Pathological Grief: The Role of Cause and Unexpectedness of Death

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Abstract

Background. A minority of those bereaved develops a set of dysfunctional grief symptoms, referred to as Pathological Grief (PG). Two constructs, cause of death (natural versus unnatural) and perceived unexpectedness of death, have been suggested to predict PG. However, no earlier studies used clinical interviews in the assessment of PG. The aim of the current study was to investigate the association between cause and perceived unexpectedness of death with PG symptoms using clinical interviews, while controlling for background characteristics (gender, educational level, time since loss and relationship to deceased). *Methods.* Participants ($N = 248$) were interviewed by telephone. PG was assessed via the Traumatic Grief Inventory – Clinician Administered (TGI-CA). Two hierarchical regression analyses were conducted. *Results.* Background characteristics explained 24.8% of the variance in TGI-CA scores ($p < .001$), cause of death explained an additional 3.8% ($p < .001$) in one analysis and perceived unexpectedness of death an additional 2.3% ($p < .01$) in the other. Two post-hoc hierarchical regression analyses showed 1) cause of death explained 2.7% ($p = .003$) of the variance in TGI-CA scores over and above background characteristics and perceived unexpectedness, and 2) perceived unexpectedness explained 1.2% ($p = .048$) of the variance in TGI-CA scores over and above background characteristics and cause of death. *Discussion.* Findings provide support for both cause and perceived unexpectedness of death as correlates of PG. Furthermore, cause of death and perceived unexpectedness are found to both explain unique variances in PG symptoms, independent of one another.

Introduction

Most of the people bereaved by a loved one adjust well over time (Stroebe et al., 2007). However, a small minority develops a set of dysfunctional grief symptoms, interfering with daily functioning and overall quality of life (Bonanno & Kaltman, 2001). Various terms have been used to refer to this pathological type of grief, like complicated grief (Shear et al., 2011), prolonged grief (Prigerson et al., 2009) and chronic grief (Bonanno et al., 2002). For the purpose of this paper, 'Pathological Grief' (PG) will be used as an umbrella term, defined as "a pattern of adaptation to bereavement that involves the presentation of certain grief-related symptoms at a time beyond that which is considered adaptive" (Lobb et al., 2010, p. 674). Two variants of PG have recently been added to the two most frequently used classification systems for mental disorders. Prolonged Grief Disorder (PGD) was included as a disorder in the International Classification of Diseases 11th Revision (ICD-11; World Health Organization [WHO], 2019) and the Persistent Complex Bereavement Disorder (PCBD) was added to Section III of the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) as a condition for further research (American Psychiatric Association [APA], 2013). Possible factors involved in the development of PG are widely researched.

Two loss-related factors that are suggested to contribute to the development of PG are the cause of death (natural versus unnatural) and the unexpectedness of death (Boelen, 2015). The amount of people affected by an unnatural and/or unexpected death is substantial, given that a) 9% of the world's deaths are unnatural (WHO, 2014) and b) an estimated 17.5% of all deaths are sudden and, therefore, often unexpected (Nofal et al., 2011). This high prevalence is of specific interest, given the detrimental health effects known to be associated with PG, such as: detrimental physical health (Stroebe et al., 2008); excess risk of mortality (Manor & Eisenbach, 2003); insomnia (Hardison et al., 2005); substance abuse; and comorbidity with depression, anxiety and post-traumatic stress disorder (Boelen, 2013; Morina et al., 2009).

These negative consequences, together with the substantial number of people affected by an unnatural and/or unexpected death, give relevance to investigate the association between cause and unexpectedness of death and PG.

