

Symptoms of prolonged grief disorder as per DSM-5-TR, posttraumatic stress, and depression: Latent classes and correlations with anxious and depressive avoidance

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ABSTRACT

Bereavement may precipitate significant mental health problems. Prolonged grief disorder (PGD) is included in section 2 of the forthcoming DSM-5 text-revision (DSM-5-TR). Research using earlier criteria of disordered grief showed that bereaved people may have distinct symptom patterns—including high, low, and comorbid symptomatology. Building on that work, we used latent class analysis to identify subgroups of bereaved individuals based on their endorsement of symptoms of PGD (per DSM-5-TR), posttraumatic stress, and depression. We also examined if class-membership was associated with socio-demographic and loss-related variables and anxious and depressive avoidance behaviors. Self-reported data were available from 436 people, mostly women, mostly bereaved by the death of their partner or child. Three subgroups were identified, evidencing low symptom levels (34.2%), predominantly PGD symptoms (38.7%), and high symptom levels (27%), respectively. Shorter time since loss, lower education, loss of a partner, and unnatural/violent deaths increased chances of inclusion in the high symptoms class. Anxious and depressive avoidance were lowest in the low symptoms class, higher in the PGD class, and strongest in the high symptoms class. Findings show that PGD per DSM-5-TR is a distinct condition and underscore that reducing avoidance behaviors is important in the treatment of post-loss psychopathology.

1. Introduction

Differences exist in the nature and intensity of reactions to bereavement. Most people adjust to loss without emotional problems, but in a considerable minority of people, the death of a close relative causes significant health issues (Djelantik et al., 2020b; Lundorff et al., 2017). Apart from depression, anxiety, and other common mental disorders, bereaved people may develop chronically distressing and disabling separation distress and other grief-reaction, which are distinct from these disorders. This has culminated in the inclusion of Prolonged Grief Disorder (PGD) in the forthcoming text-revision of the 5th edition of the Diagnostic and Statistical Manual of mental disorders (i.e., DSM-5-TR; Prigerson et al., 2021). A diagnosis of PGD can be set if a person experiences separation distress, plus several accompanying symptoms (e.g., anger, difficulties accepting the loss, and moving on) to a distressing and disabling degree, ≥ 12 months post-loss (≥ 6 months in children) (APA, 2020). Although the introduction of PGD in DSM-5-TR is vital to the identification and treatment of people who do not recover

from loss, it remains imperative to study the heterogeneity in responses to bereavement. Indeed, research shows that bereaved people may have distinct symptom patterns, including some people with no symptoms and others with substantial comorbidity (e.g., Boelen et al., 2016). Equally important is to enhance knowledge about variables associated with different response patterns.

One technique that is increasingly used to study heterogeneity in responses to loss is latent class analysis (LCA). LCA is a person centered approach, that allows grouping individuals into homogeneous subgroups, or classes, based on designated variables, such as the endorsement of items tapping emotional responses (Lanza et al., 2013). LCA can be used to identify subgroups of bereaved people, characterized by similar patterns of symptomatology. Moreover, by moving beyond dichotomous diagnostic categorization (i.e., meeting or not meeting criteria for PGD), it allows to identify bereaved people with subclinical psychopathology.

Over a dozen studies used LCA to identify subgroups of bereaved people based on patterns of symptoms of PGD and additional mental

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health outcomes (Boelen and Lenferink, 2020a; Boelen et al., 2016; Djelantik et al., 2020a, 2017; Eisma et al., 2019; Heeke et al., 2017; Kokou-Kpolou et al., 2021; Lenferink et al., 2017; Maccallum and Bryant, 2018, 2019; Nickerson et al., 2014; Zhou et al., 2018a, 2018b). Notwithstanding the importance of these studies, there is still room to advance knowledge on variations in symptom presentation following loss. For instance, many earlier LCAs focused only on PGD plus post-traumatic stress disorder (PTSD) (Eisma et al., 2019; Heeke et al., 2017; Nickerson et al., 2014; Maccallum and Bryant, 2019) or PGD plus depression (Boelen et al., 2016; Kokou-Kpolou et al., 2021; Maccallum and Bryant, 2018), and few on all three syndromes (Boelen and Lenferink, 2020a; Djelantik et al., 2017, 2020a; Lenferink et al., 2017). Others focused on PGD plus outcomes other than depression and PTSD symptoms (Zhou et al., 2018a, 2018b). Notable too is that almost all of these LCAs examined PGD symptoms as put forth by Prigerson et al. (2009), except the one by Eisma et al. (2018) that included all 19 items from the Inventory of Complicated Grief and a recent study by Kokou-Kpolou et al. (2021) examining all but two DSM-5-TR based symptoms of PGD. These PGD criteria from 2009 overlap largely but not completely with DSM-5-TR PGD as now defined (Boelen and Lenferink, 2020b).

The current study build on prior work by using LCA to identify subgroups of bereaved people based on their endorsement of symptoms of PGD as per DSM-5-TR, PTSD, and depression. Based on prior LCA work that also investigated these three symptom cluster (e.g., Boelen and Lenferink 2020a; Lenferink et al., 2017), we expected to identify at least three subgroups: one characterized by low symptom severity, one characterized by high symptom severity, and one characterized primarily by the presence of PGD symptoms. A second aim of our study was to examine socio-demographic and loss-related factors associated with class membership. Specifically, we examined differences in terms of age, gender, and education plus the duration of the bereavement, the relationship to the deceased, and the cause of the death. Considering prior research, we expected that the probability of being included in classes with more pervasive symptoms would be higher for people with relatively lower education, with shorter time since loss, and confronted with the loss of closer relatives and losses due to unexpected/violent causes (cf., Burke and Neimeyer, 2013; Djelantik et al., 2017). Given the inconsistent findings regarding the role of age and gender with bereavement outcomes, we did not have specific hypotheses regarding these variables.

