Memories, Appraisals, and Coping Strategies in Prolonged Grief Disorder



Dr Kirsten V. Smith

Wadham College

University of Oxford

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Abstract

Kirsten V. Smith
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Prolonged grief disorder (PGD) is a clinical classification of severe and enduring grief that can develop following the death of a loved one. PGD holds conceptual similarities to posttraumatic stress disorder (PTSD), another psychological disorder that arises following a stressful event. Memories, appraisals, and coping strategies are the targets for treatment in PTSD (Ehlers & Clark, 2000), but it is still unclear how these cognitive predictors relate to grief severity after loss. This thesis presents six studies, designed to investigate four research questions. 1) Are the cognitive factors relevant in the treatment of PTSD (e.g. memories, appraisals, and coping strategies) important in PGD? 2) Are there cognitive concepts missing from the literature that are relevant to PGD? 3) Are the cognitive factors associated with bereavement-related mental health problems such as PGD, PTSD and depression? 4) Do the cognitive factors predict grief severity over time?

Study 1 showed that self-report items measuring appraisals and coping strategies, developed from the literature and in collaboration with experienced therapists, significantly differentiated between bereaved individuals with and without PGD. Study 2 identified further cognitive concepts not previously discussed in the literature such as loss-related memory characteristics, social disconnection beliefs beliefs and grief resilience beliefs as being relevant to the experience of PGD. New questionnaires were developed from participants' testimonies to reflect these concepts. Study 3 investigated the factoral and psychometric validity of the questionnaires developed in Studies 1 and 2. All questionnaires demonstrated acceptable to excellent reliability and validity. Study 4 showed bereaved individuals suffering from PGD, PTSD, and PGD+PTSD scored higher than non-clinical bereaved individuals on all new questionnaires measuring cognitive factors. Study 5 tested whether the influence of negative appraisals and loss-related memory characteristics on bereavement-related mental health problems (PGD, PTSD and depression) is mediated by maladaptive coping strategies in a sample of newly bereaved (< 6 months post loss) and those bereaved longer (> 6 months post loss). Results showed significant mediation for PGD, PTSD and depression in the newly bereaved sample. In those bereaved longer, the mediating effect of coping strategies was found to be comparatively weaker for PGD and no mediation was found for depression. For PTSD, the results across samples were comparable. Study 6 identified four latent classes of grief trajectory in the first 12-18 months of loss: high grief stable (HGS), high grief low adaptation (HGLA), high grief high adaptation (HGHA), and low grief (LG). Individually all of the cognitive predictors were elevated in the high grief classes compared to the low grief class. When all predictors were analysed together with loss characteristics and pre-loss individuals differences, loss-related memory characteristics were elevated in the high grief classes compared with the LG class. Negative appraisals were elevated in the HGLA and the HGS class compared to the HGHA class. A multi-group structural equation model demonstrated that the HGHA class were the only class for whom greater loss-related memory characteristics did not predict more maladaptive coping strategies, perhaps explaining adaptation in the presence of high grief. In sum, the studies supported the influence of cognitive predictors on grief severity concomitantly and over time. These results have implications for understanding grief symptoms and have clinical relevance for the treatment of bereavement-related mental health problems.

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A Note About Language

The language we use around grief is important and there has been fierce, often politicised, debate about whether there should be a quantifiable testable classification of severe and enduring grief at all. Are we pathologising a normal human experience? Are we pathologising appropriate and entirely justifiable pain?

The participants in the studies presented in this thesis tell me that the language researchers and practitioners' use and the categorisations in diagnostic systems have a direct impact on the way they understand and experience their own grief. In fact, many of the 1000 bereaved individuals that gave their time and experience to these studies have requested copies of this work once completed. Many are eager to learn more about their difficulties and are upset at the lack of attention paid to grief within the scientific community. With that in mind I feel it important to state that this is an academic thesis designed to answer hypotheses about the grief experience tested using the scientific method with language and phrasing chosen to reflect the academic nature of the text. Language and phrasing is often derived from concepts presented in previously published research and for continuity sake is also adopted here. However, not all of the language routinely adopted within the literature is sensitive nor do the bereaved community feel it accurately reflects their experience.

With that in mind I wanted to create a short glossary to clarify and contextualise some of the phrasing and language presented within this thesis that may be experienced as insensitive.

Prolonged grief disorder (PGD): This phrase is used to describe a conceptualisation of severe and enduring grief reactions. It includes a collection of experiences that are very common after the loss of a significant other. What quantifies these experiences as a disorder and therefore something worthy of specialist support is their intensity and chronicity. If these grief experiences significantly impact on an individual's life in that they impair multiple areas of functioning (i.e. social, occupational, leisure) and they have persisted for more than 6 months then they are classified as a disorder. In this case, the word disorder quantifies a cut off point on a spectrum of experiences that indicate if an individual should be afforded access to support. It should not be understood as a sign of weakness but rather a pathway to care if the individual decides they would benefit from support.

Symptoms: Typically used to describe experiences arising from illness in medical terminology. In the present context it is used to describe experiences arising from bereavement and does not pertain to a single underlying illness or problem but the reaction of the mind/body to loss.

Maladaptive: This word is used to categorise a particular response to loss as not being in the best interests of adaption to the death. It typifies memory characteristics, appraisals or coping strategies that are associated with poorer grief outcomes. In isolation, a particular memory characteristic may not influence grief severity but collectively, when experienced frequently with high levels of intensity, may be considered maladaptive. It should be noted that maladaptive is not used in the punitive sense in which it is often experienced. If an individual engages in a behaviour aimed at reducing the intensity of their emotion in the moment that is completely understandable, in the short term it could even be considered adaptive. However, it is in the long term that we consider these behaviours and their impact on grief. It is understandable that psychological factors develop in the short term as adaptive ways of coping, they only pose problems if, like symptoms, they prevent the individual from reimagining themselves and their lives without the physical presence of the deceased.

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Chapter 1. General Introduction

The death of a significant person is an experience faced by everyone at one point or another. The experience of mourning, set in motion following a bereavement, is thought to be an evolutionary process aimed at making the necessary alterations to relational internal working models and adapting to a life without the deceased (Bowlby, 1960). Accumulating evidence about bereavement-related difficulties has suggested that not all mourning processes resolve as intended (Jacobs, 1999; Prigerson et al., 1997; Prigerson et al., 1996; Prigerson et al., 2009). In fact, there is wide variation in the prevalence of complicated grief (CG) or prolonged grief disorder (PGD) following loss, suggesting that specific factors about the type and circumstances of the loss (Stroebe, Schut, & Stroebe, 2007), as well as relational and individual vulnerability factors (Stroebe, Folkman, Hansson, & Schut, 2006) have a role to play in understanding this condition. This thesis aims to contribute to the understanding of prolonged grief by identifying and investigating cognitive predictors that could potentially be targeted in psychological treatment. This chapter summarises the discussion of the conceptualisations of complicated grief/ prolonged grief disorder, treatment approaches, as well as current evidence on predictors before outlining the content and structure of the following chapters.

Despite an emerging literature, most grief studies focus on one or a few specific factor(s) such as type of loss (Sanders, 1999) or cause of death (Dyregrov, Nordanger, & Dyregrov, 2003; Mitchell, Kim, Prigerson, & Mortimer-Stephens, 2004). Few studies look at the relative impact of a wide range of different factors and even fewer have examined interaction effects between risk factors (Denckla, Bornstein, Mancini, & Bonanno, 2015; Mancini, Shear, & Bonanno, 2009). For example, Mancini et al. (2009) found that adults with high reported marital quality who also displayed a dismissing avoidant attachment style experienced fewer distressing grief symptoms over time than those with low marital quality

and other attachment insecurities. They suggested that those with this style of attachment and a close relationship with the deceased would do better with a therapeutic approach that is less focused on the loss. Such studies allow us to more clearly disentangle 'which approach works best for whom'. However, importantly, risk factors such as loss characteristics, attachment style, and relationship characteristics are largely pre-determined, making them important in our understanding of grief's moderating factors but limited in the pursuit of modifiable risk factors that may be directly targeted in treatment. The overall aims of this thesis are to measure the impact of a number modifiable risk factors associated with increased grief symptoms and their relationship to grief severity over time.

1.1 The conceptualisation of severe and enduring grief reactions

Most experts would agree that there is sufficient evidence to justify a grief disorder in the Diagnostic and Statistical Manual (DSM) or the International Classification of Diseases (ICD) (American Psychiatric Association, 2013; International Advisory Group for the Revision of ICD-10 Mental and Behavioural Disorders, 2011). However, the constituents of a severe and enduring grief reaction worthy of specialist support have been hotly debated within the literature (Cozza et al., 2016; Maciejewski, Maercker, Boelen, & Prigerson, 2016; Maciejewski & Prigerson, 2017; Reynolds, Iii, Cozza, & Shear, 2017). Historically, Complicated Grief (CG) was diagnosed if the bereaved person scored above 25 on the *Inventory of Complicated Grief* (ICG; Prigerson et al., 1995), a 19 item self-report measure that asks participants to rate on a 5-point scale (never to always) the extent to which items best describe how they currently feel. Items reflect difficulties in adjusting to the loss, emotional changes (i.e. bitterness, disbelief, envy of others, loneliness, emotional distance from others), avoidance of reminders of the lost person, rumination, and perceptual changes (i.e. feeling pain or other symptoms similar to what the deceased person had, hearing the

voice of the deceased person, and seeing the person). Despite the consensus that disordered grief constitutes a mental health condition worthy of intervention, agreement has yet to be reached about the name and criteria by which to assess it. This lack of clarity has prevented advances in clinical research and made assimilation of findings difficult. Furthermore, without clear assessment criteria the line between typical and atypical grief becomes blurred and targeted intervention becomes difficult. Previous research has shown that grief counselling, often based on untested theories and therapist intuition, implemented in the aftermath of loss is ineffective at best and interferes with, rather than facilitates, natural grieving at worst (Jordan & Neimeyer, 2003; Schut & Stroebe, 2005).

More recently, a number of research teams proposed diagnostic criteria for submission to DSM-5 and ICD-11 (American Psychiatric Association, 2013; Prigerson et al., 2009; Shear et al., 2011a), focussing on two possible diagnoses of Prolonged Grief Disorder (PGD) or Complicated Grief (CG). Prolonged grief disorder would require a bereaved adult to endorse one symptom of separation distress experienced at least daily, five of nine cognitive, emotional and behavioural symptoms experienced at least 'once a day' or 'quite a bit,' to be at least 6 months post loss, and to be significantly impaired in one or more areas of functioning by their symptoms. The criteria were derived using results from the Yale Bereavement Study (YBS) in which item response theory and combinatoric analyses were used to identify the most informative and unbiased symptoms from the ICG administered to a community sample of 291 individuals (Prigerson et al., 2009). In contrast, complicated grief criteria (CG) were based upon factor analysis of the ICG administered to a clinical sample (Simon et al., 2011). CG would require an individual endorse at least one of four Cluster A symptoms of persistent, intense, acute grief (i.e. yearning, frequent feelings of loneliness, recurrent thoughts regarding the hopelessness or unbearable nature of life, or frequent preoccupying thoughts about the deceased), and at least two of a further eight Cluster B

symptoms (i.e. troubling rumination, feelings of disbelief regarding the death, feeling dazed or stunned, anger or bitterness, difficulty trusting others, experiencing pain or other symptoms that the deceased person had, intense emotional/physiological reactivity to memories, excessive avoidance or proximity seeking).

In light of these proposed sets of criteria the DSM-5 workgroup incorporated a number of the criteria and proposed the name: Persistent Complex Bereavement Disorder (PCBD). PCBD requires one of four symptoms of separation distress, six of 12 symptoms of reactive distress to the death or social/identity disruption, functional impairment, and requires the grief reaction to be outside of cultural or societal norms. These symptoms need to be present for 12 months as opposed to the six needed for PGD and CG. Given the lack of evidence for this new criterion it was placed in section 3 of DSM-5 'Conditions Requiring Further Study.' Meanwhile the World Health Organisation (WHO) International Classification of Diseases and Related Health Problems (ICD-11) workgroup seem likely to accept PGD in their taxonomy of disorders rather than PCBD (Maercker, Brewin, Bryant, Cloitre, Ommeren, et al., 2013).

