Accepted Manuscript

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PII: S0165-1781(18)30144-6
DOI: 10.1016/j.psychres.2018.07.038
Reference: PSY 11587

To appear in: *Psychiatry Research*

Received date: 30 January 2018
Revised date: 6 May 2018
Accepted date: 26 July 2018

Please cite this article as: Fiona Maccallum , Richard A. Bryant , Prolonged Grief and Attachment Security: A Latent Class Analysis, *Psychiatry Research* (2018), doi: 10.1016/j.psychres.2018.07.038

Highlights

- Attachment theory is a primary paradigm for understanding grief
- Distinct prolonged grief and depression symptom profiles were identified
- Higher attachment anxiety predicted increasing levels of prolonged grief symptoms
- Attachment avoidance differentiated high symptom and low symptom groups
- Results enhance understanding of mechanisms underlying bereavement outcomes

Prolonged Grief and Attachment Security: A Latent Class Analysis

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Declarations of interest: none

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Abstract

The death of a loved one has been associated with a wide range of mental health outcomes. Attachment theory is one of the primary paradigms for understanding bereavement outcome, yet there is comparatively little examination of the relationship between attachment style and bereavement responses. In this study we use Latent Class Analysis to identify subgroups of bereaved individuals based on patterns of prolonged grief (PG) and major depression symptom co-occurrence in 285 bereaved individuals. We then explored the relationship between these subgroups and attachment anxiety and avoidance. Three new subgroups of individuals were identified: one showing high levels of PGD and depression (PGD/depression), one showing high depression (Depression), and one showing few symptoms (Low). Attachment anxiety significantly differentiated between the three groups; the highest levels of attachment anxiety predicted membership of the PGD/depression group, the lowest levels, membership of the Low group. Attachment avoidance was predictive of greater depressive symptoms, with higher levels of attachment avoidance differentiating the two symptom groups (PGD/depression and depression) from the Low symptom group. These findings underscore the relevance of insecure attachment style to the current understanding of PGD.

Keywords

Grief, prolonged grief, bereavement, attachment style, depression

1. Introduction

There is significant heterogeneity in the frequency, duration, and intensity of grief reactions. Whereas the majority of individuals may experience some temporary disruptions in mood, these individuals are typically able to adjust to their loss without extended impairment (Bonanno and Kaltman, 2004). In contrast, between 7-10% of bereaved individuals will experience Prolonged Grief Disorder (PGD; or complicated grief or Persistent Complex Bereavement Disorder; Lundorff et al., 2017; Nielsen et al., 2017; Prigerson et al., 2009). PGD, as described by ICD-11, is characterised by intense yearning, emotional distress at the loss, disbelief, lack of acceptance, emotional numbness, bitterness, loss of trust, self-identity confusion, and a loss of meaning and purpose in life, ongoing for at least 6 months after the loss, and is associated with significant impairment (Maercker et al., 2013). PGD is a major public issue because it is linked with a range of negative physical and mental health outcomes (Maciejewski et al., 2016; Prigerson et al., 2009). In addition to PGD, other psychological syndromes such as Major Depressive Disorder (MDD), Posttraumatic Stress Disorder (PTSD), and other anxiety disorders are observed individually and co-morbidly among bereaved populations (Nielsen et al., 2017; Shear et al., 2011; Simon et al., 2007). The heterogeneity observed in bereaved populations has prompted a growing interest in identifying factors that underlie these diverse responses.

Attachment theory has become one of the primary paradigms for understanding adaptation to bereavement. A number of theorists have proposed that attachment insecurities present a major risk factor for complications in the grieving process (Fraley and Bonanno, 2004; Lobb et al., 2010; Maccallum and Bryant, 2013; Mikulincer and Shaver, 2008; Shear and Shair, 2005; Stroebe et al., 2010). Contemporary attachment models propose two dimensions underlying adult attachment styles: attachment *anxiety* and attachment *avoidance* (Fraley and Shaver, 2000; Mikulincer and Shaver, 2017). Attachment anxiety relates to a