A third aim was to consider if emerging subgroups differed in terms of avoidance strategies used, specifically “anxious avoidance” and “depressive avoidance.” Anxious avoidance refers to avoidance of stimuli reminding of the loss, driven by the fear that confronting these reminders will be unbearable; depressive avoidance refer to avoiding activities that could foster adjustment, driven by the view that these activities are useless and unfulfilling (Boelen et al., 2006). Research has demonstrated that both forms of avoidance are associated with emotional distress following loss, both concurrently and longitudinally (e.g., Boelen and Eisma, 2015; Eisma et al., 2013). Yet, no studies have directly examined whether subgroups of bereaved people, presenting with different symptoms clusters, differ in terms of these avoidance strategies. Increasing knowledge about the linkage of symptom profiles and modifiable psychological variables has significant clinical relevance. Anxious and depressive avoidance can be targeted successfully with exposure and behavioral activation, respectively; thus, knowing how different response patterns are linked with avoidance, provides clues about which interventions are helpful to change these patterns. Although no prior studies examined the association of avoidance with subgroups with similar symptom patterns, it was conceivable that both forms of avoidance would be more common in classes characterized by pervasive symptoms (cf. Eisma et al., 2013).

Although, formally, a diagnosis of PGD can only be set ≥ 12 months post-loss (APA, 2020; Prigerson et al., 2021), we included people whose losses occurred earlier, namely ≥ 1 month post-loss. We did so because

we did not seek to examine diagnoses of PGD but, instead, were interested in emerging subgroups of bereaved people, based on patterns in symptoms of PGD as well as symptoms of depression and PTSD. Considering that these latter symptoms may be present shortly after a loss (and, in terms of DSM-5 criteria [APA, 2013], even be part of formal diagnoses of major depression and PTSD already at two weeks and one month post-loss, respectively), we included relatively recently bereaved people. In addition, most prior LCAs included samples bereaved for several years already and we felt it was important to explore the generalization of prior research findings to more recently bereaved samples. Knowledge about symptom patterns and correlates of relatively recently bereaved people is vital to inform advances in early detection and treatment of people at risk for distress following loss.

2. Methods

2.1. Participants and procedure

We used data from 436 bereaved individuals recruited in the context of a research program on cognitive behavioral and memory processes in grief, running from late 2008 to early 2012 (see, e.g., Boelen, 2015). People were recruited via announcements on internet websites. After completion of an application form and reading information about the study, 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, data were used from people bereaved between one month and three years. Participants were aged 46.0 (SD = 12.2) years on average, included 376 (86.2%) women and 60 (13.8%) men; 208 (47.7%) had followed primary/secondary education, 228 (52.3%) higher education (i.e. college or university). The mean time since loss was 12.0 (SD = 10.1) months; 202 (46.3%) had lost a partner, 36 (8.3%) a child, and 198 (45.4%) someone other than a partner/child. Deaths were caused by natural/nonviolent causes in 391 (89.7%) cases and by unnatural/violent causes (including accidents, suicides, and homicides) in 45 (10.3%) cases.

2.2. Measures

PGD symptoms were measured with the Prolonged Grief Disorder scale (see Boelen, 2015). That is an abbreviated version of the Inventory of Complicated Grief (Prigerson et al., 1995) that assesses 13 putative markers of disturbed grief, including all but one criteria from PGD as per DSM-5-TR (Prigerson et al., 2021). Participants rate the occurrence of symptoms in the preceding month on 5-point scales (1=never, 5=always). In this sample, the scale's Cronbach's alpha was 0.91. PTSD symptoms were assessed with the 17-item PTSD Symptom Scale Self-Report version (PSS-SR; Foa et al., 1993) that instructs respondents to rate the frequency of PTSD symptoms on 4-point scales (0=not at all, 3=five or more times per week/almost always). The index-event was defined as “the death of your loved-one” (e.g., “How often did you have unpleasant dreams/nightmares about the death of your loved-one?”). The scale's Cronbach's alpha in our sample was 0.88. Depression symptoms were assessed with the 7-item depression subscale of the Hospital Anxiety and Depression Scale (HADS-D; Zigmond and Snaith, 1983). Respondents rate the presence of symptoms during the previous week, on 4-point scales with different labels. Cronbach's alpha in this sample was 0.92. Depressive and anxious avoidance were assessed with the Depressive and Anxious Avoidance in Prolonged Grief Questionnaire (DAAPGQ; Boelen et al., 2010). This 9-item measure includes four items tapping Anxious Avoidance (Cronbach's alpha = 0.77, “I avoid situations and places that confront me with the fact that [-] is dead and will never return”) and five items tapping Depressive Avoidance (Cronbach's alpha = 0.91; “I avoid doing activities that used to bring me pleasure, because I feel unable to carry out these activities”). Items are rated on 8-point scales (1=not at all true for me, 8=completely true for me).