The effect of the first construct, cause of death, on PG symptoms has been researched extensively. Rynearson (2006) defined an unnatural cause of death as 'accidents, suicides and homicides'. A large body of research has been conducted on cause of death as predictor for PG, generally associating an unnatural cause of death with elevated PG symptom scores. However, several shortcomings in the conducted studies make the conclusion of cause of death as predictor for PG premature. First of all, the majority of studies only used samples of those bereaved by an unnatural/violent cause of death (Djelantik et al., 2020; Boelen et al., 2016; Kristensen et al., 2012; Dyregrov et al., 2003). Secondly, studies that did compare PG symptom scores of unnatural losses with natural losses (Krychiw et al., 2018; Wijngaards-de Meij et al., 2005; Boelen, 2015) leave space for several methodological improvements, due to: the use of inconsistent and outdated instruments of PG symptoms (Inventory Complicated Grief [ICG] and PGD-scale); the generalizability of the sample (only bereaved parents included in Wijngaards-de Meij et al., 2005) and the use of only surveys in the assessment of PG symptoms.

Notwithstanding these limitations, possible explanations have been proposed for the presumed association between cause of death and PG symptom scores. For instance, unnatural deaths are often accompanied by violence, which is thought to violate our basic human assumptions (Currier et al., 2006). These assumptions include beliefs about ourselves, the external world and the relationship between the two (for example: 'the world is meaningful' or 'I am safe'; Heeke et al., 2017; Janoff-Bulman, 1992). Violation of these beliefs leaves survivors with an inability to make sense of the experience, which may deteriorate the bereavement process (Neimeyer, 2006).

Regarding the second construct, the unexpectedness of death, studies so far have reported inconsistent findings of its relation with PG symptoms. This inconsistency may be explained by the difference in conceptualization of unexpectedness of death. One study that used an objective measure of unexpectedness (referred to as 'unexpectedness' or 'suddenness', measured as 'number of days between forewarning of death and the actual death') reported no association with PG symptoms (Kaltman & Bonanno, 2003), whereas studies that used a subjective measure ('perceived unexpectedness') did find an association in which unexpectedness of death was linked to elevated levels of PG symptoms (Boelen, 2015; Valdimarsdóttir et al., 2004). Concordantly, on a more general level, studies identifying predictors for health outcomes support the preference for the use of a subjective measure over an objective measure. For instance, early studies by Solomon et al (1987) found subjective measures to be better predictors for stress levels than objective measures. In another study on the adaptation to death among children, perceived unexpectedness was found as a stronger predictor for detrimental health outcomes than the time that children were aware of the near death of their parent (Worden, 1996). In short, based on aforementioned studies, perceived unexpectedness is expected to be adequate in predicting PG symptom levels. Hereafter, use of the term 'unexpectedness' in this paper will refer to perceived unexpectedness.

Various theories have been proposed to explain the relation between unexpectedness of death and PG scores. In general, humans have a natural preference for predictability and respond more negatively to sudden events, which could explain a pathological reaction to a sudden loss (Krychiw et al., 2018; Lejuez et al., 2000). Furthermore, an unexpected death leaves those bereaved automatically unprepared for their loss. A lack of preparedness for death (including medical, practical and psychosocial components) has been associated with elevated levels of PG symptoms (Barry et al., 2002; Hebert et al., 2006; Nielsen et al., 2017).

In short, various studies suggest both cause and unexpectedness of death as predictors for PG symptoms. However, caution should be taken in concluding both factors as predictors, given the correlation between the two constructs (Breslau et al., 1998; Kloep et al., 2014). Cause and unexpectedness of death are related constructs, since unnatural losses are often unexpected. Questions can be raised whether the constructs each explain a unique variance of PG symptom scores. Ideally, the effect of cause of death on PG symptoms would be investigated while controlling for unexpectedness and vice versa. However, the interrelation of cause and unexpectedness of death hinder the reliability of analyses in which both constructs are included. Therefore, instead, the research aim of the current study is to investigate the association between cause and unexpectedness of death with PG symptoms, while controlling for previously studied, and generally confirmed, predictors.

