative phenomena were measured with three items specifically formulated for this study, shown in Table 1. Participants rated the degree to which they applied to them on the same 5-point scale that was also used for the PG items (1 = not at all, to 5 = very much). The internal consistency (alpha) of the three items was 0.57.

Statistical analyses

LPA was performed with Mplus (Muthen & Muthen, 1998–2019), using the 10 PGD item-scores and three dissociation item-scores, transformed into z-scores, as indicators, and using a maximum likelihood estimator. To evaluate model fit, we considered statistical indices and interpretability. Statistical indices included (i) Akaike information criterion (AIC), (ii) Bayesian information criterion (BIC), and (iii) sample-size adjusted Bayesian information criterion (SABIC), with lower values reflecting better fit, (iv) entropy (with values closer to 1 indicating better fit), as well as the (v) Lo-Mendell-Rubin likelihood ratio test (LRT), and (vi) bootstrap likelihood ratio test (BLRT), comparing the fit of models with K profiles with a model with K-1 profiles.

To characterize emerging profiles, the most likely profile membership was saved, merged with the original data, and used in a series of analyses of variance (ANOVAs) to examine if item-scores (z-scores) differed between profiles. Next, for the second study aim, we used

ANOVAs to examine if profiles differed in terms of the summed scores on the PG items as assessed at T1 and three years later, at T2. Last, for the third study aim, we used Chi square testing and ANOVAs to examine if profiles differed in terms of socio-demographic and loss-related characteristics. In so doing, we focused on age, sex, and dichotomized education (college/university-level vs. lower-level education), plus time since loss, dichotomized relationship to the deceased (loss of partner or child vs. some other close person), and dichotomized expectedness (death was experienced as unexpected vs. expected). Analyses other than the LPAs were performed using SPSS (IBM SPSS Statistics Version 27 (IBM Corp., 2020)).

Results

The sample included 200 (42 %) male and 276 (58 %) female participants. The age of participants averaged 58.7 (SD = 11.2) years; 220 (46.2 %) had college/university-level education, 256 (53.8 %) had followed other (lower) education. Regarding the relationship to the deceased, 158 (33.2 %) lost a partner or child and 318 (66.8 %) some other relative. The losses took place a mean of 94.5 (SD = 28.5) days earlier. In 113 cases (23.7 %), deaths were unexpected (i.e. due to an accident, suicide or, in most of these cases, an unexpected medical cause); in 363 cases (76.3 %), death were not unexpected (mostly due to illness or old age).

The fit indices for the one-profile through five-profile models are shown in Table 2. The three-profile solution was retained. AIC, BIC, and SA-BIC values were lower for that solution compared to the two-profile model, and the VLRT indicated that this solution fit better than the two-profile model. AIC, BIC, and SA-BIC values were lower for the four-profile and five-profile models but the decrease in values was small. Moreover, the VLMR was significant for the three-, but not the four- and five-profile solutions. Parsimony and interpretability supported selection of the three-profile model. Standardized item-scores for the three profiles are shown in Table 1 and depicted in Fig. 1. Profiles represented participants with low PG and dissociation (*n* = 295, 61.9 %), average PG and dissociation (*n* = 136, 28.5 %), and high PG and dissociation (*n* = 45, 9.4 %), respectively. There was no indication that there were distinct subgroups with high PG and low dissociation and high PG and high dissociation.

We used Welch's ANOVAs (because the assumption of homogeneity of variance was violated) to compare all standardized item-scores

Table 1
Abbreviated content of items included in the latent profile analysis, average (standardized) item-scores in each profile, and differences in item-scores between profiles in Study 1 (*N* = 476).

	Profile 1: low PG and dissociation (*n* = 295; 61.9 %)	Profile 2: average PG and dissociation (*n* = 136, 28.5 %)	Profile 3: high PG and dissociation (*n* = 45, 9.5 %)	Differences in standardized item-scores between profiles
Prolonged grief				
1. Yearning/longing	−0.56	0.85	1.21	1 < 2 < 3
2. Preoccupation	−0.47	0.51	1.56	1 < 2 < 3
3. Identity disruption	−0.33	−0.001	2.17	1 < 2 < 3
4. Disbelief	−0.60	0.75	1.76	1 < 2 < 3
5. Avoidance	−0.36	0.21	1.71	1 < 2 < 3
6. Emotional pain	−0.37	0.21	1.79	1 < 2 < 3
7. Difficulty reintegration	−0.48	0.36	2.08	1 < 2 < 3
8. Numbness	−0.50	0.42	2.06	1 < 2 < 3
9. Meaninglessness	−0.49	0.47	1.84	1 < 2 < 3
10. Loneliness	−0.40	0.27	1.90	1 < 2 < 3
Dissociation				
1. What happened in the days surrounding his/her death did not seem real, but like in a dream, film or play.	−0.39	0.38	1.41	1 < 2 < 3
2. What happened (in the days surrounding his/her death) I experienced very sharply, lived through, and with full awareness. (R)	0.01	−0.10	0.22	1 = 2 = 3
3. In the days surrounding his/her death, I sometimes struggled to understand what was happening.	−0.41	0.37	1.59	1 < 2 < 3

Note. *R* = reverse coded.