Research has shown that the items represent distinct constructs, with sound construct validity (Boelen et al., 2010; Eisma et al., 2013).

2.3. Statistical analyses

We performed LCA using MPlus 8 (Muthén and Muthén, 1998-2017). As indicators of DSM-5-TR PGD, we selected 10 items from the PGD scale, representing all symptom-criteria except “loneliness” which was not captured by our PGD measure. To keep the estimated number of parameters in proportion to the sample size, we selected six items from the PSS-SR as indicators of PTSD. We selected items corresponding to the six item from the brief PTSD screening list developed by Lang and Stein (2005) including two items for each of the three DSM-IV based symptom clusters. Finally, all seven depression items were included. We dichotomized PGD items by considering scores of 1 (never) and 2 (rarely) as item not endorsed and scores 3 (sometimes), 4 (often), 5 (always) as item endorsed. For the PTSD items, scores 0 (not at all) and 1 (once per week or less) were considered as symptom absent and scores 2 (2 to 4 times a week) and 3 (5 or more times a week) as symptom present. For the depression items, the two lowest scores and two highest scores (with varying labels) were considered as symptom absent vs. present, respectively. Table 1 shows the abbreviated content of all items included in the analyses.

Next, we evaluated models with an increasing number of classes to determine the optimal number of latent classes in the dataset. Models with one class up to six classes were estimated. Model selection was based on model fit, class sizes, and interpretability of the class solutions (Nylund et al., 2007). Fit indices considered were the Bayesian information criterion (BIC), sample-size adjusted BIC (SA-BIC), and Akaike’s information criterion (AIC) with lower values indicating better fit, the entropy, with values >0.80 considered acceptable, and the Vuong, Lo, Mendel, Rubin likelihood ratio test (VLRRT) of which p-values <0.05 indicate a significant improvement of the fit of a model relative to the model with one less class. Furthermore, class solutions that included very small class sizes were not retained because these might yield computational difficulties (e.g., inaccurate estimates of class sizes) and elevated risk for Type 2 error when examining correlates of these classes (van de Schoot et al., 2017). Lastly, parsimonious solutions that were easy to interpret were preferred over more complex solutions.

To address our second and third aims, people were assigned to classes based on the highest classification probability. Then, the 3-step method, implemented in Mplus, was used to examine differences in class membership as a function of socio-demographic variables (i.e. age, gender, and dichotomized education), loss-related variables (number of months since loss, trichotomized kinship, [loss of a partner, a child, someone other than partner/child], and dichotomized cause [loss due to a natural/non-sudden vs. unnatural/sudden cause]), and indices of anxious avoidance and depressive avoidance. Variables were first examined in distinct analyses. Then, all significant socio-demographic and loss-related predictors were simultaneously entered in a multinomial regression analysis using the 3-step approach, to examine which predictor variables continued to predict membership, when controlling the shared variance among these variables. Finally, a multinomial regression including these significant socio-demographic and loss-related predictors plus anxious and depression avoidance was conducted. Results were considered statistically significant at $p < 0.05$.

3. Results

3.1. Latent class analysis

The goodness of fit indices for the one-class through six-class solutions are shown in Table 2. The three-class solution was retained. AIC, BIC, and SA-BIC values were lower for that solution compared to the two-class model and the VLRRT indicated that this solution fit better than the two-class model. BIC and SA-BIC values were lower for the four-class

and five-class models but the magnitude of reductions in these values was small. Parsimony and interpretability supported selection of the three-class solution. Fig. 1 shows symptom probabilities and Table 1 shows symptom frequency for the sample and probabilities of item endorsement across the classes.

In keeping with prior LCAs, values ≥ 0.60 were considered as representing a high probability that the symptom was present, values between 0.15 and 0.59 as representing a moderate probability and values <0.15 as representing a low probability that the symptom was present in the class (Nickerson et al., 2014). Accordingly, the first class included 149 individuals (34.2%) with high endorsement of three PGD symptoms, moderate endorsement of five PGD symptom, and low endorsement of the other symptoms and was called “low symptoms class”. Individuals in the second class demonstrated high endorsement of eight PGD-symptoms and moderate endorsement of two PGD, five PTSD, and six depression symptoms. This class ($n = 169$, 38.7%) was labelled the “predominantly PGD class”. The third class was characterized by high endorsement of 19 of all 23 items and moderate endorsement of four items and was labelled the “high symptoms class” ($n = 118$, 27.0%).¹

3.2. Predictors of class-membership

Outcomes of the distinct analyses using the 3-step method are shown in Table 3. Compared to people in the low symptoms class, people in the PGD class had experienced their loss fewer months ago, were more frequently confronted with the death of a partner, and less frequently with the death of someone other than a child/partner. Compared to people in the low symptoms class, people in the high symptoms class were more likely to have followed lower education only, had suffered their loss fewer months ago, had suffered the loss of a partner, had not suffered the loss of someone else than a partner/child, and were more often confronted with an unnatural/violent loss. Compared to people in the PGD class, people in the high symptoms class were older, had followed lower education, were more often confronted with a partner and not someone other than a partner/child, and were more often confronted with an unnatural/violent loss. Classes also differed in terms of anxious avoidance and depressive avoidance: both avoidance scores were lowest in the low symptoms class, significantly higher in the PGD class, and highest in the high symptoms class.