Given the numerous criteria that are currently being considered, choosing an adequate conceptualisation of severe and enduring grief was critical to the development and success of the studies presented in this thesis. In choosing an appropriate conceptualisation it seems important that a number of requirements be met: 1) the chosen criterion be supported by empirical studies, 2) it should correctly identify those suffering from severe and enduring grief (true-positive) and those experiencing a typical grief trajectory (true-negative), 3) it should be sensitive enough to adequately reject near-threshold cases resulting in low rates of false-positives and appropriate rates of sample prevalence. In considering these points, a number of studies were reviewed that compared CG, PCBD, and PGD in their diagnostic utility (Cozza et al., 2016; Maciejewski et al., 2016). Cozza and colleagues determined that

CG criteria identified 90% of clinically impaired individuals, while PGD and PCBD only identified 59% and 53% respectively. Critiques of this study point out that 46% of the participants in the Cozza et al. study were excluded on the basis that they represented borderline cases with final results conducted only on those who were deemed to be either clearly clinical (ICG ≥ 30, Work and Social Adjustment Scale ≥ 20) or non-clinical (ICG < 20). Prigerson and Maciejewski (2017) assert that this introduced 'spectrum bias' which overestimates sensitivity and specificity by omitting diagnostic errors from near-threshold cases. They argue that diagnostic performance relies not on identifying extremes but correctly classifying difficult to evaluate cases. Similarly, they suggest that the CG criteria of one symptom from cluster A (four symptoms) and two from cluster B (eight symptoms) makes it too easy to obtain a diagnosis resulting in an unacceptably large proportion of individuals diagnosed with pathological grief. They report that in using the CG criterion from Cozza et al.'s study 62% of the YBS would have met criteria. In a further study, Maciejewski and colleagues used kappa agreement coefficients from the YBS to compare the PGD, PCBD, and CG criteria. Authors report the agreement between PGD and PCBD to be high (Kappa range .80 - .84), in contrast the rates of agreement of CG with PGD and PCBD were only modest (Kappa range .48 - .55), concluding that symptom diagnostics tests for PGD and PCBD, but not CG, represent a single diagnostic and are therefore only semantically different (Maciejewski et al., 2016). However, Lenferink and Eisma (2017) used binomial equations to compute all possible minimum symptom combinations to meet PCBD and PGD. They found that, due to the higher symptom count, there were 3969 ways to meet the minimum PCBD symptom profile with a total of 45,180 ways to suffer from PCBD overall, while there were only 20 ways to meet minimal criteria for PGD and 48 ways overall. Authors argue that overly complex diagnostic algorithms will be of less use in aiding researchers and clinicians to correctly distinguish between disordered and typical grief and

question, given their results, whether the differences in PCBD and PGD are merely semantic in nature (Lenferink & Eisma, 2017) .

In defence of the CG conceptualisation, Reynolds et al. (2017) argue that CG represents a more clinically relevant criteria given that it was by in large developed using a clinical sample and used a multi-informant approach combining patient and clinician judgements. They further assert that PGD criterion has largely been developed and validated using the same sample (YBS), which Reynolds and colleagues argue lacks diversity. Given that much of the research comparing these criteria has been conducted by the teams behind the proposals, further independent research is needed in order to determine which criteria performs best in identifying clinically relevant cases of disordered grief.

Given the lack of empirical studies using the PCBD criterion it was excluded on this basis. In comparing the conceptualisations of CG and PGD it was determined that the CG criteria would likely result in an unacceptably high rate of disordered grief and as such did not meet the necessary standards for sensitivity and specificity. The PGD criteria[1] (see Table 1.1) were determined to adequately demonstrate the requirements necessary to identify severe and enduring grief.

[1] The term "*prolonged* grief disorder" has found strong consensus among leading researchers in the field (Maercker, Brewin, Bryant, Cloitre, Reed, et al., 2013). However, the majority of clinical and research publications on this condition use the term complicated grief (CG). Therefore, given our decision to utilise the PGD criteria, and to avoid confusion, we use prolonged grief disorder to refer to studies that investigated complicated grief using the Inventory of Complicated Grief.

Table 1.1

Prolonged grief disorder criteria (Prigerson et al., 2009)

A. Event: Death of a significant other

B. Separation Distress: Yearning, longing, craving, or pining for; or preoccupation with the deceased person is experienced most days to a disabling degree

C. Additional Cognitive, Emotional, Behavioural Symptoms of Grief: Five or more of the following symptoms experienced most days

1. Confusion about one's role in life or diminished sense of self (i.e., feeling that a part of oneself has died)
2. Difficulty accepting the death
3. Avoidance of reminders of the reality of the death or avoidance of thoughts, activities or situations that arouse intense emotions related to the death.
4. Inability to trust others or feeling alone or detached from others since the death
5. Bitterness or anger related to the death
6. Difficulty moving on with life (e.g., making new friends, pursuing interests, feeling life no longer holds the potential for satisfaction or joy)
7. Numbness (absence of emotion) since the death
8. Feeling that life is unfulfilling, empty, meaningless or unbearable since the death
9. Feeling stunned, dazed, or shocked by the loss

D. Timing: Symptoms should have persisted for longer than six months since the death

E. Impairment: Symptoms cause clinically significant impairment in social, occupational, or other important areas of functioning (e.g. domestic responsibilities).

F. The disturbance is not better accounted for by another disorder such as PTSD, or depression.

1.2 Can PTSD models inform treatment targets in PGD?

PGD, like PTSD, can arise in the aftermath of a triggering traumatic life event and, like PTSD, is not a foregone consequence of bereavement. Cognitive risk factors have been implicated in the development and maintenance of PTSD (Dunmore, Clark, & Ehlers, 2001; Ehlers et al., 1998; Ehring, Frank, & Ehlers, 2008; Halligan, Michael, Clark, & Ehlers, 2003) and a highly successful treatment program has been developed based on the cognitive model for PTSD (Ehlers & Clark, 2000). The cognitive model for PTSD asserts that certain cognitive processing styles during a trauma lead to the memory of the trauma being encoded in a poorly elaborated, disorganised, and disjointed state in which the memories of the most distressing moments of the trauma are disconnected from information that gives them a less threatening meaning in the present, for example safety information obtained after the trauma (Ehlers, Hackmann, & Michael, 2004). In addition, negative appraisals about the trauma and its aftermath concerning the self (i.e. *'I am weak'*), the world (i.e. *'The world is a dangerous place'*), and others (i.e. *'Everyone leaves me'*) leads to a sense of current threat, which together with the disjointed nature of the trauma memory, results in involuntary activation of the memory in the form of re-experiencing symptoms. The sense of current threat motivates the individual to engage with a range of coping strategies aimed at keeping themselves safe and reducing the sense of current threat. While successful in the short term in reducing emotional arousal, some coping strategies serve to maintain the symptoms of PTSD by preventing the individual from challenging their negative appraisals and updating the worst moments with information that gives them a less threatening meaning. This theory is consistent with other neurobiological models of traumatic memory encoding that emphasise the importance of reconsolidating the trauma memory in a more stable and contextualised state (Brewin, Gregory, Lipton, & Burgess, 2010).

This failure of memory integration is proposed to be central to several models of PGD. Shear and colleagues proposed that grief symptoms arise as a result of a mismatch between the reality of the death and the mental representation of an attachment figure as being both emotionally and proximally available (Shear et al., 2007). Boelen, van den Hout, and van den Bout (2006) similarly suggest that there is a failure to integrate the reality of the loss into the person's existing mental representation of one's self and the world. Another recent model of prolonged grief (Maccallum & Bryant, 2013) does not contradict previous models of PGD, but more clearly emphasises the role of mourning to revise the self-memory system, a system proposed to reciprocally link to the autobiographical memory database (Conway & Pleydell-Pearce, 2000). Maccallum and Bryant (2013) suggest that symptoms of PGD arise as a result of the discrepancy between an individual's internal self-identity and real life experiences that challenge the coherence of that identity. They propose the extent to which an individual's sense of self is entwined or merged with the deceased will predict disturbances of memory and emotions as a result of difficulties in integrating the reality of the loss and associated information into the self-memory system.

Similar to PTSD, current models of PGD propose an important role for negative appraisals of the death in generating symptoms of PGD and acknowledge the role of these negative appraisals in generating unhelpful coping strategies that act as barriers to successful loss integration (Boelen, van den Hout, et al., 2006; Maccallum & Bryant, 2013; Shear et al., 2007). One question to consider when trying to disentangle the ways in which the memory systems of trauma and bereavement behave differently is the quality of the experience that arises as a result of failures of loss integration. In PTSD, it is proposed that a sense of current threat to self or others is generated by re-experiencing symptoms and negative appraisals (Ehlers & Clark, 2000). This activated sense of threat can be generated in response to explicitly triggered memories of the trauma or, in the case of 'affect without recollection,'

without awareness of the trauma memories (e.g. feeling terrified when seeing someone who resembles the assailant without consciously remembering the attack) (Ehlers, 2010). Of interest is whether there is a corresponding activated sense in PGD and what it consists of. Previous research has predicted that a failure of loss integration would give rise to a sense that the deceased is still present, leading to confusion regarding the permanence of the loss and a sense of shock and disbelief (Boelen, van den Hout, et al., 2006; Ehlers, 2006; Shear et al., 2007). Yet it remains to be seen whether the extent to which the deceased's presence is felt as current is a core feature of incomplete loss integration.

1.2.1 PGD: The younger sibling of PTSD? Despite the similarities between PGD and PTSD, there are clear distinctions that warrant PGD-specific targeted intervention. PTSD can prompt a number of emotions such as fear, shame, and disgust. While, authors also report fear to be a common feature of the grieving process (Shear et al., 2007), the primary affect reported in PGD is sadness and separation distress (e.g. yearning). In PGD, fear typically takes the form of separation anxiety such as fear regarding one's ability to cope without their loved one or fear of being overwhelmed by grief. The hyperarousal and exaggerated reactivity common in PTSD are not typically associated with prolonged grief reactions (Duffy & Wild, 2017). Furthermore, in PTSD, avoidance strategies are largely employed to prevent the sense of current threat linked to trauma memories and negative cognitions. In PGD, coping strategies can be avoidant but also paradoxically represent proximity seeking, in which reminders of the deceased are sought out and nurtured in an attempt to establish emotional connection. Memories of the trauma for PTSD sufferers tend to be predominantly negative and painful, while memories in PGD can be bittersweet in nature (both positive and negative memories can be painful) (Boelen, van den Hout, et al., 2006; Maercker & Znoj, 2010). Triggers to intrusive re-experiencing in PTSD are typically associated with perceptually similar stimuli present during the trauma (Ehlers & Clark, 2000). In PGD,

intrusions can be triggered by a wide variety of reminders of the deceased and are not usually limited to circumstances surrounding the death. Another difference between PTSD and PGD is the assumed timeframe for natural resolution of symptoms and adaptation to the trauma/loss. A diagnosis of PTSD can be given if symptoms persist for over 1 month while at least 6 months is recommended for PGD. This suggests that revision of the autobiographical memory base takes longer when confronted with a deceased attachment figure than a traumatic event in which no loss occurred (Maercker & Znoj, 2010). Given these important differences a number of approaches have been developed to address PGD.

1.3 Treatment approaches and their outcomes

Psychological therapies targeting PGD have shown some success in reducing grief symptoms (see Table 1.2 for descriptions, sample size, and outcome data).

1.3.1 Cognitive Behavioral Therapy (CBT). Cognitive-behavioural approaches for treating PGD have aimed to alleviate symptoms by focusing on maintaining factors: maladaptive coping strategies, such as avoidance of feared stimuli (i.e. reminders that the deceased has gone) and rumination, negative or catastrophic appraisals about the self, the world and others, and social and emotional withdrawal (Boelen, 2006; Eisma, Boelen, et al., 2015).

Similar to PTSD, avoidant behaviour plays a role in maintaining symptoms. In PGD, avoidance of bereavement-related stimuli appears to maintain symptoms by blocking integration of the loss into existing autobiographical knowledge. CBT approaches would gradually encourage the individual to reintroduce the aversive stimuli associated with loss while bolstering emotional regulation. This might involve working with the loss directly via letter writing to the deceased about difficult memories or engaging in an avoided activity like visiting the grave. Depressive avoidance is common to PTSD and PGD, manifesting as a

lack of interest in activities previously enjoyed, motivated by a lack of meaning or a reduction in the reward offered by these activities. Similar to CBT for depression and PTSD, CBT for PGD would encourage 'behavioural activation' in which pleasurable and rewarding activities are engaged with despite the motivating factor being currently absent (Martell, Addis, & Jacobson, 2001).

Negative appraisals that arise following loss are understood to maintain PGD by influencing the way the griever engages with themselves, the world, and others. In believing that '*I am changed and can never be the same again*,' an individual may withdraw from social activities and make little attempt to engage in new activities, or in thinking '*the future has nothing to offer me*' may result in rumination about how hopeless life has become. Understanding appraisals in this way demonstrates how negative beliefs may give rise to negative emotions and result in significant behavioural changes characteristic of PGD.

Studies focusing on treating PGD from a cognitive-behavioural perspective have aimed to address avoidance, withdrawal, and negative appraisals through exposure to avoided thoughts and stimuli, behavioural activation, and cognitive restructuring. Boelen and colleagues (2007) compared sequences of cognitive restructuring followed by exposure (6 sessions each), with exposure followed by cognitive restructuring (6 sessions each), and 12 sessions of nonspecific supportive counselling for treating PGD. Results showed CBT approaches led to greater improvement than supportive counselling, single exposure was more effective than single cognitive restructuring, and exposure combined with cognitive restructuring was more effective when exposure was delivered first. These findings were further supported by Bryant and colleagues (2014), who compared CBT with and without an exposure component and found that CBT plus exposure led to greater reductions in PGD, depression, negative appraisals, and functional impairment. These findings suggest that encouraging sufferers to confront avoidant stimuli is not only helpful in addressing the

symptoms and functional consequences of PGD but also aids in the reduction of negative appraisals. However, it should be noted that in Boelen et al. (2007) the most successful group (exposure therapy + cognitive restructuring), improvements of clinical significance did not exceed 50% of the sample and in Bryant et al. (2014) only 1 in every 4 sufferers treated recovered from PGD suggesting that effective targets in treatment have yet to be realised.

