Symptoms of prolonged grief, post-traumatic stress, and depression after loss in a Dutch community sample: A latent class analysis

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ABSTRACT

Mental health problems following loss can manifest as heterogeneous symptomatology that may include symptoms of Prolonged Grief Disorder (PGD), Post-Traumatic Stress Disorder (PTSD), and Major Depressive Disorder (MDD). However, the co-occurrence of symptoms of these three disorders is still only partially explored. The aims of this study were to identify subgroups (i.e., classes) in a Dutch sample of bereaved individuals, based on severity and/or co-occurrence of symptoms and to identify predictors for these subgroups, taking into account all three disorders. Using data from 496 participants who filled in questionnaires assessing PGD, PTSD and MDD, we conducted latent class analyses to identify different symptom classes. Predictors of these classes were identified using one-way ANOVA, Chi Square tests and multinomial regression analysis. We found three different classes: a resilient class, a PGD class and a combined PGD/PTSD class. Violent cause of death, loss of a child, and loss of a partner were associated with membership of the combined PGD/PTSD class. This study increases our understanding of the predictability of symptomology outcome following bereavement. This is a first step towards designing assessment and intervention methods, specifically directed towards subgroups of individuals sharing characteristic symptomatology.

1. Introduction

Much research in recent years has focused on the distinctiveness of Prolonged Grief Disorder (PGD) from Post-Traumatic Stress Disorder (PTSD) and Major Depressive Disorder (MDD) in bereaved persons. This distinctiveness has been shown in several bereaved populations (Boelen et al., 2016; Boelen and van den Bout, 2005; Lichtenthal et al., 2004; Maercker and Lalor, 2012; Prigerson et al., 1995a, 1995b).

Prolonged Grief Disorder (PGD) will most likely be included in the forthcoming edition (11th) of the International Statistical Classification of Diseases and Related Health Problems (Maercker et al., 2013; Prigerson et al., 2009). The main distinctive feature of PGD is "yearning for the deceased", instead of "anxiety" and "dysphoria" in PTSD and MDD, respectively (Maercker and Znoj, 2010; Prigerson et al., 1999; Shear, 2015). Characteristic symptoms of PGD include frequent preoccupying thoughts and memories of the deceased person, a feeling of disbelief or an inability to accept the loss, and difficulty imagining a meaningful future without the deceased person, to such an extent that the person is impaired in daily functioning for at least 6 months (Shear, 2015). Treatments especially focused on PGD have been developed with proven efficacy (Maccallum and Bryant, 2013;

Shear, 2015). Recently, a similar but slightly different conceptualization of PGD, named Persistent Complex Bereavement Disorder (PCBD) has been included in the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (American Psychiatric Association, 2013) as a condition requiring further research. A recent study demonstrated that the ICD-11 and DSM-5 criteria sets of PGD and PCBD were roughly equivalent in terms of sensitivity, specificity and criterion validity (Maciejewski et al., 2016).

Research has shown that the death of a loved one can precipitate the development of different forms of psychopathology, including symptoms of all three related disorders, viz. PGD, PTSD and MDD (Bonanno and Kaltman, 2001; Kristensen et al., 2012; Momartin et al., 2004; Morina et al., 2010; Nickerson et al., 2014; Pfefferbaum et al., 2001). How exactly these symptoms co-occur in bereaved individuals is still relatively unexplored.

Two studies investigated the co-occurrence of symptoms in individuals with latent class analysis (LCA) methods (Boelen et al., 2016; Nickerson et al., 2014). LCA identifies subgroups of individuals who share common characteristics and is therefore called a person-centred statistical technique (Lanza et al., 2010). In these studies, subgroups or so-called classes of bereaved individuals were identified, that differed

in terms of the severity of symptoms, the nature of symptoms, or both the severity and nature of symptoms.

