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Research paper

Comparison of proposed diagnostic criteria for pathological grief using a sample of elderly bereaved spouses in Denmark: **Perspectives** on future bereavement research

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ABSTRACT

Background: A distinct grief-specific disorder is included in the *ICD-11*. Lack of clarity remains regarding whether different proposed diagnostic criteria capture similar or different diagnostic entities. Our aim was to examine the specificity of four proposed diagnostic criteria-sets for pathological grief in a population-based sample.

Methods: Participants were 206 conjugally bereaved elderly Danes (59% female; mean age = 72.5 years, *SD* = 4.2; range 65–81) who completed self-report questionnaires six months post-loss. The main measure was the Danish version of Inventory of Complicated Grief-Revised.

Results: Results indicate substantial agreement between Prolonged Grief Disorder (PGD), Persistent Complex Bereavement Disorder (PCBD) and ICD-11-PGD (kappa's = 0.69–0.84), which found 6–9% of cases tested positive for pathological grief. Complicated Grief (CG) was partly in agreement with the three other symptom-diagnostic tests (kappa's = 0.13–0.20), and the prevalence-rate of pathological grief was 48%.

Limitations: The low response-rate of 39%. The selective inclusion of data ≥6 months post-loss prevents a comparison of acute and prolonged grief reactions. Using self-reported data, not diagnostic interviews, challenges the validity of our findings. Using a sample of elderly people may limit the generalizability of our results to other age groups.

Conclusion: We suggest that PGD, PCBD and ICD-11-PGD may be more discriminative in identifying a specific grief-related psychopathology, while CG may identify a broader set of grief reactions.

1. Background

During the last decades bereavement research has repeatedly demonstrated the existence of a mental disorder specific to grief reactions following the loss of a loved one (Boelen et al., 2010; Boelen and Prigerson, 2013; Golden and Dalgleish, 2010; Lundorff et al., 2017; Maercker et al., 2013; Prigerson et al., 2009; Shear, 2015; Shear et al., 2011). This disorder is believed to affect approximately one in ten bereaved adults (Lundorff et al., 2017), is distinct from other types of complicated grief reactions, such as bereavement-related Post Traumatic Stress Disorder (PTSD), depression, and anxiety disorders (Barnes et al., 2012; Boelen et al., 2010, 2003) and is characterized by intense symptoms of grief that persist at least six months post-loss and leads to functional impairment (Golden and Dalgleish, 2010; Maercker et al., 2013; Prigerson et al., 2009). With the release of *DSM-5* in 2013, Persistent Complex Bereavement Disorder (PCBD) was included as a disorder for further study, which allows immediate diagnosis as “other specified trauma/stressor related disorders” (American Psychiatric Association, 2013; Wakefield, 2013). PCBD incorporates two overlapping yet different proposals for a bereavement-specific mental disorder (Friedman, 2016; Wakefield, 2013). These proposals, each with their own empirical track record, were developed by two major research groups, one lead by Katherine Shear who label the disorder Complicated Grief (CG) (Cozza et al., 2016; Mauro et al., 2017; Shear,

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2015; Shear et al., 2011; Simon et al., 2011) and the other lead by Holly Prigerson, who use the label Prolonged Grief Disorder (PGD) (Boelen and Prigerson, 2013; Jacobs et al., 2000; Lichtenthal et al., 2004; Maciejewski and Prigerson, 2017; Maciejewski et al., 2016; Prigerson et al., 2009; Prigerson and Maciejewski, 2017). These research groups agree on the time criterion of ≥6 months post-loss as well as the two key characteristics of the disorder: A) separation distress, such as yearning for the deceased, and/or preoccupation with the deceased and B) symptoms of intense emotional pain (Prigerson et al., 2009; Shear et al., 2011). These two characteristics are also included in PCBD in an attempt to breach the gap between the two proposals along with including new elements, such as a 12 month duration criteria (American Psychiatric Association, 2013; Wakefield, 2013). This resulted in a proposal with no independent empirical track record.(Wakefield, 2013) It appears the *DSM-5* workgroup attempted to consolidate competing proposals, but ended up with an alternative proposal in need of further study and validation.