Four background characteristics that will be controlled for in the current study are gender, educational level, time (since loss) and relationship to the deceased (based on reviews of Heeke et al., 2017 and Lobb et al., 2010). Reviews showed that women are at higher risk to develop PG symptoms than men (Burke & Neimeyer, 2013; Dyregrov et al., 2003; Kersting et al., 2011), partners and parents of deceased have higher PG symptom scores than other relatives (Kersting et al., 2011; Newson et al., 2011), PG symptom scores decrease over time (Heeke et al., 2015; Schaal et al., 2010) and low educational level is associated with higher PG symptom scores (Dyregrov et al., 2003; Neria et al., 2007; Wijngaards-de Meij et al., 2005).

In the light of the above, the following research question was addressed: "To what extent are cause and unexpectedness of death related to PG symptoms, when controlling for gender, time, education and relationship?". PG symptoms are assessed via clinical interviews (using the Traumatic Grief Inventory – Clinician Administered [TGI-CA]) rather than surveys, to control for biases such as misinterpretation of questions and anchoring (Boelen, 2015; Bui et al., 2015; Kristensen et al., 2012). Two hypotheses were formulated. Firstly, cause of death is

hypothesized to explain variance in PG symptoms over and above gender, time, education and relationship. Secondly, unexpectedness of death is hypothesized to explain variance in PG symptoms over and above gender, time, education and relationship.

The current study is both clinically as scientifically relevant in its contribution to the inquiry to further disentangle the constructs of cause and unexpectedness of death as correlates of PG symptoms. Clinically, this study may help a clinician in the assessment of a person's risk to develop PG based on the type of loss. More specifically, the possible risk for PG for those bereaved by an unexpected natural death might be overlooked given the emphasis of earlier research on cause of death rather than unexpectedness of death (Djelantik et al., 2020; Lobb et al., 2010). Scientifically, following up on recommendations of Boelen (2015) and Kristensen et al. (2012), this study will be the first in the investigation of cause and unexpectedness of death as correlates of PG symptoms in which clinical interviews are used in the assessment of PG symptoms.

Methods

Participants

Participants were recruited using convenience and snowball sampling methods: 42.7% via the researchers' social network, 40.7% via social media and 16.5% via other sources. Participants were recruited in two samples: 161 (64.9%) participants were recruited and interviewed by a Dutch research team, working from Utrecht University, and 87 (35.1%) participants by a German research team, working from the University of Groningen. Inclusion criteria were a minimum age of 18 years and bereavement longer than six months ago. Exclusion criteria were suicidal ideation and (a history of) psychotic symptoms. 251 participants were interviewed, of which three were excluded: one due to suicidal ideation, two participants because their loss had

occurred within the last six months. Therefore, the final sample consisted of 248 participants. Participants participated voluntarily, except for a minority of 17 participants (6.9%) who received credit points from Utrecht University for participating. The study was approved by a local ethical committee.

Procedure

Six researchers (master's students) were trained by clinicians in conducting the interviews. Participants signed up for the study via a Qualtrics-link, in which they signed the informed consent and left their contact details. One researcher then contacted the participant, either by email or telephone, to set a date for the interview. The researchers were never paired with the participants that they recruited themselves, since the familiarity between researcher and participant may lead to biased data through socially desirable responses from the participant and biases of the researcher. Interviews were conducted via telephone and took about 45 minutes in which six components were assessed: 1) sociodemographic data, 2) loss-related data, 3) Patient Health Questionnaire-9 (PHQ-9), 4) TGI-CA, 5) Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5) and 6) Work and Social Adjustment Scale (WSAS). Loss-related data was obtained from all losses that a participant reported to have experienced during their life. During the administration of the TGI-CA, participants were asked to keep one particular deceased person in mind: their most significant loss.