Next, we performed a multinomial regression (using the 3-step method) including all socio-demographic and loss-related variables predicting class-membership in the univariate analyses. Outcomes (summarized in Table 4) show that, compared to people in the low symptoms class, people in the PGD class were younger and more recently bereaved. Compared to people in the low symptoms class, people in the high symptoms class were more likely to have followed lower education only, had suffered loss more recently, more often suffered the death of either a partner or child, and were more often confronted with an unnatural/violent loss. Compared to people in the PGD class, people in the high symptoms class were older, had followed lower education, and were more often confronted with an unnatural/violent loss.

Finally, we performed a multinomial regression adding anxious and depressive avoidance apart from age, education, time since loss, loss of partner, loss of someone else, and having experienced violent loss. Results are presented in Table 5. Time since loss continued to predict class membership and was longest in the low symptoms class, shorter in the

¹ For exploratory reasons, we split the sample into people who had experienced their loss maximally 11 months earlier ($n = 257$, 58.9%) and those who had experienced their loss ≥ 12 months earlier ($n = 179$, 41.1%). In the recently bereaved group, 27.6%, 41.2%, and 31.1% were included in the low symptoms class, PGD class, and high symptoms class, respectively. In the group longer bereaved, these percentages were 43.6%, 35.2%, and 21.2%. These percentages differed significantly (Chi square = 12.67, $df = 2$, $p = 0.002$).

Table 1

Probability of item endorsement for symptoms of prolonged grief, posttraumatic stress, and depression for the three-class solution.

| Prolonged Grief Symptoms | Overall symptom frequency | | Class 1; Low symptoms class (<i>n</i> = 149); 34.2% | | Class 2; Predominantly PGD class (<i>n</i> = 169); 38.7% | | Class 3; High symptoms class (<i>n</i> = 118); 27.0% | |
|--------------------------------------|---------------------------|-----|--|-------|---|-------|---|-------|
| | % | N | Probability | SE | Probability | SE | Probability | SE |
| Yearning for the deceased person | 91% | 397 | 0.818 | 0.035 | 0.955 | 0.020 | 0.969 | 0.018 |
| Preoccupation with loss | 85% | 373 | 0.666 | 0.046 | 0.941 | 0.019 | 0.982 | 0.013 |
| Identity disruption | 54% | 238 | 0.171 | 0.041 | 0.593 | 0.042 | 0.946 | 0.036 |
| Difficulties accepting the loss | 62% | 268 | 0.281 | 0.047 | 0.692 | 0.042 | 0.924 | 0.031 |
| Avoidance of reminders | 23% | 102 | 0.058 | 0.023 | 0.236 | 0.037 | 0.455 | 0.048 |
| Pangs of grief | 89% | 389 | 0.713 | 0.041 | 0.977 | 0.019 | 0.992 | 0.008 |
| Difficulties moving on with life | 54% | 238 | 0.092 | 0.030 | 0.638 | 0.052 | 0.980 | 0.017 |
| Numbness | 62% | 274 | 0.250 | 0.045 | 0.747 | 0.039 | 0.928 | 0.027 |
| Feeling life is empty/meaningless | 65% | 284 | 0.258 | 0.046 | 0.722 | 0.042 | 0.969 | 0.019 |
| Impairments in functioning | 58% | 254 | 0.176 | 0.041 | 0.708 | 0.042 | 0.923 | 0.036 |
| Posttraumatic Stress Symptoms | | | | | | | | |
| Intrusive memories/thoughts | 48% | 211 | 0.148 | 0.038 | 0.536 | 0.045 | 0.834 | 0.042 |
| Upset when reminded | 38% | 165 | 0.048 | 0.022 | 0.396 | 0.047 | 0.773 | 0.045 |
| Avoided situations/activities | 8% | 38 | 0.018 | 0.013 | 0.040 | 0.019 | 0.242 | 0.042 |
| Feeling distant/cutoff | 3% | 133 | 0.021 | 0.018 | 0.321 | 0.042 | 0.636 | 0.050 |
| Irritable/angry | 24% | 105 | 0.030 | 0.017 | 0.311 | 0.042 | 0.409 | 0.049 |
| Difficulty concentrating | 44% | 192 | 0.102 | 0.033 | 0.482 | 0.046 | 0.818 | 0.047 |
| Depression symptoms | | | | | | | | |
| Not enjoying things | 34% | 152 | 0.000 | 0.000 | 0.229 | 0.054 | 0.966 | 0.024 |
| Cannot laugh/see sunny side | 26% | 113 | 0.009 | 0.010 | 0.111 | 0.034 | 0.790 | 0.052 |
| Not feel cheerful | 29% | 126 | 0.028 | 0.016 | 0.178 | 0.037 | 0.778 | 0.049 |
| Feel slowed down | 41% | 177 | 0.063 | 0.023 | 0.373 | 0.055 | 0.881 | 0.036 |
| Lost interest in appearance | 21% | 95 | 0.018 | 0.014 | 0.180 | 0.036 | 0.524 | 0.051 |
| Don't look forward to things | 35% | 156 | 0.018 | 0.013 | 0.235 | 0.053 | 0.960 | 0.025 |
| Don't enjoy book/radio/tv | 43% | 190 | 0.071 | 0.027 | 0.460 | 0.050 | 0.857 | 0.038 |

Table 2

Goodness-of-fit indices for latent class models.