CG, as defined by Shear et al. (2011) was developed using interviews with clinical samples and developed to identify bereaved people in need of clinical attention more so than to develop a specific set of diagnostic characteristics or symptoms, that is, a diagnosis (Cozza et al., 2016; Reynolds et al., 2017). The specific criteria for CG include: A) at least one of four symptoms of separation distress (yearning, loneliness, experiencing that life is meaningless, and preoccupation with the loss), as well as B) at least two of eight additional grief-related symptoms (Mauro et al., 2017; Shear et al., 2011.) Some of these additional symptoms incorporate two or more sub-symptoms, e.g. "Persistent difficulty trusting *or* caring about other people *or* feeling intensely envious of others who have not experienced a similar loss" (Shear et al., 2011, p 110). This may increase the likelihood of meeting CG criteria and potentially risk overestimating the true cases of a grief-specific disorder. CG has been found to efficiently identify people seeking grief-specific treatment in a general group of people seeking treatment, and to correctly identify clinical cases in a population of bereaved military family members as well as non-cases of CG in healthy comparison groups (Cozza et al., 2016; Mauro et al., 2017; Reynolds et al., 2017). These studies were based on self-report data. When applying the PGD and PCBD criteria to their data, the research group found that PGD and PCBD did not identify any false positive cases of the disorder in the healthy controls, but that these two entities only identified approximately 60% of the cases considered to be clinically significant (i.e., treatment-seeking) and none in the non-clinical comparison groups. CG identified 92–99% with CG in the clinical groups and none in the non-clinical comparison groups (Cozza et al., 2016; Mauro et al., 2017). Based on these results, the Shear-group concluded that both PCBD and PGD are too restrictive and risk overlooking true clinical cases, and that CG is better suited for identifying people in need of treatment (Cozza et al., 2016; Mauro et al., 2017; Reynolds et al., 2017).

PGD, as defined by Prigerson and colleagues (Boelen and Prigerson, 2013; Maciejewski and Prigerson, 2017; Prigerson et al., 2009), was developed with the aim of reaching high diagnostic accuracy (i.e., few false negatives) and high specificity (i.e., few false positives), using a set of specific diagnostic criteria (Prigerson et al., 2009; Prigerson and Maciejewski, 2017). In accordance with CG, PGD contains two main diagnostic criteria: (A) separation distress, such as longing and yearning for or preoccupation with the deceased and (B) intense emotional pain demonstrated by cognitive, emotional, and behavioural symptoms (Prigerson et al., 2009). PGD criteria were derived using mainly community-based samples, which had relatively low response rates but still appeared to be representative of the general population of bereaved Americans (Maciejewski et al., 2016; Prigerson et al., 2009). Community sampling was used to enable the study of normal as well as prolonged, pathological grief reactions (Prigerson et al., 2009).

With the recent release of *ICD-11*, the World Health Organisation (WHO) included PGD as a disorder specifically associated with distress entitled "6B42 Prolonged Grief Disorder" (ICD-11, 2018). ICD-11-PGD does not specify the number of criteria that must be fulfilled (ICD-11, 2018), but it has been suggested that a diagnosis of ICD-11-PGD requires the presence of one of two symptoms of separation distress and three out of five symptoms of intense emotional pain (Maciejewski et al., 2016). Recently, the Shear-group found that ICD-11-PGD and PGD identify different subgroups as having PGD when applying four or fewer diagnostic criteria in ICD-11-PGD, but close to the same group when applying five or more (Mauro et al., 2018).

Maciejewski and colleagues, who are involved in the Prigerson-group, compared the original version of PGD (Prigerson et al., 2009), with PCBD, ICD-11-PGD (ICD-11, 2018), and CG (Maciejewski et al., 2016). They found a prevalence-rate of 12–14%, high diagnostic specificity, comparable predictive validity, and high pair-wise agreement between PGD, PCBD, and ICD-11-PGD (Maciejewski et al., 2016). In contrast, CG was found to have a prevalence-rate of 30%, low diagnostic specificity, moderate agreement with the other proposals, and low predictive validity (Maciejewski et al., 2016). An application of the CG criteria to their data yielded more false-positive than true-positive cases, and they concluded that PGD, PBCD, and ICD-11-PGD identified the same diagnostic entity while CG did not. Due to the high prevalence-rate found by CG in a community sample, this raises the issue as to whether CG may potentially risk pathologizing normal grief reactions (Maciejewski et al., 2016).