Further studies investigating components of CBT found support for behavioural activation approaches and exposure therapy. Papa and colleagues (2013) examined the impact of 12-14 sessions of behavioural activation (BA) compared to no treatment (in a delayed start group) and found reductions in PGD, PTSD symptoms, and depression symptoms. Eisma and colleagues (2015) compared internet-based exposure and behavioural activation to a waitlist control group and found that both treatment groups showed significant decreases in PGD, PTSD, and grief rumination, while the exposure group also showed decreases in depression and brooding. However, completers analysis showed no significant differences between conditions. As with previous studies, reliable clinical improvement was only seen in approximately half of the samples in both studies (Eisma, Boelen, et al., 2015; Papa et al., 2013).

Overall, cognitive-behavioural interventions have been shown to substantially decrease distressing symptoms arising from bereavement; however, rates of recovery suggest that around half of individuals respond to treatment. Further research is needed to determine whether treatment targets of importance are missing from current practices and what emphasis should be placed on factors already identified.

1.3.2 Complicated Grief Treatment (CGT). Another important therapeutic approach to PGD was developed by Shear and colleagues and uses an attachment-based perspective to facilitate adjustment to bereavement (Shear, Frank, Houck, & Reynolds, 2005). Within this approach an individual's internal working model (i.e. their cognitive framework comprising

mental representations for understanding themselves, the world, and others) is closely associated with the deceased's physical and emotional availability. If the attachment figure is physically and emotionally available then the relationship to the deceased serves as bio-behavioural regulator and a source of stability and comfort (Shear & Shair, 2005). The physical and emotional distance established in bereavement triggers the physiological and psychological distress seen in the grieving response. Furthermore, the yearning and preoccupation with the deceased can be understood as an intrinsically motivated desire to re-establish proximity, comfort, safety, and the status quo of one's own internal working model. The instability created by the distance from the deceased makes it difficult for individuals to retain interest in and motivation for other relationships and activities which consequently leads to withdrawal and avoidance (Shear et al., 2007).

Complicated grief treatment (CGT) is a 16-session manualised treatment that aims to facilitate adaptation to the individual's internal working model by integrating information that the deceased is gone, achieved through imaginal reliving of the moment the bereaved individual learns of the death. Imaginal conversations with the deceased are also conducted in an attempt to promote a sense of connection. Cognitive, affective, and social difficulties are targeted by encouraging a reduction in avoided situations, activities or people and promoting autonomy and excitement for the future through engagement with aspirational goals, problem-solving, and by increasing motivation (Shear et al., 2005).

The therapeutic impact of CGT was demonstrated in a randomized controlled trial comparing CGT to interpersonal psychotherapy (IPT), which is a demonstrated effective treatment for depression. CGT was significantly more effective than IPT (Shear et al., 2005). Of participants who completed therapy, the number needed to treat in order for 1 person to recover from CG was 2.9. However, 27 % of participants in the CGT group dropped out of therapy and the number needed to treat using an intention to treat analysis was 4.3. These

results were supported by a further study on elderly bereaved sufferers of CG in which CGT demonstrated clinically significant change superior to IPT (Shear et al., 2014).

Table 1.2

Psychological interventions for PGD intention to treat analyses

Study	Intervention conditions	Sample Size	Dropout Rate (%)	PGD effect size *d'* Pre-treatment – Follow-up (Within group)	PGD effect size *d'* Pre-treatment – Follow-up (Between group)	Clinically significant change (%) at follow-up
Boelen et al. (2007)	(1) Cognitive restructuring + Exposure	23	21.7	0.83	(1 vs. 2) 0.43	22.0
	(2) Exposure + Cognitive restructuring	20	20.0	1.25	(2 vs. 3) 0.97	45.0
	(3) Supportive counselling	11	36.4	0.42	(1 vs. 3) 0.57	0.0
Bryant et al. (2014)	(1) Cognitive behavioural therapy + Exposure	41	24.4	NR	1.77	NR
	(2) Cognitive behavioural therapy	39	28.2	NR		NR
Papa et al. (2013)	(1) Behavioural activation	12	8.3	1.83	0.27	35.0
	(2) Waitlist control	10	10.0	NR		
Eisma et al. (2015)	(1) Internet-based exposure	18	33.3	0.6	(1 vs. 2) 0.34	58.3
	(2) Internet-based behavioural activation	17	58.8	0.9	(2 vs. 3) 0.89	63.6*
	(3) Waiting list	12	16.7	0.16	(1 vs. 3) 0.63	20.0
Shear et al. (2005)	(1) Complicated grief treatment (CGT)	49	28.6	1.63[a]	.32[a]	69.0[a]
	(2) Individual interpersonal therapy (IPT)	46	26.1	1.07[a]		51.0[a]
Shear et al. (2014)	(1) Complicated grief treatment (CGT)	72	18.0	NR	.48[a]	70.5[a]
	(2) Individual interpersonal therapy (IPT)	73	19.0	NR		32.0[a]

Note. [a] Pre-post treatment response. Shear et al. (2005, 2014) did not collect follow-up data. NR = Not reported. *Clinically significant change should be interpreted in the context of high drop out rates.

1.4 Pre-loss individual differences and loss characteristics as risk factors for PGD

1.4.1 Type and circumstances surrounding the death. It has often been argued that the mode of death and the relationship to the deceased plays an important role in the development of prolonged grief. A number of studies have reported that violent death is a significant risk factor for the development of PGD (Boelen, 2015; Boelen & van den Bout, 2005; Currier, Holland, & Neimeyer, 2006; Kaltman & Bonanno, 2003), with some authors suggesting the death of one's own child elicits more intense and complex grief reactions (Prigerson et al., 2002; Sanders, 1999; van Denderen, de Keijser, Huisman, & Boelen, 2014). Studies have argued that individuals bereaved by suicide are at increased risk of developing PGD (Mitchell et al., 2004). However, other studies have disputed that it is the sudden nature of a loss that makes it potentially distressing, as opposed to suicide in particular (Dyregrov et al., 2003; Sveen & Walby, 2008). This thesis will include all modes of death so that it can be investigated whether different patterns of risk variables are relevant following different losses.

1.4.2 Relationship with deceased.

Dependency. The extent to which bereaved individuals relied on the deceased for support, help, and daily functioning has been shown to be associated with bereavement outcomes (Fraley & Bonanno, 2004). Previous research has suggested that although dependency and attachment (i.e. an emotional bond that connects one person to another) are related concepts they manifest and are accordingly measured differently. Denckla et al. (2015) states that 'dependency represents behaviours influenced by and directed toward a class of individuals, attachment behaviours are directed toward and reinforced by a particular individual.' Johnson, Zhang, Greer, and Prigerson (2007) bridged the two by investigating the impact of childhood adversity, a common contributor to insecure attachment, and its

relationship to spousal dependency on the development of PGD in 191 widowed individuals from the YBS. They found that individuals who were highly dependent on their spouse were more likely to experience severe grief symptoms and this relationship was, in part, mediated by a history of overly restrictive parenting. A more recent study found that healthy dependency was associated with a grief trajectory free from clinically problematic symptoms even after controlling for attachment insecurity (Denckla et al., 2015). This study was not able to replicate previous findings linking overdependence to PGD over and above attachment style (Bonanno, Wortman, et al., 2002b) but concluded that assessing dependency across a broad range of domains may have contributed to this null finding. Denckla et al. (2015) suggested that focusing on different types of dependency (i.e. deceased specific, and general style) would yield better results. Therefore, in this work we will look at general levels of healthy dependency as well as relationship specific dependency to the deceased.

1.4.3 Attachment style. An individual's attachment style refers to the pattern of behaviour that is exhibited in the development, maintenance and ending of close relationships. Individual differences in attachment styles have been shown to significantly influence the patterns and outcome of affect regulation during the grieving process (Houwen et al., 2010; Shear & Shair, 2005; Stroebe, Schut, & Stroebe, 2005). Currier and colleagues found that attachment insecurities (anxious and avoidant) were associated with higher levels of prolonged grief in those bereaved by violent means. They also found that when individuals engaged in greater use of continuing bonds (i.e. behaviours or experiences aimed at maintaining an ongoing memory or connection to the deceased), and had an avoidant attachment style, they were at greater risk of more severe grief symptoms (Currier, Irish, Neimeyer, & Foster, 2015). Another study used a longitudinal approach to determine the dimensions of attachment patterns associated with more severe grief symptoms over time

(Fraley & Bonanno, 2004). They found that a preoccupied or anxious style, typically experienced as a need for reassurance of intimacy due to inconsistent caregiving, as well as a fearful-avoidant style, usually associated with a craving for intimacy accompanied by a fear of rejection that results in distancing from intimate relationships, was associated with higher intensity of grief and depressive symptoms at multiple assessment points over a 15-month period. Furthermore, this paper was able to identify that a dismissing avoidant attachment style, characterized by individuals who believe they do not need intimacy from others in order to be fulfilled and successful, was associated with a pattern of resilience following loss (Fraley & Bonanno, 2004). These results suggest that those with a dissmissing attachment style may be resilient to emotional distress following the loss of an attachment figure, either because they failed to develop a strong bond to the individual in the first place, or as a result of cognitive defenses that allow them to divert attention away from information that may threaten their self-worth or independence (Fraley, Davis, & Shaver, 1998). A more recent study supported the idea that an anxious attachment style is associated with more emotional distress to the loss and difficulty accepting the death, compared to an avoidant style (Kho, Kane, Priddis, & Hudson, 2015). Interestingly, the level of yearning thoughts for the deceased mediated the associations between attachment style and emotional distress and unreality of the loss. Authors assert that, in line with previous research (Fraley & Shaver, 1997), an anxious attachment pattern gives rise to a cognitive hypervigilance to negative attachment stimuli, threats, and memories and suggest unremitting yearning thoughts act in a similar way by preventing regulation of emotions and acceptance of the loss. These findings add to the body of literature that operationalises insecure attachment patterns in terms of cognitive style (Fraley & Brumbaugh, 2007; Fraley, Garner, & Shaver, 2000; Fraley & Shaver, 1997) allowing researchers to more easily identify potential mediators that should be targeted in treatment.

1.5. Cognitive behavioural predictors

1.5.1 Memory characteristics, content, and consequences.

Memories of the Death and the Deceased. Few studies have interviewed adults with and without a diagnosis of PGD to examine how they remember their loss, the deceased, and their relationship. To date there has been one study investigating intrusive imagery in grief (Boelen & Huntjens, 2008) and to our knowledge no study has yet compared the difference between those who do and do not meet criteria for PGD. In 131 mourners Boelen and Huntjens (2008) assessed the frequency and association with loss-related mental health problems such as PGD, depression and anxiety of four types of intrusive images (a) positive memories of the lost person; (b) unpleasant moments surrounding the death; (c) re-enactment fantasies; and (d) unpleasant images of the future. They found that positive intrusive images of the lost person were the most frequently reported intrusion (63.6%) followed by re-enactment fantasies (42.7%), intrusive images of moments surrounding the death (26.7%) and unpleasant images of the future (22.9%). Interestingly, despite being the most commonly reported intrusion, positive memories of the lost person were found to be associated with PGD but not symptoms of depression and anxiety, while the other types of intrusive images/memories were associated with all three symptom measures.

Investigations of memory processing in grief have largely focused on the autobiographical memory system (Boelen, Huntjens, van Deursen, & van den Hout, 2010; Golden, Dalgleish, & Mackintosh, 2007; Golden, 2013; Maccallum & Bryant, 2010b; Nagy & Szamosközi, 2014; Neshat Doost et al., 2014; Robinaugh & McNally, 2013). This is understandable since the autobiographical memory system is thought to develop, express, and maintain the self (Conway & Pleydell-Pearce, 2000), aid in the contextualisation of the past, present, expected future, and assist in the development of goal oriented behaviours (Williams et al., 2007). These are all processes likely to be drawn upon during healthy adaptation to

bereavement. Overgeneral memory thus has the potential to precipitate mental health problems by preventing access to specific positive past memories that regulate distress and foster resilient responding. A number of studies have found impairments in autobiographical memory specificity in PGD sufferers compared to bereaved controls (Dalgleish, Rolfe, Golden, Dunn, & Barnard, 2008; Golden et al., 2007; Maccallum & Bryant, 2010b). However, the results have been mixed with some studies finding an immunity of the reduced specificity effect in PGD when the memories being probed were tied to the object of the individual's distress (Golden, 2013) and some studies not (Robinaugh & McNally, 2013). While autobiographical memory is likely an important candidate process for understanding failures of loss integration this thesis aims to investigate other factors that might serve to indicate the extent to which a loss has been assimilated into autobiographical memory.

1.5.2. Negative appraisals about the loss, the self, others and grief. Cognitive conceptualisations of PTSD suggest that negative beliefs and appraisals about the self, the world, and others are likely to play an important role in the maintenance of distressing symptoms (Ehlers & Clark, 2000). Several authors have highlighted the importance of bereavement-related cognitions in recovery from loss, but they vary with respect to the specific cognitions that are thought to be involved (Boelen, de Keijser, & Smid, 2015; Boelen & Lensvelt-Mulders, 2005; Boelen, van den Bout, & van den Hout, 2010; Boelen & van den Hout, 2008; Johnson et al., 2007; Stroebe et al., 2014). Boelen and Lensvelt-Mulders (2005) proposed a nine-factor structure of problematic grief cognitions that focus on the self, world, life, future, the reactions of others, self-blame, and beliefs about grief reactions. They found that individuals with PGD scored significantly higher on all subscales than those with lower severity grief symptoms. These findings were extended in a longitudinal analysis to determine what cognitive and avoidance variables were associated with increased grief symptoms up to 18 months after a loss (Boelen, van den Bout, & van den Hout, 2006). Only

four of the nine subscales were included in this analysis due to sample size but results showed that negative cognitions about the self, life, future and threatening interpretations about grief were all related to grief symptom severity at all three time points. However, after controlling for baseline symptom severity, only threatening appraisals of grief symptoms and beliefs about the future had an impact on grief symptoms at time point 2 (6 months after baseline) and time point 3 (15 months after baseline) respectively. While these results underscore the importance of investigating cognitions in grief they suggest that more work is needed to understand the specific beliefs that impact on the development of PGD. In more recent work on violent loss and homicide, negative cognitions about the self, the future, and catastrophic interpretations about grief were identified as predictors of PGD, suggesting that there is an important interaction between mode of death and post loss cognitions (Boelen et al., 2015; Boelen, van Denderen, & de Keijser, 2016). However, these studies were cross-sectional with the average time since death ranging from 3 to 7 years.