Boelen et al. (2016) sought to identify subgroups of bereaved individuals based on symptom levels of PGD and depression among people confronted with unnatural loss (e.g., suicide, accidents, homicide); they identified a resilient class, a PGD class, and a class with combined symptoms of PGD and depression. Nickerson et al. (2014) examined classes in a group of multi-traumatized refugees. They identified four symptom classes namely a resilient class, a PGD class, a PTSD class, and a combined PGD/PTSD class. Although these studies are important, they are limited. For example, Boelen et al. (2016) exclusively focused on victims of violent loss and did not examine PTSD; whereas the study of Nickerson et al. (2014) relied on a sample of refugees with a history of multiple traumas and did not examine classes based on depression scores. Therefore, more research is needed to examine whether subgroups of bereaved individuals can be identified following loss, across a variety of bereaved populations (i.e. other than bereaved by an unnatural cause), taking into account a variety of symptoms, including PGD, PTSD, and depression.

If we would be able to distinguish different subgroups of bereaved in symptomatology, a next step could be to specify predictors or risk factors for these subgroups. In the study of Nickerson et al. (2014) for example, gender, age, and the number of traumatic events and losses emerged as predictors of membership of the combined PTSD and PGD class. Such knowledge can be used to identify refugees at risk for developing PTSD and PGD symptoms in an early stage. In the study of Boelen et al. (2016) participants included in the combined PGD/MDD-class were more likely to endorse negative cognitions about the self and life, and to catastrophically misinterpret their grief-reactions. This knowledge helps to identify targets for cognitive behavioural therapeutic interventions.

The current study, conducted in the Netherlands, sought to extend prior work by examining classes of bereaved individuals, based on symptom levels of PGD, PTSD, and depression in a heterogeneous community sample of individuals, confronted with different types of losses (both natural and unnatural losses). Based on prior findings from Boelen et al. (2016) and Nickerson et al. (2014) we expected that different subgroups of bereaved individuals could be identified, including a class with combined PGD, PTSD and depression symptoms. We also expected that we would be able to identify predictors for each symptom class. We expected that individuals who had been confronted with violent losses or the loss of a close kin (e.g., partner or child) would have a different symptom profile or have more severe symptoms

compared with individuals who experienced other types of losses (e.g., nonviolent loss and/or loss of friends). We examined several possible predictors of class membership, including age, time since loss, and education level.

2. Methods

2.1. Participants and procedure

Participants were recruited via professional and lay mental health care workers (e.g., grief counsellors, therapists, clergy). The research protocol was approved by a local review board and written informed consent was obtained from all participants. For this study we only selected participants who had experienced a loss fewer than 3 years earlier, in order to increase the homogeneity of our sample. These were 496 participants from the total number of 712 individuals enrolled in the research program. The mean age of participants was 54.6 (SD=13.3) years. Most participants (n=372; 75%) were women. 285 participants (58%) had followed primary or secondary education only, whereas 211 participants (42%) had been to college or university. With regard to loss related variables, 334 participants (67%) had lost a spouse/partner, 44 (9%) a child, and 118 (24%) some other loved one; 52 participants (11%) had lost a loved one due to a violent cause (i.e., accident, suicide, or homicide) and 444 participants (89%) lost a loved one due to a nonviolent cause (e.g., illness). Losses occurred on average 13.2 (SD=8.8, range=1–36 months) months earlier (see Table 1). In a prior study, the same data were used to examine the role of cognitive behavioural variables in mediating the impact of violent loss on bereavement outcomes (Boelen et al., 2015).

2.2. Measures

2.2.1. PGD scale

The PGD scale is based on the 19-item Inventory of Complicated Grief. It contains 11 items representing criteria for PGD (Prigerson et al., 2009). Accordingly, items represent one separation distress symptom, nine cognitive and emotional symptoms (including difficulties accepting the loss, avoidance, bitterness/anger), and one functional impairment symptom. Participants are asked to rate how often symptoms occurred in the preceding month on 5-point scales (1=never; 5=always). Consistent with prior LCA-research, we dichotomized all items because LCA uses binary indicators to identify patterns of responses. We considered the ratings 1 and 2 as "symptom

Table 1
Socio-demographic and loss-related characteristics..