The disagreement about diagnostic criteria for a grief-specific mental disorder may cause confusion and pose barriers in efforts to adequately identify, study, and treat the condition. To support its implementation into clinical practice, it is essential that the diagnosis capture the bereaved people with the disorder with a high level of sensitivity as well as specificity. Furthermore, it is important to compare definitions of pathological grief to establish whether research based on somewhat different conceptualizations of pathological grief is equivalent. Previous work has been done in attempt to accomplish this (Maciejewski and Prigerson, 2017; Mauro et al., 2017; Prigerson et al., 2009; Shear et al., 2011). However, the two main research groups led by Katherine Shear (Cozza et al., 2016; Mauro et al., 2017; Shear et al., 2011) and Holly Prigerson (Boelen and Prigerson, 2013; Maciejewski and Prigerson, 2017; Maciejewski et al., 2016; Prigerson and Maciejewski, 2017) primarily conducted these studies in isolation, each group occasionally reusing their respective datasets. Thus, there is a pressing need to test the methods applied in previous studies in independent datasets and by independent research groups (Patil et al., 2016).

The aim of the present study was to replicate Maciejewski and colleagues' study from 2016 in a Danish, population-based sample of bereaved adults. As such, we wanted to investigate the diagnostic specificity of PGD in a sample independent of the Maciejewsky and colleagues' original study and other similar studies (Mauro et al., 2017; Reynolds et al., 2017). Specifically, we investigated the specificity of different diagnostic criteria for pathological grief and the level of agreement between these criteria. We also aimed to explore and discuss methodology across existing studies and offer suggestions for future research.

2. Methods

2.1. Procedure

The data in this study originated from a large, longitudinal survey study which included all persons between the ages of 65 and 80 years, who lived in the County of Aarhus, Denmark, and who lost their spouse during 2006 (O'Connor, 2010a). Participants were identified via the Danish Civil Registration System (CPR) and contacted eight weeks after their loss, with an invitation to participate in the study. The project was approved by the regional ethics committee (no.: 20030296). Informed consent was obtained and participants completed questionnaires at 2, 6, 13, 18, and 48 months post spousal death.

Table 1
Items included in symptom-diagnostic tests.

Symptom (item)	Symptoms Category	ICG-R short form Item nr./formulation	PGD Category	PGD Item nr.	CG Category	CG Item nr.	PCBD/DSM 5 Category	PCBD/DSM 5 Item nr.	ICD-11 PGD Category	ICD-11 PGD Item nr.
1. Yearning	A	ICG-R item 3 I feel myself longing and yearning for _____.	A	1	A	1	A	1	A	1
2. Preoccupation	A	ICG-R item 1 I am preoccupied with thoughts of _____'s death.	A	2	A	4	A	3 4	A	2
3. Part of yourself died	B	ICG-R item 12 I feel that a part of myself died along with _____.	B	1	–	–	B	11	B	2
4. Disbelief	B	ICG-R item 9 I feel disbelief over _____ 's death.	B	2	B	2	B	1	B	1
5. Avoidance of reminders	B	ICG-R item 5 I go out of my way to avoid reminders that _____ is gone.	B	3	B	8	B	6	–	–
6. Hard to trust others	–	NOT INCLUDED	B	4	B	5	B	8	–	–
7. Anger/bitterness	B	ICG-R item 15 I am bitter over _____ 's death.	B	5	B	4	B	4	B	3
8. Difficulty moving on	B	ICG-R item 11 It is difficult for me to imagine life being fulfilling without _____.	B	6	A	3	B	12	B	5
9. Numbness	B	ICG-R item 7 I feel like I have become numb or detached since the death of _____.	B	7	B	3	B	2	–	–
10. Life empty, meaningless, unfulfilling	B	ICG-R item 10 I feel that life is empty or meaningless without _____.	B	8	A	2	B	10	–	–
11. Stunned	B	ICG-R item 8 I feel stunned, dazed, or shocked over _____ 's death.	B	9	B	3	B	2	–	–
12. Loneliness	A	ICG-R item 4 I feel lonely since _____ died.	–	–	A	2	B	9	–	–
13. Survivor guilt	B	HTQ item 31 Feel guilty because I could have done something/have not done enough	–	–	A	3	B	5	B	4
14. Suicidal ideation	B	BDI item 9 I would like to take my own life" or "I would take my own life if I had the chance	–	–	A	3	B	7	–	–
15. Inability to care	B	HTQ item 4 Feel unengaged or isolated from other people	–	–	B	5	–	–	–	–
16. Envious of others without loss	–	NOT INCLUDED	–	–	B	5	–	–	–	–
17. Symptoms of deceased	B	ICG-r item 14 I feel pain in the same area of my body, some of the same symptoms, or have assumed some of the behaviors or characteristics of _____ before s/he died.	–	–	B	6	–	–	–	–
18. Hear or see deceased	–	NOT INCLUDED	–	–	B	6	–	–	–	–
19. Memories upset you	A	HTQ 1/ ICG-R item 1 Recurrent thoughts or memories about the death	A	2	B	7	B	3	–	–
20. Drawn to places	A	ICG-R item 2 I feel drawn to places and things associated with _____.	–	–	B	8	–	–	–	–