Measures

Level of PG symptoms was assessed through the TGI-CA, consisting of 22 items on grief reactions. The TGI-CA is based on the self-report questionnaire Traumatic Grief Inventory-Self Report (TGI-SR), which measures PGD (based on Prigerson et al., 2009) and PCBD (Boelen & Smid, 2017; Boelen et al., 2018). In the TGI-CA, four items were added in order to

include the measurement of the PGD (based on the ICD-11). Furthermore, three changes have been made in the TGI-CA, with respect to the TGI-SR, regarding the formulation of the items: 1) questions instead of statements, 2) reference to "last month" in every item instead of only at the introduction text, and 3) reference to the name of the deceased in every item instead of "him/her". An item-example is: "In the past month, have you experienced life as empty and without meaning without [name of deceased]?". Answer options were reported on a Likert scale from 1 (never) to 5 (always). The TGI-CA score is the sum of the scores on the 22 questions, ranging from 22 to 110. In this sample, the TGI-CA had a Cronbach's alpha of .93, which is considered excellent (George & Mallery, 2003).

Four background characteristics were measured. First, gender was queried (scored 1 = men, 2 = women). Second, educational level was assessed with the question: "What is your highest level of education that you have completed with a diploma?". Scores were categorized as low (scored 1; primary education, high school and vocational education) and high (scored 2; applied sciences or university) based on Neria et al. (2007). Third, relationship to the deceased was scored in two categories (1 = loss of someone other than partner or child and 2 = loss of partner or child), based on Kersting et al. (2011). Fourth, time since loss (in years) was calculated by the difference in days between the date of death and the date of the interview.

Two loss-related variables were assessed. First, cause of death was dichotomized (scored 1 = natural, 2 = unnatural) based on the question: "What was the cause of the death of [name of deceased]?", with answer options: physical illness; accident; suicide; murder or manslaughter; and other cause. Seven participants chose 'other cause' and were recategorized in the existing categories based on their comment about the cause of death: 'senility' and 'dementia' were categorized as 'physical illness'; a 'euthanasia' category was formed in which two participants were added and an 'unknown cause' category was formed in which three participants were added. Thereafter, the dichotomized version of the cause of death variable

was computed in which 'accident', 'suicide', 'murder/manslaughter' and 'euthanasia' were added to the 'unnatural cause'-category and 'physical illness' and 'unknown cause' were added to the 'natural cause'-category. Euthanasia was categorized as an unnatural cause of death, with the rationale that it can be viewed as a legal and controlled form of suicide (which is an unnatural cause of death). Unknown cause was categorized as a natural cause of death, based on the participants' comment that unnatural causes of death were ruled out.

Secondly, unexpectedness of death was queried with one item: "To what extent did you experience [name of deceased]'s death as unexpected?", rated on a 5-point Likert scale (1 = not at all unexpected, 5 = totally unexpected; Boelen, 2015).

Analysis

SPSS Statistics 26.0 was used for the analyses. The loss-related data were filtered in such a way that only the questions regarding the most significant loss (of which the TGI-CA was answered) were used in the analysis. The loss-related data of other losses were not used in the current study.

Preliminary analyses were performed to test the associations between the independent variables and TGI-CA scores. First, four independent t-tests were performed for the distinctive value of a) gender, b) cause of death, c) relationship, and d) education in TGI-CA. Second, Pearson correlation analysis was used to test the correlation between TGI-CA and time. Third, Spearman's rho correlation was calculated between TGI-CA and unexpectedness of death.

Two hierarchical regression analyses were conducted in order to test the two hypotheses. Cause and unexpectedness of death were added in two different analyses to preclude multicollinearity (Kloep et al., 2014; Breslau et al., 1998). Gender, time, education and relationship were entered in the first step in both analyses. Cause of death was entered in the second step of one analysis and unexpectedness of death in the second step of the other

analysis. The dependent variable was the TGI-CA score. In all analyses, $p = .05$ was used as significance level.

Results

Preliminary analyses

Participants were 194 women (78.2%) and 54 men (21.8%), with a mean age of 46.70 ($SD = 16.32$), ranging from 19 to 87. Most participants were born in the Netherlands (58.1%), others in Germany (33.9%), Belgium (3.2%) or other countries (4.8%). Educational level was fairly distributed, 121 participants (48.8%) finished low education and 127 participants (51.2%) finished high education. The median of time since loss was three years and eight months. The majority of participants was bereaved by someone other than their partner or child (57.7%), the remaining 42.3% was bereaved by their partner or child. Most people lost a significant other due to a natural cause of death (192 participants, 77.4%), a minority due to an unnatural cause of death (56 participants, 22.6%).