person's appraisals of the availability and responsiveness of attachment figures in times of stress. Individuals high on attachment anxiety are overly dependent on interpersonal relationships to provide them with a sense of security, and worry that attachment figures will not be available in times of need (Fraley and Shaver, 2000; Mikulincer et al., 2003). These individuals typically respond to stress with over-activation of the attachment system, which may include hypervigilance to the attachment figure, vigorous attempts to achieve closeness, and intense distress to potential signs of rejection. In contrast, individuals high on attachment avoidance do not trust others to provide comfort in times of need, and tend to withdraw emotionally from close relationships (Fraley and Shaver, 2000; Mikulincer et al., 2003). High attachment avoidance is characterised by a deactivation of the attachment system, which involves social withdrawal and minimization of emotional pain. The attachment responses associated with high attachment anxiety and avoidance are thought to place individuals at risk for a range of emotional problems including PGD (Bartholomew and Horowitz, 1991; Bowlby, 1980; Mikulincer and Shaver, 2008; Mikulincer and Shaver, 2017). In the context of bereavement, hyper-activation associated with attachment anxiety may exacerbate yearning for the unavailable deceased attachment figure, perpetuating distress. On the other hand, attachment avoidance may reduce distress, but may also impede the use of social supports and development of new attachments.

Many of the pre-loss risk factors linked with PGD involve threats to the development of secure attachments (for review see Lobb et al., 2010; Maccallum and Bryant, 2013). Despite much theorizing about the relationship between attachment style and bereavement outcome, comparatively few studies have directly examined this association. These studies have generally found a relationship between anxious attachment and worse bereavement outcomes, including PGD (Currier et al., 2015; Field and Sundin, 2001; Fraley and Bonanno, 2004; Meier et al., 2013; Wayment and Vierthaler, 2002; Wijngaards-de Meij et al., 2007).

However, findings relating to attachment avoidance (in the absence of attachment anxiety) have been inconsistent (e.g., Boelen and Klugkist, 2011; Jerga et al., 2011; Van der Houwen et al., 2010). Few studies have identified a relationship between avoidant attachment style and outcome in the absence of moderating or mediating factors (for an exception see Wijngaards-de Meij et al., 2007); in one study in the context of high relationship quality, attachment avoidance was predictive of better outcomes (Mancini et al., 2009). This suggests the relationship between attachment avoidance and PGD may be more complex than attachment anxiety.

The typical approach to investigating the association between attachment style and bereavement outcome has been to examine relationships between attachment dimensions and grief or depression severity separately (Jerga et al., 2011; Mancini et al., 2009). The symptoms of PGD and MDD have been shown to cluster separately (Boelen et al., 2010), and so this approach has merit in its potential to isolate differential relationships with grief and depression. However, research on comorbidity has shown that mental health conditions co-occur more often than chance (Kessler et al., 2005). Accordingly, there has been increased interest in exploring the extent to which symptoms from different diagnostic groups co-occur within individuals, and further, whether there are subgroups of individuals who present with different symptom cluster profiles (Boelen et al., 2016; Nickerson et al., 2014). For example, Boelen et al. (2016) used latent class analysis (LCA) to examine symptom profiles of PGD and depression among bereaved individuals whose loved ones had died by accident, suicide or violence. LCA is a person-centered statistical approach. In contrast to variable-centred techniques, which focus on the relationships between variables, LCA seeks to identify subgroups of individuals who share common characteristics on a set of indicators (variables). The rationale for LCA is that by identifying discrete subgroups, or classes of individuals, it may then be possible to identify predictors of subgroup membership that can be used to

inform risk assessments and treatment planning (Nickerson et al., 2014). Boelen et al. (2016) identified three classes in their sample: a class that had a high prevalence of PGD symptoms and low prevalence of depression symptoms, a class that had high prevalence of PGD *and* depression symptoms, and a class that showed low probability of either type of symptoms. Moreover, class membership was differentially predicted by the extent to which individuals endorsed catastrophic cognitions about their grief reactions and negative cognitions about them self and their life. Similarly, Nickerson et al. (2014) used LCA to examine socio-economic predictors of class membership based on symptom profiles of PGD and PTSD. They identified a number of differential predictors of class membership, such as adaptation difficulties since relocation and loss of culture and support.