Note. Symptom-diagnostic test agreement. PGD – Prolonged Grief Disorder (original version by Prigerson et al., 2009), CG – complicated grief (based on Shear et al., 2011), PCBD – persistent complex bereavement disorder (based on DSM-5 criteria), ICD-11 PGD – ICD-11 prolonged grief disorder).

2.2. Participants

Two months post-loss, 839 elderly bereaved people were invited to participate in the study (O'Connor, 2010b). Of these, 330 persons agreed to participate (response rate 39%). Of the participants ($M = 73$ years), 183 (62%) were female. In the nonresponse group ($M = 74$ years), 352 (75%) were female. A one-way between-groups ANOVA revealed significant differences between participants and non-participants in gender [$F(1793) = 12.18$; $p \leq 0.001$] and age [$F(1793) = 13.33$; $p \leq 0.001$]. We found no other significant demographic differences between participants and non-participants. For the purpose of the present study, baseline was set at six months post-loss to coincide with the PGD duration criterion. Here, 237 participants completed the questionnaires. We excluded participants with more than 20% missing values on the included scales. The Expectation Maximization algorithm was used to impute the remaining missing data on all grief symptoms included.

2.3. Measures

Demographic information was collected via self-report questionnaires at the first contact, that is, 2 months post-loss. This included years of education, years of marriage, number of children, loss-related questions (e.g., cause of death, circumstances around the death, experiences of pre-warning of the death), experience of distress, helplessness and death anxiety, help received from professionals, and medication use since the loss.

2.3.1. Inventory of Complicated Grief-Revised

The Danish version of the Inventory of Complicated Grief-Revised (ICG-R) (Guldin et al., 2011; O'Connor et al., 2015) was used to capture pathological grief symptoms. The respondents rated 15 items, focusing on symptoms of separation distress (category A) and traumatic distress (category B) on 5-point Likert scales based on their reactions to their loss in the last month. The Danish version of the scale has been found to be a reliable and valid measure of prolonged grief (Eckholdt et al., 2017; Guldin et al., 2011; O'Connor et al., 2010) and showed high internal reliability in the present study ($\alpha = 0.91$). For the symptom diagnostic tests, individual symptoms were considered present if the matched ICG-R item was answered with a rating of minimum 4 on the 5-point Likert scale.

2.3.2. The Harvard Trauma Questionnaire

The Post Traumatic Stress (PTS) subscale from the Harvard Trauma Questionnaire (HTQ) (Mollica et al., 1992) was used to estimate the occurrence of posttraumatic stress symptoms. Participants were asked about post traumatic stress reactions (related to the death of their spouse) during the preceding month. Each item was rated on a 4-point Likert scale. The Danish version of the HTQ has been found to be reliable and valid (Bach, 2003; Eckholdt et al., 2017), with high reliability in the present study ($\alpha = 0.84$). For the symptom diagnostic tests, individual symptoms were considered present if the matched HTQ items were answered with a rating of minimum 3 on the 4-point Likert scale.

2.3.3. Beck's Depression Inventory

Beck's Depression Inventory (BDI) (Bach, 2003; Seignourel et al., 2008), a 21-item self-report measure, was used to assess severity of symptoms of depression over the past two weeks. Each item consists of statements describing the symptom in question at varying degrees of intensity (range 0–3). The BDI showed good internal consistency in the present study ($\alpha = 0.80$). For the symptom diagnostic tests, individual symptoms were considered present, if the matched BDI items were answered with a rating of minimum 2.

2.4. Symptom-diagnostic tests

In line with existing research, the focus of the present study is restricted to an examination of tests for meeting the symptom criteria for the presence of a grief-related mental disorder six months (= PGD duration criterion) following spousal loss (Maciejewski et al., 2016). Therefore, we only included symptom criteria from categories A and B (see below), while excluding functional impairment criteria from our analysis (Maciejewski et al., 2016).

