Validation of the newly proposed DSM criteria for prolonged grief disorder and the PG-13-Revised (PG-13-R) scale

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Although the concept of pathological grief dates back at least as far as Freud's Mourning and Melancholia*, there has been opposition to its recognition as a distinct mental disorder. Resistance has been overcome by evidence demonstrating that distinctive symptoms of prolonged grief disorder (PGD) – an attachment disturbance featuring yearning for the deceased, loss of meaning and identity disruption – can endure, prove distressing and disabling, and require targeted treatment. In acknowledgement of this evidence, the DSM Steering Committee has recently voted to include PGD as a new mental disorder in the DSM. We tested the validity of the newly proposed DSM criteria for PGD and of an adapted version of our PG-13 scale, the PG-13-Revised (PG-13-R), designed to map onto these criteria, using data from investigations conducted at Yale University (N=270), Utrecht University (N=163) and Oxford University (N=239). Baseline assessments were performed at 12-24 months post-loss; follow-up assessments took place 5.3-12.0 months later. Results indicated that the PG-13-R grief symptoms represent a unidimensional construct, with high degrees of internal consistency (Cronbach's alpha=0.83, 0.90 and 0.93, for Yale, Utrecht and Oxford, respectively). The DSM PGD diagnosis was distinct from post-traumatic stress disorder (phi=0.12), major depressive disorder (phi=0.25) and generalized anxiety disorder (phi=0.26) at baseline. Temporal stability was remarkable for this diagnosis (r=0.86, p<0.001). Kappa agreement between a PG-13-R threshold symptom summary score of 30 and the DSM symptom criterion for PGD was 0.70-0.89 across the datasets. Both the DSM PGD diagnosis and the PG-13-R symptom summary score at baseline were significantly associated (p<0.05) with symptoms and diagnoses of major depressive disorder, post-traumatic stress disorder and/or generalized anxiety disorder, suicidal ideation, worse quality of life and functional impairments at baseline and at follow-up, in the Yale, Utrecht and Oxford datasets. Overall, the newly proposed DSM criteria for PGD and the PG-13-R both proved reliable and valid measures for the classification of bereaved individuals with maladaptive grief responses.*

Key words: Prolonged grief disorder, DSM, PG-13-R, ICD-11, pathological grief, bereavement, post-traumatic stress disorder

(World Psychiatry 2021;20:1-11)

Although the concept of pathological grief dates back at least as far as Freud's *Mourning and Melancholia*[1], there has been public and professional opposition to its recognition as a mental disorder[2-5]. For example, a 2015 international online survey of public attitudes revealed that approximately 25% of respondents did not endorse the position that grief could be a mental disorder[2]. More recently, an online survey on public opinion in China found that about 40% of participants did not agree that grief could be a mental disorder, even under circumstances such as threat of harm to self or others[4]. Concerns about "pathologizing" grief are reported to be rooted in the belief that all grief is normal and an expected response to the death of a loved one. Thus, a diagnosis of pathological grief is considered to be tantamount to stigmatizing, medicalizing and/or pathologizing love[2,4].

Himself wary of pathologizing grief, Freud conceptualized mourning (grief) as a normal, natural reaction to loss of a loved one, and even deemed working through grief as necessary to bereavement adjustment – the hard, often painful, work a mourner must do to withdraw emotional attachment to the deceased person. In fact, Freud considered medical interference in "grief work" to be "inadvisable if not even harmful"[1]. By contrast, he considered melancholia (i.e., depression) the pathological response to bereavement, and noted that this condition, not grief, posed a risk for suicide, and warranted medical attention.

Research over the past quarter century has shown not only that a small but substantial proportion of grief reactions can be severe, disabling, and endure beyond normal expectations, but that they may respond only to specialist treatment. Specifically, studies have documented that certain grief symptoms are distinct from those of bereavement-related depression[6-9], have idiosyncratic neurobiological[10] and clinical[11-13] correlates, can persist unabated for months or even years[8,14], prove distressing and dysfunctional[14-16], and may only respond to targeted intervention[17,18]. Thus, there exists a substantial and mounting body of evidence in support of a psychiatric syndrome of maladaptive grief.

The ICD-11 Workgroup on Stress-Associated Disorders found the available evidence for prolonged grief disorder (PGD) sufficiently compelling to recommend its recognition as a new mental disorder[19]. The DSM-5 had included "persistent complex bereavement disorder" (PCBD) in Section III (i.e., among "conditions for further study"). In response to the ICD's inclusion of PGD and the accumulated evidence, the DSM Steering Committee convened a workshop in June 2019. An invited panel of researchers presented their data to the Committee, who concluded that these data supported moving the disorder to Section II (i.e., among recognized mental disorders). A provisional PGD criteria set was then drafted, and the researchers were tasked with using the best data available to inform the parameters of the PGD diagnostic algorithm, and then to evaluate that algorithm's reliability and validity. The researchers submitted their reports, which found the same PGD diagnostic algorithm to be optimal. The Steering Committee then posted that PGD algorithm online on the American Psychiatric Association's website and opened a

period for public commentary between April and May 2020. After reviewing the research reports and submitted comments, the DSM Steering Committee voted to approve the inclusion of the proposed criteria set for PGD in Section II (see Table 1).

In order to be sensitive to the concern expressed in the public commentary about pathologizing normal grieving and diagnosing a grief-related disorder "too soon" after the death, the newly proposed DSM PGD criteria specify that 12 months must elapse since the death. This time frame contrasts with the ICD-11 diagnostic guidelines for PGD, requiring a period of 6 months[20]. Unlike the PCBD criteria, the DSM criteria for PGD acknowledge the possibility of delayed onset of symptoms at or beyond 12 months post-loss. Furthermore, the PGD criteria require that three of eight C criteria (compared to PCBD's six of 12) be met for a diagnosis, and focus more on "yearning for" and preoccupation with the deceased person and less on "preoccupation with the circumstances of the death" – the latter of which could be captured by a post-traumatic stress disorder (PTSD) diagnosis. Lastly, the PGD diagnosis allows for fewer combinations of symptoms to meet the criteria compared to the PCBD diagnosis. An empirical analysis of the performance of these newly proposed DSM criteria for PGD has not yet been published, nor has the psychometric performance of a scale that maps onto these diagnostic criteria been evaluated.