By clustering individuals based on patterns of common symptom co-occurrence, LCA offers an approach way of to examining the relationship between predictors and outcomes in a way that has significant potential clinical utility. Accordingly, in this study we used this approach as a novel way to examine the relationship between attachment style and bereavement outcomes. First, we used LCA to identify subpopulations of bereaved individuals characterized by differential symptom profiles of PGD and MDD. Based on prior research, we expected to find four subgroups of individuals: a PGD only profile, a depression only profile, a PGD and depression profile, and a low symptom profile. We expected that attachment anxiety would be a significant predictor of membership of the PGD and PGD/depression and Depression only (Shaver et al., 2005) groups, but not the low symptom profile. Given the inconsistent findings relating to attachment avoidance and bereavement outcomes we did not have specific hypotheses regarding this dimension.

2. Method

2.1 Participants and procedures

The sample comprised 285 bereaved individuals (79.1% female) with mean age of 48.89 years (*SD* = 14.62). Participants were volunteers who responded to advertisements in newspapers and online recruitment websites seeking bereaved individual interested in participating in a grief treatment trial or a research project focused on understanding adaptation to bereavement. All participants attended a clinical assessment conducted by a Masters level clinical psychologist and completed self-report questionnaires. Participant characteristics are presented in Table 1. In terms of relationship to the deceased, participants had lost a spouse (28.5%), parent (38.9%), child (18.9%), or sibling or other close relative (13.7%). In terms of the nature of the death, 77.3% of deaths were the result of medical conditions, 12.2% were the result of an accident, 9.4% suicide and 1% homicide. Mean time since loss was 3.59 years (*SD* = 3.84). Participants provided written informed consent.

2.2 Measures

Prolonged Grief Assessment. Prolonged grief was assessed using a semi-structured clinical interview based on the PG-13 (Prigerson et al., 2009). The PG-13 assesses for the presence of yearning, emotional distress at the lost relationship, difficulty accepting the death, shock, avoidance of reminders, numbness, bitterness, difficulty engaging in life, identity disturbance, and a sense of purposelessness and meaninglessness and functional impairment. Items on the PG-13 were scored by clinicians on a 1-5 scale (1 = *not at all*, 5 = *several times a day/overwhelmingly*). For each symptom, a dichotomous indicator variable (symptom absent/present) was constructed for entry into the LCA. A symptom was considered to be present if it was rated at least 3 (*at least once a week*) on the 5-point scale. This threshold is consistent with comparable studies as reflecting presence of a symptom (Boelen et al., 2016, Nickerson et al., 2014). We did not include the item assessing functional impairment as this item relates to the impact of the other items on the person's functioning, rather than representing an individual symptom. Cronbach alpha for the scale was α = .92.

Beck Depression Inventory. The BDI-II (BDI; Beck et al., 1996) is a reliable 21-item self-report measure of depressive symptomatology. Items are scored on a 0-3 scale. A subset of items corresponding to the DSM-5 criteria for MDD (American Psychiatric Association, 2013) were selected for inclusion. Again, items were dichotomized for inclusion in the LCA based on consideration of diagnostic criteria. A symptom was rated as absent if participants gave a 0 response (e.g, *I do not feel sad*), and present if they gave a response scored as 1 to 3 (e.g., *I feel sad much of the time, I am sad all the time, I am so sad or unhappy that I can't stand it*).

Experiences in Close Relationships – Short Form (ECR-SF; Wei et al., 2007). The ECR-SF contains 12 questions that measure attachment anxiety (6 items) and avoidance (6 items). Participants respond to each question on a 7-point Likert-type scale 1 = *disagree strongl*y, 7 = *agree strongly*). The ECR-SF retains the psychometric properties of the original 36-item version of the ECR (Brennan et al., 1998) while reducing participant burden (Wei et al., 2007). The Cronbach alpha's for Attachment Anxiety and Attachment Avoidance in the current study were α = .86 and α = .76, respectively.

2.3 Statistical Analysis

LCA was undertaken using Mplus v.7 using full maximum likelihood estimation. LCA uses binary indicators to identify patterns of responses, assigning individuals to classes of the basis of these patterns. We identified classes based on dichotomous indicators (symptoms) of PGD and MDD. LCA identifies the minimum number of classes that can account for associations between symptoms. The iterative procedure commences by fitting a one class model to the data, next successive models with an increasing number of classes are fit to determine the optimal number of latent classes that are present in the dataset. We assessed comparative model fit using Sample Size Adjusted Bayesian Information Criterion (SS-BIC), Akaike's Information Criterion (AIC), entropy, and the Lo-Mendell-Rubin test (LRT). Optimal model

selection was based on overall model fit, interpretability, and parsimony (Nylund et al., 2007). Class membership was derived from the optimal class model.