	Total sample n=496	Class 1: PGD n=238 (48%)	Class 2: PGD/PTSD n=132 (27%)	Class 3: Resilient n=126 (25%)	Significance tests for differences between the groups
Socio-demographic variables					
Gender					χ^2 (2, N=496)=1.75
Men (%)	124 (25)	55 (23)	32 (24)	37 (29)	
Women (%)	372 (75)	183 (77)	100 (76)	89 (71)	
Age (M) (SD)	54.6 (13.3)	55.9 (14.1)	54.3 (12.5)	52.6 (12.7)	F (2, 493)=2.56
Low level of education (primary or secondary school) (%)	285 (58)	137 (58)	87 (66)	61 (48)	χ^2 (2, N=496)=8.81[*]
Loss related variables					
Loss					χ^2 (4, N=496)=68.72[***]
Loss of a partner (%)	334 (67)	179 (75)	95 (72)	60 (48)	
Loss of a child (%)	44 (9)	19 (8)	21 (16)	4 (3)	
Loss of other (%)	118 (24)	40 (17)	16 (12)	62 (49)	
Time since loss (M) (SD)	13.2 (8.8)	13.8 (8.7)	13.0 (8.8)	12.1 (9.1)	F (2, 493)=1.56
Violent cause (%)	52 (11)	21 (9)	26 (20)	5 (4)	χ^2 (2, N=496)=18.34[***]

Note. PGD=Prolonged Grief Disorder, PTSD=Post Traumatic Stress Disorder. SE=Standard Error.
[*]p < 0.05.
[**] p < 0.01.
[***]p < 0.001.

absent" and 3, 4 and 5 as "symptom present". This is the same threshold used in comparable studies (Boelen et al., 2016; Nickerson et al., 2014). In this study, Cronbach's alpha of the PGD scale was 0.90.

2.2.2. PTSD symptom scale–self-report version (PSS-SR)

The PSS-SR is a 17-item measure of PTSD symptoms, as defined in DSM-IV (American Psychiatric Association, 2000). Respondents are instructed to rate PTSD symptoms, on 4-point scales (0=not at all; 4=five or more times per week/almost always). We considered the ratings 0 and 1 as "symptom absent" and 3 and 4 as "symptom present". The index event was defined as "the death of your loved one" (e.g., "How often did you have unpleasant dreams or nightmares about the death of your loved one? "). The English and Dutch versions have good psychometric properties (Engelhard et al., 2007). In the present sample, the alpha was 0.88.

2.2.3. Beck depression inventory (BDI)

The BDI measures 21 depressive symptoms, formulated as 4 statements representing each symptom at increasing levels of severity (e.g., depressed mood; 0=I do not feel sad; 1=I feel sad; 2=I am sad all the time and I can't snap out of it; 3=I am so sad and unhappy that I can't stand it). We considered the ratings 0 and 1 as "symptom absent" and 2 and 3 as "symptom present". The English and Dutch versions have adequate psychometric properties (Beck et al., 2002, 1996). The alpha in this sample was 0.91. Due to limitations of the number of items that could be included in the LCA, we decided to select 6 items (see Table 3) that correspond closely to DSM-IV criteria for major depression. We excluded items that were not part of these criteria (e.g., crying easily) and items that were deemed ambiguous in the light of subject's circumstances (e.g., thoughts of death).

2.3. Statistical analysis

LCA was used to model PGD, PTSD and depression symptoms, using Mplus version 7.31 (Muthén and Muthén, 1998–2011). We examined the following indices to find the optimal number of classes: Bayesian Information Criterion (BIC), Sample-Size Adjusted Bayesian Information Criterion (SS-BIC), the Aikaike's Information Criterion (AIC), and entropy. Lower BIC and AIC values and higher entropy values indicate better fit.

To examine the associations of the class membership with predictors, we conducted one-way ANOVA and Chi Square analyses. First, we consecutively examined whether each of the possible predictor variables independently predicted subgroup membership. Next, we used multinomial regression to examine which of the variables emerging as significant predictors in the univariate analyses, predicted class membership when controlling for the overlap between the predictor variables. For these analyses, SPSS version 21 was used.