The PG-13 scale[22] was introduced in the process of developing PGD diagnostic criteria proposed for inclusion in the DSM-5 and ICD-11[8]. The scale contains 13 items that can be used for the dual purposes of assessing grief intensity continuously on a dimensional scale and of diagnosing PGD according to the proposed criteria. Items in the PG-13 are a subset of those in the Inventory of Complicated Grief - Revised (ICG-R)[23], which is a revision of the Inventory of Complicated Grief (ICG)[7]. Included items were those that we found to be informative and unbiased with respect to gender, relationship to the decedent, and time from loss in item response theory-based item analysis, and which mapped onto our criteria for PGD proposed in 2009[8].

The present paper has two primary objectives. First, it aims to introduce and validate the PG-13-R, a revised version of the PG-13 scale that corresponds to the newly proposed DSM criteria for PGD. Second, it aims to validate these new DSM criteria for PGD. Data from the US (the Yale Bereavement Study), the Netherlands (the Utrecht Bereavement Study), and the UK (the Oxford Grief Study) were used to evaluate the psychometric properties of the PG-13-R, determine its agreement with the proposed DSM criteria for PGD, assess the PG-13-R and DSM criteria's predictive validity, and establish a threshold PG-13-R score to identify syndromal level PGD.

METHODS

Datasets and measures

Data to evaluate the performance of PG-13-R items and the newly proposed DSM criteria for PGD came from the Yale Bereavement Study, the Utrecht Bereavement Study, and the Oxford Grief Study. In the Yale Bereavement Study, community-based bereaved individuals were recruited for a field trial of consensus criteria for PGD[8]. In the Utrecht Bereavement Study, community-based bereaved subjects were enrolled by mental health care providers to examine the role of cognitive behavioral factors in bereavement adjustment[24]. In the Oxford Grief Study, a community-based bereaved sample was recruited to investigate loss-related memories, appraisals and coping strategies relevant to the development and maintenance of PGD[25].

Across datasets, participants with at least one assessment at 12-24 months post-loss were included. Participants without

Table 1 Proposed DSM criteria for prolonged grief disorder

A. The death, at least 12 months ago, of a person who was close to the bereaved (for children and adolescents, at least 6 months ago).

B. Since the death, there has been a grief response characterized by one or both of the following, to a clinically significant degree, nearly every day or more often for at least the last month:
1. Intense yearning/longing for the deceased person
2. Preoccupation with thoughts or memories of the deceased person (in children and adolescents, preoccupation may focus on the circumstances of the death)

C. As a result of the death, at least 3 of the following 8 symptoms have been experienced to a clinically significant degree since the death, including nearly every day or more often for at least the last month:
1. Identity disruption (e.g., feeling as though part of oneself has died)
2. Marked sense of disbelief about the death
3. Avoidance of reminders that the person is dead (in children and adolescents, may be characterized by efforts to avoid reminders)
4. Intense emotional pain (e.g., anger, bitterness, sorrow) related to the death
5. Difficulty with reintegration into life after the death (e.g., problems engaging with friends, pursuing interests, planning for the future)
6. Emotional numbness (i.e., absence or marked reduction in the intensity of emotion, feeling stunned) as a result of the death
7. Feeling that life is meaningless as a result of the death
8. Intense loneliness (i.e., feeling alone or detached from others) as a result of the death

D. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

E. The duration and severity of the bereavement reaction clearly exceeds expected social, cultural, or religious norms for the individual's culture and context.

F. The symptoms are not better explained by major depressive disorder, posttraumatic stress disorder, or another mental disorder, or attributable to the physiological effects of a substance (e.g., medication, alcohol) or another medical condition.

complete responses to the DSM proposed PGD symptom items were excluded (total missing rate ~5%), resulting in sample sizes of N=270 (Yale), N=163 (Utrecht) and N=239 (Oxford), for a total of N=672. In participants with more than one assessment, the first evaluation within the time frame was used for item evaluation and threshold sensitivity analysis. The average time post-loss for the first assessment (T1) was 16.7±2.6 months for the Yale study, 16.3±3.7 months for the Utrecht study, and 14.1±1.7 months for the Oxford study. Participants' next available assessment (T2) was used for predictive external validity analysis, with a time lag of 7.4±2.0, 12.0±0 (fixed by design), and 5.3±1.3 months after T1 for Yale (N=48), Utrecht (N=90) and Oxford (N=35) subjects, respectively. All studies were approved by each university's institutional review board.

All three studies assessed the 10 symptom items included in both the newly proposed DSM criteria for PGD and the PG-13-R (yearning, preoccupation, identity disruption, disbelief, avoidance, intense emotional pain, difficulty with reintegration, emotional numbness, feeling that life is meaningless, and intense loneliness). These items (questions Q3 through Q12 in the PG-13-R) were rated using a 5-point Likert scale ranging from "1 = not at all" to "5 = overwhelmingly". In the PG-13-R, the symptom items are accompanied by three gatekeeper items exploring whether the respondent had lost a significant other (Q1), how long ago the death occurred (Q2), and impairment associated with the above symptoms (Q13) (see Figure 1).

In the Yale study, the occurrence of post-traumatic stress disorder (PTSD), major depressive disorder (MDD), generalized anxiety disorder (GAD) and panic disorder was further explored using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I)[26]; suicidal ideation was assessed using the Yale Evaluation of Suicidality (YES)[27]; and quality of life in eight domains (physical functioning, role-physical, bodily pain, general health, vitality, social functioning, role-emotional, and mental health) was evaluated using the SF-12 Health Survey[28].

In the Utrecht study, PTSD symptoms were assessed using the PTSD Symptom Scale Self-Report (PSS-SR)[29], and depressive symptoms by the Beck Depression Inventory (BDI-II)[30]. In the Oxford study, mental health problems were assessed using the Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5)[31], the Patient Health Questionnaire (PHQ-9)[32] and the Work and Social Adjustment Scale (WSAS)[33].

Statistical analysis

The item performance of the PG-13-R symptom items (Q3-Q12) was evaluated within each dataset at T1. This included inspection of item means and variances, percentage of syndromal-level responses (score of 4 or 5), and item-total correlations. Cronbach's alpha of the PG-13-R symptom items was used to evaluate the internal consistency (reliability) of the scale.

A principal components factor analysis was conducted for each dataset at T1 to evaluate the dimensionality of the grief symptoms (Q3-Q12) construct. In each dataset, the eigenvalues obtained from actual PG-13-R symptom item data were compared with those obtained from simulated random data (parallel analysis)[34].

The external validity of the 10-item PG-13-R symptom score at T1, not including the impairment item (Q13), was assessed by its associations with other concurrent (T1, concurrent validity) and follow-up (T2, predictive validity) psychological and behavioral health measures within each dataset, including measures of depression, post-traumatic stress, suicidality, quality of life and functional impairments. Associations with dichotomous variables were estimated as odds ratios (ORs) using logistic regression; associations with continuous variables were evaluated with Pearson's correlation coefficients.