Four independent t-tests showed gender, relationship and cause of death to be significantly related to TGI-CA scores, whereas educational level was not. Women ($M = 41.05$, $SD = 15.01$) had higher TGI-CA scores than men ($M = 36.04$, $SD = 12.44$), $t(246) = -2.25$, $p = .026$. Participants bereaved by their partner or child ($M = 47.28$, $SD = 16.51$) had higher TGI-CA scores than participants bereaved by someone other than their partner or child ($M = 34.58$, $SD = 10.16$), $t(160.733) = -6.97$, $p < .001$. Participants bereaved due to an unnatural cause of death ($M = 46.34$, $SD = 16.33$) had higher TGI-CA scores than participants bereaved due to a natural cause of death ($M = 38.09$, $SD = 13.56$), $t(78.452) = -3.45$, $p = .001$. Participants with lower educational level ($M = 40.96$, $SD = 15.38$) did not differ in TGI-CA scores from participants with higher educational level ($M = 39.00$, $SD = 13.84$), $t(246) = $

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1.06, $p = .292$. Subsequently, a significant Pearson correlation was found between TGI-CA and time ($r(246) = -.28$, $p < .001$) and a significant Spearman rho correlation was found between TGI-CA and unexpectedness of death ($r_s(246) = .24$, $p < .001$).

Hierarchical regression analyses

Two hierarchical regression analyses were performed to examine the extent to which cause and unexpectedness of death were associated with TGI-CA while controlling for background characteristics (gender, time, education and relationship). The background characteristics explained 24.8% of the variance in TGI-CA scores ($F(4, 243) = 20.01$, $p < .001$; see Table 1). Cause of death explained 3.8% of the variance over and above the background characteristics ($F(1, 242) = 12.80$, $p < .001$). Unexpectedness of death explained 2.3% of the variance over and above the background characteristic variables ($F(1, 242) = 7.46$, $p < .01$; see Table 2).

Table 1
Hierarchical regression analysis for background characteristics and cause of death in predicting pathological grief symptoms.

	B (SE)	*β*	Δ*R²*	Δ*F (df)*
Step 1: Background characteristics	-	-	.248	20.01*** (4,243)
Gender	3.90 (1.92)	.11	-	-
Time	<.01 (.00)	-.24	-	-
Education	-.86 (1.59)	-.03	-	-
Relationship	10.65 (1.64)	.36	-	-
Step 2: Cause of death	6.88 (1.92)	.20	.038	12.80*** (1, 242)

Note. df = degrees of freedom. - = Not displayed. SE = Standard Error. Values of B's, SE's, and *β*'s are reported from the final step, whereas Δ*R²* and Δ*F* values are reported from each step.
*** $p < .001$.

Table 2

Hierarchical regression analysis for background characteristics and unexpectedness of death
in predicting pathological grief symptoms.

	B (SE)	*β*	*ΔR²*	**ΔF** *(df)*
Step 1: Background characteristics	-	-	.248	20.01*** (4, 243)
Gender	4.01 (1.94)	.11	-	-
Time	-.001 (.00)	-.22	-	-
Education	-.314 (1.63)	-.01	-	-
Relationship	10.57 (1.68)	.36	-	-
Step 2: Unexpectedness of death	1.40 (.51)	.16	.023	7.46** (1, 242)

Note. df = degrees of freedom. - = Not displayed. SE = Standard Error. Values of B's, SE's,
and *β*'s are reported from the final step, whereas **ΔR²** and **ΔF** values are reported from each
step.
** $p < .01$.
*** $p < .001$.