To assess predictors of class membership, we conducted multinomial logistic regression analyses in SPSS version 23. Due to the potentially large number of predictors of bereavement outcomes (Nickerson et al., 2014; Nielsen et al., 2017; Wijngaards-de Meij et al., 2005), we first examined the extent to which sociodemographic and loss variables predicted class membership using one way analysis of variance (ANOVA) and Chi square analysis. Significant predictors were then simultaneously entered into a multinomial regression to examine the extent to which each variable continued to predict membership when accounting for shared variance among these predictors. For the purpose of these analyses we dummy coded relationship of the deceased as spouse versus other, parent versus other, child versus other, sibling & relative versus other, and nature of the death as medical or other (collapsing across accident, suicide and homicide).

3. Results

3.1 Latent class analysis

Table 2 presents the fit indices for the latent class analysis. Inspection of the Lo- Mendell-Rubin values suggested that the 4-class model accounted for more variation in the data than the 3-class model; whereas, the classification quality (Entropy) was better for the 3-class than the 4-class model. Inspection of the estimated symptom probabilities for the 3 versus 4-class model revealed that the 4th class came from a splitting of the High PGD/Dep class in the 3-class model into two separate classes (High PGD/Dep and Moderate PGD/Dep). The difference between the two classes related to the absolute symptom probability (10-20% lower for each symptom in the Moderate PGD/Dep class); the relative symptom probability (ie presence of yearning compared to trust difficulties etc) appeared comparable. Based on consideration of the fit indices, interpretability and parsimony, the 3-class solution was

retained (See Figure 1). This model included a class with a high prevalence of both PGD and Depression symptoms (PGD/Dep), a class with high Depression symptoms only (Dep) and a class with a low probability of all symptoms (Low). We considered values greater than .60 representative of a high probability, values between .15 and .59 as representative a moderate probability, and values below .15 as representative of a low probability that the symptom was present in the class (Nickerson et al., 2014).

As can be seen in Figure 1, the High PGD/Dep class evidenced a high probability of the presence of most symptoms of PGD and Depression items. Thoughts of self-harm, the least prevalent symptoms had a probability of 53%. Sadness, loss of interest, fatigue and concentration difficulties evidence probabilities of over 95%. Yearning and emotional pain were the PGD items with the highest probabilities (> 90%). In contrast, the Dep class had a high probability of most depressive symptoms but only a low to moderate probability of PGD items. Thoughts of self-harm was the least prevalent depression symptom at 26%. Yearning was the only PGD symptom with a probability of greater than 30%. Finally, the Low class had a low probability of all PGD items and most Depression items. The most frequently endorsed items in this group were sleep problems (26%) and fatigue (26%).

3.2 Predictors of class membership

Table 1 presents participant characteristics and loss-related variables for each of the classes. Chi square analyses indicated significant differences between classes in terms of gender ($X^2(2) = 7.66$, $p < .023$). The classes also differed on whether the loss was of a parent or not ($X^2(2) = 10.06$, $p < .008$). Classes did not differ in the proportion of individuals who had experienced a death as a result of accident, suicide or homicide ($p< .14$). Oneway ANOVAs indicated that the classes did not differ in terms of age ($p <.74$), years since loss ($p <.23$), or years of education ($p < .21$). However, there were significant differences between classes on attachment anxiety ($F(2, 282) = 55.69$, $p < .001$) and avoidance ($F(2, 282) = 23.75$,

$p < .001$). Follow-up testing, indicated that the 3 classes differed from each other on both attachment anxiety and avoidance; for attachment anxiety, the PGD/Dep was significantly higher than Dep ($p < .001$), which was significantly higher than the Low symptom class ($p < .001$). For attachment avoidance, PGD/Dep was significantly higher than Dep ($p < .05$), which was significantly higher than the low group ($p < .002$).