Table 2
Goodness-of-fit indices for latent profile models.

Model	Log-likelihood	AIC	BIC	SA-BIC	Entropy	VLMR	BLRT	Sample size by profile based on most likely membership
Study 1 (N = 476)								
1 profile	−8714.289	17,480.579	17,588.880	17,506.359				476
2 profiles	−7509.469	15,098.938	15,265.555	15,138.691	0.966	0.0002	<0.001	106/370
3 profiles	−7079.582	14,267.164	14,492.096	14,320.708	0.944	0.0135	<0.001	45/136/295
4 profiles	−6947.996	14,031.993	14,315.241	14,099.419	0.925	0.2591	<0.001	32/74/121/249
5 profiles	−6798.312	13,760.623	14,102.187	13,841.931	0.937	0.3835	<0.001	23/27/56/121/249
Study 2 (N = 141)								
1 profile	−2767.00	5589.990	5672.560	5583.970				141
2 profiles	−2346.637	4779.270	4906.070	4770.020	0.988	<0.001	<0.001	45/96
3 profiles	−2197.419	4519.611	4510.838	4691.866	0.946	0.0086	<0.001	39/49/53
4 profiles	−2139.439	4424.877	4640.137	4409.167	0.952	0.1461	<0.001	16/29/48/48
5 profiles	−2097.23	4370.460	4620.951	4351.522	0.958	0.5110	<0.001	10/16/19/48/48
Study 3 (N = 258)								
1 profile	−5838.011	11,740.022	11,853.717	11,752.266				258
2 profiles	−5362.284	10,822.567	10,996.662	10,841.316	0.877	0.0556	<0.001	124/134
3 profiles	−5177.999	10,487.997	10,722.493	10,513.251	0.902	0.0278	<0.001	51/93/114
4 profiles	−5080.796	10,327.592	10,622.487	10,359.350	0.898	0.2090	<0.001	44/46/82/86
5 profiles	−5027.533	10,255.066	10,610.362	10,293.329	0.908	0.4633	<0.001	5/44/47/79/83

Note. AIC = Akaike information criterion. BIC = Bayesian information criterion. BLRT = bootstrap likelihood ratio test (BLRT). SA-BIC = Sample-size adjusted Bayesian information criterion. VLMR = Vuong-Lo-Mendell- Rubin likelihood ratio test.
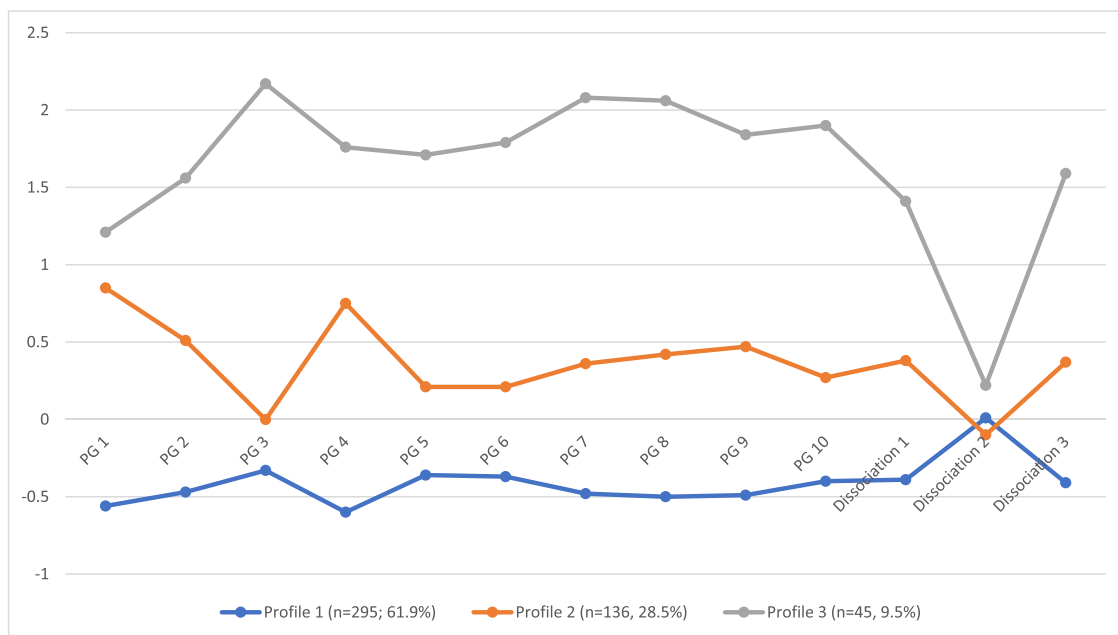

Fig. 1. Means of standardized prolonged grief and dissociation items for each latent profile in Study 1 ($N = 476$).

between the profiles. F-values were statistically significant for all 13 item-scores (all Welch's F's > 54.51, all p's < .001), except the second dissociation item ($F = 1.50$, $p = .23$). Post-hoc testing showed that for all items (except this last one) scores were lowest in the low PG/dissociation group, significantly higher in the average PG/dissociation group, and highest in the high PG/dissociation group (i.e. Profile 1 < Profile 2 < Profile 3; see Table 1). For the second dissociation item, scores did not differ (i.e. Profile 1 = Profile 2 = Profile 3).