Post hoc analyses

Two post hoc hierarchical regression analyses were performed to examine whether cause of

death still explained additional variance in TGI-CA when controlled for the background

characteristics *and* unexpectedness of death and vice versa (see Table 3). Even though a t-test

between cause and unexpectedness of death was significant ($t(246)$ = -4.21, $p <$ .001), the

Cohen's *d* effect size was not large (d = .65, which is moderate; Cohen, 1998) and the Variance

Inflation Factor (VIF) was not substantially greater than 1 (Bowerman & O'Connell, 1990,

Field, 2013). Therefore, the assumption of multicollinearity regarding the association between

cause and unexpectedness of death was no longer considered to be endangered, which made

the post hoc analyses possible. In the first post-hoc analysis, when controlling for gender, time,

education and relationship (step 1) and unexpectedness of death (step 2), cause of death

explained an additional 2.7% of the variance in TGI-CA (F(1, 241) = 9.20, p = .003). In the

second post-hoc analysis, when controlled for gender, time, education and relationship (step 1)

and cause of death (step 2), unexpectedness of death explained an additional 1.2% of the

variance in TGI-CA (F(1, 241) = 3.96, p = .048).

Table 3

Two post hoc hierarchical analyses for cause and unexpectedness of death in predicting pathological grief symptoms, while controlling for background characteristics and unexpectedness and cause of death (respectively).

	B (SE)	*β*	*ΔR²*	**Δ**F *(df)*
Analysis 1				
Step 1: Background characteristics	-	-	.248	20.01*** (4, 243)
Step 2: Unexpectedness of death	1.03 (.52)	.16	.023	7.46** (1, 242)
Step 2: Cause of death	5.97 (1.97)	.17	.027	9.20** (1, 241)
Analysis 2				
Step 1: Background characteristics	-	-	.248	20.01*** (4, 243)
Step 2: Cause of death	5.97 (1.97)	.18	.038	12.80*** (1, 242)
Step 3: Unexpectedness of death	1.03 (.52)	.12	.012	3.96* (1, 241)

Note. df = degrees of freedom. - = Not displayed. SE = Standard Error. Values of B's, SE's, and *β*'s are reported from the final step, whereas **ΔR²** and **Δ**F values are reported from each step.

* *p* < .05.

** *p* < .01.

*** *p* < .001.

Discussion

The aim of the current study was to investigate the association between cause and unexpectedness of death with PG symptoms, while controlling for background characteristics (gender, time, education and relationship). Cause and unexpectedness of death both explained variances in PG symptoms over and above background characteristics. Furthermore, two post hoc analyses were conducted, showing a) cause of death explained variance in PG symptoms over and above background characteristics and unexpectedness and b) unexpectedness explained variance in PG symptoms over and above background characteristics and cause of death.

Conform the first hypothesis, cause of death explained variance in PG symptoms over and above background characteristics, in which an unnatural cause of death was associated with higher PG symptom scores than a natural cause of death. This finding is in line with earlier

studies (Boelen, 2015; Krychiw et al., 2018; Wijngaards-de Meij et al., 2005) and complements to the literature by confirming cause of death as a correlate of PG using an updated conceptualization of PG symptoms (PGD based on the ICD-11 and PCBD), a more heterogeneous sample in terms of the relationship to the deceased and an interview-based assessment of PG symptoms instead of surveys. This result gives reason to further investigate the possible explanations for detrimental health outcomes following an unnatural cause of death, such as the violence of death (Currier et al., 2006).

Conform the second hypothesis, unexpectedness explained variance in PG symptoms over and above background characteristics, in which a higher unexpectedness of death was associated with higher PG symptom scores. This result is in line with research that conceptualizes unexpectedness as how it is perceived (Boelen, 2015), but not with research that conceptualizes unexpectedness as an objective measure (Kaltman & Bonanno, 2003). Hence, a subjective measure of unexpectedness seems valuable in predicting PG. In order to compare a subjective with an objective measure of unexpectedness as correlate of PG in future studies, the inclusion of both measures of unexpectedness is recommended. Nevertheless, this study provides support for an association between unexpectedness and PG, which gives reason to further investigate the possible explanations for this effect, like the inability to cope with unpredictable events (Krychiw et al., 2018; Lejuez et al., 2000) and the lack of preparedness (Barry et al., 2002).