Next, we conducted a multinomial logistic regression to examine the extent to which the significant variables continued to predict class membership when all were simultaneously entered into the analysis. Results are presented in Table 3. The PGD/DEP class served as the reference class for this analysis. Whereas the chi square analysis indicated the classes differed according to gender, when variables were entered simultaneously, gender of the participant was not predictive of class membership. The relationship of the deceased continued to be a predictor of class membership. Compared to the PGD/Dep class, members of the Depression and Low classes were less likely to have lost a spouse or child. Attachment anxiety was also a significant predictor of class membership in this analysis; lower mean attachment anxiety predicted membership of the Dep and Low class compared to the PGD/Dep class. In contrast, attachment avoidance did not predict membership of the Dep class compared to the PGD/Dep class. Lower attachment avoidance did, however, predict membership of the Low class compared to the PGD/Dep class. To examine comparative predictors of membership of the Dep and Low classes we reran the multinomial regression with the Low class as the reference class. Compared to the Low class, higher attachment anxiety ($B = .82$, $SE = .23$, $Exp(B) = 2.27$, $p < .000$ [95% CI = 1.45 – 3.53]) and attachment avoidance ($B = .48$, $SE = .21$, $Exp(B) = 1.61$, $p < .021$ [95% CI = 1.08 – 2.41]) were predictive of membership of the depression class. Relationship and gender did not differentially predict class membership of these two classes.

4. Discussion

This study employed LCA to investigate the relationship between attachment style and symptoms of PGD and Major Depression in a heterogeneous sample of bereaved individuals. As shown in Figure 1, we identified three classes of individuals that showed distinct patterns of symptom co-occurrence: one class with a high probability of all symptoms (PGD/Dep), one class with a high probability of major depression symptoms only (Dep), and one class with a low probability of any symptoms (Low). Higher attachment anxiety predicted membership of PGD/Dep class compared to both the Dep and Low symptom classes. Higher attachment anxiety also predicted membership of the Dep class compared to the Low symptom class. Attachment avoidance was a significant differential predictor of membership of the PGD/Dep class and the Low symptom class. It did not differentiate between the PGD/Dep and Dep classes. These relationships held when potential shared variation associated with loss-related and demographic predictors was taken into account in the analysis. Overall, our results are in line with previous studies showing that attachment insecurity is associated with poor bereavement outcomes (Boelen and Klugkist, 2011; Fraley and Bonanno, 2004; Meier et al., 2013; Wayment and Vierthaler, 2002).

There is a growing body of literature demonstrating a relationship between attachment anxiety and poor bereavement outcomes (Field and Sundin, 2001; Fraley and Bonanno, 2004; Meier et al., 2013; Wayment and Vierthaler, 2002), including PG (Boelen and Klugkist, 2011; Wijngaards-de Meij et al., 2007; Wijngaards-de et al., 2007). In this study, attachment anxiety was predictive of greater levels of symptomatology in general, with higher levels of attachment anxiety being predictive of membership of both the PGD/Dep and Dep classes compared to the Low symptoms class. However, attachment anxiety also appeared predictive of the presence of PGD symptoms, with higher levels differentially predicting membership of the PGD/Dep and Dep classes. Attachment theory proposes that individual with high attachment anxiety are overly reliant on attachment figures to provide a sense of security, and

that this is associated with hyper-activation of the attachment system in times of stress. In the context of bereavement, this hyper-activation may lead to both the intense yearning for the deceased associated with PGD, and more negative appraisals about the individual's ability to manage without the attachment figure (Boelen et al., 2006; Maccallum and Bryant, 2013; Mancini and Bonanno, 2012; Stroebe et al., 2010).

Attachment avoidance also differentially predicted class membership; however, the pattern of findings differed from that of attachment anxiety. Consistent with attachment anxiety, high levels of attachment avoidance differentially predicted membership of both the PGD/Dep class and the Dep class compared to the Low class. However, level of attachment avoidance did not differentially predict membership of the PGD/Dep and Dep classes. Theorists have argued that the deactivating strategies employed by avoidant individuals (such as minimising emotional involvement with and dependence on others) should result in fewer emotional symptoms (Fraley and Bonanno, 2004). Recent empirical findings regarding the relationship between attachment avoidance and bereavement outcomes suggest a complex relationship. In terms of PGD, attachment avoidance has been associated with poorer bereavement outcomes (Boelen and Klugkist, 2011; Wijngaards-de Meij et al., 2007); however, this relationship may be weaker or even reversed in the context of specific moderators such as neuroticism (Wijngaards-de et al., 2007) or relationship satisfaction (Mancini et al., 2009; Wijngaards-de et al., 2007). In our study, attachment avoidance differentiated between the groups who showed high and low probabilities for the presence of depressive symptoms. In the bereavement context, it is possible that attachment avoidance contributes to bereavement complications, such as depression, by reducing the likelihood that an individual will utilize available social supports or develop new attachments. A failure to develop new attachments may also increase dependence on the deceased over time and facilitate an idealised view of the lost relationship (Maccallum and Bryant, 2013). As the Dep