Each of the diagnostic proposals (or symptom-diagnostic tests) examined in this study includes two main clusters of symptoms. One cluster (Category A) captures separation distress, which is at the core of grief disorders (Prigerson et al., 2009; Shear et al., 2011). The other symptom criterion (Category B) captures emotional pain based other bereavement-related symptoms of the disorder.

The first author (MOC) initially mapped out the symptoms of each of the four diagnostic entities, PGD, CG, DSM-5-PBCD, and ICD-11-PGD, and matched them with items from the ICG-R (see Table 1). This work was based on a careful review of the main publications on each of the selected diagnostic entities (American Psychiatric Association, 2013; ICD-11, 2018; Kessler and Wang, 2008; Prigerson et al., 2009; Shear et al., 2011). Subsequently, the third author (LL) re-evaluated this work using the same literature. Disagreements were discussed until consensus was reached between the two authors. A third negotiator (ML) then reviewed the symptom mapping. The last author (PB) finally confirmed this work. In cases where symptoms in the diagnostic entities were not included in the ICG-R, missing symptoms were matched with items from the HTQ and the BDI where possible. This procedure enabled us to test the alternative diagnostic algorithms in the same dataset. With the purpose of increasing the chance of identifying caseness while reducing the risk of false negatives (type-2 error), when a symptom was missing in a diagnostic algorithm, we recalculated the criteria (i.e., the number of category A or B symptoms needed) in accordance with the number of symptoms in the original criteria.

2.4.1. Prolonged grief disorder (PGD) test

The PGD test was almost identical to the symptoms identified and validated by Prigerson et al. (2009). It includes 10 of the original 11 PGD symptoms represented in the ICG-R (two category A and eight of the original nine category B symptoms). One category B item ("Inability to trust others since the loss"Prigerson et al., 2009) was not included in the Danish ICG-R, BDI, or HTQ and therefore excluded from our analyses. The diagnostic criteria of PGD in the present study were met when at least one out of two category A symptoms and at least four out of eight category B symptoms were endorsed (original PGD criteria: one of two A symptoms and five of nine B symptoms; See Table 1).

2.4.2. Complicated grief (CG) test

The proposed CG symptom-diagnostic test consists of four category A and eight category B symptoms (Shear et al., 2011). Some of these items contains two or more elements and can therefore be met in a number of ways. The CG test items are represented by one or more ICG-R, BDI, or HTQ items. Symptom A2 ("Frequent intense feelings of loneliness or longing for the person who died") was represented by ICG-R item 4 and ICG-R item 10; See Table 1). Symptom A3 ("Recurrent thoughts that it is unfair, meaningless or unbearable to have to live when a loved one has died, or a recurrent urge to die in order to find or to join the deceased") was represented by ICG-R item 11, HTQ item 31, and BDI item 9. Symptom B8 ("Change in behaviour due to excessive avoidance or the opposite, excessive proximity seeking") was represented by two items (ICG-R 2; ICG-R 5). Two of the CG category B symptoms were not included in our data. The diagnostic criteria of CG in the present study were met when at least one out of four category A symptoms and at least two out of seven category B symptoms were endorsed (original CG criteria: one out of four A symptoms and two out of eight B symptoms; See Table 1).

2.4.3. DSM-5 Persistent Complex Bereavement Disorder (PBCD) test

The PCBD test consists of four category A and twelve category B symptoms (American Psychiatric Association, 2013). Of these sixteen symptoms, eleven symptoms were represented by one or more ICG-R items, one by a BDI item, and one by a HTQ item. Symptom B1 ("Experiencing disbelief or emotional numbness over the loss") was approximated by the ICG-R item 9, symptom B5 ("Maladaptive appraisals about oneself in relation to the deceased (e.g. self-blame)") was approximated by the HTQ item 31, and symptom B7 ("A desire to die in order to be with the deceased") was approximated by BDI item 9. Three PBCD symptoms (one category A symptom and two category B symptoms) were not included in our data, whereas two symptoms (A3 and A4) were covered by one item. Criteria for PBCD were met when at least one out of two category A symptoms and at least five out of ten category B symptoms were endorsed (original DSM-5 criteria: one out of four A symptoms and six out of twelve B symptoms; See Table 1).