The summed PG-13-R score for the symptom items may range from 10 to 50. The optimal threshold was the symptom score that had the highest degree of agreement (kappa statistic) with fulfillment of B and C symptom criteria for PGD according to DSM within each dataset. The median maximum-agreement threshold score across the datasets was taken to be the overall optimal PG-13-R symptom threshold score.

The associations between the dichotomous PG-13-R diagnostic threshold score plus the three gatekeeper criteria (i.e., loss, timing, impairment) as well as the DSM PGD diagnosis with the mental and behavioral health outcomes at baseline and follow-up were estimated as ORs using logistic regression.

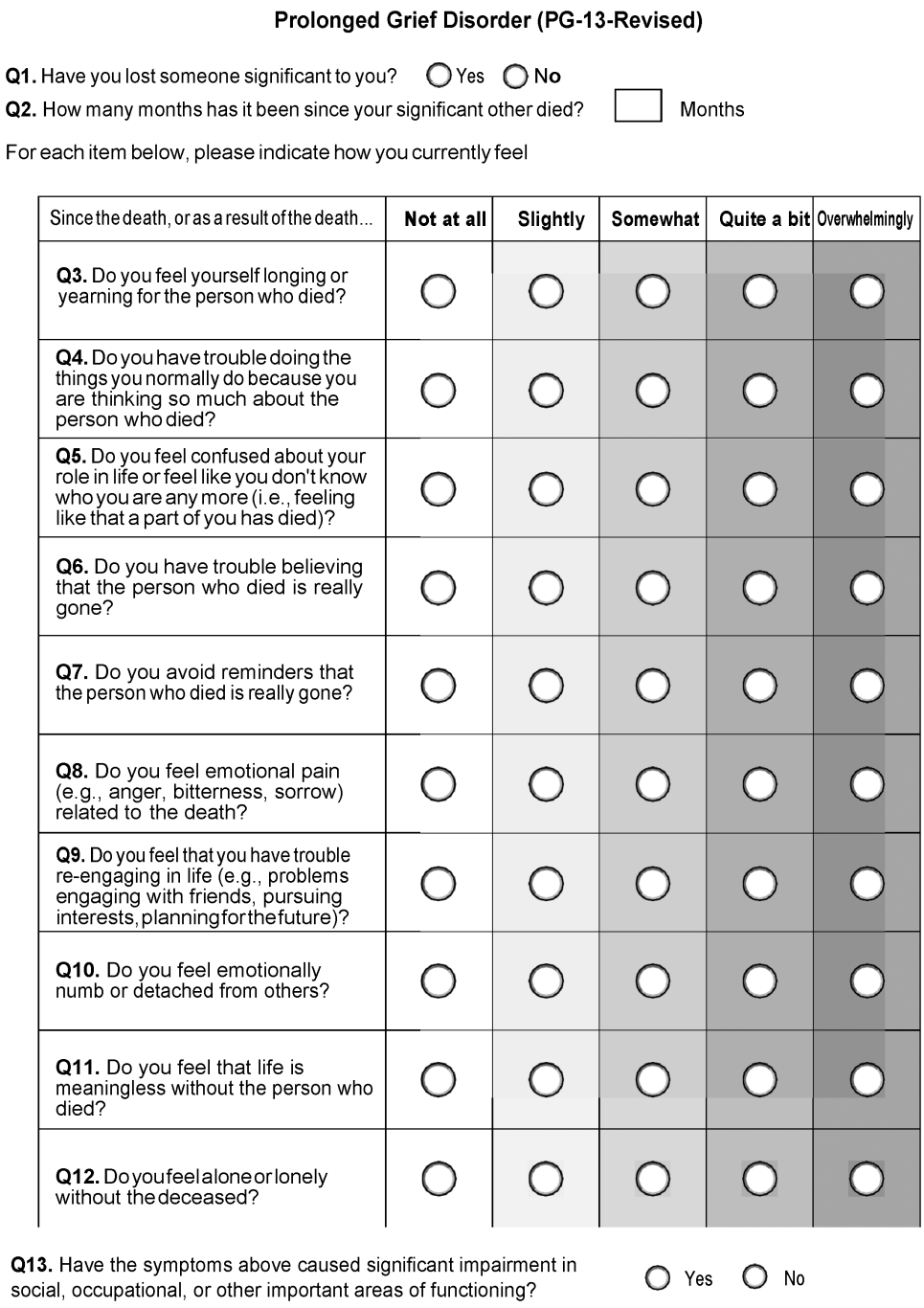
Phi coefficients were used to determine associations between PGD and other diagnosed mental disorders (e.g., MDD, PTSD, GAD in the Yale data). Pearson's correlation coefficients were used to determine stability of PGD and these other mental disorders between T1 and T2.

Statistical analyses for the Yale, Utrecht and Oxford studies were performed using SAS (version 9.4), R (version 3.6.2), and SPSS (version 24), respectively.

RESULTS

Table 2 summarizes the demographic characteristics of the three study samples. The Yale sample was older (mean age: 61.8±13.5 years) than the Utrecht (mean age: 56.2±13.3 years) and Oxford (mean age: 46.9±13.3 years) ones. All three samples were primarily female (73.0 to 79.1%), and most survived a death from natural causes (compared to unnatural causes such as suicide or homicide or accidental) (>90%). The Yale and Oxford samples had higher levels of educational attainment (college or above >60%) than the Utrecht sample (college or above <40%).

The mean scores for each PG-13-R symptom item at T1 are presented in Table 3. They ranged from 1.3 to 2.9 in the Yale study; from 1.9 to 3.8 in the Utrecht study; and from 1.8 to 3.2 in the Oxford study. In general, most item means were located around the center of the range, which is an indication of desirable variability. The avoidance (Q7) and preoccupation (Q4) items were infrequent in the Yale study, where mean scores in general were low. Variances for most items across the datasets were reasonably high, confirming the scale's discriminating ability.