class also scored higher on attachment anxiety than the Low class, we cannot rule out the possibility that attachment anxiety also contributed to the presence of depression symptoms.

This study differed from previous investigations in several ways. Typically, prior studies have examined the relationship between attachment style and bereavement outcomes by identifying predictors of PGD and depression severity in separate analyses. This approach has proved useful in identifying some differential predictors of depression and PGD (Wijngaards-de Meij et al., 2005). In contrast, this study used LCA to identify subgroups of individuals based on shared symptom co-occurrence and examined predictors of these subgroups. This offers a novel way of exploring predictors of co-morbidity by examining how symptoms co-occur together within individuals. Perhaps surprisingly, we did not observed a PGD only class. It is important to note, however, that LCA derives its classes based on the characteristics of the sample under investigation. A strength of our analysis was the high levels of clinical impairment and the number of treatment-seeking individuals in the sample; however, there is some evidence that in the context of bereavement treatments-seekers may be more depressed than non-treatment seekers (Wijngaards-de Meij et al., 2005). Specifcally, Wijngaards-de Meij et al et al., (2005) found that professional help-seeking among a sample of bereaved parents signficantly predicted depression, but not grief, severity. More work is needed to understand differences between individuals who do and do not seek treatment for their grief, however, this provides one possible explanation as to why the current analysis, with many treatment-seeking individuals did not identify a PGD only class. Thus while our findings have clinical relevance, suggesting both attachment anxiety and avoidance contribute to clinical presentations, the specific classes observed in this study are not considered representative of the entire population of bereaved individuals. We note, however, our findings relating to attachment appeared independent of sample specific

features identified as relevant in prior studies, such as gender and lost relationship type (Nielsen et al., 2017; Wijngaards-de Meij et al., 2005).

There are a number of limitations to the conclusions that can be drawn from this study. The cross sectional nature of LCA precludes any causal conclusions. Theoretical models of attachment propose that attachment style is a vulnerability factor for poor outcomes. The average time since loss in our sample was just over three and a half years. We cannot rule out the possibility that chronic PGD or depressive symptoms produced changes in self-reported attachment styles; for example, ongoing sadness or emotional pain may reduce one's expectation that others can ease distress; alternatively, attachment avoidance may reduce opportunities to experience pleasure and form new attachments, and so exacerbate sadness and distress. We also note that some items indexed by attachment measures may overlap conceptually with symptoms of PGD, and in this sense the measures may be marginally overlapping. Nonetheless, the finding suggests that where depression is a feature, it will be important for clinicians to assess and address potential impacts of attachment avoidance. This could include targeting appraisals related to others, or facilitating non-interpersonal approaches to managing distress. The findings also highlight that co-morbidity may be associated with complex patterns of attachment tendencies.

Further, several studies have suggested that certain losses (e.g. violence or suicide) may be associated with more severe symptomatology (Lobb et al, 2010). For example, persistent grief reactions following suicide have been associated with cognitive avoidance and depression (Bellini et al., 2018), which may have relevance to the current finding of the role of avoidant attachment style predicting a depressive class. Although type of death was not a significant predictor of class membership in this study, we note that the most (80%) of our participants had experienced a medical loss. Future studies that include a greater percentage of participants bereaved through violence or suicide will help address the extent to