In subsequent research Boelen and van der Hout (2008) also found an association between threatening interpretations of grief reactions, ruminative avoidance and continuing bonds (i.e. evidence of an ongoing inner relationship with the deceased) in those experiencing severe PGD symptoms. Furthermore, threatening interpretations of grief reactions were found to be associated with elevated situational avoidance (i.e. avoiding places and people that act as reminders to the loss) in depressed mourners, highlighting the importance of understanding the interplay between cognitive processes and behavioural outcomes in the emotional difficulties associated with grief (Boelen & van den Hout, 2008).

1.5.3. Coping strategies - Avoidance, Proximity Seeking, and Rumination.

Bereavement-related coping strategies are defined in three ways in this thesis. First, avoidant coping can be described as the extent to which a participant avoids any experience

that has subsequently become difficult as a result of their bereavement. Next, proximity seeking, sometimes thought of as a way of avoiding confronting the reality of the loss, can be defined as repeated attempts to regain physical or emotional proximity to the deceased. Finally, rumination refers to repetitive and passive thinking about past events, negative emotions and the possible causes and consequences of symptoms of distress.

Avoidance is thought to be an important coping strategy in many emotional difficulties; it is also conceptualised to be a maintenance factor that is often the focus of psychological therapy. Previous cognitive behavioural conceptualisations of prolonged grief have demonstrated a role for anxious and depressive avoidance strategies in blocking recovery (Shear et al., 2005; Shear et al., 2007). Anxious avoidance is thought to stem from fear that feelings, thoughts, and recollections will be 'intolerable' or hold 'disastrous consequences,' resulting in attempts to avoid a focus on their grief either cognitively, by suppressing painful thoughts associated with their loss, or by ruminating about the loss or its consequences, which results in avoiding the painful underlying emotion associated with the permanence of the death (Boelen, 2006). This form of avoidance prevents 'self-correction' of potentially unhelpful underlying cognitions about the threatening nature of grief, which in turn maintains anxious responding. Depressive avoidance is defined as a reduction or withdrawal from previously meaningful activities and new activities that would aid in adaptation to the loss and facilitate integration of the loss into extant knowledge about the self in the present and future.

A recent longitudinal study using a measure of depressive and anxious avoidance in prolonged grief (DAAPGQ) and found that anxious avoidance (i.e. '*I avoid situations and places that confront me with the fact that [–] is dead and will never return'*, '*I avoid to dwell on painful thoughts and memories connected to his/her death'*) predicted PGD symptoms and depression (and at trend-level PTSD) but only in those whose loss was recent at baseline (i.e.

in the first 5 months) (Boelen & Eisma, 2015). Authors suggested that anxiously avoiding loss-related cues in the first few months following bereavement might interfere with elaboration and integration of the loss. In contrast, anxious avoidance after the first year, while still being a correlate of distress, does not lead to further exacerbation of grief symptoms. Interestingly, the authors did not find a prospective association between depressive avoidance and grief symptoms but it did predict bereavement related PTSD irrespective of time since loss. These findings highlight the role of maladaptive coping strategies in the first few months after loss and the importance of early assessment to determine the factors that predict the development of PGD at specific time points in the bereavement process. This study suggests that early intervention work focusing on anxious avoidance may in fact to be too late if implemented in the second half of the first year of bereavement.

Proximity seeking, the ways in which an individual attempts to maintain a relationship with the deceased, is most closely associated with definitions of 'continuing bonds,' 'the presence of an ongoing relationship with the deceased person by the bereaved individual' (Stroebe & Schut, 2005). Within the literature the continuing bonds scale (CBS) developed by Field, Gal-Oz, and Bonanno (2003) measures a mixture of behaviours (e.g. '*I seek out things to remind me of my spouse'*) and appraisals (e.g. '*Even though no longer physically present, my spouse continues to be a loving presence in my life'*). Field and colleagues found that the type of continuing bond differentially predicted grief severity in the first 6 months following loss. Bereaved individuals who used the deceased's possessions to gain comfort were more distressed during a monologue role-play with the deceased spouse and demonstrated slower resolution of grief specific symptoms over time than those who found attachment through fond memories (Field, Nichols, Holen, & Horowitz, 1999). However, in a follow-up study using the same sample 5 years post loss, any use of continuing

bonds both internal, via appraisals, or external, via proximity seeking behaviours, were associated with more severe grief reactions (Field et al., 2003). The authors propose that the stage at which a coping strategy is implemented in the grieving process may explain these contradictory results, with internal continuing bonds being adaptive early in bereavement but counterproductive 5 years later. In contrast, Boelen and colleagues, found that retaining a loved one's possessions was predictive of PGD only at the trend level, while feeling soothed and supported by memories was a strong predictor of grief intensity over time (Boelen, Stroebe, Schut, & Zijerveld, 2006). These seeming contradictions were addressed in a review by Stroebe, Schut, and Boerner (2010), who argued that attachment style and other individual differences are likely to influence the extent to which a bond is considered adaptive or maladaptive. To date, there is limited evidence to elucidate the role of proximity seeking behaviours in adaptation to bereavement.

Another coping strategy shown to increase mental health problems following bereavement is rumination, typically conceptualised as negative repetitive thinking (Nolen-Hoeksema, McBride, & Larson, 1997). It has previously been suggested that persistent self-reflection about the loss may represent 'grief work' a process theorized to be necessary in mourning to alter the internal working models of the relationship (Worden, 2010), but if persistent, may also point to rumination about the loss. Recent research has aimed to identify forms of adaptive and maladaptive rumination as a way of improving interventions aimed at reducing loss-specific distress (Eisma, Schut, Stroebe, Boelen, et al., 2015; Eisma et al., 2014). They found that grief rumination, (i.e. repetitive thinking about the causes and consequences of the loss and loss-related emotions) explained more variance in PGD symptom levels than depressive rumination (i.e. brooding and reflection on depressive symptoms and consequences). Another major finding was that grief rumination about injustice of the loss predicted higher concurrent and prospective symptom levels of prolonged

grief and higher prospective symptom levels of depression. In contrast, grief rumination about emotional reactions was related to prospective reductions in symptoms of prolonged grief. Reflection was also associated with prospective reductions of prolonged grief and depressive symptom levels (Eisma, Schut, Stroebe, Boelen, et al., 2015). Furthermore, researchers were able to distinguish between ruminative and reflective self-focus, which were associated with increased and reduced depressive symptoms over time respectively. Reflection was defined as 'a purposeful turning inward to engage in cognitive problem solving to alleviate one's depressive symptoms,' whereas brooding was defined as 'passive comparisons between the one's current situation with some unachieved standard.' This distinction is an important one because it allows for more targeted clinical intervention. For example, therapists could educate clients about the types of thoughts that are likely to be unhelpful to engage in and encourage techniques that maximize reflection while minimizing brooding. Taken together these findings suggest that coping strategies can be functional and dysfunctional and point to avoidance that serves an adaptive function. Determining what strategies are important at what stage following bereavement is likely to be theoretically and clinically important.

1.5.4. Desire thinking. Desire thinking is a concept derived from research on appetitive disorders such as addiction (Caselli & Spada, 2011; May, Kavanagh, & Andrade, 2014). In this context it can refer to the extent to which the bereaved individual engages in verbal perseveration or imaginal prefiguration of the deceased in the present moment. Verbal perseveration involves verbal repetitions about having the deceased back while imaginal prefiguration refers to the extent to which an image of the deceased in the present moment is conjured up in the bereaved individual's mind.

Studies that have focused directly on yearning have suggested that in prolonged grief

it may feel bittersweet; feeling both negative as it is associated with a deficit state and comforting as it draws individuals closer to a time when the deceased was alive (O'Connor & Sussman, 2013). The phenomenology of yearning has not yet been investigated comprehensively. Clinical observations seem to suggest it involves physical, psychological and neurobiological changes from homeostasis. An fMRI study investigated the neural responses of a group of widows with and without a diagnosis of PGD when viewing grief-related idiographic words selected from a written narrative of the death event versus neutral words and a picture of the deceased versus a stranger (Arizmendi, Kaszniak, & O'Connor, 2016). Only the PGD group showed increased activation in the neural pathways linked to the rewards system in the brain and in particular the nucleus accumben (NA) when viewing grief-related words. The authors hypothesised that there would have been an increase in response to the picture as well had there not been a habituation effect of a single photograph of the deceased being repeatedly presented. A further analysis on the first third of trials revealed a similar increase in activation. Importantly, the increases observed in the picture and word conditions were also significantly correlated with more frequent self-reported yearning as measured by criterion A1 of the complicated grief assessment (CGA; Jacobs SC, Mazure C, & Prigerson, 2000). Recent research has validated the use of the Yearning in Situations Scale (YSL) in clinical contexts with treatment seeking individuals with PGD (Robinaugh et al., 2015). Results showed that eleven of the thirteen items that loaded highest on a single YSL factor assess evaluative counterfactual thought, in which the participants unfavourably contrasted their present reality with a counterfactual reality that includes the deceased. Accordingly, the YSL appears to assess yearning principally, though not exclusively, by measuring the cognitive representation of the desired object (i.e., a preferred counterfactual reality in which the deceased is present). While this description of yearning is certainly an important one, other prominent researchers have defined it differently. Bowlby

(1960), defined yearning as 'yearning, a pre- occupation with and pining for the deceased,' whereas Carr et al. (2000, p. 200) define it as 'an intermittent, recurrent, and obtrusive wish or need to recover the person who has died'. To our knowledge, no studies have yet operationalised a behavioural component of the emotional experience of yearning through imagining the presence of the deceased as a function of verbal perseveration (i.e. '*When I begin to think about [-] I continue until I am exhausted'*) and imaginal prefiguration (i.e. *'I bring to mind the sensations I would feel if we were together'*). These concepts were originally defined within the addictions literature and are conceptualised as responses to craving for an addictive substance (The Desire Thinking Scale; Caselli & Spada, 2011). Taken together these constructs measure desire thinking, which may act, in line with the definitions above, as a behavioural response to yearning (i.e. the act of trying to satisfy the deficit in experience that the bereavement has created).

1.7 Outline of The Oxford Grief Study

In assessing risk factors known to be important in the treatment of PTSD and their possible relevance for treating PGD, it is necessary to determine the significance of these factors in comparison to loss characteristics and pre-loss individual differences. In particular if modifiable risk factors (e.g. cognitive factors) are identified as more predictive of grief severity than variables such as time since loss, type and circumstances of the loss, relationship characteristics of the loss and attachment style, then treatments targeting such modifiable predictors can be designed. Drawing on influences from the cognitive model for PTSD (Ehlers & Clark, 2000) and previous literature, this thesis aims to develop and test a number of cognitive predictors for the extent to which they influence the development and maintenance of prolonged grief disorder (PGD). This will be done in three parts: Part I, consisting of chapters 2, 3 and 4, covers questionnaire development and validity testing; Part

II, consisting of chapters 5 and 6, investigates group differences in cognitive predictors and the predictive relationships between cognitive variables and psychological distress; Part III, consisting of chapter 7, examines grief trajectories and their correlates.

1.7.1 Part I – Questionnaire development and validity testing. Pilot studies 1 (chapter 2) and 2 (chapter 3) consist of a sample of bereaved individuals at least 6 months post loss and constitute the questionnaire development section of the thesis. Study 1, in consultation with experienced therapists, develops an item pool for the appraisals and coping strategies measures. Questionnaire content subscales are then tested for their ability to discriminate bereaved individuals with and without PGD. Those with and without PGD will also be compared on scales of attachment style and desire thinking adapted for use with bereaved participants. Study 2 (chapter 3) is a qualitative analysis of semi-structured interviews with a subset of individuals from study 1 to identify content and construct areas missing from the questionnaires developed in chapter 2. Using interviews with bereaved individuals with and without PGD, chapter 3 will aim to explore the content, consequences, qualities, and triggers of loss-related memories to further understand the impact they have on an individual's grief experience. Furthermore, coping strategies, repetitive thinking and sources of support will be explored for their relevance to PGD. Study 3 (chapter 4) uses a large community sample of bereaved individuals at least 6 months post loss to evidence factoral and psychometric validation. It consists of an exploratory and confirmatory factor analysis of the six newly developed/adapted questionnaires and multiple robustness checks to confirm each scale's psychometric validity.

1.7.2 Part II – Group differences and mediation analyses. Cross-sectional studies 4 (chapter 5) and 5 (chapter 6) use the same sample as chapter 4. Study 4 compares four diagnostic groups (no-PGD/PTSD, PGD, PTSD, PGD+PTSD) on the cognitive predictors to understand how PGD differs from PTSD on memory characteristics, appraisals, coping

strategies, social disconnection beliefs beliefs, grief resilience, and desire thinking and how suffering from both conditions (PGD+PTSD) impacts results. Using a series of mediation analyses, study 5 tests the cognitive model for PTSD (i.e. that problems with memory and negative appraisals influence maladaptive coping strategies) in the prediction of PGD, PTSD and depression in a newly bereaved sample (<6 months post loss) and a sample bereaved longer (> 6 months post loss).