| Model | Log Likelihood | AIC | BIC | SA-BIC | Entropy | VLRT | Sample size by class based on most likely membership |
|---------|----------------|------------|------------|------------|---------|---------|--|
| 1 class | -5859.648 | 11,859.082 | 11,765.296 | 11,786.092 | | | 436 |
| 2 class | -4728.460 | 9742.569 | 9550.920 | 9593.416 | 0.925 | <0.0001 | 201/235 |
| 3 class | -4469.804 | 9371.122 | 9081.609 | 9145.805 | 0.900 | <0.0001 | 118/169/149 |
| 4 class | -4404.806 | 9386.988 | 8999.612 | 9085.508 | 0.855 | 0.2934 | 98/132/130/76 |
| 5 class | -4350.593 | 9424.425 | 8939.186 | 9046.781 | 0.849 | 0.2222 | 101/79/73/08/75 |
| 6 class | -4316.309 | 9501.722 | 8918.619 | 9047.914 | 0.867 | 0.1464 | 71/81/95/40/42/107 |

Note. AIC = Akaike information criterion. BIC = Bayesian information criterion. SABIC = Sample-size adjusted Bayesian information criterion. VLRT = Vuong-Lo-Mendell- Rubin likelihood ratio test.

PGD class, and shortest in the high symptoms class. Furthermore, depressive (but not anxious) avoidance differentiated between the PGD class and the low symptoms class, whereas both depressive and anxious avoidance differentiated the high symptoms class from the low symptoms class and the PGD class.

4. Discussion

The present study used LCA to examine whether classes with distinct patterns of symptoms could be identified in a heterogeneous convenience sample of bereaved people, who had experienced their loss one year ago, on average. In so doing, we focused on symptoms of PGD as defined in the forthcoming DSM-5-TR, symptoms of PTSD, and symptoms of depression. Three classes were identified, one class characterized by low symptomatology, a second class with high probability of endorsing eight of ten PGD symptoms plus moderate probability for several other symptoms, and a third class evidencing strong endorsement of almost all symptoms. How do findings relate to earlier LCAs based on indicators of PGD, depression, and PTSD? Findings are consistent with studies from Boelen and Lenferink (2020) and Lenferink et al. (2017), yielding similar classes among recently, and traumatically bereaved people, respectively. Djelantik et al. (2017) also identified classes characterized by low symptoms, predominantly PGD, and high symptoms in their LCA, albeit that depression was relatively low across all their classes. In the fourth known study including PGD, depression, and PTSD by Djelantik et al. (2020a), no distinct class was identified

evidencing PGD only. That that study relied on a sample of traumatized patients possibly accounts for the absence of a PGD class. Altogether, the finding of a separate class of bereaved people with elevated PGD but not other symptoms across different LCAs lends further evidence that PGD—based on criteria of Prigerson et al. (2009) used in prior studies as well as criteria of DSM-5-TR used in our study—is a distinction condition. This is consistent with variable centered, factor analytic studies indicating that symptoms of disordered grief are distinguishable from, rather than form one cluster of symptoms with, other manifestations of post-loss distress (Golden and Dalgleish, 2010; O'Connor et al., 2010). A formal diagnosis of PGD in DSM-5-TR requires that a year has passed since the death. It is notable that among participants who had not passed this threshold, >60% were included in either the predominantly PGD class or high symptoms class (see footnote 1). These outcomes are consistent with prior findings that, in the early months of bereavement, considerable variation in grief reactions exists and that people with severe distress in this period may benefit from early bereavement care (cf. Aoun et al., 2015).

We examined the linkage of several sociodemographic and loss-related variables with class-membership. We found that, e.g., the probability of membership of the PGD class and high symptoms classes (compared to the low symptoms class) was elevated for bereaved people with relatively lower levels of education. This is consistent with different prior studies (Burke and Neimeyer, 2013; Djelantik et al., 2017; Lenferink et al., 2020b) albeit that Kokou-Kpolou et al. (2020) found higher education to be associated with elevated PGD in a non-Western sample.