2.4.4. ICD-11 Prolonged grief disorder (ICD-11-PGD) test

Our ICD-11 version of the PGD test was based on the narrative formulation of this disorder in the ICD-11 (2018). We included two category A and five category B symptoms represented by collapsing a list of ten words/symptoms describing different expressions of intense emotional pain following the loss into five symptoms as seen in previous works (ICD-11, 2018; Maciejewski and Prigerson, 2017; Maciejewski et al., 2016). All the ICD-11-PGD symptoms are represented by ICG-R items. In line with Maciejewski et al. (2016), criteria for ICD-11-PGD were met when at least one out of two category A symptoms and at least three out of five category B symptoms were endorsed (See Table 1).

2.5. Statistical analyses

The prevalence-rates of PGD, CG, DSM-5-PBCD, and ICD-11-PGD, as specified above, were calculated including 95% confidence intervals (CI). Pairwise agreement between tests was assessed and evaluated using kappa statistics (0–0.2 = slight agreement; 0.21–0.40 = fair agreement; 0.41–0.60 = moderate agreement; 0.61–0.80 = substantial agreement; 0.81–1.0 = almost perfect agreement (Landis and Koch, 1977).

3. Results

3.1. Demographic information

In total, 206 elderly bereaved people participated 6 months post loss (59% female; mean age = 72.5 years, *SD* = 4.2; range 65–81). Most had experienced spousal illness preceding the death of their partner (90%), had been married for a mean time of 44.9 years before the loss (*SD* = 10.9; range 3–62 years), had a mean of eight years of primary and secondary schooling (*SD* = 1.62; range 5–14 years), and three years of higher education (*SD* = 2.61; range 0–13 years). No significant gender differences were found on the demographic variables with the exception of men (*M* = 4.09 years) having more years of higher education than women (*M* = 2.62 years) ($F(1,135) = 11.4$; $p < .001$).

3.2. Symptom scores

Fig. 1 displays the positive test rates for pathological grief, including 95% confidence intervals.

The positive test rates for PGD, CG, PBCD, and ICD-11-PGD were, respectively, 9.2% (*CI*: 5.2%−13.2%), 48.1% (*CI*: 41.2%−54.9%), 8.3% (*CI*: 4.5%−12.0%), and 5.8% (*CI*: 2.6%−9.1%) (See Fig. 1). As indicated by the confidence intervals, the positive test rate for CG was higher than for PGD, PBCD, and ICD-11 PGD, whereas there were no pairwise differences in positive test rates between PGD, PBCD, and ICD-11 PGD.

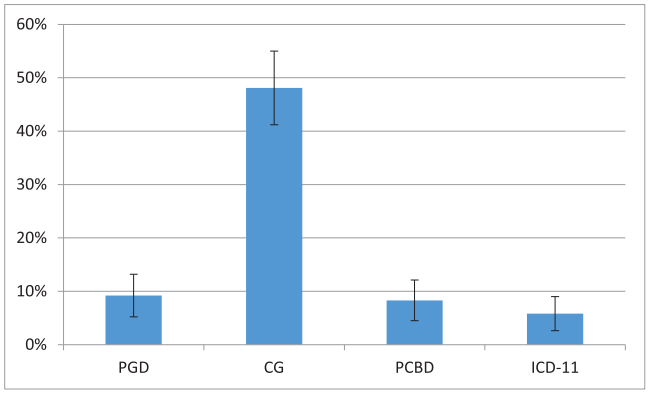

Fig. 1. Symptom-diagnostic test rates.
Note. Symptom-diagnostic test agreement. PGD – Prolonged Grief Disorder (original version by Prigerson et al., 2009), CG – complicated grief (based on Shear et al., 2011), PCBD – persistent complex bereavement disorder (based on DSM-5 criteria (American Psychiatric Association, 2013), ICD-11 – ICD-11 prolonged grief disorder (ICD-11, 2018).

Table 2
Pairwise agreement (kappa) between symptom-diagnostic tests.

Symptom-diagnostic test	PGD	CG	PCBD	ICD-11-PGD
PGD	–			
CG	0.20	–		
PBCD	0.88	0.18	–	
ICD-11 PGD	0.69	0.13	0.74	–

Note. Symptom-diagnostic test agreement. PGD – Prolonged Grief Disorder (original version by Prigerson et al., 2009), CG – complicated grief (based on Shear et al., 2011), PCBD – persistent complex bereavement disorder (based on DSM-5 criteria (American Psychiatric Association, 2013), ICD-11 – ICD-11 prolonged grief disorder (ICD-11, 2018).