The summed scores on the PG items differed significantly between profiles (Welch's $F = 850.50$, $p < .001$). Scores were $M = 13.74$ (SD = 2.58), $M = 23.33$ (SD = 3.58), and $M = 37.53$ (SD = 4.79) for profiles 1, 2, and 3, respectively. Post-hoc testing showed that all pairwise comparisons were significant at $p < .001$. For the sample with follow-up data three years after baseline ($N = 251$), the summed scores on the PG items assessed at follow-up were $M = 14.32$ (SD = 4.27), $M = 20.68$ (SD = 7.04), and $M = 28.16$ (SD = 8.19) for profiles 1, 2, and 3, respectively. Scores differed significantly (Welch's $F = 55.02$, $p < .001$). Post-hoc

testing showed that all pairwise differences were significant at $p < .001$.

With respect to correlates of profiles, we found that sex did not differ between profiles ($\chi^2 = 4.66$, df = 2, $p = .10$). Education differed ($\chi^2 = 8.25$, df = 2, $p = .02$) with slightly more people with higher education in the low PG/dissociation profile. Kinship differed ($\chi^2 = 85.70$, df = 2, $p < .001$) with less people who lost a partner or child in the low PG/dissociation profile and more people who lost a partner or child in the other two profiles. Unexpectedness differed ($\chi^2 = 16.01$, df = 2, $p < .001$) with relatively more people confronted with expected losses in the low PG/dissociation profile. Time since loss (Welch's $F < 1$) and age (Welch's $F = 2.07$, $p = .13$) did not differ between profiles.

Study 2

Participants and procedure

Study 2 drew from a project examining cognitive behavioral

variables in grief (see e.g., Boelen, De Keijser & Smid, 2015; Djelantik, Smid, Kleber & Boelen, 2017). Participants were recruited via bereavement care providers who distributed questionnaires. Over 700 individuals entered the study. For the present research, data were used from 141 participants who were at least 18 years of age and bereaved no more than six months ago. All participants provided written informed consent and were invited to complete symptom-measures again, one year after inclusion in the project. Of all $N = 141$ participants, 87 (61.7 %) provided data one year later, at T2. A medical ethics review board approved the study (METC-08–117/K).

Measures

PGD symptoms were assessed using an adapted version of the Dutch Inventory of Complicated Grief-revised (ICG-R; Boelen et al., 2003), originally developed by Prigerson and Jacobs (2001). Some added items (e.g., representing difficulties moving on with life) represented reformulations of PGD criteria that were introduced in the literature when the study was running. Participants rated the presence of symptoms in the preceding month, on five-point scales ranging from 1 = never to 5 = all the time. As in Study 1, we selected 10 items mapping onto DSM-5-TR criteria for PGD (see Table 3 and Supplementary Table 1). The internal consistency (alpha) of the 10 PGD items was 0.92 at T1 and 0.94 at T2.

Dissociative phenomena were assessed with the 10-item Peritraumatic Dissociative Experiences Questionnaire (PDEQ; Marmar et al., 1997). Participants rated the intensity of 10 dissociative experiences in the immediate aftermath of the death, on scales ranging from 1 = not at all to 5 = very much. For the current study, we selected items representing depersonalization and derealization, shown in Table 3. The internal consistency (alpha) of these four item-scores was 0.89.

PTS symptoms were assessed with the Posttraumatic Symptom Scale Self Report version (PSS-SR) developed by Foa, Riggs, Dancu and Rothbaum (1993). Participants rated the presence of symptoms during the preceding month, on four-point scales (ranging from 0 = not at all, to 3 = five or more times per week/almost always) with the loss as the anchor event (e.g., "How often did you have unpleasant dreams or nightmares about the death of your loved one?"). The measure has good psychometric properties (Foa et al., 1993). In the present sample, the alpha was 0.89 at T1 and 0.93 at T2.

Statistical analyses

The statistical analyses planned for this study were similar to those for Study 1.

Results

The T1 sample included 31 (22 %) male and 110 (78 %) female participants. The participant's mean age was 51.5 (SD = 12.9) years; 79 (56 %) had college/university level education, 62 (44 %) followed other (lower) education; 78 (53.3 %) lost a partner or child and 60 (42.6 %) some other close person (there were three missing values). Losses occurred $M = 3.7$ (SD = 1.6) months before the assessment. Deaths were unexpected in 36 cases (25.5 %) and not unexpected in 104 cases (74.3 %; there was one missing).

Table 2 shows fit indices. Again, the three-profile model was retained. AIC, BIC, and SA-BIC values were lower for this solution than for the one- and two-profile solutions. The VLMR indicated that this solution was better than the two-profile solution and that the four- and five-profile solutions were not an improvement over the three-profile solution (even though AIC, BIC, and SA-BIC values declined somewhat for these models). Subgroups of those latter solutions also went too small for meaningful interpretation. Table 3 and Fig. 2 show standardized scores on the PG and dissociation items in each profile. Profiles represented participants with low PG and low dissociation ($n = 49$, 34.7 %), average PG and low dissociation ($n = 53$, 37.5 %), and high PG and high dissociation ($n = 39$, 27.6 %), respectively. Again, results did not point at distinguishable subgroups with high PG and low dissociation vs. high PG and high dissociation.