which type of death differentially predicts patterns of symptom comorbidity. Finally, LCA enables researchers to sort individuals into relatively homogenous subgroups that are more similar to each other than other subgroups within a sample (Miettunen et al., 2016). In doing so, however, the approach removes some sources of variance in the data (Bohnke and Croudace, 2015; Miettunen et al., 2016). Nonetheless, our findings show that both attachment anxiety and avoidance are relevant to symptom co-occurrence following loss. A tentative conclusion is that individuals presenting with both PGD and depression are likely to have higher levels of both anxious and avoidant attachment, whereas individuals presenting predominantly with depression are likely to be higher on attachment avoidance. There is an increasing array of statistical approaches on offer to explore symptom heterogeneity and moderators of outcomes following loss (for discussion see Bohnke and Croudace, 2015; Borsboom et al., 2016). Future research would benefit from examining the pathways by which attachment anxiety and avoidance impact symptom development over time using longitudinal techniques such as network modelling (Borsboom and Cramer, 2013). It is through the application of a variety of approaches that we will gain greater understanding of the mechanisms underlying poor adaption to bereavement and improve outcomes for this vulnerable population.

Funding: This study was supported by grant 568970 from the National Health and Medical Research Council of Australia awarded to Richard A Bryant and grant 1053997 from the National Health and Medical Research Council of Australia awarded to Fiona Maccallum.

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Table 1: Participant Characteristics

	Total sample	Class 1 PGD/Dep	Class 2 Dep	Class 3 Low	*p*
N	285	162 (56.8%)	61 (21.6%)	62 (21.6%)	
Female	78.9%	84.6%	68.9%	74.2%	<.023[a]
Mean Age	48.58 (14.59)	48.62 (13.45)	49.54 (17.74)	47.52 (14.21)	<.074[b]
Relationship of deceased					
Partner	28.3%	31.9%	26.2%	21.0%	<.008[c]
Child	19.1%	23.8%	13.1%	12.9%	
Parent	38.9%	31.9%	41.1%	54.8%	
Sibling	11.3%	10.6%	13.1%	11.3%	
Other	2.4%	1.8%	6.5%	0%	
Type of death					
Medical	77.1%	73.3%	78.8%	85.4%	<.14[d]
Accident	12.3%	15.5%	9.8%	6.5%	
Suicide	9.5%	10.6%	9.8%	6.5%	
Homicide	1.1%	0.6%	1.6%	1.6%	
Years since loss	3.67 (3.89)	3.97 (4.31)	2.76 (1.76)	3.78 (4.16)	<.23[b]
Years Education	13.98 (2.91)	13.69 (2.93)	14.35 (2.86)	14.51 (2.84)	<.21[b]
Attachment					
Anxiety	3.58 (1.22)	4.10 (1.09)	3.27 (1.07)	2.51 (0.87)	<.001[b]
Avoidance	3.87 (1.00)	4.15 (0.92)	3.80 (0.89)	3.19 (1.00)	<.001[b]

BDI Score	21.07 (14.01)	29.53 (10.53)	16.54 (9.07)	3.26 (2.99)	<.001[b]

Note: PGD = Prolonged Grief; Dep = Depression; BDI = Beck Depression Inventory. A = *X* square analysis, b = Oneway anova, c = *X* square analysis parent versus other relationship death, d = medical versus other type of death

Table 2: Goodness-of-fit statistics for 1 to 5 class solutions

Model	Loglikelihood	BIC	SS-BIC	AIC	Entropy	Vlmrt
1	-3715.46	7544.59	7481.17	7470.91		
2	-2738.29	5709.59	5579.57	5558.57	.97	.000
3	**-2610.31**	**5573.00**	**5376.38**	**5344.62**	**.94**	**.000**
4	-2550.72	5573.17	5309.96	5267.43	.87	.02
5	-2523.39	5637.88	5308.06	5254.78	.89	.45

Note. AIC = Akaike information criterion; BIC = Bayesian information criterion; SSBIC = sample size adjusted Bayesian information criterion; VLMRT = Lo-Mendell-Rubin test.

Table 3. Multinomial logistic regression predicting class membership

Predictor	*B*	*SE*	*Exp (B)*	*95% CI*	*p*
Class 3 (Dep) compared to Class 1 (PGD/Dep)					
Gender	-0.68	.38	.50	.24 – 1.07	.073
Deceased [1]	-0.91	.34	.41	.21 – .79	.008
Attach Anxiety	-.76	.17	.47	.34 – .67	.000
Attach Avoidance	-.25	.18	.78	.53 – 1.53	.163
Class 4 (LOW) compared to Class 1 (PGD/DEP)					
Gender	-.45	.46	.64	.26 – 1.58	.336
Deceased [1]	-1.37	.41	.26	.12 – .56	.001
Attach Anxiety	-1.58	.23	.21	.13 - .33	.000
Attach Avoidance	-.73	.21	.48	.32 - .73	.000