3. Results

3.1. Latent class analysis

The fit indices for the latent class solutions are presented in Table 2.

Table 2
Fit Indices for best fit model LCA.

Model tested	Log likelihood	BIC	SS - BIC	AIC	Entropy
1 class	−7966.645	16138.107	16033.364	15999.290	
2 classes	−6856.798	14129.436	13916.776	13847.595	0.899
3 classes	−6572.241	13771.345	13450.768	13346.481	0.904
4 classes	−6471.947	13781.781	13353.287	13213.894	0.870

Note. AIC=Akaike Information Criterion. BIC=Bayesian Information Criterion. SS-BIC=Sample Size Adjusted BIC.

Both the three-class solution and the four-class solution appeared adequate, based on the fit indices. However, based on the interpretability of outcomes, the three-class solution was retained. The three classes consisted of participants with mainly PGD symptoms (class 1), participants with a combination of symptoms of PGD and PTSD (class 2), and participants who were resilient, i.e. who were likely not to endorse symptoms (class 3). The distinct symptom prevalence rates in each of the three classes are reported in Table 3 and Fig. 1. We considered values > 0.50 as a high probability of item endorsement.

In class 1 (comprising 48% of the sample) all PGD symptoms had a high probability except for "mistrust" and "avoidance". Class 2 (27%) included participants with a high probability of endorsing all PGD symptoms, except "avoidance", and several symptoms of PTSD. In class 3 (25%) none of the different symptoms of the PGD, PTSD and depression symptoms had a high probability, except for "yearning for the deceased". In none of the three classes, symptoms of depression had a high probability of being endorsed (Table 3 and Fig. 1).

3.2. Predictors of class membership

Table 1 shows socio-demographic and loss-related variables in all classes and outcomes of statistical tests testing for differences between classes. No significant differences between the classes were found in terms of age, time since loss, and gender. Kinship differed significantly between the classes such that both loss of a child (vs. other losses) and loss of a partner (vs. other losses) were associated with an elevated chance of inclusion in the PGD and PGD/PTSD class. A violent cause of death also distinguished between classes; participants in the PGD and PGD/PTSD class were more likely to have experienced a loss due to a violent cause. Furthermore, classes differed in terms of education level; both the PGD and the PGD/PTSD class included more participants with a low education level (Table 1).

We then conducted multinomial regression analysis to see which predictors were still associated with the classes when controlling for the shared variance between the predictor variables. We consecutively investigated the association of the predictors losing a child, losing a partner, violent cause and lower level of education both with inclusion in the PGD class and inclusion the PGD/PTSD class, respectively, using the resilient class as reference class. Subsequently, we calculated the odd's ratio's (OR) to estimate the strengths of these associations. As can be seen in Table 4, losing a partner or losing a child were both associated with membership of the PGD class (OR resp. 4.43 and 6.69) and the combined PGD/PTSD class (OR resp. 5.20 and 15.10). Furthermore, having lost a loved one due to a violent cause and a lower level of education were associated with membership of the PGD/PTSD class (OR resp. 5.12 and 1.93).

In conclusion, bereaved individuals in class 1 (PGD) were more likely to have lost a partner or a child. Bereaved individuals in class 2 (PGD/PTSD), besides having lost a partner or child, were more likely to have lost someone due to a violent cause and to have a lower level of education.

4. Discussion

We employed LCA in a heterogeneous sample of bereaved individuals and found different classes of PGD, PTSD and depression symptoms. These classes differed in the nature of symptoms; specifically, we found a class with PGD symptoms, a class with both PGD and PTSD symptoms and a resilient class. The classes did not differ in terms of depression symptoms. Therefore, our findings provide support for our first hypothesis, namely that there are different subgroups of bereaved individuals sharing characteristic symptomatology.

In line with previous research (Boelen et al., 2016; Nickerson et al., 2014), our findings indicate two main things. First, in people confronted with losses, subclasses exist that can be distinguished based by the dominance of particular symptom clusters rather than by graded

Table 3
Probability of PGD symptom-items in the latent classes.