Prolonged Grief Disorder (PG-13-Revised)

Q1. Have you lost someone significant to you? ◯ Yes ◯ No

Q2. How many months has it been since your significant other died? ☐ Months

For each item below, please indicate how you currently feel

Since the death, or as a result of the death...	Not at all	Slightly	Somewhat	Quite a bit	Overwhelmingly
Q3. Do you feel yourself longing or yearning for the person who died?	◯	◯	◯	◯	◯
Q4. Do you have trouble doing the things you normally do because you are thinking so much about the person who died?	◯	◯	◯	◯	◯
Q5. Do you feel confused about your role in life or feel like you don't know who you are any more (i.e., feeling like that a part of you has died)?	◯	◯	◯	◯	◯
Q6. Do you have trouble believing that the person who died is really gone?	◯	◯	◯	◯	◯
Q7. Do you avoid reminders that the person who died is really gone?	◯	◯	◯	◯	◯
Q8. Do you feel emotional pain (e.g., anger, bitterness, sorrow) related to the death?	◯	◯	◯	◯	◯
Q9. Do you feel that you have trouble re-engaging in life (e.g., problems engaging with friends, pursuing interests, planning for the future)?	◯	◯	◯	◯	◯
Q10. Do you feel emotionally numb or detached from others?	◯	◯	◯	◯	◯
Q11. Do you feel that life is meaningless without the person who died?	◯	◯	◯	◯	◯
Q12. Do you feel alone or lonely without the deceased?	◯	◯	◯	◯	◯

Q13. Have the symptoms above caused significant impairment in social, occupational, or other important areas of functioning? ◯ Yes ◯ No

Figure 1 PG-13-Revised (by H.G. Prigerson, J. Xu and P.K. Maciejewski)

Across studies, the PG-13-R symptom items cohered well (Cronbach's alpha=0.83 for Yale, 0.90 for Utrecht, 0.93 for the Oxford study) (see Table 3). This analysis revealed that the deletion of the avoidance item in each of the three datasets resulted in either the same or an improved overall Cronbach's alpha (deleted alpha=0.84, 0.91, 0.93 for the Yale, Utrecht and Oxford, respectively). Similarly, while all the other items had high item-total correlations ($r \geq 0.50$, 0.56 and 0.69 for the three datasets, respectively), the avoidance item was an exception, with lower item-total correlations (r=0.25, 0.33, 0.52, respectively).

As illustrated in Figure 2, principal components factor analysis in combination with parallel analysis for each dataset supported the conclusion that the PG-13-R grief symptoms represent a unidimensional construct. In fact, in each dataset, a single factor emerged whose eigenvalue was substantially larger than 1 and greater than would be expected by chance. This primary factor explained 40.3%, 53.5% and 61.8% of the variance in the Yale, Utrecht and Oxford studies, respectively.

Table 2 Sample characteristics for the three bereavement studies

	Yale Study (N=270)	Utrecht Study (N=163)	Oxford Study (N=239)
Age, years (mean±SD)	61.8±13.5	56.2±13.3	46.9±13.3
Time from loss, months (mean±SD)	16.7±2.6	16.3±3.7	14.1±1.7
Gender, N (%)			
Male	67 (24.9)	44 (27.0)	50 (20.9)
Female	202 (75.1)	119 (73.0)	189 (79.1)
Highest education, N (%)			
Primary/secondary school	103 (38.3)	102 (62.6)	55 (23.0)
College/university	166 (61.7)	61 (37.4)	184 (77.0)
Relationship to the deceased, N (%)			
Partner/spouse	219 (83.6)	128 (78.5)	71 (29.7)
Other	43 (16.4)	35 (21.5)	168 (70.3)
Cause of death, N (%)			
Natural	251 (94.0)	151 (92.6)	218 (91.2)
Unnatural	16 (6.0)	12 (7.4)	21 (8.8)

Results in Table 4 support the external validity of the PG-13-R symptom score, not including the impairment item (Q13). PG-13-R symptom scores at T1 were significantly associated with PTSD, MDD and/or GAD diagnoses or symptomatology and suicidal ideation, both concurrently ($p<0.001$) and predictively ($p<0.05$), in the Yale, Utrecht and Oxford data. PG-13-R symptom scores were significantly associated with poorer role-emotional and mental health domains of quality of life both concurrently and predictively in the Yale data ($p<0.005$), and with work and social adjustment difficulties both concurrently and predictively in the Oxford data ($p<0.001$).

PG-13-R symptom threshold scores of 29, 32 and 30 maximized agreement with meeting DSM symptom criteria for PGD in the Yale (kappa=0.77), Utrecht (kappa=0.86), and Oxford (kappa=0.89) study data, respectively. Overall, a symptom threshold score of 30 optimized agreement with meeting DSM symptom criteria for PGD across the three datasets (kappa ≥0.70 across the datasets).

Results in Table 5 illustrate that using a PG-13-R symptom threshold score of 30 in combination with the impairment criterion demonstrated excellent external validity. The prevalence of PGD using the PG-13-R score ≥30 at T1, including impairment, was 6.3%, 16.6% and 11.3% for the Yale, Utrecht and Oxford samples, respectively. The PG-13-R threshold-based diagnoses of PGD at T1 were significantly ($p<0.05$) associated with PTSD, MDD and/or GAD diagnoses or symptomatology and suicidality in the Yale, Utrecht and Oxford data, concurrently and predictively (except for suicidality in the Utrecht study, where the association was significant only concurrently). PG-13-R threshold-based diagnoses of PGD were significantly associated with poorer role-emotional and mental health domains of quality of life both concurrently and predictively in the Yale data ($p<0.05$), and with work and social adjustment difficulties both concurrently and predictively in the Oxford data ($p\leq0.001$).

Results in Table 6 illustrate that the DSM diagnosis of PGD demonstrated excellent external validity. The prevalence of PGD using DSM criteria at T1 was 4.4%, 15.3% and 10.9% for the Yale, Utrecht and Oxford samples, respectively. DSM diagnoses of PGD at T1 were significantly ($p<0.05$) associated with PTSD, MDD and/or GAD diagnoses or symptomatology concurrently and predictively in the Yale, Utrecht and Oxford data. Interestingly, in the Yale sample, DSM diagnoses of PGD were significantly associated with suicidality predictively (at T2) but not concurrently (at T1). DSM diagnoses of PGD were significantly associated with poorer vitality, role-emotional and mental health domains of quality of life both concurrently and predictively in the Yale data ($p<0.05$), and with work and social adjustment difficulties both concurrently and predictively in the Oxford data ($p\leq0.001$).

In the Yale data (T1, N=270), the DSM PGD diagnosis was found to be distinct from PTSD (phi=0.12), MDD (phi=0.25) and GAD (phi=0.26). Temporal stability (T1, T2 correlation; N=48) was greatest for DSM PGD ($r=0.86$, $p<0.001$), significant for MDD ($r=0.31$, $p=0.030$), and not significant for GAD ($r=-0.07$, $p=0.653$). We could not estimate the temporal stability for PTSD because no participants with T2 data met criteria for PTSD at T1 (and only one study participant met criteria for PTSD at T2).