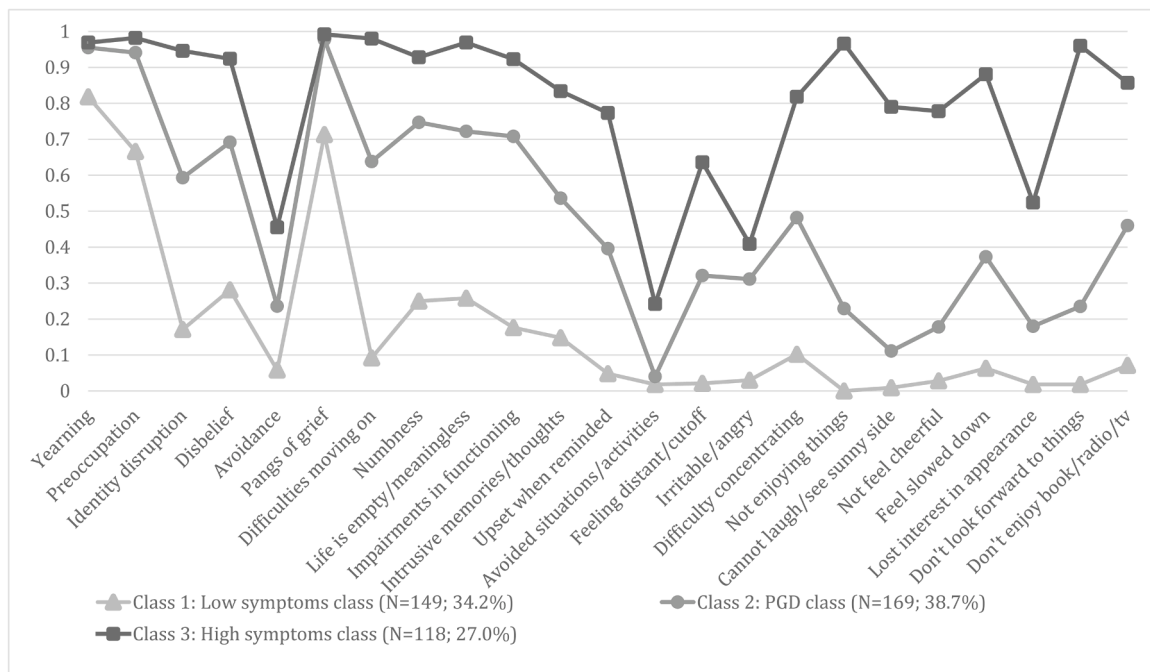


Fig. 1. Estimated symptom prevalence for the three-class solution.

Table 3
Summary of outcomes of distinct 3-step analyses.

| Comparison profile | Reference profile | | | | | | PGD class (N = 169) | | | | | |
|--------------------------------|-------------------|-------|--------|--------|-------|-------|---------------------|--------|--------|-------|-------|-------|
| | Est | SE | Exp(B) | 95% CI | p | Est | SE | Exp(B) | 95% CI | p | | |
| PGD class (N = 169) | | | | | | | | | | | | |
| Age | -0.019 | 0.011 | 0.981 | 0.961 | 1.002 | 0.072 | | | | | | |
| Education (0=low, 1=high) | -0.307 | 0.250 | 0.736 | 0.451 | 1.200 | 0.219 | | | | | | |
| Sex (0=man, 1=woman) | 0.102 | 0.358 | 1.107 | 0.549 | 2.233 | 0.775 | | | | | | |
| Months since loss | -0.036 | 0.012 | 0.965 | 0.942 | 0.988 | 0.003 | | | | | | |
| Deceased is partner | 0.582 | 0.254 | 1.789 | 1.087 | 2.945 | 0.022 | | | | | | |
| Deceased is child | -0.168 | 0.486 | 0.845 | 0.326 | 2.191 | 0.729 | | | | | | |
| Deceased is other | -0.515 | 0.248 | 0.597 | 0.367 | 0.971 | 0.038 | | | | | | |
| Cause (0=natural, 1=unnatural) | 0.214 | 0.476 | 1.238 | 0.487 | 3.145 | 0.653 | | | | | | |
| Anxious avoidance | 0.149 | 0.029 | 1.160 | 1.096 | 1.228 | 0.000 | | | | | | |
| Depressive avoidance | 0.327 | 0.050 | 1.387 | 1.258 | 1.529 | 0.000 | | | | | | |
| High symptoms class (n = 118) | | | | | | | | | | | | |
| Age | 0.016 | 0.010 | 1.016 | 0.996 | 1.037 | 0.118 | 0.035 | 0.011 | 1.036 | 1.014 | 1.058 | 0.001 |
| Education (0=low, 1=high) | -1.039 | 0.266 | 0.354 | 0.210 | 0.596 | 0.000 | -0.732 | 0.264 | 0.481 | 0.286 | 0.807 | 0.006 |
| Sex (0=man, 1=woman) | -0.025 | 0.366 | 0.975 | 0.476 | 1.996 | 0.945 | -0.127 | 0.347 | 0.880 | 0.423 | 1.831 | 0.733 |
| Months since loss | -0.052 | 0.014 | 0.949 | 0.924 | 0.975 | 0.000 | -0.016 | 0.014 | 0.984 | 0.957 | 1.012 | 0.258 |
| Deceased is partner | 1.217 | 0.269 | 3.379 | 1.993 | 5.729 | 0.000 | 0.636 | 0.263 | 1.889 | 1.128 | 3.163 | 0.016 |
| Deceased is child | 0.536 | 0.437 | 1.709 | 0.726 | 4.022 | 0.220 | 0.704 | 0.458 | 2.021 | 0.824 | 4.958 | 0.124 |
| Deceased is other | -1.460 | 0.282 | 0.232 | 0.134 | 0.403 | 0.001 | -0.945 | 0.282 | 0.389 | 0.224 | 0.675 | 0.000 |
| Cause (0=natural, 1=unnatural) | 1.136 | 0.424 | 3.113 | 1.355 | 7.150 | 0.007 | 0.922 | 0.399 | 2.514 | 1.149 | 5.500 | 0.021 |
| Anxious avoidance | 0.231 | 0.029 | 1.260 | 1.190 | 1.335 | 0.000 | 0.083 | 0.019 | 1.086 | 1.047 | 1.127 | 0.000 |
| Depressive avoidance | 0.537 | 0.058 | 1.711 | 1.526 | 1.917 | 0.000 | 0.210 | 0.026 | 1.233 | 1.172 | 1.297 | 0.000 |

Note. This table includes a summary of outcomes of distinct 3-step analyses in which socio-demographic variables, loss-related variables, anxious avoidance, and depressive avoidance were consecutively compared between the classes. PGD = Prolonged grief disorder.