Note: 1 = direction indicates that Low and Dep less likely to have lost a spouse or child than PGD/DEP class. PGD = Prolonged Grief; Dep = Depression

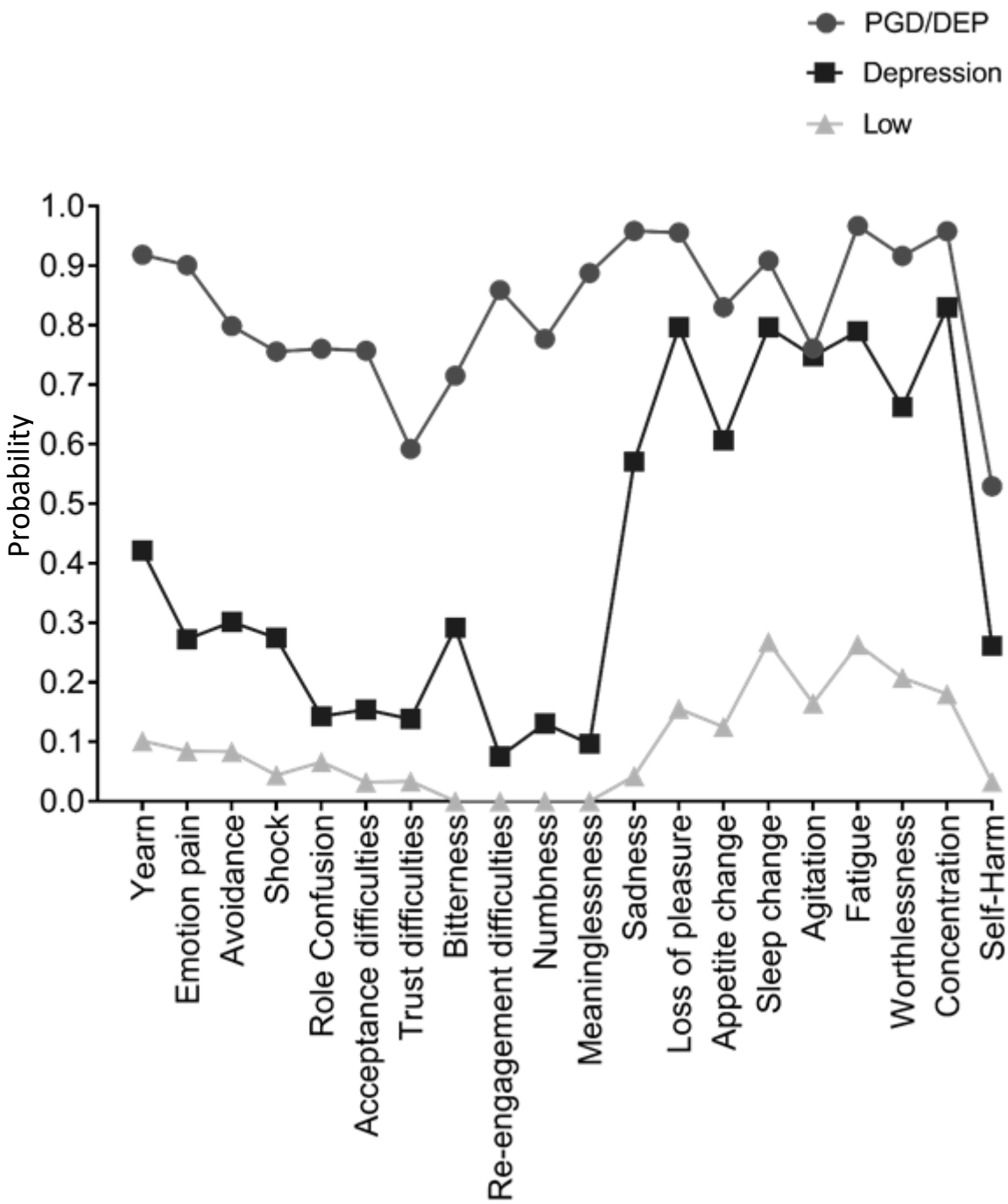

Figure 1. Estimated symptom prevalence for the three-class solution.