DISCUSSION

Results of analyses of data from independent Yale, Utrecht and Oxford bereavement studies suggest that both the PG-13-R and the DSM PGD diagnostic criteria possess desirable perfor-

Table 3 PG-13-R item performance and scale internal consistency

		Yale Study (N=270) Alpha=0.83				Utrecht Study (N=163) Alpha=0.90				Oxford Study (N=239) Alpha=0.93			
PGD-13-R symptom item		Rate	Score (mean±SD)	Deleted alpha	Corrected item-total correlation	Rate	Score (mean±SD)	Deleted alpha	Corrected item-total correlation	Rate	Score (mean±SD)	Deleted alpha	Corrected item-total correlation
Q3	Yearning	35.2%	2.9±1.3	0.81	0.59	68.1%	3.8±0.9	0.89	0.65	34.7%	3.1±1.2	0.92	0.75
Q4	Preoccupation	2.6%	1.3±0.8	0.82	0.53	26.4%	2.9±0.9	0.88	0.72	36.4%	3.2±1.2	0.92	0.74
Q5	Identity disruption	22.6%	2.2±1.4	0.81	0.58	42.3%	3.1±1.3	0.88	0.71	33.9%	2.7±1.4	0.92	0.76
Q6	Disbelief	6.3%	1.5±1.0	0.82	0.50	27.0%	2.9±1.2	0.89	0.56	33.9%	2.8±1.3	0.92	0.69
Q7	Avoidance	2.6%	1.3±0.7	0.84	0.25	5.5%	1.9±1.0	0.91	0.33	11.7%	1.8±1.2	0.93	0.52
Q8	Intense emotional pain	10.7%	2.1±1.0	0.82	0.51	49.7%	3.4±1.0	0.88	0.75	26.8%	3.0±1.1	0.92	0.74
Q9	Difficulty with reintegration	9.3%	1.8±1.1	0.82	0.52	26.4%	2.7±1.2	0.89	0.67	17.6%	2.1±1.3	0.92	0.76
Q10	Emotional numbness	7.4%	1.5±1.0	0.82	0.50	16.6%	2.4±1.1	0.88	0.70	21.8%	2.4±1.2	0.92	0.76
Q11	Life is meaningless	16.3%	2.0±1.2	0.81	0.61	39.3%	3.1±1.1	0.88	0.76	18.8%	2.1±1.3	0.92	0.80
Q12	Intense loneliness	33.3%	2.8±1.3	0.81	0.61	51.5%	3.4±1.1	0.89	0.65	26.4%	2.5±1.3	0.92	0.76

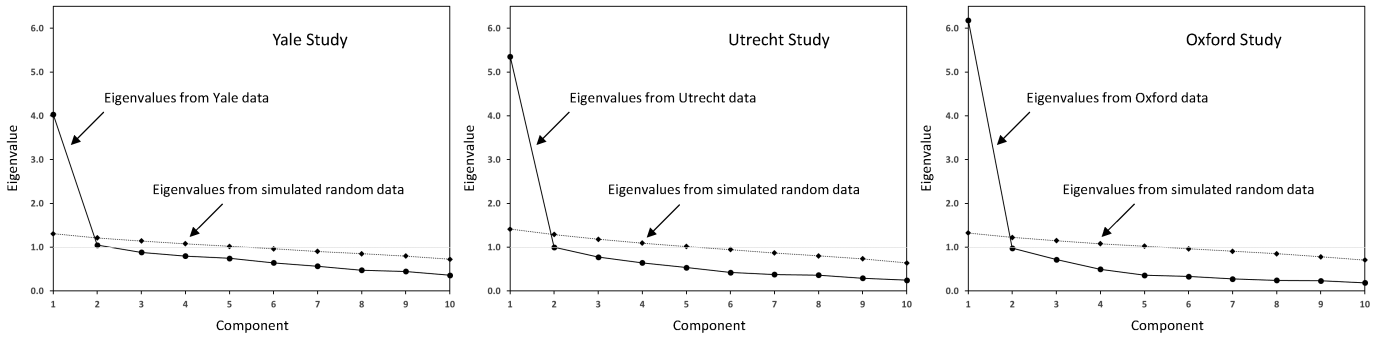


Figure 2 Eigenvalues from principal components factor analysis for PG-13-R symptom items and comparison to eigenvalues from parallel analysis (median of 100 replications of simulated random data) for the three studies

mance characteristics. The symptoms were uniformly higher in the Utrecht sample, which is unsurprising given that this sample was recruited via mental health professionals. Across all three datasets, the preoccupation item was infrequently reported at syndromal levels. This was most noticeable in the Yale data, where syndromal level preoccupation was found in <3% of the sample. Such low prevalence is an undesirable property for a "gatekeeper" item, which suggests that it might be prefer-

Table 4 Concurrent and predictive validity of PG-13-R symptom score (excluding impairment)

	PG-13-R symptom score (sum of 10 items) at T1							
	Concurrent (T1) outcome				Predictive (T2) outcome			
Yale Study	**N**	**%**	**OR**	**p**	**N**	**%**	**OR**	**p**
Post-traumatic stress disorder (PTSD)	270	1.5	1.23	0.007	48	2.1	n.e.	
Major depressive disorder (MDD)	270	5.9	1.16	<0.001	48	4.2	n.e.	
Generalized anxiety disorder (GAD)	270	3.3	1.24	<0.001	48	6.3	1.26	0.032
PTSD, MDD or GAD	270	8.1	1.18	<0.001	48	8.3	1.57	0.033
Yale Evaluation of Suicidality (YES): atleast one positive response	269	17.5	1.18	<0.001	48	18.8	1.13	0.032
Yale Study	**N**	**mean±SD**	**r**	**p**	**N**	**mean±SD**	**r**	**p**
SF-12: Physical functioning	269	5.1±1.3	–0.10	0.109	48	4.7±1.7	0.10	0.518
SF-12: Role-physical	270	3.5±0.8	–0.12	0.048	48	3.3±0.9	–0.05	0.715
SF-12: Bodily pain	270	4.5±0.9	–0.24	<0.001	48	4.4±1.0	–0.10	0.513
SF-12: General health	270	3.6±1.0	–0.25	<0.001	48	3.6±1.1	–0.21	0.162
SF-12: Vitality	270	2.6±1.3	–0.42	<0.001	48	2.4±1.3	–0.23	0.110
SF-12: Social functioning	270	4.3±1.0	–0.41	<0.001	48	4.4±1.0	–0.13	0.373
SF-12: Role-emotional	270	3.6±0.7	–0.45	<0.001	48	3.6±0.7	–0.42	0.003
SF-12: Mental health	270	7.4±2.0	–0.60	<0.001	48	7.3±2.1	–0.61	<0.001
Utrecht Study	**N**	**mean±SD**	**r**	**p**	**N**	**mean±SD**	**r**	**p**
PSS-SR	158	31.4±8.4	0.77	<0.001	85	26.3±6.5	0.68	<0.001
BDI-II	153	34.6±8.8	0.75	<0.001	82	31.1±7.8	0.53	<0.001
BDI-II: Suicidality (item 9)	161	1.2±0.4	0.34	<0.001	90	1.2±0.4	0.29	0.005
Oxford Study	**N**	**mean±SD**	**r**	**p**	**N**	**mean±SD**	**r**	**p**
PCL-5	239	23.5±17.8	0.78	<0.001	35	20.7±16.8	0.53	0.001
PHQ-9	239	8.9±7.1	0.68	<0.001	35	7.8±7.1	0.60	<0.001
PHQ-9: Suicidality (item 9)	239	0.4±0.8	0.52	<0.001	35	0.3±0.8	0.55	0.001
WSAS	237	12.8±9.4	0.77	<0.001	35	11.5±9.7	0.64	<0.001