1.7.3 Part III – Grief trajectories and their correlates. The longitudinal study (chapter 7) consists of a large sample of newly bereaved individuals (i.e. in the first 6 months following loss). Participants are assessed at baseline and followed up at 6 and 12 months later to investigate the predictive utility of cognitive factors in the first 6 months on grief severity over time. Study 6 compares distinct trajectories of grief in the first 12-18 months of loss and identifies the cognitive factors associated with more severe and enduring grief reactions. Further analyses investigate whether the hypothesis assessed in chapter 6 (i.e. memory characteristics and appraisals predict maladaptive coping strategies) is equivalent across grief classes.

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Chapter 2 - Part I: Development of the Oxford Grief Appraisals and Coping Strategies Scales: Initial Item Pool, Item Selection and Comparison of Bereaved People with and without Prolonged Grief Disorder

1. Introduction

Losing a significant other to death is an inevitable experience. The mourning process resulting from bereavement can involve a number of painful and distressing experiences such as yearning for the deceased individual, frequent distracting thoughts and memories, and disbelief regarding the finality of the loss. Despite these experiences, the majority of bereaved individuals will adapt to their loss over time and are able to return to pleasurable activities and meaningful relationships. However, between 1 and 9% of individuals will go on to experience Prolonged Grief Disorder (PGD), a form of severe and enduring grief that substantially interferes with social and occupational functioning (Fujisawa et al., 2010; Kersting, Brähler, Glaesmer, & Wagner, 2011; Middleton, Burnett, Raphael, & Martinek, 1996). Therefore, from both a clinical and theoretical perspective, it is important to identify psychological factors associated with the development and maintenance of emotional distress following bereavement.

PGD, in its presentation, has similarities to posttraumatic stress disorder (PTSD), another psychological problem that develops after a traumatic event, including, but not exclusive to, sudden bereavement. Both conditions overlap phenomenologically in the domain of intrusive cognitions. Intrusive re-experiencing, which is the hallmark symptom of PTSD, is almost predominantly painful and negative. Yearning for a deceased person has been described as intrusive unfulfilled wishes that the deceased be physically present, which can be bittersweet in nature (Maercker & Znoj, 2010). However, the conditions seem to diverge in the content of their intrusive imagery with PTSD re-experiencing typically related to scenes of the trauma while grief-related intrusions are characterised by intense preoccupation with images and memories of the deceased (Boelen & Huntjens, 2008).

Given these parallels, previous research investigating the psychological factors associated with prolonged grief responses (Boelen & van den Bout, 2010; Boelen, van den

Bout, & van den Hout, 2003a) has drawn on literature from cognitive approaches to PTSD (Foa, Ehlers, Clark, Tolin, & Orsillo, 1999; Wenninger & Ehlers, 1998). As in PTSD, aside from re-experiencing, global beliefs about the self, the world and others as well as maladaptive coping strategies are thought to be critical in the development and maintenance of PGD (Boelen & Eisma, 2015; Boelen, van den Bout, et al., 2006; Eisma, Schut, Stroebe, Boelen, et al., 2015; Field & Bonanno, 2001; Shear, 2012).

Cognitive appraisal measures that have shown associations with the stress-response syndromes PTSD and PGD in empirical studies have focused on similar content domains of catastrophic thinking in which the worst possible outcome is expected. The posttraumatic cognitions inventory (PTCI) developed by Foa et al. (1999) measures three empirically validated factors relating to negative cognitions about the self (e.g. general negative view of self, perceived permanent change, alienation, hopelessness, lack of self-trust, and negative interpretation of symptoms), the world (e.g. unsafe world and mistrust of other people), and self-blame (e.g. *The event happened to me because of the sort of person I am*). Building on the PTCI, the Grief Cognitions Inventory (GCQ) developed by Boelen and colleagues comprises nine *a priori* subscales (self, world, life, future, self-blame, others, appropriateness of grief, cherishing grief, and threatening interpretation of grief) (Boelen & Lensvelt-Mulders, 2005). They found all nine subscales predicted the severity of symptoms of PGD, depression, and anxiety and were inversely related to measures of positive thinking. The GCQ was also found to be significantly associated with avoidance of reminders of the loss and rumination regarding events leading up to the death, in line with cognitive behavioural conceptualisations of PGD (Boelen, van den Hout, et al., 2006).

Similarly, coping strategies that have been shown to maintain PTSD may also be relevant to PGD (Clohessy & Ehlers, 1999; Ehlers & Clark, 2000; Ehlers et al., 1998; Valentiner, Foa, Riggs, & Gershuny, 1996). Avoidance behaviours (e.g. situations, place,

and people) are central to the maintenance of PTSD and are also thought to be critical in PGD (Boelen, 2006; Shear et al., 2007). Grief-related avoidance may be more nuanced than avoiding triggers to reminders of the loss because memories are bittersweet in nature causing individuals to seek out reminders of the deceased. While seemingly representing proximity seeking to the lost person, these behaviours may represent a subgroup of avoidance behaviours. In wearing the deceased's clothes or bringing images of them to mind, bereaved individuals may be attempting to avoid the reality that the person they loved has died (Boelen, van den Hout, et al., 2006; Kobak, 1999). Proximity seeking within the literature has largely been conceptualised as the ways in which an individual attempts to maintain a relationship with the deceased (frequently referred to as 'continuing bonds') (Boelen, Stroebe, et al., 2006; Field et al., 2003). These typically take the form of physical proximity (e.g. retaining the deceased possessions) or an internalised proximity (e.g. having inner conversations with the deceased). Results are inconsistent with some studies finding physical, but not internalised, proximity seeking predicts grief severity (Field et al., 2003) and some finding the reverse (Boelen, Stroebe, et al., 2006). Further studies argue that individual differences are the key to understanding the role of proximity seeking on grief responses with attachment style (Stroebe et al., 2010) and loss meaning (Neimeyer, Baldwin, & Gillies, 2006) implicated as important factors.

Another process important in the development of both PTSD and PGD is repetitive ruminative thinking (Boelen, van den Hout, et al., 2006; Ehring et al., 2008; Eisma et al., 2013; Stroebe, Boelen, et al., 2007). Similar to the anxiety literature, grief rumination (i.e. repetitive thinking about the loss, one's reactions to the loss, and the consequences of the loss) has been linked to avoidance. It is proposed to serve as a distraction from the most painful aspects of the loss (Stroebe, Boelen, et al., 2007). In ruminating about the past, reviewing the evidence of painful events, and reflecting on the hopelessness of the situation,

it is suggested that this confirmatory process of hopelessness may be more bearable than the uncertainty about whether they have control over aspects of their lives (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). However, other theories of rumination would suggest that it is supported by positive metabeliefs about the functions and consequences repetitive thinking (Papageorgiou & Wells, 2001), or an abstract thinking style (Watkins, 2008). Research into the types of rumination specifically relevant to grief found that items pertaining to injustice and social support from the Utrecht Grief Rumination Scale (UGRS) were predictive of complicated grief and depression at 6 and 12 months (Eisma, Schut, Stroebe, Boelen, et al., 2015).

The above studies suggest that negative cognitions about the self, other people and the future and problematic coping responses such as avoidance, rumination and proximity seeking are related to symptom severity in both PTSD and PGD. This thesis builds on these findings and aims to develop and test a comprehensive battery of measures of cognitive and behavioural factors that contribute to the development and maintenance of PGD. Part I of this thesis comprises of the questionnaire development chapters 2, 3, and 4. In order to develop the Oxford Grief Appraisals (OG-A) and Coping Strategies (OG-CS) measures, a large pool of items was generated in collaboration with therapists experienced in the treatment of enduring grief reactions and PTSD following loss, as well as relevant items from the literature (e.g. GCQ and UGRS). These items were then tested for their ability to discriminate between individuals with and without PGD (Chapter 2). In chapter 3 interviews with bereaved individuals with and without PGD were qualitatively analysed to identify content domains missing from the item pool in chapter 2. Finally, the best items were then selected from a large community sample of bereaved people and exploratory and confirmatory factor analyses and robustness checks were conducted to ensure factoral and psychometric validity (Chapter 4).

This study also explores the association with another form of repetitive thinking, i.e. desire thinking, to grief intensity (Caselli & Spada, 2011; Kavanagh, Andrade, & May, 2005). Yearning to be reunited with the deceased is a core feature of PGD but previous research has not operationalised potential behavioural components. Here we adapted a measure typically used within addictions literature to record the extent to which bereaved persons engage with imaginal or verbal preoccupation for the return of the deceased (Caselli & Spada, 2011). If rumination can be understood as confirmatory reassurance of the hopelessness of a situation, we propose that this measure more clearly captures an active desire for reunion and represents an attempt to stave off hopelessness by realising unfulfilled wishes. Furthermore, the present study also included a measure of attachment style and desire thinking for comparison. Previous research has demonstrated some support for the influence of attachment style on grief intensity (Currier et al., 2015; Fraley & Bonanno, 2004). An anxious attachment style is thought to result in hypervigilance to negative memories and threat material which drives yearning thoughts in people who have lost their loved ones (Kho et al., 2015).

Aims: This chapter describes the initial item pool and item selection for the Oxford Grief Appraisals and Coping Strategies Scales. It compares bereaved individuals with and without PGD on newly developed measures of appraisals, coping strategies, and desire thinking as well as investigating pre-loss individual differences such as attachment style.

Hypothesis 1: In a sample of bereaved individuals, higher scores on grief-related appraisals and coping strategies will be related to the presence of PGD.

Hypothesis 2: In a sample of bereaved individuals, higher scores on adapted questionnaires of desire thinking and attachment style (avoidant and anxious) will be related to the presence of PGD.

Furthermore, it was expected that the new scales would demonstrate acceptable to excellent internal consistency and criterion validity.

2. Methods and Materials

2.1 Participants

Participants were aged 18 to 75 years old and had experienced the death of a close loved one at least six months prior to participation. Participants were recruited from bereavement charity mailing lists and social media as well as the Google content network and provided with a link to the online questionnaires. No restrictions on inclusion were placed on the length of time since loss, or on the variety and intensity of those symptoms so as to preserve the heterogeneity in the sample that better reflects the population of grievers and those with PGD. Given that mood and anxiety disorders are common among PGD-diagnosed individuals (Simon et al., 2007), participants were not excluded on the basis of these comorbidities.

Power analysis. Previous literature has suggested that that a pilot study sample should be 10% of the sample projected for the larger parent study (Connelly, 2008). Our parent study aimed to recruit 60 participants for each of the groups in chapter 5 (no-PGD/PTSD, PGD, PTSD, PGD+PTSD), thus a pilot sample size of 12 would have been suitable. However, previous research on survey data gathered online suggests a sample size of 10-30 participants (Hill, 1998). The current study's sample size (N = 52) meets this requirement, meaning it is sufficiently powered to detect group differences.

2.2 Summary of measures and administration procedure

All questionnaire data were collected using online data collection software that allows measures to be compiled and distributed via the internet (Qualtrics, Provo, UT) (see Table 2.1). In order to minimize the effects of test fatigue a break was suggested half way through the questionnaires and participants were encouraged to take more if

necessary. In addition, questionnaire formats were varied and items on longer questionnaires were randomly presented. Questionnaires were designed to be tailored to the user; participants chose a preferred name for the deceased that then appeared in all relevant items (i.e. Without *my dad* I can never be strong again), furthermore only items relevant to particular characteristics were displayed (i.e. items about avoiding the home were only shown to those who shared a home with the deceased).

Table 2.1

Measures in protocol order

Order	**Online Measures**
1	Demographic and Loss Information (Adapted from; Neimeyer, 2006)
2	Item pool for Oxford Grief Appraisal measure (OG-A)
3	Item pool for Oxford Grief Coping Strategies measure (OG-CS)
4	Prolonged Grief Disorder Inventory (PG-13; Prigerson & Maciejewski, 2008)
5	Postraumatic Stress Disorder Checklist for DSM-5 (PCL-5; Weathers et al., 2013).
6	The Experiences in Close Relationships Scale – Short form (ECR-S; Wei, Russell, Mallinckrodt, & Vogel, 2007)
7	Patient Health Questionnaire (PHQ-9; Kroencke, Spitzer, & Williams, 2001)
8	Adapted Desire Thinking Scale (DTS; Caselli & Spada, 2011).