Questionnaires	Overall symptom frequency	Class 1 (48%) PGD		Class 2 (27%) mixed PGD/PTSD		Class 3 (25%) resilient	
Description of symptoms	%	*Probability*	*SE*	*Probability*	*SE*	*Probability*	*SE*
PGD scale *Criteria* (Prigerson et al., 2009)							
Acceptance	58.6	**0.64**	0.04	**0.87**	0.03	0.17	0.04
Yearning	90.5	**0.97**	0.01	**1.00**	0.00	**0.68**	0.05
Stunned	56.6	**0.60**	0.04	**0.95**	0.03	0.10	0.03
Mistrust	25.3	0.21	0.03	**0.57**	0.05	0.01	0.01
Avoidance	16.1	0.15	0.03	0.30	0.05	0.05	0.02
Numbness	48.9	**0.52**	0.04	**0.90**	0.03	0.00	0.00
Bitterness or anger	49.2	**0.53**	0.04	**0.83**	0.04	0.07	0.03
Life is empty	51.8	**0.59**	0.04	**0.87**	0.04	0.02	0.02
Part of self died	65.4	**0.75**	0.03	**0.93**	0.03	0.19	0.04
Difficulty moving on	53.0	**0.55**	0.05	**0.94**	0.03	0.06	0.02
PSS-SR scale *PTSD DSM-IV*							
Recurrent and intrusive recollections of the event	39.0	0.37	0.04	**0.74**	0.05	0.05	0.02
Recurrent distressing dreams	8.7	0.06	0.02	0.23	0.04	0.00	0.00
Acting or feeling as if the loss was recurring	19.9	0.15	0.03	0.43	0.05	0.03	0.02
Intense psychological distress at exposure to cues that resemble the loss	31.3	0.27	0.03	**0.65**	0.05	0.04	0.02
Physiological reactivity on exposure to cures that resemble an aspect of the loss	17.3	0.11	0.02	0.43	0.05	0.02	0.01
Efforts to avoid thoughts, feelings or conversations about the loss	18.7	0.16	0.03	0.40	0.05	0.01	0.01
Efforts to avoid activities, places or people that arouse recollections of the loss	8.7	0.04	0.02	0.26	0.04	0.00	0.00
Inability to recall aspects of the loss	16.6	0.16	0.03	0.32	0.05	0.02	0.01
Diminished interest or participation in significant activities..	34.7	0.24	0.04	**0.81**	0.06	0.06	0.02
Feeling of estrangement of others	23.2	0.10	0.03	**0.65**	0.06	0.02	0.02
Restricted range of affect.	15.6	0.10	0.02	0.38	0.06	0.03	0.01
Sense of foreshortened future	43.4	0.41	0.04	**0.83**	0.05	0.05	0.02
Difficulty falling or staying asleep	49.7	**0.50**	0.04	**0.83**	0.04	0.13	0.03
Irritability or outburst of anger	13.8	0.07	0.02	0.36	0.06	0.02	0.01
Difficulty concentrating	37.0	0.34	0.04	**0.74**	0.06	0.05	0.02
Hyper vigilance	18.3	0.17	0.03	0.34	0.05	0.04	0.02
Exaggerated startle response	9.1	0.06	0.02	0.23	0.04	0.01	0.01
BDI scale Depression items							
Depressed mood	2.9	0.00	0.00	0.11	0.04	0.00	0.00
Feelings of worthlessness or excessive guilt	2.6	0.01	0.01	0.07	0.02	0.01	0.01
Diminished interest or pleasure	7.5	0.01	0.01	0.26	0.05	0.00	0.00
Feelings of worthlessness	4.7	0.02	0.01	0.14	0.03	0.01	0.01
Fatigue or loss of energy	19.6	0.15	0.03	0.44	0.05	0.03	0.02
Little appetite	8.7	0.04	0.02	0.23	0.05	0.02	0.01