Table 2 presents pairwise agreement between the four symptom-diagnostic tests. According to the benchmark scale proposed by Landis and Koch (1977), the PGD and PBCD tests were in almost perfect agreement, whereas the agreement between the PGD and ICD-11-PGD tests and the PBCD and ICD-11-PGD test were substantial. The CG test was only in slight agreement with the three other symptom diagnostic tests.

4. Discussion

We explored the positive test rates, diagnostic specificity, and the level of agreement among different diagnostic entities for pathological grief based on self-report data from a population-based community sample of elderly bereaved people in Denmark.

The results indicate an almost perfect agreement between PGD and PBCD and substantial agreement between both PGD and ICD-11-PGD and between PBCD and ICD-11-PGD, with positive test rates of pathological grief ranging between 6 and 9%. In contrast, CG was only in slight agreement with the three other symptom diagnostic tests and demonstrated a positive test rate of 48%.

In line with previous findings (Lundorff et al., 2017; Maciejewski et al., 2016), our results suggest that PGD, PBCD, and ICD-11-PGD identify similar positive test rates of pathological grief and largely identify the same subgroup of bereaved people. Differences between these three diagnostic tests are likely to originate in minor differences in how the symptom criteria are worded and thus mainly semantic. In contrast, CG appears to capture a different symptomatic profile and a substantially larger subgroup of bereaved individuals. As expected, we found some of the same patterns regarding the relationships among the different pathological grief diagnostic tests as in previous studies[22].

The present study included a population-based sample recruited

through national registers, which likely represents the whole spectrum of grief reactions. Thus, we expected lower frequencies of pathological grief reactions compared to clinical or self-referred samples. This was confirmed for PGD, PBCD, and ICD-11-PGD which identified a positive test rate that was 23–54% *lower* than in the original study by Maciejewski et al. (2016). Conversely, we identified a prevalence of CG which was approximately 60% *higher* than in the original study (i.e., 30% identified by Maciejewski et al., 2016 versus 48% identified in this study). The much higher frequency identified by the CG diagnostic test in this study is especially surprising, because the types of loss experienced by our respondents were mainly timely (e.g., happened in old age) and mainly due to natural causes, and the sample was considered representative of the total population of Danish elderly bereaved spouses.

CG criteria were developed as a diagnostic test to capture the subgroup of bereaved people with clinically relevant levels of CG symptoms, functional impairment, and need for treatment (Shear et al., 2011). This subgroup was identified through a combination of questionnaire- and interview data as well as treatment-seeking behaviour. Shear and colleagues demonstrated in two studies that the CG, and just recently the ICD-11-PGD diagnostic test, when including four or less diagnostic criteria, correctly identified nearly 100% of those with complicated grief in a general clinical population (Mauro et al., 2018), while PGD and PBCD only identified 59–70% (Cozza et al., 2016; Mauro et al., 2017). This seems to suggest that CG and ICD-11-PGD criteria are more sensitive than PGD and PBCD criteria and that the latter two criteria-sets may fail to identify people in need of treatment (Cozza et al., 2016; Mauro et al., 2017; Shear et al., 2011). However, the question remains whether the CG criteria capture 1) a specific grief disorder with a particular and circumscribed set of characteristics or 2) a broader range of grief reactions including, but not restricted to, PGD. That is, another explanation of the high CG rates could be that the threshold of CG is very low with only two symptoms needed to meet the B criterion. Based on this, one would expect the prevalence to be higher for CG than that of narrower grief symptom-specific disorders, such as PGD or ICD-11-PGD with stricter diagnostic criteria, as found in the present and other studies (Mauro et al., 2018). In the present study, perhaps the CG criteria capture a broader range of grief reactions, including PGD, as well as subclinical cases and possibly cases with painful but non-pathological grief, which then increase the prevalence rate. PGD, DSM-5-PBCD, and ICD-11-PGD, on the other hand, may identify bereaved people with a more grief-specific mental disorder. This suggestion needs further scrutiny.