OR – odds ratio, SF-12 – Medical Outcomes Short-Form-12, PSS-SR – PTSD Symptom Scale Self-Report, BDI-II – Beck Depression Inventory, PCL-5 – Post-traumatic Stress Disorder Checklist for DSM-5, PHQ-9 – Patient Health Questionnaire-9, WSAS – Work and Social Adjustment Scale, n.e. – not estimated

Table 5 Concurrent and predictive validity of prolonged grief disorder (PGD) diagnosis using PG-13-R symptom threshold score of 30 and including impairment

	PG-13-R threshold score-based diagnosis of PGD at T1					
	Concurrent (T1) outcome			Predictive (T2) outcome		
Yale Study	**N**	**OR**	**p**	**N**	**OR**	**p**
Post-traumatic stress disorder (PTSD)	270	54.00	0.001	48	n.e.	
Major depressive disorder (MDD)	270	18.98	<0.001	48	n.e.	
Generalized anxiety disorder (GAD)	270	15.26	<0.001	48	28.00	0.014
PTSD, MDD or GAD	270	20.77	<0.001	48	63.00	0.002
Yale Evaluation of Suicidality (YES): atleast one positive response	269	3.71	0.012	48	9.25	0.028
Yale Study	**N**	**r**	**p**	**N**	**r**	**p**
SF-12: Physical functioning	269	–0.05	0.433	48	0.10	0.509
SF-12: Role-physical	270	–0.08	0.216	48	0.03	0.857
SF-12: Bodily pain	270	–0.24	<0.001	48	0.00	0.992
SF-12: General health	270	–0.17	0.006	48	–0.14	0.351
SF-12: Vitality	270	–0.29	<0.001	48	–0.20	0.183
SF-12: Social functioning	270	–0.34	<0.001	48	0.00	0.992
SF-12: Role-emotional	270	–0.38	<0.001	48	–0.31	0.034
SF-12: Mental health	270	–0.30	<0.001	48	–0.38	0.007
Utrecht Study	**N**	**r**	**p**	**N**	**r**	**p**
PSS-SR	158	0.48	<0.001	85	0.39	<0.001
BDI-II	153	0.47	<0.001	82	0.39	<0.001
BDI-II: Suicidality (item 9)	161	0.18	0.024	90	0.19	0.070
Oxford Study	**N**	**r**	**p**	**N**	**r**	**p**
PCL-5	239	0.51	<0.001	35	0.58	<0.001
PHQ-9	239	0.45	<0.001	35	0.59	<0.001
PHQ-9: Suicidality (item 9)	239	0.54	<0.001	35	0.79	<0.001
WSAS	237	0.49	<0.001	35	0.52	0.001

OR – odds ratio, SF-12 – Medical Outcomes Short-Form-12, PSS-SR – PTSD Symptom Scale Self-Report, BDI-II – Beck Depression Inventory, PCL-5 – Post-traumatic Stress Disorder Checklist for DSM-5, PHQ-9 – Patient Health Questionnaire-9, WSAS – Work and Social Adjustment Scale, n.e. – not estimated

able to have only "yearning" in the B criterion for PGD in the DSM.

The weakest performing item across all the datasets was "avoidance of reminders that the deceased is dead". Item-total correlations for this item were the lowest of all items examined, and Cronbach's alpha improved in the Yale and Utrecht datasets when the avoidance item was removed. It may be the case that avoidance is more a function of fear, with roots in psychological trauma, than a function of grief, with roots in an attachment disturbance. Alternately, there may be a need to revise the item to focus on what aspect of the loss is avoided (e.g., avoidance of reminders of the death as an event may be more a traumatic stress response, while avoidance of reminders that the deceased is truly gone may be the most relevant to disturbed grief). Future studies are needed to confirm whether the avoidance item should be retained, revised or discarded.

In accordance with the high internal consistency of the PG-13-R symptom items, factor analyses revealed that the scale is unidimensional. These results are consistent with those reported for the Inventory of Complicated Grief[7] and its Dutch version[35], and for the original PG-13[8] and its Swedish[36], Chinese[37], Portuguese[38] and many other translated versions[e.g.,39]. Though some studies have found multiple factors in this set of grief symptoms[40], these exceptions occurred only in highly comorbid treatment-seeking and treatment-receiving samples and a military family study, not in community-based samples. The preponderance of evidence supports the unidimensional nature of PGD symptomatology as found in the three studies examined here.