Note. Probability greater than 0.5 are shown in boldface. BDI=Beck Depression Inventory. PGD=Prolonged Grief Disorder. PSS-SR=PTSD Symptom Scale–Self-Report. PTSD=Post Traumatic Stress Disorder. SE=Standard Error.
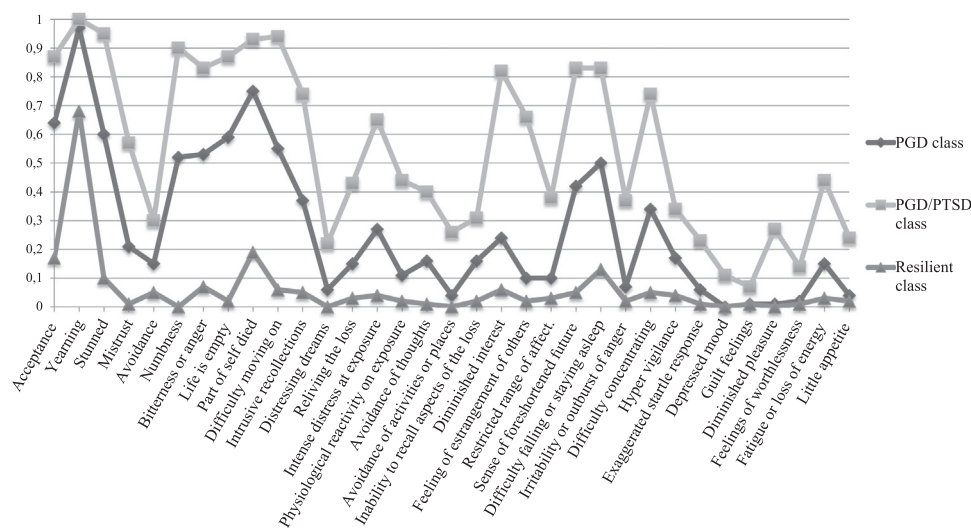

Fig. 1. Estimated symptom prevalence for the three-class solution.

Table 4

Multinomial logistic regression predicting class membership and summary of the odds ratios of the different predictors per class.

	B	SE	OR	95% CI	*p-value*
PGD class vs. resilient class					
Losing a partner	1.49	0.26	4.43	2.68–7.35	< 0.001
Losing a child	1.90	0.59	6.69	2.10–21.32	< 0.001
Violent cause	0.76	0.53	2.13	0.75–6.06	0.16
Low level of education	0.17	0.24	1.19	0.74–1.90	0.48
PGD/PTSD class vs. resilient class					
Losing a partner	1.65	0.33	5.20	2.70–10.01	< 0.001
Losing a child	2.72	0.63	15.10	4.40–51.90	< 0.001
Violent cause	1.63	0.54	5.12	1.77–14.79	< 0.001
Low level of education	0.66	0.28	1.93	1.11–3.37	< 0.001

Note. B=Beta. CI=Confidence Interval. OR=Odds Ratio. PGD=Prolonged Grief Disorder. PTSD=Post Traumatic Stress Disorder. SE=Standard Error.

severity of a more general post-loss response. Secondly, in all three studies, a class of combined symptomatology emerged, indicating that, in a subgroup of bereaved individuals, the death of a loved one precipitates a combination of symptoms of grief, traumatic stress, and depression.

We also found support for our second hypothesis, namely that symptomatology of bereaved individuals in different classes can be distinguished by particular characteristics of their loss experience and socio-demographic variables. For instance, we found that individuals who lost a partner or child were more likely to be included in the PGD class and in the combined PGD/PTSD, whereas people who lost a loved one other than a partner or child were more likely to be included in the resilient class. These findings accord with prior evidence that losing a partner or child gives more serious reactions which is probably due to the stronger attachments with partners and children (Kristensen et al., 2012; Stroebe et al., 2007). However, our finding that losing a child or partner was associated with the combined PGD/PTSD class is novel. PGD has been described as a stress response syndrome (Shear et al., 2007). The stress is caused by the failure to integrate the reality of the loss into one's personal view of the world and/or in one's feeling of safety in life. One may speculate that this stress generates PTSD reactions in some bereaved individuals. Furthermore, we found that a confrontation with a violent loss was associated with membership of the combined PGD/PTSD class. This links up with prior evidence that confrontation with a loss due to unnatural, violent causes is associated with more pervasive distress (Boelen et al., 2015; Kristensen et al., 2012; Nickerson et al., 2014). A logical explanation for this association could be that a violent loss is a combination of a traumatic event that might result in PTSD symptoms and a loss that might result in PGD symptoms.