In non-clinical samples of bereaved people it is generally expected that around 10% will have PGD symptoms (Lundorff et al., 2017; Shear et al., 2011) while a total of 15–20% may have one or more of different types of complicated grief reactions such as grief related depression, anxiety or PTSD and/or PGD (Bonanno and Kaltman, 1999; Mancini and Bonanno, 2012; O'Connor, 2010c; Stroebe and Schut, 2010). In the present study, the CG diagnostic test indicates that almost half of the sample is in need of treatment six months post-loss. This level of treatment need seems excessively high considering the community-based sample. It is possible that PGD, PBCD, and ICD-11-PGD have higher specificity, i.e., higher ability to identify true positive cases of bereaved people with PGD in need of treatment, at least in community samples. Conversely, the risk of low sensitivity, i.e., more false negatives, may be higher with these tests in clinical samples. It is therefore possible that PGD and PCBD will not be sufficiently sensitive in identifying those in need of treatment in clinical samples.

4.1. Limitations and future research

The present study has a number of limitations, of which the main limitation may be the low initial response-rate of 39%. Although we only found significant differences in the demographic variables of age and gender, (the non-response group included slightly older people and more females than the response group) the results must be interpreted with caution due to the low response rate. In addition, we only assessed pathological grief symptoms after six months. It would be interesting for future research to compare the performance of criteria sets between more recently and more remotely bereaved people. Thirdly, we used self-report measures of pathological grief rather than structured clinical interviews and not all symptoms were represented by the measures we used. With the aim to explore symptoms-diagnostic tests, we focused on symptom categories of pathological grief reactions alone and excluded the functional criteria, which is the same across all diagnostic tests. More work is needed to compare the performance of criteria sets using interview-based assessment, representing all symptoms and criteria included. Fourth, we included elderly people who were conjugally bereaved within a year in a constricted geographical area. This limits the generalizability of the findings to other populations. Fifth, the study included a population-based sample, which might be considered a weakness since the proportion of participants with pathological grief may be low compared to that of clinical samples (Cozza et al., 2016; Mauro et al., 2017; Shear et al., 2011). On the other hand, this type of sampling can also be considered a strength as it allows the investigation of the whole spectrum of bereavement reactions as well as a more direct comparison with other studies using population-based samples.

High agreement between symptom diagnostic tests based on and including many of the same items is not a surprising finding. Maybe the main difference between the symptom diagnostic tests of PGD, PBCD, and ICD-11-PGD compared to CG is simply a question of the CG test including more potential symptom combinations and requiring fewer symptom criteria for an diagnosis of CG, thus capturing a more heterogeneous sample (Boelen and Prigerson, 2012). To our knowledge, no systematically validated clinical or diagnostic cut-off has been identified on the ICG or newer versions of this or other grief scales. This seems an important issue as the majority of more recent quantitative bereavement research build on these scales. This underlines a need for more empirical work on 1) the psychometric quality of the existing grief scales, 2) the development of new scales matching the ICD-11-PGD and PBCD closely, 3) the specificity and sensitivity of the diagnostic proposals, 4) the identification of validated clinical and diagnostic cut-offs before firm conclusions based on our research can be drawn, and 5) the relationship between PGD and other types of grief complications such as PTSD, depression, and anxiety following the loss. This task may be more attainable with the newly released *ICD-11* diagnosis of PGD as a gold standard, and may build a foundation for more precise and efficient screening and treatment of PGD and other types of complicated grief reactions.

5. Conclusion

In line with previous research, the results from this study indicates that PGD, PBCD, and ICD-11-PGD identify a relatively small proportion of elderly bereaved spouses as having a pathological grief reaction while CG identify a larger and more heterogeneous group. PGD, PBCD and ICD-11-PGD have substantial overlap and identify many of the same participants, while CG appears to capture a different symptomatic profile. Based on our results, it seems that that PGD, PBCD and ICD-11-PGD may be more discriminative in identifying a specific grief-related pathology, at least in non-clinical bereavement samples. Conversely, CG may identify a broader set of grief reactions, including, but not restricted to, PGD. Further research on psychometrics of grief scales and diagnostic criteria is recommended.

CRediT authorship contribution statement

Maja O'Connor: Writing - original draft, Supervision. **Mathias Lasgaard:** Formal analysis. **Lene Larsen:** Project administration. **Maja Johannsen:** Project administration. **Marie Lundorff:** Project administration. **Ingeborg Farver-Vestergaard:** Project administration. **Paul A. Boelen:** Project administration.

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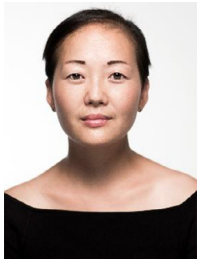

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