Because the Yale data alone included structured clinical interviews that yielded diagnoses of mental disorders, only these data could be used to assess PGD's overlap with other disorders and to compare diagnostic stability over time. The results demonstrated minimal overlap between PGD and competing diag-

Table 6 Concurrent and predictive validity of newly proposed DSM diagnostic criteria for prolonged grief disorder (PGD)

	DSM diagnosis for PGD at T1					
	Concurrent (T1) outcome			Predictive (T2) outcome		
Yale Study	**N**	**OR**	**p**	**N**	**OR**	**p**
Post-traumatic stress disorder (PTSD)	270	7.73	0.087	48	n.e.	
Major depressive disorder (MDD)	270	10.25	0.001	48	n.e.	
Generalized anxiety disorder (GAD)	270	14.00	0.001	48	43.00	0.008
PTSD, MDD or GAD	270	10.13	<0.001	48	129.00	0.002
Yale Evaluation of Suicidality (YES): atleast one positive response	269	1.61	0.486	48	19.00	0.017
Yale Study	**N**	**r**	**p**	**N**	**r**	**p**
SF-12: Physical functioning	269	0.00	0.965	48	0.05	0.737
SF-12: Role-physical	270	–0.02	0.805	48	0.15	0.316
SF-12: Bodily pain	270	–0.14	0.024	48	0.03	0.828
SF-12: General health	270	–0.09	0.134	48	–0.25	0.086
SF-12: Vitality	270	–0.20	0.001	48	–0.31	0.032
SF-12: Social functioning	270	–0.32	<0.001	48	–0.05	0.760
SF-12: Role-emotional	270	–0.28	<0.001	48	–0.38	0.008
SF-12: Mental health	270	–0.19	0.002	48	–0.45	0.001
Utrecht Study	**N**	**r**	**p**	**N**	**r**	**p**
PSS-SR	158	0.48	<0.001	85	0.39	<0.001
BDI-II	153	0.47	<0.001	82	0.39	<0.001
BDI-II: Suicidality (item (9)	161	0.20	0.011	90	0.19	0.070
Oxford Study	**N**	**r**	**p**	**N**	**r**	**p**
PCL-5	239	0.48	<0.001	35	0.58	<0.001
PHQ-9	239	0.43	<0.001	35	0.59	<0.001
PHQ-9: Suicidality (item 9)	239	0.54	<0.001	35	0.79	<0.001
WSAS	237	0.48	<0.001	35	0.52	0.001

OR – odds ratio, SF-12 – Medical Outcomes Short-Form-12, PSS-SR – PTSD Symptom Scale Self-Report, BDI-II – Beck Depression Inventory, PCL-5 – Post-traumatic Stress Disorder Checklist for DSM-5, PHQ-9 – Patient Health Questionnaire-9, WSAS – Work and Social Adjustment Scale, n.e. – not estimated

noses (i.e., PTSD, MDD and GAD) (phi=0.12-0.26), suggesting its distinctness from mental disorders already included in Section II of the DSM. In addition, the PGD diagnosis proved remarkably stable between the T1 and T2 assessments approximately 7.4 months apart (r=0.86, p<0.001) and much more stable than MDD (r=0.31, p=0.030) or GAD (r=–0.07, p=0.653). These results suggest that PGD fills a diagnostic gap left open by other mental disorders secondary to bereavement. Furthermore, they show that PGD is likely not to remit with the passage of time and to require specialized treatment.

With respect to concurrent and predictive validity, we first sought to determine if the intensity of PGD symptoms alone (excluding impairment, the DSM criterion D) would predict distress and dysfunction. The PG-13-R symptom score proved to be highly predictive of both concomitant and future distress and dysfunction, indicating that the severity of these symptoms themselves is pathological even without "stacking the deck" by requiring the fulfillment of an impairment criterion.

Next, we sought to determine the threshold score of these symptoms that optimized agreement with meeting the B and C symptom criteria for PGD in the DSM. We found that the PG-13-R symptom score of 30 was the optimal threshold score across the three datasets. Finally, we sought to evaluate and compare the concurrent and predictive validity of diagnoses for PGD using the PG-13-R threshold diagnostic score, and, separately, using the DSM criteria B and C, each in combination with meeting the impairment criterion. Results indicated that both performed extremely well in predicting substantial current and future maladaptive behaviors and outcomes.

A strength of this study was the use of three independent community-based bereavement cohort samples. A possible weakness was the fact that the wording for the PG-13-R questions was slightly different in the three studies. The Utrecht sample was uniformly more distressed than the Yale and Oxford samples, which is understandable given that Utrecht participants were recruited via mental health care providers, who are

more likely to encounter distressed bereaved individuals. The Yale and Utrecht samples were predominantly comprised of widowed persons, which was not the case for the Oxford sample (~80% to ~30%, respectively). With respect to ethnicity, all three samples nearly entirely consisted of people of Caucasian ethnicity.

In conclusion, three independent community-based samples showed that the PG-13-R is a reliable tool for assessing grief symptoms on a dimensional scale. A PG-13-R symptom score of 30 or greater identifies syndromal-level PGD symptomatology. The dimensional PG-13-R symptom score, the diagnosis of PGD using the PG-13-R threshold symptom score of 30 plus the impairment criterion, and the diagnosis of PGD using newly proposed DSM criteria all predict enduring distress and dysfunction. Thus, the PG-13-R and the newly proposed DSM criteria for PGD appear to be reliable and valid measures for the classification of bereaved individuals with maladaptive grief responses. Future research is needed to confirm their psychometric performance in more ethnically diverse samples.

ACKNOWLEDGEMENTS

This work was supported by grants from the US National Cancer Institute (nos. CA197730 and CA218313), the US National Institute of Minority Health and Health Disparities (no. MD007652), the US National Institute of Nursing Research (no. NR018693), the US National Institute on Aging (no. AG049666), the US National Institute of Mental Health (no. MH121886), the US National Center for Advancing Translational Science (no. TR002384), the Wellcome Trust (no. 200796), the National Institute for Health Research (NIHR) Biomedical Research Centre, based at Oxford University Hospitals National Health System (NHS) Trust (no. NIHR-INF-0085), and the Oxford Health NIHR Biomedical Research Centre. The views expressed are those of the authors and not necessarily those of the supporting institutions. The authors are grateful to A. Ehlers for her support and supervision of the Oxford Grief Study. A smart pdf version of the PG-13-R is available at https://endoflife.weill.cornell.edu/sites/default/files/file_uploads/pg-13-r.pdf.