2.3 Measures

2.3.1. Demographic and Loss Information. (Adapted from; Neimeyer, 2006)

Age, gender, ethnic background, marital status, employment status, household income (an indicator of socio-economic status), religious beliefs, highest qualification, time since loss, relationship to deceased, length of relationship to deceased, mode of death, whether the participant was present at the time of death, frequency of contact with the deceased, number of other significant losses, amount of hours spent discussing the loss, and details of treatment received for past and current emotional problems were recorded. Mode of death was coded as

violent or non-violent on the basis that it resulted from human (in)action (i.e. that of the perpetrator in cases of homicide, the deceased in suicidal deaths, and relevant others in the case of many accidents). Death through violent means is thought to violate fundamental assumptions about the perceived order of the natural life span and as such may result in a different grieving response than a loss via natural causes (Currier et al., 2015)

2.3.2 Symptom Measures.

Prolonged Grief Disorder Inventory (PG-13). (Prigerson & Maciejewski, 2008) The PG-13 assesses the prevalence and severity of PGD symptoms (e.g. yearning for the deceased, feelings of emotional numbness/detachment from others, feeling that a part of oneself died along with the deceased). The PG-13 is a subset of 13 items from the Inventory of Complicated Grief (ICG; Prigerson et al., 1995). The ICG has very good internal consistency (α=.85), test-retest reliability (.80), and has excellent incremental validity in predicting a variety of grief-related functional impairments, controlling for depression and anxiety. The PG-13 was derived from an Item Response Theory analysis of the ICG, whereby its most informative and unbiased items were identified (Prigerson et al., 2009). Combinatoric analyses then determined the diagnostic algorithm providing the greatest degree of diagnostic efficiency with respect to the criterion standard (Litz et al., 2014). In order to meet criteria for PGD, bereaved individuals need to have experienced at least one item of separation distress, and at least five out of nine symptoms of cognitive, emotional or behavioural disturbances daily or several times a day for at least six months following the bereavement. These difficulties must also result in a significant impairment in social, occupational or other important areas of functioning (e.g. domestic responsibilities). A continuous score can also be determined by summing the items.

Posttraumatic stress disorder checklist for DSM-5*(PCL-5; Weathers et al., 2013).* The

PCL-5 is a self-report instrument assessing distress associated with the 20 symptoms of PTSD in DSM-5 over the past month. Items were rated on a five-point scale, from 0 (not at all) to 4 (extremely). A cut-off score of 33 has been recommended for a probable PTSD diagnosis.

Patient Health Questionnaire (PHQ-9; Kroencke et al., 2001). The PHQ-9 is a self-report measure based on the Diagnostic and Statistical Manual, 4th Edition, Text Revision criteria for major depressive disorder (DSM IV-TR, American Psychiatric Association, 2000). It mirrors the nine major depressive symptoms, with each item scored on a zero (not at all) to three (nearly every day) Likert scale in the last two weeks. A systematic review found the PHQ-9 had 77% sensitivity and 94% specificity for a diagnosis of major depression based on a structured psychiatric interview (Wittkampf, Naeije, Schene, Huyser, & van Weert, 2007). A cut-off score of 9 has been recommended for a probable diagnosis of depression.

2.3.3 Other Questionnaire Measures.

Adapted Desire Thinking Scale (DTS; Caselli & Spada, 2011). The DTS is a 10-item self-report instrument consisting of two subscales of five items that measures desire thinking. The first subscale assesses the perseveration and repetition of verbal thoughts about desire-related content and experience (verbal perseveration [VP]). The second subscale measures the tendency to visually imagine desire-related content and experiences (imaginal prefiguration [IP]). The DTS total score and subscale scores have shown good factor structure, internal consistency, test–retest reliability, as well as predictive and discriminative validity (Caselli & Spada, 2011). The adapted version in this study replaced the term 'desired activity' with the chosen name of the deceased and altered some wording to clarify items.

The Experiences in Close Relationships Scale Revised ***(ECR-S; Wei et al., 2007).***

Attachment anxiety and avoidance were measured with a validated 12-item version of the ECR-S. Instructions and wording were adapted to ask about 'close loved ones' such as partners, close friends and family members instead of exclusively romantic partners. Participants rated their agreement with six items measuring attachment anxiety (e.g. *'I need a lot of reassurance that I am loved by my close loved ones'*) and six items measuring attachment avoidance (e.g. *'I do not often worry about being abandoned'*) on seven-point scales from 1 (strongly disagree) to 7 (strongly agree).

2.3.4 New measures developed for the purposes of the project.

Pilot measures of appraisals and coping strategies were developed in collaboration with Professor Anke Ehlers and cognitive therapists experienced in the treatment of chronic grief reactions through loss and through a review of the literature (Boelen & Lensvelt-Mulders, 2005; Paul A. Boelen, Jan van den Bout, & Marcel A. van den Hout, 2003; Eisma et al., 2014; Mancini et al., 2009).

Appraisals questionnaire. The item pool for the appraisals measure comprised 125 cognitive items pertaining to 7 content domains:

- Changed self (17 items): perceived disruptions to the continuity of self perception and a sense of permanent change post-loss such as '*I have lost my sense of who I am in the world*' or '*I can never feel pleasure again.*'
- Negative interpretations about grief symptoms (16 items): excessively negative appraisals of symptoms such as '*If [-]'s death fully hit me I would go crazy*.'
- Negative relationships with others (19 items): disruptions to social processes

since the loss (e.g. *I cannot maintain previous relationships without [-]*).

- Concerns about losing the connection with the deceased (17 items), such as '*Letting go of my grief would mean betraying [-].'*
- Self-blame (20 items): beliefs about holding responsibility for the death or other aspects of the relationship (e.g. *I blame myself for saying unpleasant things to [-]).*
- Difficulty accepting the death (11 items), such as '*I will never be able to make sense of the death.'*
- Meaningless/hopelessness about life or the future (25 items), such as *'I can't imagine anything good in my future.'*

Coping strategies questionnaire. The item pool for the coping strategies measure included 53 items pertaining to three content domains:

- Avoidance of grief or connection to the deceased (15 items) (e.g. *I avoid eating foods and meals that we shared or [-] liked*).
- Seeking proximity or connection to the deceased (16 items) (e.g. *I feel bad if I don't visit the grave/where the ashes were scattered*).
- Rumination about the loss (22 items) (e.g. *I can't stop thinking about how much [-] suffered*).

2.4 General procedure

The research was reviewed and approved by the Oxford University Medical Sciences Central University Research Ethics Committee Reference number MS-IDREC-C1-2015-032 (Appendix I). Participants received electronic information sheets (Appendix II) and informed consent was sought from the participant at the outset when filling in the online

questionnaires. Participants were provided with a link to the online questionnaires via bereavement charity mailing lists and social media as well as the Google content network. Participants were also given the opportunity to download a research support leaflet (Appendix V) that detailed helpful services during the bereavement process. These services ranged from 24-hour telephone support to more intensive one-to-one counselling as well as advice about what to do in a mental health emergency.

2.4.1 Procedure for distressed participants. Before being given access to the measures prospective participants were informed that the process may be emotionally challenging and advised to choose a location in which they felt comfortable and a time to complete them that would allow for some free time afterwards. Participants were also advised to have something either relaxing or distracting, depending on their preferred coping strategy, planned for after the questionnaires. Furthermore, everyone who completed the measures online received a check-in email the next day to ascertain whether further support was needed and to give them the opportunity of a phone call to discuss any aspects that they had found distressing. The email also included an expression of appreciation that they participated, condolence for their loss, and normalisation of difficult emotions related to answering questions about grief. These procedures were included following suggestions from early pilot participants to ensure the study was as ethically and emotionally sensitive as possible, given the delicate subject matter.

2.5. Data analysis

2.5.1 Preparation of the data. The Statistical Package for Social Sciences version 21 (SPSS, IBM Corp. in Armonk, NY) was employed for quantitative analyses. Statistical significance was set at $p < .05$. Where analysis of variance (ANOVA) was carried out,

Mauchly's test of sphericity was not conducted due to a maximum of two levels within the dependent variables (Field, 2013). Homogeneity of variance was assessed for each test and where assumptions were violated the alternative test statistic is reported.

2.5.2 Exploring the data. The full data set was screened for missing data and outliers before the main statistical analyses were conducted (Field, 2009). Descriptive statistics were used in order to identify missing data, outliers, and skewness and kurtosis were calculated to establish whether each variable met the assumptions of parametric testing. In cases where an unequal distribution or variance was observed, transformations were used in an attempt to adjust the distribution, explored further below.

2.5.3 Outliers. Outliers were defined as scores which were more than three standard deviations from the mean score, and which were considered to be from outside of the group the study was designed to capture (Field, 2009). After examining the data, using box plots, histograms and descriptive statistics for each variable, no scores presented as significant outliers on any of the dependent variables.

2.5.4 Checking normality and variance assumptions of parametric data.

Skewness and kurtosis z-scores were calculated for each variable. Z-scores for skewness and kurtosis were calculated using the following formulae (Field, 2009):

$$\text{Skewness} \quad z = \frac{S}{SE_{skew}} \qquad \text{Kurtosis} \quad z = \frac{\sqrt{K}}{SE_{kurtosis}}$$

For both skewness and kurtosis, a z-score of less than 2.58 was used to indicate a normal distribution ($p < .01$), as recommended for small samples (Field, 2009). The rumination subscale revealed a significant positive skew in the no-PGD group ($z = 2.68$, p

= .004). Transformations were unable to establish a normal distribution of this subscale and as such non-parametric tests are reported. All other dependent variables met parametric assumptions of variance and normality.

3. Results

3.1 Participants

Characteristics of participants with and without PGD are reported in Table 2.2. The PGD and no-PGD groups did not significantly differ in terms of age, gender, ethnic background, months since death, length of relationship. Groups differed significantly on scores of grief intensity, a continuous measure derived from the PG-13 (Prigerson & Maciejewski, 2008) , depression (PHQ-9; Kroencke et al., 2001) and PTSD severity (PCL-5; Weathers et al., 2013).

Table 2.2

Participant Demographics, Loss Characteristics, and Psychopathology

	No-PGD (n = 28)	PGD (n = 24)	Statistic (t,χ^2)
Demographics			
Age in years *M (SD)*	53.54 (10.82)	55.50 (9.24)	t = -.70
Gender *N (%)*			
Female	22 (78.57)	21 (87.50)	.480[a]
Highest level of education *N (%)*			
No qualifications	0 (0.00)	2 (8.33)	
O levels/GCSE	2 (7.14)	3 (12.50)	
A Levels	0 (0.00)	3 (12.50)	
Professional qualification (e.g. teaching, nursing)	8 (28.57)	6 (25.00)	
NVQ/BTech	1 (3.57)	1 (4.16)	
University degree	7 (25.00)	7 (29.17)	
Postgraduate degree	10 (37.5)	2 (8.33)	
Loss characteristics			
Months since loss *M (SD)*	49.35 (74.01)	26.54 (14.35)	t = 1.59
Who died? *N (%)*			
Spouse/Partner	15 (53.57)	13 (54.17)	
Child	6 (21.43)	7 (29.17)	
Parent	4 (14.29)	2 (8.33)	
Other close relative/friend	3 (10.71)	2 (8.33)	
Mode of death			
Non-Violent	23 (82.14)	21 (87.50)	
Violent (e.g. homicide, suicide, accident, medical negligence)	5 (17.86)	3 (12.50)	
Length of relationship M *(SD)*	340.32 (119.27)	356.17 (156.79)	t = -.41
Psychopathology			
PGD *M (SD)*	29.64 (6.73)	47.20 (4.70)	t = -10.73***
Depression *M (SD)*	8.07 (5.30)	19.83 (5.42)	t = -7.90***
PTSD *M (SD)*	21.73 (11.79)	54.96 (15.48)	t = -8.77***

Note. Categorisation into *PGD* and *No-PGD* determined by ICD-11 diagnosis on the PG-13.
[a]Fisher's Exact Test (2x2), $p < .05^{*}$ $p < .01^{**}$ $p < .001^{***}$

3.2 Item selection for appraisal and coping measures

In order to select items for inclusion within the final measures from the pilot pool of items, the suitability of the items was evaluated by, (1) mean scores and standard deviations to select items with a good range of item responding, (2) correlations between items and PGD

symptoms, (3) removal of low mean scores indicating low endorsement, (4) low internal consistency on *a priori* content domains, and (5) ability of the item to discriminate between participants with and without PGD/ and PGD (t-tests). Finally, items were reviewed further by therapists experienced in the treatment of PGD for the extent to which each item was representative of the appraisals and coping strategies of their clients. For appraisals 73 items were removed, 32 items were removed/deselected because their content was deemed very similar to other items and 41 items because of low discriminatory power between groups.

Given the similarities between PGD and PTSD (Simon et al., 2007; Zisook, Chentsova-Dutton, & Shuchter, 1998) and differences (Bonanno et al., 2007) following a loss, a subscale with items that distinguished between individuals suffering from PGD alone from those with comorbid PTSD was retained in the appraisals measure. Items relating to the concept of self-blame specifically about the death (4 items) such as '*They must have suffered at the end and I was not there to comfort him/her*' were included. These items showed modest but significant differences between those with and without PGD, but were significantly ($p < .05$) correlated with symptoms of PTSD in the PGD group and thus retained for subsequent studies.

After exclusions, 52 appraisals items were selected for further evaluation, with 6 items for the subscale 'changed self,' 6 for 'self-blame', 4 for 'self-blame about the death', 5 for 'negative interpretation of grief reactions', 5 for 'not accepting the death', 8 for 'fear of losing connection', 9 for 'relationships with others', and 9 for 'hopelessness of life' (details in Appendix III).

For coping strategies, 7 items were dropped because their content was very similar to another item with better discrimination between the groups, 17 items because of low discriminatory power, and 2 items with overlapping content were combined to create one item (e.g. Two separate items reflecting support from friends and family became *"I ask*

myself whether I get adequate support from friends or family members"). This left 28 coping strategies items for further evaluation, 7 for the subscale avoidance, 7 for proximity seeking, and 14 for rumination (Appendix IV). For the selected items, scores for each *a priori* scale fell within the acceptable range of skewness and kurtosis.