We again used Welch's ANOVAs (because the homogeneity of variance assumption was not met) to compare the standardized scores of all items included in the LPA. F-values were statistically significant for all 14 item-scores (all F's > 14.13, all p's < .001). Post-hoc testing showed that, for the PG avoidance item and three dissociation items, scores did not differ between the low PG/low dissociation and average PG/low dissociation profiles and were significantly higher in the high PG/ dissociation profile. For all other items, scores were ordered: Profile 1 < Profile 2 < Profile 3 (Table 3).

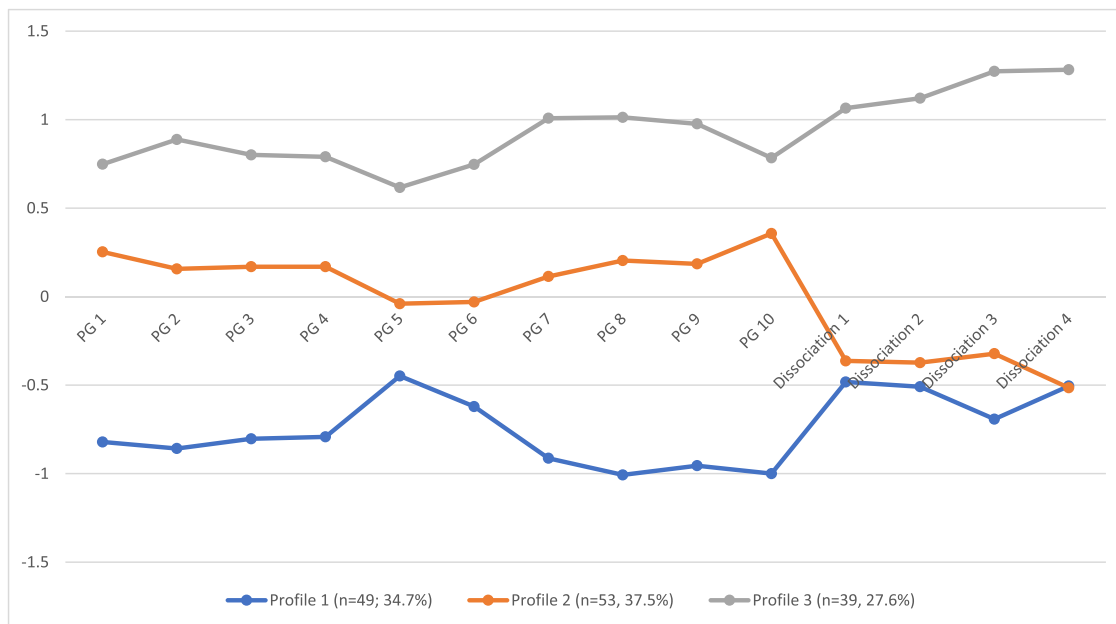The summed scores on the PG items differed significantly between

Table 3
Abbreviated content of items included in the latent profile analysis, average (standardized) item-scores in each profile, and differences in item-scores between profiles in Study 2 ($N = 141$).

	Profile 1: low PG and low dissociation ($n = 49$; 34.7 %)	Profile 2: average PG and low dissociation ($n = 53$; 37.5 %)	Profile 3: high PG and high dissociation ($n = 39$; 27.6 %)	Differences in standardized item-scores between profiles
Prolonged grief				
1. Yearning/longing	−0.821	0.253	0.748	1 < 2 < 3
2. Preoccupation	−0.858	0.157	0.888	1 < 2 < 3
3. Identity disruption	−0.803	0.169	0.801	1 < 2 < 3
4. Disbelief	−0.792	0.169	0.790	1 < 2 < 3
5. Avoidance	−0.448	−0.040	0.617	1 = 2 < 3
6. Emotional pain	−0.621	−0.030	0.747	1 < 2 < 3
7. Difficulty reintegration	−0.913	0.114	1.008	1 < 2 < 3
8. Numbness	−1.007	0.204	1.013	1 < 2 < 3
9. Meaninglessness	−0.955	0.185	0.976	1 < 2 < 3
10. Loneliness	−1.000	0.357	0.784	1 < 2 < 3
Dissociation				
1. I had moments of losing track of what was going on. I "blanked out" or "spaced out" or in some way felt that I was not part of what was going on.	−0.482	−0.363	1.065	1 = 2 < 3
2. There were moments when my sense of my own body seemed distorted or changed. I felt disconnected from my own body, or it was unusually large or small.	−0.509	−0.373	1.121	1 = 2 < 3
3. What was happening seemed unreal to me, like I was in a dream, or watching a movie or play.	−0.692	−0.322	1.273	1 < 2 < 3
4. I felt as though I were spectator watching what was happening to me, as if I were floating above the scene or observing it as an outsider.	−0.505	−0.515	1.282	1 = 2 < 3

Fig. 2. Means of standardized prolonged grief and dissociation items for each latent profile in Study 2 ($N = 141$).