Two post hoc analyses were conducted in which the effect of cause of death on PG symptoms was investigated while controlling for unexpectedness of death and vice versa. Findings suggest that both cause and unexpectedness of death explain unique variances in PG symptoms, independent of one another. Together with the finding that cause and unexpectedness of death were not as strongly related to one another as expected, these results emphasize the individual contribution of both constructs in explaining PG. While previous

studies mostly focused on cause of death in predicting PG symptoms (Djelantik et al., 2020; Lobb et al., 2010), the current findings suggest that unexpectedness is informative as well: unexpectedness seems to explain variance in PG symptoms that cannot be explained by cause of death. Two categories of bereaved people that can be thought of in which unexpectedness, but not cause of death, is related to PG are 1) those bereaved by a natural but highly unexpected death (heart attack, stroke, late stage cancer) with high PG symptom scores and 2) those bereaved by an unnatural but expected death (e.g. suicide in a highly suicidal patient) with low PG symptom scores. In these cases, the level of PG is unforeseen based on the cause of death. Instead, unexpectedness offers an explanation. Although an unnatural expected death seems uncommon at first sight, previous research on suicide suggests otherwise: a study on suicidal losses reported that 46% of those bereaved by suicide did not experience the death as unexpected (De Groot et al., 2006). If those bereaved by suicide indeed have lower PG scores, this may have contributed to the variance in PG that is explained by unexpectedness, when controlled for cause of death. In short, these findings indicate that cause nor unexpectedness of death should be left out in the assessment of one's risk for PG.

The results of the current study have clinical and scientific implications. Clinically, these results provide preliminary support to consider both cause and unexpectedness of death (regardless of the cause) as important indicators in the assessment of a person's risk to develop PG. Awaiting the results of further studies, unexpectedness could be assessed on screening material in order to detect PG. Scientifically, these results add to the inquiry on cause and unexpectedness of death as correlates of PG by using interview-based assessments of PG symptoms instead of surveys (Boelen, 2015). Furthermore, unexpectedness could potentially be added as covariate in studies to further identify correlates of PG.

Strengths of the current study include the use of an interview-based assessment of PG symptoms and a heterogeneous sample in terms of cause of death, relationship to the deceased

and time since loss. However, several limitations must be considered in the interpretation of the findings. First, the cross-sectional design precludes the possibility to draw causal conclusions. Second, the uneven distribution of cause of death in the sample (77.4% natural, 22.6% unnatural) limits the statistical power. Third, the sample was non-representative to the general population in terms of gender (predominantly female) and nationality (mostly Dutch/German), which may have influenced the results. Women tend to have higher PG scores than men. Hence, the mean PG score in this study could be an overestimation, hindering the generalization to men (Kersting et al., 2011). Furthermore, expressions of grief differ widely per culture (Rosenblatt, 2008). Since cultural background correlates with nationality, conclusions of the current study can only be generalized to the studied nationalities.

These limitations may serve as leads for future research. A longitudinal research design is recommended to investigate possible causal relations. Furthermore, the current study could be replicated using a more heterogeneous sample in terms of cause of death, gender and nationality. Moreover, the use of a clinical sample could reveal whether current findings can be confirmed in a sample with higher levels of PG symptom scores. Finally, in order to test the hypothesis regarding the importance of the conceptualization of unexpectedness in the prediction of PG, a study design could be used in which both an objective measure (i.e. 'number of days between forewarning of death and the actual death'; Kaltman & Bonnano, 2003) as a subjective measure (perceived unexpectedness) of unexpectedness is included.

In conclusion, the current study strengthens the support for cause of death and perceived unexpectedness as correlates of PG symptoms, when controlled for gender, time, education and relationship to the deceased. Furthermore, cause of death and perceived unexpectedness are found to both explain unique variances in PG symptoms. Hence, it is favorable to include both constructs in the assessment of one's risk to develop PG, in order to contribute to the overall attempt to diminish the associated detrimental health outcomes.

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