With regard to socio-demographic variables, we found lower levels of education to be associated with membership of the combined PGD/PTSD class; this finding also accords with prior research showing that lower education is a vulnerability factor for persistent distress following loss (Lobb et al., 2010) and trauma (Sareen, 2014).

Notably, in our study we focused on the co-occurrence of symptoms rather than the co-occurrence of disorders. For example, although our analyses revealed a subgroup of people endorsing both PGD and PTSD symptoms, we did not examine whether these people met formal criteria for diagnoses of PGD and PTSD. The reasons for this were twofold. Firstly, we aimed to compare our results with previous research of Nickerson et al. (2014) and Boelen et al. (2016) that also focused on symptoms rather than clinical diagnoses. Secondly, we sought to explore classes of symptoms in a non-clinical population in order to enhance knowledge about the nature of emotional responses to loss in the general population. However, it would be interesting to evaluate the co-occurrence or co-morbidity of the full disorders in future studies.

There are several other limitations to our study that should be kept in mind. Firstly, all data were based on self-report questionnaires. Associations between variables could therefore be inflated because of shared variance effects. Secondly, it is important to note that some participants were bereaved less than 6 months. However, for a formal PGD diagnosis, symptoms need to be present more than 6 months after the loss (Prigerson et al., 2009). Although, as we noted, it was not our intention to assess formal diagnoses, it would be interesting for future studies to examine if symptom of PGD and PTSD differentiate themselves in more remotely bereaved individuals. Thirdly, our list of predictors was focused on socio-demographic and loss related variables. Further research is needed to examine to what extent other factors, including characteristics of the relationship such as dependency and personality variables such as attachment style are associated with different symptom patterns following loss. Therefore, our results can only be generalized to other populations with caution.

Notwithstanding these limitations, the current study is the first to identify subgroups of bereaved people based on symptom-levels of PGD, PTSD and depression. This was examined in a large general community sample confronted with a variety of losses. The findings suggest that bereaved individuals, who have experienced a violent loss or a loss of a close kin, have an elevated risk to develop combined symptomatology of PGD and PTSD. This implies that psychosocial support and screening methods are important to conduct after violent losses, for instance following traffic accidents, disaster, war and suicide-related losses, especially in close kin.

Furthermore, this research helps refining the proposed criteria for PGD in the forthcoming ICD-11. As shown, there is a high probability of the symptom yearning and a low probability for avoidance in all three classes. This accords with prior findings (Boelen and Hoijtink, 2009; Boelen et al., 2016; Prigerson et al., 1999). Hence, these two symptoms are relatively less useful to detect psychopathology in bereaved individuals. Notably, mistrust was a discriminating symptom between the PGD and PGD/PTSD class in this study. Mistrust has been previously described as a pathway to higher PTSD levels in veterans (Schok et al., 2011). This suggests that this symptom could be important in detecting co-morbid PTSD symptomatology in bereaved with PGD problems.

It would be interesting for future studies to employ latent class analysis in different subpopulations of bereaved individuals, like patients referred to mental health services. If in this subpopulation comparable classes of combined symptomatology would emerge, this could help in designing tailored intervention methods for specific symptom groups. For example, this study suggests that interventions for bereaved following a violent loss should possibly not only be focused on grief, but also on the PTSD symptoms.

In conclusion, we found three distinct classes of bereaved individuals confronted with natural and unnatural losses, based on the presence of PGD, MDD, and PTSD symptoms, namely a resilient, PGD, and a PGD/PTSD class. The loss of a child or a partner was associated with the PGD class. In addition, the loss of a child or a partner, a violent cause of the loss and a low level of education were associated with the PGD/PTSD class.

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