profiles (Welch's $F = 255.20$, $p < .001$). Scores were $M = 15.75$ (SD = 3.38), $M = 27.56$ (SD = 4.46), and $M = 36.02$ (SD = 5.31) for profiles 1, 2, and 3, respectively. For the subgroup with follow-up data ($N = 87$), the summed scores on the PG items assessed at one year followed up were $M = 14.57$ (SD = 4.00), $M = 23.93$ (SD = 4.94), and $M = 31.86$ (SD = 7.74) for profiles 1, 2, and 3, respectively. Scores differed significantly (Welch's $F = 65.83$, $p < .001$). PSS-SR scores at T1 were $M = 7.42$ (SD = 5.32), $M = 16.33$ (SD = 7.11), and $M = 24.23$ (SD = 6.71) for profiles 1, 2, and 3, and differed significantly (Welch's $F = 84.83$, $p < .001$). At T2 scores were $M = 21.09$ (SD = 3.17), $M = 28.61$ (SD = 5.90), and $M = 37.11$ (SD = 8.96) and also differed significantly (Welch's $F = 46.82$, $p < .001$). For PG scores and PTS scores at T1 and T2, all pairwise differences were significant at $p < .001$, with scores ordered: profile 1 < profile 2 < profile 3.

Profiles did not differ in terms of sex ($\chi^2 = 1.25$, df = 2, $p = .53$), education ($\chi^2 = 0.38$, df = 2, $p = .82$), and age (Welch's $F < 1$). Profiles differed in terms of kinship ($\chi^2 = 31.72$, df = 2, $p < .001$), with lower proportions of people confronted with the death of a partner/child in the low PG/low dissociation group compared to the average PG/low dissociation and high PG/dissociation profiles. Unexpectedness of the loss differed between profiles ($\chi^2 = 11.32$, df = 2, $p < .001$) with lower proportions of people confronted with an unnatural loss in the low PG/low dissociation group compared to the other groups. Time since loss also differed: less time had passed in the low PG/low dissociation group compared to the other groups (Welch's $F = 7.29$, $p < .01$).

Study 3

Participants and procedure

Study 3 was performed using data from 258 people, bereaved between six and 36 months earlier, originally enrolled in a study on cognitive and memory processes in grief (e.g., Boelen, 2015). People were recruited via announcements on internet websites. After completion of an application form and reading study information, participants completed questionnaires either online or, if so wished, in paper-and-pencil format. Over 900 people completed an application form and >70 % completed questionnaires. For the present study, we used data from 258 people, bereaved 6–36 months earlier.

Measures

PGD symptoms were measured with the Prolonged Grief Disorder scale (see Boelen, 2015). That is an abbreviated version of the ICG-R (used in Study 2) that assesses 13 putative markers of disturbed grief, including items representing PGD as defined in DSM-5-TR. Participants rate the occurrence of symptoms in the preceding month on 5-point scales (1 = never, 5 = always). We again selected 10 items representing the DSM-5-TR criteria for PGD (see Table 4 and Supplementary Table 1). The internal consistency (alpha) of the 10 PGD items used in the study was 0.89.

Dissociation symptoms were assessed with six items selected from the 10-item Trait Dissociation Questionnaire (TDQ) developed by Murray, Ehlers and Mayou (2002). Participants are instructed to rate the occurrence of dissociative experiences on 6-point (0 = never, 5 = always). To limit the number of items in the analyses and avoid content overlap with other variables assessed, two items measuring numbness and two assessing amnesia were not included, leaving six items (see Table 4). The internal consistency (alpha) of these six item-scores was 0.80.

PTSD symptoms were assessed with the PSS-SR, as described in Study 2.

Statistical analyses

Statistical analyses planned for this study were similar to those for Study 1 and 2.

Results

Participants were aged 46.02 (SD = 12.01) years, on average, and included 219 (84.9 %) females and 39 (15.1 %) males; 137 (53.1 %) had followed college/university level education, 121 (46.9 %) other (lower) education. One hundred and fifty one (58.5 %) lost a partner or child and 107 (41.5 %) some other close person. Losses occurred $M = 18.20$ (SD = 8.77) months earlier. Deaths were unexpected (defined as in Study 1 and 2) in 99 cases (38.4 %) and not unexpected in 159 cases (61.6 %).

Table 2 shows fit indices. We selected the three-profile model as the optimal model. The AIC, BIC, and SA-BIC were lower for that model, compared to the one- and two-profile models and the VLMR showed that

Table 4.

Abbreviated content of items included in the latent profile analysis, average (standardized) item-scores in each profile, and differences in item-scores between profiles in Study 3 ($N = 258$).