REFERENCES

1. Freud S. Mourning and melancholia. In: Rickman J (ed). A general selection from the works of Sigmund Freud. New York: Doubleday, 1957:124-40.
2. Breen LJ, Penman EL, Prigerson HG et al. Can grief be a mental disorder?: An exploration of public opinion. J Nerv Ment Dis 2015;203:569-73.
3. Bambauer KZ, Prigerson HG. The Stigma Receptivity Scale and its association with mental health service use among bereaved older adults. J Nerv Ment Dis 2006;194:139-41.
4. Tang S, Chow AYM, Breen LJ et al. Can grief be a mental disorder? An online survey on public opinion in mainland China. Death Stud 2020;44: 152-9.
5. Johnson JG, First MB, Block S et al. Stigmatization and receptivity to mental health services among recently bereaved adults. Death Stud 2009;33:691-711.
6. Prigerson HG, Frank E, Kasl SV et al. Complicated grief and bereavement-related depression as distinct disorders: preliminary empirical validation in elderly bereaved spouses. Am J Psychiatry. 1995;152:22-30.
7. Prigerson HG, Maciejewski PK, Reynolds CF 3rd et al. Inventory of Complicated Grief: a scale to measure maladaptive symptoms of loss. Psychiatry Res 1995;59:65-79.
8. Prigerson HG, Horowitz MJ, Jacobs SC et al. Prolonged grief disorder: psychometric validation of criteria proposed for DSM-V and ICD-11 PLoS Med 2009;6:e1000121.
9. Boelen PA, van den Bout J. Complicated grief, depression, and anxiety as distinct postloss syndromes: a confirmatory factor analysis study. Am J Psychiatry 2005;162:2175-7.
10. Kakarala SE, Roberts KE, Rogers M et al. The neurobiological reward system in prolonged grief disorder (PGD): a systematic review. Psychiatry Res Neuroimaging 2020;303:111135.
11. Boelen PA, Reijntjes A, Djelantik AAAMJ et al. Prolonged grief and depression after unnatural loss: latent class analyses and cognitive correlates. Psychiatry Res 2016;240:358-63.
12. Johnson JG, Zhang B, Greer JA et al. Parental control, partner dependency, and complicated grief among widowed adults in the community. J Nerv Ment Dis 2007;195:26-30.
13. Wright AA, Keating NL, Balboni TA et al. Place of death: correlations with quality of life of patients with cancer and predictors of bereaved caregivers' mental health. J Clin Oncol 2010;28:4457-64.
14. Maciejewski PK, Zhang B, Block SD et al. An empirical examination of the stage theory of grief. JAMA 2007;297:716-23.
15. Prigerson HG, Bierhals AJ, Kasl SV et al. Traumatic grief as a risk factor for mental and physical morbidity. Am J Psychiatry 1997;154:616-23.
16. Maciejewski PK, Maercker A, Boelen PA et al. "Prolonged grief disorder" and "persistent complex bereavement disorder", but not "complicated grief", are one and the same diagnostic entity: an analysis of data from the Yale Bereavement Study. World Psychiatry 2016;15:266-75.
17. Reynolds CF 3rd, Miller MD, Pasternak RE et al. Treatment of bereavement-related major depressive episodes in later life: a controlled study of acute and continuation treatment with nortriptyline and interpersonal psychotherapy. Am J Psychiatry 1999;156:202-8.
18. Shear K, Frank E, Houck PR et al. Treatment of complicated grief: a randomized controlled trial. JAMA 2005;293:2601-8.
19. Maercker A, Brewin CR, Bryant RA et al. Diagnosis and classification of disorders specifically associated with stress: proposals for ICD-11. World Psychiatry 2013;12:198-206.
20. World Health Organization. ICD-11 guidelines. https://gcp.network/en/.
21. Boelen PA, Lenferink LIM. Comparison of six proposed diagnostic criteria sets for disturbed grief. Psychiatry Res (in press).
22. Prigerson HG, Maciejewski PK. Prolonged Grief Disorder (PG-13) scale. Boston: Dana-Farber Cancer Institute, 2008.
23. Prigerson HG, Jacobs S. Traumatic grief as a distinct disorder: a rationale, consensus criteria, and a preliminary empirical test. In: Stroebe MS, Hansson RO, Stroebe W et al (eds). Handbook of bereavement research: consequences, coping, and care. Washington: American Psychological Association, 2001:613-45.
24. Boelen PA, de Keijser J, Smid G. Cognitive-behavioral variables mediate the impact of violent loss on post-loss psychopathology. Psychol Trauma 2015;7:382-90.
25. Smith KV, Ehlers A. Cognitive predictors of grief trajectories in the first months of loss: a latent growth mixture model. J Consult Clin Psychol 2020;88:93-105.
26. First MB, Spitzer RL, Gibbon M et al. Structured Clinical Interview for DSM-IV Axis I Disorders, Non-Patient Version (SCID-V-NP). New York: Biometrics Research Department, New York State Psychiatric Institute, 1995.
27. Latham AE, Prigerson HG. Suicidality and bereavement: complicated grief as psychiatric disorder presenting greatest risk for suicidality. Suicide Life Threat Behav 2004;34:350-62.
28. Ware JE, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. Med Care 1992;30:473-83.
29. Engelhard IM, Arntz A, van den Hout MA. Low specificity of symptoms on the post-traumatic stress disorder (PTSD) symptom scale: a comparison of individuals with PTSD, individuals with other anxiety disorders and individuals without psychopathology. Br J Clin Psychol 2007;46:449-56.
30. Beck AT, Steer RA, Brown GK. Manual for the Beck Depression Inventory-II. San Antonio: Psychological Corporation, 1996.
31. Weathers F, Litz B, Keane T et al. The PTSD Checklist for DSM-5 (PCL-5). www.ptsd.va.gov.
32. Kroencke K, Spitzer R, Williams J. The PHQ-9: validity of a brief depression severity measure. J Gen Int Med 2001;16:606-13.
33. Mundt JC, Marks IM, Shear MK et al. The Work and Social Adjustment Scale: a simple measure of impairment in functioning. Br J Psychiatry 2002;180:461-4.
34. Kabacoff R. Determining the dimensionality of data: a SAS Macro for parallel analysis. SAS Users Group International 28, Seattle, March 2003.
35. Boelen PA, Van Den Bout J, De Keijser J et al. Reliability and validity of the Dutch version of the Inventory of Traumatic Grief (ITG). Death Studies 2003;27:227-47.

36. Pohlkamp L, Kreicbergs U, Prigerson HG et al. Psychometric properties of the Prolonged Grief Disorder-13 (PG-13) in bereaved Swedish parents. Psychiatry Res 2018;267:560-5.
37. He L, Tang S, Yu W et al. The prevalence, comorbidity and risks of prolonged grief disorder among bereaved Chinese adults. Psychiatry Res 2014;219:347-52.
38. Delalibera M, Coelho A, Barbosa A. Validação do instrumento de avaliação do luto prolongado para a população portuguesa. Acta Med Port 2011;24:935-42.
39. Morina N, Rudari V, Bleichhardt G et al. Prolonged grief disorder, depression, and posttraumatic stress disorder among bereaved Kosovar civilian war survivors: a preliminary investigation. Int J Soc Psychiatry 2010;56:288-97.
40. Fisher JE, Mauro C, Cozza SJ et al. Examination of factor structure of the inventory of complicated grief (ICG) in a sample of bereaved military family members with persistent and elevated grief. Int J Methods Psychiatr Res 2017;26:e1571.

DOI:10.1002/wps.20823