In addition, having experienced the loss more recently and having lost a partner increased the probability of membership of the PGD class, compared to the low symptoms class; these same variables plus the loss being due to an unnatural/violent cause differentiated the high from the low symptoms class. Interestingly, education, time since loss, kinship, and cause continued to differentiate the high from the low symptoms class in the multinomial regression (see Table 4). The findings are broadly consistent with prior evidence that pervasive distress following loss is greater for those with lower education, suffering the loss of someone more close, and confrontation with sudden, unnatural loss

(Burke and Neimeyer, 2013; Djelantik et al., 2017, 2020b). The current findings suggest that these variables render a person prone to experience PGD, but even more so a combination of elevated PGD, depression, and PTSD.

Apart from focusing on PGD as per DSM-5-TR (rather than an earlier definition of PGD from Prigerson et al., 2009 used in most prior LCAs), one further extension of prior work was our focus on the association of avoidance strategies with classes. Specifically, we considered both anxious avoidance (avoiding loss-related stimuli driven by fears that confrontation with such stimuli will be unbearable or cause a

Table 4
Summary of multinomial regression analyses with relevant sociodemographic and loss-related variables.

| Comparison profile | Reference profile | | | | | | PGD class (N = 169) | | | | | |
|--------------------------------|------------------------------|-------|--------|--------|-------|-------|---------------------|-------|--------|--------|-------|-------|
| | Low symptoms class (N = 149) | | | | | | B | SE | Exp(B) | 95% CI | p | |
| | Est | SE | Exp(B) | 95% CI | p | | | | | | | |
| PGD class (N = 169) | | | | | | | | | | | | |
| Age | -0.040 | 0.013 | 0.961 | 0.937 | 0.985 | | | | | | | |
| Education (0=low, 1=high) | -0.370 | 0.269 | 0.691 | 0.408 | 1.170 | | | | | | | |
| Months since loss | -0.043 | 0.013 | 0.958 | 0.934 | 0.982 | | | | | | | |
| Deceased is partner | 0.909 | 0.581 | 2.483 | 0.795 | 7.759 | | | | | | | |
| Deceased is other | -0.205 | 0.566 | 0.815 | 0.269 | 2.470 | | | | | | | |
| Cause (0=natural, 1=unnatural) | 0.255 | 0.498 | 1.290 | 0.486 | 3.423 | | | | | | | |
| High symptoms class (n = 118) | | | | | | | | | | | | |
| Age | -0.014 | 0.013 | 0.986 | 0.960 | 1.012 | 0.280 | 0.025 | 0.012 | 1.026 | 1.001 | 1.051 | 0.039 |
| Education (0=low, 1=high) | -1.014 | 0.288 | 0.363 | 0.206 | 0.639 | 0.000 | -0.644 | 0.277 | 0.525 | 0.305 | 0.903 | 0.020 |
| Months since loss | -0.064 | 0.015 | 0.938 | 0.910 | 0.966 | 0.000 | -0.021 | 0.015 | 0.979 | 0.950 | 1.009 | 0.163 |
| Deceased is partner | 0.533 | 0.547 | 1.704 | 0.584 | 4.977 | 0.329 | -0.367 | 0.487 | 0.686 | 0.264 | 1.783 | 0.440 |
| Deceased is other | -1.137 | 0.550 | 0.321 | 0.109 | 0.944 | 0.039 | -0.932 | 0.501 | 0.394 | 0.148 | 1.051 | 0.063 |
| Cause (0=natural, 1=unnatural) | 1.141 | 0.489 | 3.129 | 1.200 | 8.159 | 0.020 | 0.886 | 0.444 | 2.425 | 1.015 | 5.795 | 0.046 |

Note. This table includes a summary of the multinomial regression analyses in which sociodemographic and loss-related variables emerging as significant correlates in the distinct univariate analyses were entered simultaneously. PGD = Prolonged grief disorder.

Table 5
Summary of multinomial regression analyses with relevant sociodemographic and loss-related variables plus anxious avoidance and depressive avoidance.