	Profile 1: low PG and dissociation ($n = 93$; 36.0 %)	Profile 2: average PG and dissociation ($n = 114$; 44.2 %)	Profile 3: high PG and dissociation ($n = 51$; 19.7 %)	Differences in standardized item-scores between profiles
Prolonged grief				
1. Yearning/longing	−0.683	0.302	0.564	$1 < 2 = 3$
2. Preoccupation	−0.639	0.243	0.637	$1 < 2 < 3$
3. Identity disruption	−0.856	0.233	1.060	$1 < 2 < 3$
4. Disbelief	−0.787	0.210	0.969	$1 < 2 < 3$
5. Avoidance	−0.458	−0.073	1.029	$1 < 2 < 3$
6. Emotional pain	−0.679	0.110	1.017	$1 < 2 < 3$
7. Difficulty reintegration	−0.853	0.207	1.100	$1 < 2 < 3$
8. Numbness	−0.867	0.280	0.971	$1 < 2 < 3$
9. Meaninglessness	−0.967	0.396	0.870	$1 < 2 < 3$
10. Loneliness	−0.530	−0.080	1.180	$1 < 2 < 3$
Dissociation				
1. I feel distant and cut off from others around me.	−0.441	−0.104	1.071	$1 < 2 < 3$
2. I feel that my personality is split into distinct parts.	−0.538	−0.016	1.046	$1 < 2 < 3$
3. I underestimate or overestimate the amount of time that has passed.	−0.400	−0.045	0.849	$1 < 2 < 3$
4. I feel like I don't belong.	−0.439	−0.062	0.969	$1 < 2 < 3$
5. I do many things which I regret afterwards.	−0.302	−0.088	0.781	$1 = 2 < 3$
6. I don't know how to stop myself from doing something.	−0.444	−0.043	0.933	$1 < 2 < 3$

it had a significantly better fit than the two-profile model. The four- and five-profile models had still lower AIC, BIC, and SA-BIC values, but the VLMR values were not significant. Also, interpretability and parsimony supported selection of the three-profile over the four- and five-profile models. Table 4 and Fig. 3 show standardized scores on the items in each profile. Profiles represented participants with low PG and low dissociation ($n = 93$, 36 %), average PG and average dissociation ($n = 114$, 44.2 %), and high PG and high dissociation ($n = 51$, 19.7 %), respectively. No profiles emerged with high PG and low dissociation.

We used Welch's ANOVAs to compare standardized item-scores between profiles. F-values were statistically significant for all scores (all Welch's F's > 21.49, all p's < .001). For all but two items, scores were ordered Profile 1 < Profile 2 < Profile 3. For the yearning/longing item, the low PG/dissociation profile had lower scores compared to the other two profiles that did not differ. For the fifth dissociation item, scores

were higher in the high PG/dissociation group compared to the other profiles that did not differ.

Summed scores on the PG items differed significantly between profiles (Welch's $F = 395.70$, $p < .001$). Scores were $M = 18.22$ (SD $= 3.70$), $M = 29.01$ (SD $= 3.55$), $M = 37.68$ (SD $= 4.78$) for profiles 1–3, respectively. PTS scores were $M = 7.94$ (SD $= 4.76$), $M = 16.09$ (SD $= 5.82$), and $M = 25.61$ (SD $= 6.64$) for profiles 1, 2, and 3, respectively and also differed significantly (Welch's $F = 158.37$, $p < .001$). Post-hoc testing for these PG and PTS scores showed that all pairwise differences were significant at $p < .001$, with scores ordered: profile 1 < profile 2 < profile 3.

Profiles did not differ in terms of sex ($\chi^2 = 1.59$, df $= 2$, $p = .45$) and age (Welch's $F < 1$). Education differed ($\chi^2 = 14.23$, df $= 2$, $p < .001$) such that, in profile 1, there were significantly more, and in profile 3, significantly fewer people with college/university. Kinship differed
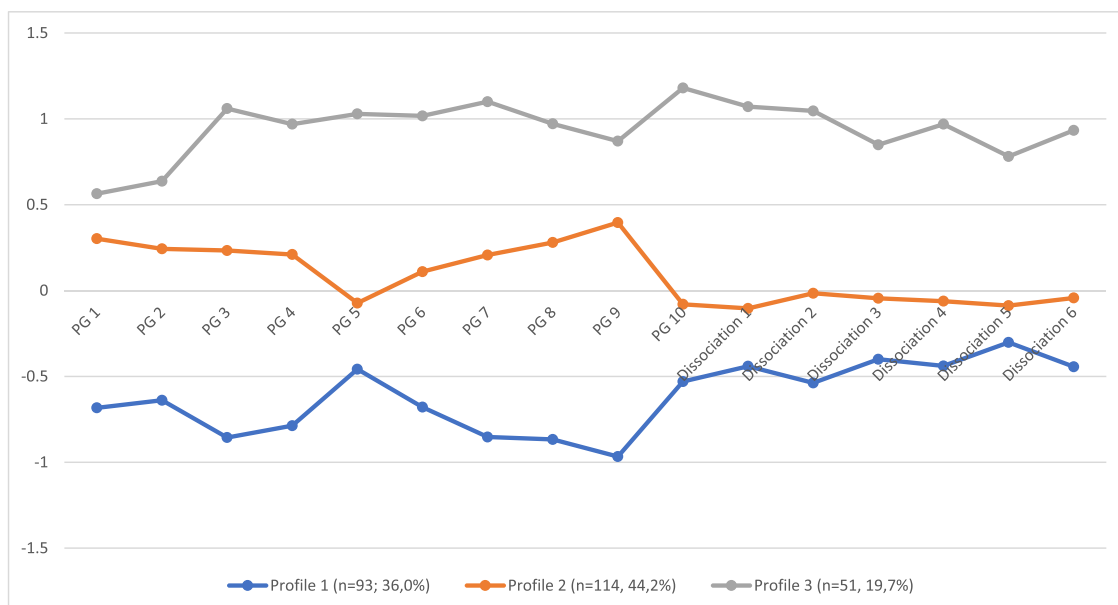