3.3 Psychometric validity of questionnaire measures

Psychometric validity for the measures are presented in Table 2.3. The *a priori* concept domains of the newly developed and adapted scales demonstrated acceptable internal consistency. Criterion validity was confirmed via significant correlations with symptoms of PGD, PTSD and depression. Internal consistencies (Cronbach's alpha) and were all acceptable to excellent.

Table 2.3

Psychometric validity measures for a priori subscales

	Criterion validity *r*			IC
	PGD	PTSD	Depression	*α*
Appraisals				
A changed self *(6 items)*	.83***	.76***	.74***	.85
Negative interpretation of grief symptoms *(5 items)*	.58***	.65***	.60***	.87
Self-blame *(6 items)*	.42**	.48***	.40**	.86
Self-blame about the death (4 items)	.32*	.38**	.29*	.73
Difficulty accepting the death *(5 items)*	.74***	.68***	.58***	.74
Fear of losing connection *(8 items)*	.55***	.52***	.45**	.92
Relationships with others *(9 items)*	.65***	.70***	.70***	.79
Meaninglessness or hopelessness about life or the future *(9 items)*	.72***	.66***	.67***	.93
Coping strategies				
Proximity seeking *(7 items)*	.57***	.53***	.51***	.78
Avoidance *(7 items)*	.68***	.74***	.64***	.86
Rumination *(14 items)*	.74***	.74***	.66***	.93
Attachment Style				
Avoidant	.34*	.49***	.38**	.79
Anxious	.37**	.47***	.52***	.74
Desired thinking				
Verbal perseveration	.78***	.71***	.63***	.90
Imaginal prefiguration	.59***	.56***	.45**	.89

Note: *r* = Correlation, IC = Internal Consistency, $p < .05^{*}$ $p < .01^{**}$ $p <. 001^{**}$

3.4 Group differences on questionnaire measures

Discriminant validity of new item concepts was assessed by comparing responding of individuals with and without a probable diagnosis of PGD (Table 2.4). Groups significantly differed on all subscales of the appraisals and coping strategies measures ($p < .001$). Two appraisals items measured overlapping content with symptoms of PGD. The 'changed self' item '*I have lost my sense of who I am in the world'* and the hopelessness of life and future item from the GCQ item '*My life is meaningless since [-] died*' are similar to PGD symptom item 6 '*Do you feel confused about your role in life or feel like you don't know who you are (i.e. feeling that a part of yourself has died)?*' and item 12 '*Do you feel that life is unfulfilling, empty, or meaningless since your loss?'* Correlations between these appraisals items and their respective grief symptoms did not exceed .80. However, to ensure results were not driven by this overlap, these appraisals items were removed and group differences re-run. These deletions did not change group differences.

The adapted questionnaires (ECR-S and DTS) also demonstrated group differences. The PGD group scored significantly higher than the no-PGD group on the anxious attachment subscale of the ECR-S $t(50) = -2.47$, $p = .02$. There was a near significant group difference on the avoidance attachment scale ($t(50) = -1.90$, $p = .06$). The groups significantly differed on the measures of verbal perseveration, $t(50) = -6.82$, $p < .001$ and imaginal prefiguration $t(50) = -3.30$, $p = .002$, with the PGD group reporting higher levels of desire thinking about the deceased.

Table 2.4

Subscale data across questionnaire sample

	No-PGD *(n=28)*		PGD *(n=24)*		
	Mean	SD	Mean	SD	*t*
Appraisals					
A changed self *(6 items)*	23.50	5.97	34.20	5.26	-6.81***
Negative interpretation of grief symptoms *(5 items)*	16.42	6.44	25.40	6.34	-5.05***
Self-blame *(6 items)*	18.03	6.65	25.75	8.86	-3.58**
Self-blame about the death (4 items)	11.50	5.39	15.08	6.70	-2.14*
Difficulty accepting the death *(5 items)*	21.54	5.37	29.58	4.95	-5.58***
Fear of losing connection *(8 items)*	25.56	9.27	37.85	12.84	-3.91***
Relationships with others *(9 items)*	23.64	6.48	35.79	8.74	-5.74***
Meaninglessness or hopelessness about life or the future *(9 items)*	31.25	10.49	48.45	11.25	-5.70***
Coping strategies					
Proximity seeking *(7 items)*	14.64	3.86	21.13	5.60	-4.88***
Avoidance *(7 items)*	11.04	3.60	18.70	7.48	-4.14***
Rumination *(14 items)*	27.68	8.67	44.13	8.95	71.50u***
Attachment Style					
Avoidant	17.54	6.54	21.33	7.88	-1.90
Anxious	22.50	5.89	27.37	8.29	-2.47*
Desired thinking					
Verbal perseveration	10.64	3.92	18.29	4.16	-6.82***
Imaginal prefiguration	10.07	3.56	13.67	4.29	-3.30**

Note: u significance of Mann-Whitney U test
$p < .05^{*}$ $p < .01^{**}$ $p < .001^{***}$

4. Discussion

The present study aimed to develop new measures of grief-related appraisals and maladaptive coping strategies from a large item pool developed in collaboration with expert therapists and through review of previous literature (Boelen & Lensvelt-Mulders, 2005; Paul A. Boelen et al., 2003; Eisma et al., 2014). Following administration of the pilot questionnaire, items were selected from a larger pool of items; the shortened scales successfully distinguished between bereaved individuals with and without prolonged grief disorder. Appraisals subscales measuring beliefs about a changed self, self-blame, difficulty accepting the loss, negative interpretation of grief reactions, hopelessness of life and future, relationships with others, and fear of losing connection all significantly differed between the PGD and no-PGD group demonstrating discriminant validity. Furthermore, items pertaining to self-blame specifically about the death significantly correlated with PTSD symptoms in those suffering from PGD.

Avoidance, proximity, and rumination behaviours were significantly different between groups, with the PGD group reporting higher coping strategies on all three subscales. A newly adapted measure of desire thinking also successfully distinguished between those with and without PGD, with those experiencing PGD engaging in higher levels of verbal perseveration and imaginal prefiguration of the deceased. Finally, the PGD group reported significantly higher anxious attachment compared with the no-PGD group. Taken together these results provide initial support for the newly developed measures of appraisals and coping strategies and the desired thinking questionnaire.

This study provides the first step in developing a battery of grief-specific self-report measures focusing on the targets for treatment in PGD. Previous research offered a basis for examples of appraisals and coping strategies common in severe and enduring grief reactions (Baker, Keshaviah, Horenstein, Goetter, Mauro, Reynolds, Zisook, Shear, et al., 2016;

Boelen & Lensvelt-Mulders, 2005; Boelen & van den Bout, 2010; Eisma et al., 2014; Field et al., 2003). Ten of the GCQ items were retained in this pilot version of the OGS appraisals measure, 1 'Changed Self' item, 1 'Self-Blame' item, 2 'Negative Interpretation of Grief Reactions' items, 2 'Self-Blame About the Death' items, and 4 'Hopelessness of Life and Future' items. Similarly, 4 items were retained from the Utrecht Grief Rumination Scale (UGRS; Eisma et al., 2014) and used in the rumination subscale of the OGS coping strategies measure; 2 items were retained exactly and 2 items were reworded but retained content. Items retained from previously validated measures are indicated by [a] in appendices.

Despite these retentions many new items were developed covering content not previously described in other studies. No validated appraisals measures describe the changes to relationships following the loss. The GCQ 'Others' subscale refers to a sense that others should provide more support, interest in the bereaved, and care-taking since the loss, while the retained items in this study specifically refer to changes in making and maintaining relationships as well as beliefs about how others would respond if the bereaved were to be open and honest with their feelings. Furthermore, unlike the GCQ which does not specify a time frame, the OG-A described here specifically asked for the extent to which each participant agreed the items in the preceding month. This was chosen to parallel the PG-13, which records symptoms of PGD from the last month (Prigerson & Maciejewski, 2008).

The OG-CS was developed as a unified and comprehensive list of grief-related maladaptive coping strategies by measuring a range of strategies demonstrated within the literature to be important in the prediction of PGD, namely rumination, avoidance, and proximity seeking (Baker, Keshaviah, Horenstein, Goetter, Mauro, Reynolds, Zisook, Shear, et al., 2016; Boelen & van den Bout, 2010; Eisma et al., 2014; Field et al., 2003; Stroebe et al., 2010). An additional consideration was the development of items pertaining to specific avoidant and proximity seeking behaviours employed by grieving individuals instead of a

general assessment of avoidance or proximity seeking of activities that are commonly considered within the diagnostic conceptualisation of PGD and PTSD. In a previous study, Boelen and van den Bout (2010) provide psychometric validity for the Depressive and Anxious avoidance in prolonged grief questionnaire (DAAPGQ). They assert, as in the Cognitive Model for PTSD, that anxious avoidance maintains PGD symptoms by preventing elaboration and integration of the loss, while depressive avoidance prevents restructuring of negative beliefs about the self, the world and others that may have developed following the loss. Depressive avoidance items focus on avoidance of previously enjoyed activities and anxious avoidance items refer to avoidance of general thoughts, memories, situations and activities that act as confronting reminders of the loss. This scale used generalities of 'activities' and 'thoughts' as opposed to determining specific activities or thoughts that may be avoided. Items retained in the present study aimed to focus more on specific activities such as avoidance of television programmes, foods, and places the bereaved and the deceased visited together. Unlike the DAAPGQ, the present study items also did not offer reasons for avoidance of situations or activities (e.g. 'because I feel unable to carry out these activities' or 'it confronts me with the fact that [–] is dead and will never return') as reasons for avoidance may differ by individual. Items constructed in this way prompt endorsement of both the avoidance behaviour and the reason for avoidance, which may lead to confusion or negative responses.

4.1 Limitations and future directions

This study develops new pilot measures of grief-related coping strategies and appraisals that successfully distinguish between bereaved individuals with and without PGD. Nonetheless, there are some limitations to the current study worth noting. There is some overlap between the appraisals and coping strategies measure and the symptoms of PGD.

Items 6 '*Do you feel confused about your role in life or feel like you don't know who you are (i.e. feeling that a part of yourself has died)?*' and 12 *Do you feel that life is unfulfilling, empty, or meaningless since your loss?* of the PG-13 overlap with the appraisals subscales a 'changed self' and 'hopelessness of life and future'. It could be argued that the 'Changed Self' item '*I have lost my sense of who I am in the world'* and the hopelessness of life and future item from the GCQ item perhaps '*My life is meaningless since [-] died*' directly reflects two symptoms of PGD rather than cognitive predictors of the disorder. Care needs to be taken when devising cognitive behavioural measures aimed at predicting psychological difficulties if the psychological mechanisms hypothesised to be maintenance factors are closely related to items included in the diagnostic criteria as symptoms. Overlapping predictors and outcomes increase the likelihood of a significant effect because they measure the same construct. In this instance the distinction comes from the symptoms reflecting feelings and the appraisal items measuring cognitions. The PGD symptoms reflect feelings that, according to cognitive theory, arise as a result of negative automatic thoughts (Beck, 1979). In fact, the correlations between the appraisals items and the PGD symptoms do not exceed .8 (PGD item 6 and 'Changed Self' item 3, $r = .63$; PGD item 12 and 'Hopelessness of Life and Future' item 61, $r = .76$) indicating the items measure different constructs. Furthermore, removing these items from their respective subscales and rerunning the group comparison does not change the results.

The same criticism could be applied for the avoidance items of the coping strategies scale and item 4 of the PGD scale *'How often have you tried to avoid reminders that the person you lost is gone?'* However, unlike the DAAPGQ, the present avoidance items do not prompt the individual regarding the reason for their avoidance behaviour and as such are less closely related to item 4. Another limitation of the study is the self-report nature of the

instruments used making true prevalence rates of PGD, confirmed via clinical interview, unknown in our sample.

Finally, the items generated in this study came from collaboration with therapists experienced in the treatment of chronic distress following loss, and from previous literature. While therapists are expertly placed to comment on the distressing cognitions of their clients, they are one step removed from the source of the distress and may have altered the wording and emphasis of the items to more closely fit with their understanding of the problem or their clients. Research that draws upon both client and therapist testimony is more likely to comprehensively capture the experience of bereaved individuals by representing individual and collective perspectives. The results in chapter 3 present a qualitative analysis of semi-structured interviews with a subset of individuals from the present study. These results in combination make up the final measures of The Oxford Grief Study.

This pilot study demonstrates that bereaved individuals with and without PGD significantly differ on the extent to which they hold the grief-related appraisals and engage with maladaptive coping strategies. This study acts as important first step in identifying target cognitions and behaviours relevant in the treatment of PGD.