| Comparison profile | Reference profile | | | | | | PGD class (N = 169) | | | | | |
|--------------------------------|------------------------------|-------|--------|--------|--------|-------|---------------------|-------|--------|--------|-------|-------|
| | Low symptoms class (N = 149) | | | | | | B | SE | Exp(B) | 95% CI | p | |
| | Est | SE | Exp(B) | 95% CI | p | | | | | | | |
| PGD class (N = 169) | | | | | | | | | | | | |
| Age | -0.020 | 0.022 | 0.980 | 0.938 | 1.024 | 0.376 | | | | | | |
| Education (0=low, 1=high) | -0.029 | 0.399 | 0.971 | 0.444 | 2.122 | 0.941 | | | | | | |
| Months since loss | -0.074 | 0.027 | 0.929 | 0.880 | 0.980 | 0.007 | | | | | | |
| Deceased is partner | 0.868 | 1.064 | 2.381 | 0.296 | 19.163 | 0.415 | | | | | | |
| Deceased is other | 0.251 | 0.986 | 1.285 | 0.186 | 8.869 | 0.799 | | | | | | |
| Cause (0=natural, 1=unnatural) | -0.984 | 0.778 | 0.374 | 0.081 | 1.718 | 0.206 | | | | | | |
| Anxious avoidance | 0.051 | 0.033 | 1.052 | 0.985 | 1.123 | 0.128 | | | | | | |
| Depressive avoidance | 0.338 | 0.075 | 1.402 | 1.210 | 1.624 | 0.000 | | | | | | |
| High symptoms class (n = 118) | | | | | | | | | | | | |
| Age | 0.006 | 0.027 | 1.006 | 0.954 | 1.060 | 0.836 | 0.025 | 0.016 | 1.026 | 0.993 | 1.059 | 0.121 |
| Education (0=low, 1=high) | 0.021 | 0.562 | 1.021 | 0.340 | 3.070 | 0.970 | 0.051 | 0.414 | 1.052 | 0.468 | 2.366 | 0.903 |
| Months since loss | -0.107 | 0.032 | 0.899 | 0.845 | 0.956 | 0.001 | -0.033 | 0.017 | 0.968 | 0.935 | 1.001 | 0.058 |
| Deceased is partner | 0.504 | 1.117 | 1.655 | 0.185 | 14.763 | 0.652 | -0.364 | 0.591 | 0.695 | 0.218 | 2.213 | 0.538 |
| Deceased is other | -0.696 | 1.075 | 0.499 | 0.061 | 4.103 | 0.518 | -0.946 | 0.629 | 0.388 | 0.113 | 1.332 | 0.132 |
| Cause (0=natural, 1=unnatural) | -0.329 | 0.848 | 0.720 | 0.137 | 3.792 | 0.698 | 0.655 | 0.503 | 1.926 | 0.719 | 5.160 | 0.192 |
| Anxious avoidance | 0.142 | 0.046 | 1.152 | 1.052 | 1.261 | 0.002 | 0.091 | 0.033 | 1.095 | 1.027 | 1.168 | 0.006 |
| Depressive avoidance | 0.544 | 0.082 | 1.724 | 1.467 | 2.026 | 0.000 | 0.207 | 0.029 | 1.230 | 1.161 | 1.303 | 0.000 |

Note. This table includes a summary of the multinomial regression analyses in which sociodemographic and loss-related variables emerging as significant correlates in the distinct univariate analyses were entered simultaneously, together with anxious avoidance and depressive avoidance. PGD = Prolonged grief disorder.

catastrophe) and depressive avoidance (refraining from activities previously considering meaningful, driven by predictions that these cannot be continued without the lost person or will not provide joy). Items reflecting both forms of avoidance were endorsed more strongly in the PGD class compared to the low symptoms class and more strongly in the high symptoms class compared to the PGD class and low symptoms class. Findings are consistent with prior evidence that both forms of avoidance interfere with recovery from loss (Boelen and Eisma, 2015; Eisma et al., 2013). When included in a multinomial regression alongside socio-demographic and loss-related variables, depressive avoidance distinguished the PGD class from the low symptoms class; both depressive and anxious avoidance differentiated the high symptoms class from the low symptoms and PGD classes. This indicates that depressive avoidance increases the probability of experiencing elevated PGD, whereas engaging in depressive plus anxious avoidance inflates the chance of experiencing co-occurring symptomatology. Notably, most of the other variables no longer predicted class membership when including avoidance strategies in the regressions; this accords with prior evidence that individual coping strategies more strongly determine distress vs. recovery, compared to static characteristics of the bereaved

person and the loss (Burke and Neimeyer, 2013).

This study has limitations that should be taken into account. First, the goal of this study was to identify subgroups of bereaved people based on profiles of PGD, PTSD, and depression symptomatology and to characterize subgroups in terms of, e.g., avoidance behaviors. The use of this person centered approach and cross-sectional data was suitable for these goals and our findings were largely consistent with prior variable analyses showing that avoidance prospectively predicts post-loss psychopathology (Boelen and Eisma, 2015). Still, the cross-sectional nature of this study precludes causal conclusions about the stability of these profiles and prospective predictors of profiles. Future research is required to investigate these issues. Second, the strength of this study was its focus on criteria from the forthcoming DSM-5-TR. Yet, that one of these criteria was not tapped by our measure is a limitation. Third, we used self-report measures to assess symptoms; future work should preferably use interview based assessment. A fourth limitation is that our sample was a convenience sample with a strong overrepresentation of women and relatively much people with a higher educational level. The gender imbalance is common in bereavement research (Eisma and Stroebe, 2021). Future studies including larger samples with more men

are need to further examine if heterogeneity in symptoms patterns following loss is moderated by gender.

Notwithstanding these considerations, the present study adds to our understanding of the heterogeneity in the presentation of symptoms of PGD, depression, and PTSD after the death of a loved one. The findings bolster prior evidence that, apart from a large group of people showing resilience in the face of loss, one further group is characterized by elevated PGD, and yet another group by elevated symptomatology across different domains. Importantly, our findings also suggest that prior LCAs examining PGD symptoms as proposed by Prigerson et al. (2009) generalize to PGD criteria in DSM-5-TR. This is not unexpected given the similarity between the sets. Depressive and anxious avoidance were more strongly present among those with elevated PGD and, even more so, those with a pattern of co-occurring symptoms of PGD, PTSD and depression. These outcomes highlight the importance of mitigating these avoidance behaviors in the treatment of post-loss psychopathology. Different interventions may be used to do so: behavioral activation may be used to reduce depressive avoidance, exposure (to external reminders of the loss, to distressing memories of circumstances surrounding the death) may be used to reduce anxious avoidance, and cognitive restructuring may be employed to address negative predictions fueling both types of avoidance.

Author disclosure

The authors has nothing to disclose.

Author contribution

PB is the only authors 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.

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