Fig. 3. Means of standardized prolonged grief and dissociation items for each latent profile in Study 3 ($N = 258$).

between profiles ($\chi^2 = 9.35$, df = 2, $p = .009$). Compared to profile 1, in profiles 2 and 3 relatively more people lost a partner/child. Profiles differed, as a trend, in terms of unexpectedness of the loss ($\chi^2 = 5.73$, df = 2, $p = .057$). In profile 2 and 3, relatively more people lost a loved one unexpectedly. Time since loss averaged 19.92 (SD = 9.20), 17.27 (SD = 8.33), and 17.13 (SD = 8.61) in profiles 1–3, respectively. Time differed, as a trend, between profiles (Welch's $F = 2.69$, $p = .07$) and was lower in profile 2 compared to 1 ($p = .08$).

Discussion

The present study sought to enhance our understanding of the association between symptoms of PG (e.g., yearning, preoccupation, difficulties accepting the loss) and dissociative phenomena (specifically depersonalization and derealization) in people confronted with deaths of close persons. Prior research has provided preliminary evidence that dissociation in the immediate aftermath of a loss (i.e., *peri-loss dissociation*) and dissociative experiences beyond this acute phase are correlated with PG severity (e.g., Boelen et al., 2012; Bui et al., 2013). However, these studies have focused on sample-level mean scores and have not considered the possibility that bereaved samples include multiple subsamples characterized by different combinations of PG and dissociation. In the current research, we used LPA to examine heterogeneity in these symptoms, in two recently and one more remotely bereaved sample. We focused primarily on depersonalization and depersonalization to align with the literature on the dissociative subtype of PTSD (White et al., 2022), recognizing that dissociation naturally encompasses much more than these two phenomena.

A first main finding was that in all three studies, we identified three profiles (or subgroups) that were characterized by a combination of relatively low, average, and high levels of PG and dissociation. Specifically, in Study 1, we identified such groups among people recruited via a funeral company, who were all bereaved up to six months, using assessments instruments not yet validated in other studies. In Study 2, we identified profiles characterized by low PG and dissociation, average PG and low dissociation, and high PG and dissociation, among people recruited via bereavement care providers, using validated measures of PG and dissociation. Study 1 and 2 focused on combinations of retrospectively assessed peri-loss dissociation and acute PG. Thus, they did not allow to examine subgroups in terms of protracted PG and dissociation. However, we considered that dissociative phenomena have their origin in confrontation with an adverse event (Carlson et al., 2012) and that acute PG strongly predicts later PG (Boelen & Lenferink, 2022; Boelen et al., 2019). Therefore, it was deemed relevant to examine if recently bereaved samples included different subgroups characterized by both elevated dissociation and PG vs. elevated PG only. However, this was not the case. Instead, findings suggested that early PG and dissociation increase and decrease more or less simultaneously.

In our third study, based on a convenience sample, we examined associations of PG and trait-like dissociation, reported by people bereaved between six and 36 months earlier. Here also, we found "parallel profiles" of people with low, average, and high combination of PG and dissociation. Similar to studies 1 and 2, no discrete subgroups emerged characterized by high PG plus low dissociation or high dissociation and low PG. Making a comparison with the dissociative PTSD subtype, the findings of this third study do not indicate that a similar dissociative subtype of PGD exists, distinguishable from PGD with no dissociation.

Differences in the association of depersonalization and derealization with PTSD observed in prior studies (e.g., White et al., 2022) and associations of these phenomena with PG emerging in our studies may be explained in a number of possible ways. From a theoretical perspective, it is possible that dissociative phenomena typically seen in the context of trauma exposure, including derealization and depersonalization, are not so relevant to bereavement and grief. That is, in the context of traumatic stress, people may have a particularly strong need to dampen tension

and pain, fueling derealization and depersonalization, whereas, in the context of separation distress, there is a lesser need for such experiential disconnection. Speculatively, severe separation distress may be more strongly linked with an inability to access and control memories and feelings (driven by e.g., confusion about the implications of the loss) strengthening numbness or amnesia. It would be interesting if future research further explored to what extent PG and loss-related PTSD are associated with different dissociative reactions. There may also be methodological explanations for differences between ours and prior findings in PTSD. For instance, it is possible that grief reactions in our samples were mostly mild and that, therefore, the low base rate of symptoms may have obscured group differences in terms of PG and dissociation.

A notable observation is that in all three samples, alongside the dissociation symptoms, we found that all 10 PG symptoms differed between the profiles. This is largely consistent with earlier LCA and LPA studies examining PG symptoms, in which emerging subgroups were characterized by different scores on all PG indicators considered, and not by combinations of high and low scores on some PG indicators (see, e.g., Heeke et al., 2022; Nickerson et al., 2014, but see Boelen et al., 2019).

With respect to our second aim, another main finding of our studies was that profile membership was associated with concurrently and longitudinally assessed indicators of psychological problems in an expectable way. That is, in Study 1 and 2, profiles of low, average, and high PG/dissociation, respectively, were associated with low, higher, and the highest summed scores of all PG items assessed concurrently and three years beyond baseline (Study 1) and with summed scores on PG and PTS items assessed concurrently and at one year follow-up (Study 2). In a prior study, based on the data used in Study 1, we already established that subgroups characterized by low, moderate, and severe symptoms of persistent complex bereavement disorder (as per DSM-5, APA, 2013), evidenced low, moderate, and severe symptoms at three-years follow-up (Boelen et al., 2019). The current findings in Study 1 show that these findings generalize to DSM-5-TR based PG. In terms of the predictive value of early PG profiles, Study 2 extended Study 1 by showing that profile membership not only predicted levels of PG, but also PTS, assessed later in time. This reinforces the finding that people with more intense acute grief reactions are prone to developing various mental health disorders (Boelen & Lenferink, 2022). Among the more remotely bereaved people studied in Study 3, we similarly found that membership of the profiles with low, average, and high PG/dissociation was associated with lower, higher, and the highest scores on summed PG and PTS item-scores.

Regarding our third aim, to characterize profiles in terms of sociodemographic and loss-related characteristics, we found that, in all three studies, gender and age were unrelated to profile membership. Education was a correlate of profiles in Study 1 and 3 (but not 2) with more people with higher education in the low PG/dissociation profile. Time since loss was a correlate in Study 2 (but not Study 1 and only as a trend in Study 3) with people in the low PG/low dissociation profile being closer to their loss compared to people in the other profiles. This seems counterintuitive and may be a chance finding; yet it may also be interpreted as indicating that, within this short time span of the first six months of bereavement, typical grief reactions and dissociation are overshadowed by other responses (e.g., despair, disbelief, defeat) in the first months and only emerge slightly later in this period. In all three studies, the experience of a closer loss (of a partner or child) and an unexpected death increased the likelihood of inclusion in the more pervasive PG/dissociation profiles. This aligns with prior evidence that closer and more sudden deaths coincide with the most severe acute grief responses (e.g., Boelen & Lenferink, 2022; Lobb et al., 2010).

There are limitations to this research that should be considered. First, in Studies 1 and 2, we examined retrospective accounts of peri-loss dissociation. Such retrospective accounts are vulnerable to memory inconsistency (David et al., 2010). Research in which dissociative

phenomena experienced in the early period of bereavement are measured directly (rather than retrospectively) is needed for a more accurate view on the linkage between acute dissociation and PG. A further limitation is that, in all three studies, we only focused on depersonalization and derealization and not other dissociative phenomena. In their review, White et al. (2022) found no evidence that prevalence rates of the dissociative PTSD subtype differed as a function of the nature of the dissociative symptoms considered. Yet, (as noted above) to what extent patterns of PG and dissociation differ, dependent on which dissociative symptoms are assessed, remains an issue for future research. Third and relatedly, not all items we used to measure depersonalization and derealization are equally representative of these concepts; arguably, some items reflect a broad definition of these concepts. This highlights the importance of more research, with other and better-validated questions. Fourth, we did not assess bereavement-related PTSD. Thus, although the results do not indicate an analogous variant of a "dissociative PGD subtype", we cannot rule out that, following bereavement, some people develop a loss-related PTSD of the dissociative subtype. Fifth, study samples were not drawn from clinical populations and, therefore, for most participants, grief reactions were likely limited. Since dissociation in the wake of adverse events has been postulated to reflect more severe symptomatology, it is possible that discrete subgroups of grievers with different combinations of clinically relevant PG and dissociation do actually exist among more severely disturbed griever.

Notwithstanding these considerations, this research contributes to our knowledge about the heterogeneity in PG and dissociative symptomatology in bereaved people. We found no evidence that dissociation is a salient feature of PG symptomatology for a specific subgroup of bereaved people. Instead, findings suggest that experiences of depersonalization and derealization after bereavement are elements of overall grief reactions, going up and down in parallel with other responses. In terms of clinical implications, we should be cautious in drawing conclusions, given the preliminary nature of our studies. Yet, it seems that severe PG may coincide with severe experiences of depersonalization and derealization and, possibly, other dissociative symptoms. This may cue clinicians to address these dissociative experiences in their severely distressed bereaved patients and may imply that some specific interventions may be required for these symptoms. For instance, cognitive restructuring may be used to mitigate depersonalization and derealization (cf. Hunter, Wong, Gafoor, Lewis, & David, 2023) and dissociation management training to target other dissociative symptoms (cf. Vancappel, Réveillère & El-Hage, 2022). It is important to continue improving our understanding of the broad phenomenology of responses to loss and maintaining mechanisms thereof. That will ultimately improve timely identification and treatment of bereavement-related psychopathology.

Author disclosure

The author has nothing to disclose.

Author contribution

PB is the only author and designed the study, collected the data, performed the statistical analyses, and wrote the manuscript.

Declaration of Competing Interest

The author declares to have no conflicts of interest.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.ejtd.2023.100368.

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