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Chapter 3 - A Qualitative Analysis of Cognitive Behavioural Concepts Relevant to Grief Reactions: A Comparison of Bereaved People with and without Prolonged Grief Disorder

1. Introduction

As reported in chapter 2, and in line with previous research, the presence of certain negative grief-related appraisals and maladaptive coping strategies is reported more frequently by individuals suffering from prolonged grief disorder (PGD) (Boelen & Lensvelt-Mulders, 2005; Boelen, van den Bout, et al., 2006; Eisma et al., 2013; Shear et al., 2007) than those who adapt to the loss. In conceptualising the psychological factors involved in the development and maintenance of PGD previous conceptual models have proposed an important role for memorial processes. It is suggested that symptoms of PGD arise from a failure to integrate information about the loss into the existing autobiographical memory base (Boelen, van den Hout, et al., 2006; Maccallum & Bryant, 2013) or attachment-related long-term memory (Shear et al., 2007). Studies investigating this failure of loss integration have traditionally found impairments in autobiographical memory specificity in PGD sufferers compared to bereaved controls (Dalgleish et al., 2008; Golden et al., 2007; Maccallum & Bryant, 2010b). Overgeneral memory is thought to precipitate mental health problems by preventing access to specific positive past memories that regulate distress and foster resilient responding. In PTSD the frequency and intensity of intrusive memories are understood to result from poor integration of the trauma memory into the autobiographical memory base (Ehlers & Clark, 2000). In an exploratory study Boelen and Huntjens (2008) investigated the types of intrusive images experienced in a bereaved sample. They found the frequency of negative intrusions (i.e. re-enactment fantasies, unpleasant future images, and unpleasant moments surrounding the death) to be correlated to symptoms of PGD, depression, and anxiety, suggesting intrusions are common in bereavement-related mental health problems. However, to date, little is known about the characteristics, content, triggers and qualities of loss-related memories, features that may point to specific failures of loss integration. Here we

aimed to use semi-structured interviews to explore the features of loss-related memory in a sample of bereaved individuals with and without PGD who had lost loved ones to cancer.

Another factor hypothesised to be linked to adaptation after bereavement is the extent to which the bereaved individual feels socially supported (Stroebe & Stroebe, 1987). Social support is typically considered to consist of the availability of relationships and/or the extent to which these relationships serve supportive functions such as emotional and instrumental support (Cohen & Wills, 1985). Despite the widely held assumption that social support is important in successful grief resolution, evidence for the role of social support in bereavement outcomes is inconsistent (Stroebe, Zech, Stroebe, & Abakoumkin, 2005), with some studies finding an effect (Norris & Murrell, 1990; Okabayashi et al., 1997) and some not (Nolen-Hoeksema & Davis, 1999; Stroebe, Stroebe, & Abakoumkin, 1996). A further study found no evidence that the extent to which an individual engaged in emotional disclosure (thought to be one of the ways through which social support would facilitate coping with loss) was associated with better bereavement outcomes (Stroebe, Stroebe, Schut, Zech, & van den Bout, 2002). Given these inconsistencies we aimed to explore qualitatively the themes arising in client testimony regarding their social support following bereavement with a view to determining whether there are concepts of importance currently missing from the literature.

Furthermore, in asking participants about their methods of coping and content of their negative thoughts, we aimed to ascertain whether there were any content domains of importance missing from the item pool for appraisals and coping strategies from chapter 2.

2. Methods and Materials

2.1 Participants

Participants were 28 individuals who were over 18 years old and had experienced the death of a close loved one at least six months prior to participation. This time line was chosen to reflect the criteria proposed by Shear et al. (2011b) and Prigerson et al. (2009) in which symptoms of prolonged grief at 6 months post-loss predict adverse mental and physical health outcomes later on. Participants were recruited from bereavement charity mailing lists and social media as well as the Google content network. Participants had all lost a loved one to cancer. No restrictions on inclusion were placed on the length of time since loss, or on the variety and intensity of symptoms so as to preserve the heterogeneity in the sample that reflects the population of grievers and those with PGD. Given that mood and anxiety disorders are common among PGD-diagnosed individuals (Simon et al., 2007), participants were not excluded on the basis of these comorbidities. Participants were excluded if they had identified a serious physical health problem that that might make travelling to the session difficult or held a current or past diagnosis of schizophrenia or a neurological condition or impairment. People who were considered clinically too unstable to tolerate the research interview were excluded from taking part. This included those who expressed concerns about their ability to cope with the emotional content of the session in a pre-session screening phone call with the interviewer. All participants completed online questionnaires and the interview session. The mean time from loss to interview was 27.4 months (SD=18.78, range: 6-90 months, *Mdn*= 20).

2.2 Summary of measures and administration procedure

All questionnaire data were collected using online data collection software that allows measures to be compiled and distributed via the internet (Qualtrics, Provo, UT). The

measures were the same as reported in chapter 2. The specific measures of interest in this chapter are presented below.

2.2.1 Measures.

Demographic and Loss Information (Adapted from; Neimeyer, 2006). Age, gender, ethnic background, marital status, employment status, household income (an indicator of socio-economic status), religious beliefs, highest qualification, time since loss, relationship to deceased, length of relationship to deceased, mode of death, whether the participant was present at the time of death, frequency of contact with the deceased, number of other significant losses, amount of hours spent discussing the loss, and details of treatment received for past and current emotional problems were recorded.

Symptom Measures.

Prolonged Grief Disorder Inventory (PG-13). The PG-13; Prigerson and Maciejewski (2008) assesses the prevalence and severity of PGD symptoms (e.g., yearning for the deceased, feelings of emotional numbness/detachment from others, feeling that a part of oneself died along with the deceased). The PG-13 is a subset of 13 items from the Inventory of Complicated Grief (ICG; Prigerson et al., 1995). In order to meet criteria for PGD, bereaved individuals need to have experienced at least one item of separation distress, and at least five out of nine symptoms of cognitive, emotional or behavioural disturbances daily or several times a day for at least six months following the bereavement. These difficulties must also result in a significant impairment in social, occupational or other important areas of functioning (e.g. domestic responsibilities). A continuous score can also be determined by summing the items.

Posttraumatic stress disorder checklist for DSM-V (PCL-5; Weathers et al., 2013). The PCL-5 is a self-report instrument assessing distress associated with the 20 symptoms of

PTSD in DSM-5 over the past month. Items were rated on a five-point scale, from 0 (not at all) to 4 (extremely). A cut-off score of 33 has been recommended for a probable PTSD diagnosis.

Patient Health Questionnaire (PHQ-9; Kroencke et al., 2001). The PHQ-9 is a self-report measure based on the Diagnostic and Statistical Manual, 4th Edition, Text Revision criteria for major depressive disorder (DSM IV-TR, American Psychiatric Association, 2000). It mirrors the nine major depressive symptoms, with each item scored on a 0 (not at all) to 3 (nearly every day) Likert scale in the last two weeks. A cut-off score of 9 has been recommended for a probable diagnosis of depression.

2.2.2 Interview schedule. A semi-structured interview schedule was developed in collaboration with Professor Anke Ehlers and therapists experienced in the treatment of chronic grief reactions and through a review of the literature (Boelen & Lensvelt-Mulders, 2005; Eisma et al., 2014; Mancini et al., 2009). The semi-structured interview (Appendix VI) was designed to extract relevant information regarding memories, felt presence of the deceased, the experience of yearning for the deceased, coping strategies, rumination and helpful and unhelpful support from others. As such, participants were asked direct questions about these topics (e.g. 'Do you have memories of the deceased that pop into your mind repeatedly?') and the interviewer prompted to understand the temporal order of their experiences from the context in which the experience arose and its triggers, to the behaviour or time point that brought the experience to an end (e.g. 'What were you doing or thinking just before this happened?'). If experiences were endorsed participants were asked to describe these in detail and asked for their frequency and duration as well as the perceived meaning (e.g. 'What does this experience say about you, the world, others, the deceased?'). Participants were also prompted for any corresponding thoughts, emotions, physical

sensations and behaviours that were associated with the experience in question. The theoretical background of these questions assumes that participants' memories, thoughts, behaviours and emotions interact and influence one another (Beck, 1979; Ehlers & Clark, 2000).

2.3 General procedure

The research was reviewed and approved by the Oxford University Medical Sciences Central University Research Ethics Committee Reference number MS-IDREC-C1-2015-032 (Appendix I). Participants received electronic information sheets and informed consent was sought from the participant at the outset when filling in the online questionnaires. The researcher screened them on the telephone for inclusion and exclusion criteria before the session. They also gave written informed consent prior to taking part in the interview session. The research sessions lasted between 120-150 minutes and were conducted by the author. All sessions were audio or video recorded depending on the participants' preference.

After the data collection, the participants were debriefed, given a research support leaflet, and given the opportunity to discuss whether any aspect of the experimental procedure had been in any way distressing. Participants were sent a 'check in' email the day following the interview to see if there were any aspects of the session that they would like to discuss. They were reassured that any negative emotions that had arisen from the session were perfectly normal and would likely subside to pre-research levels in the next couple of days. They were encouraged to get in touch if this was not the case; two participants contacted the researcher to discuss difficulties following the interview session and further support information was provided.

2.4 Data analysis

All sessions were transcribed verbatim. The qualitative data from the interview were analysed by using a thematic analysis approach and the software package NVivo 7 (www.qsrinternational.com) for Mac. Code and theme development was conducted following the guidance by Braun and Clarke (2006), emphasizing familiarity with the data, and the iterative refinement of themes. Similarities between themes were identified and aggregated to develop superordinate and subordinate themes (e.g. superordinate theme: social disconnection beliefs beliefs, subordinate themes: being with others, masquerading, private grief, and protective buffering). For each theme a file of transcript extracts was created. The reported extracts give some examples of the recurrent themes. Themes and exert examples were developed and refined in collaboration with Anke Ehlers. An independent rater reviewed 10% of the extracts and their corresponding themes (Barbour, 2001). Any inconsistencies between the raters were resolved by discussion.

Towards the end of the qualitative analysis process no new categories were created, suggesting that all major themes had been identified. Each transcript was then re-read to determine whether newer themes more clearly captured previously coded sections. Any individually coded items not relevant were removed from the broader themes.

3. Results

3.1 Participants

3.1.1 Demographic characteristics. Characteristics of participants with and without PGD are reported in Table 3.1. The PGD and no-PGD groups did not significantly differ in terms of age, gender, ethnic background, months since death, length of relationship. Groups differed significantly on scores of grief intensity, a continuous measure derived from the PG-13 (Prigerson & Maciejewski, 2008), depression (PHQ-9; Kroencke et al., 2001), and PTSD severity (PCL-5; Weathers et al., 2013).

Table 3.1

Participant Demographics, Loss Characteristics, and Psychopathology

	Interview Sample		
	PGD (n = 12)	No-PGD (n = 16)	Statistic (t or χ^2)
Demographics			
Age in years *M (SD)*	59.00 (6.38)	54.50 (11.55)	t = -1.21
Gender *N (%)*			
Female	10 (83.33)	12 (75.00)	.673a
Highest level of education *N (%)*			
No qualifications	1 (8.33)	0 (0.00)	
O levels/GCSE	2 (16.67)	1 (6.25)	
A Levels	2 (16.67)	0 (0)	
Professional qualification (e.g. teaching, nursing)	3 (25.00)	4 (25.00)	
NVQ/BTech	0 (0.00)	1 (6.25)	
University degree	3 (25.00)	4 (25.00)	
Postgraduate degree	1 (8.33)	6 (37.50)	
Loss characteristics			
Months since loss *M (SD)*	28.33 (15.48)	26.06 (21.37)	t = -.31
Who died*? N (%)*			
Spouse/Partner	10 (83.33)	11 (68.75)	
Child	1 (8.33)	1 (6.25)	
Parent	0 (0.00)	2 (12.50)	
Other	1 (8.33)	2 (12.50)	
Length of relationship *M (SD)*	332.41 (160.60)	365.00 (133.03)	t = .59
Psychopathology			
Prolonged grief disorder *M (SD)*	45.83 (5.24)	30.31 (7.40)	t = -6.18***
Depression *M (SD)*	18.67 (5.69)	8.43 (5.80)	t = -4.70***
PTSD *M (SD)*	46.58 (15.19)	23.59 (12.69)	t = -4.36***

Note. Categorisation into *PGD* and *No-PGD* determined by ICD-11 diagnosis on the PG-13.
[a] significance of Fisher's Exact Test (2x2).
*p <.001****

3.2 Semi-Structured Interview - Principal themes

The thematic map listing all superordinate and subordinate themes is presented in Table 3.2.

Table 3.2

Thematic map of superordinate and subordinate themes

Superordinate theme	**Subordinate theme**
Intrusive imagery	Change for the worse
	Illness-related imagery
	Positive past memories
	Deceased in the present
Memories are painful	Negative memories take precedent
	Happy memories cause pain
Time	
Coping strategies	Avoidance
	Cognitive techniques
	Memory activation
	Proximity Seeking
	Substances
	Routine and keeping busy
	Reassurance seeking
	Therapy
Social disconnection beliefs beliefs	Being with others
	Masquerading
	Protective buffering
	Private grief
Grief resilience	Resignation statements
	Living well to honour them
	Broadening of perspective
	Rejecting a hopeless life
Felt presence	
Feelings of unreality	
Mortality communication	
Idolising	

3.2.1 Intrusive Imagery. The vast majority of the sample (89.3%) reported current intrusive memories relating to circumstances surrounding the death as well as the death event.

Changed for the worse/loss of hope. Two thirds of the PGD group (66.7%) and 43.8% of the no-PGD group reported intrusive memories in the last month relating to traumatic time points common in cancer treatment (first diagnosis, terminal diagnosis, moment of death); these moments appear to signal a loss of hope or the moment the event changed for the worse.

First diagnosis:

> *'The very moment that they said that he had a brain tumour and his reaction. He was just so quiet and dignified. Because when you see a consultant running down the corridor trying to find you before you leave an MRI unit; you know it's not going to be good news.'*

Terminal diagnosis:

> *'It's the moment that I thought he still looked well and they told me he had less than a month to live. And he didn't know; they hadn't told him; and I had to explain it to him.'*

A higher proportion of individuals in the PGD group reported experiencing intrusive imagery relating to the moment of death (50.0%) compared with the no-PGD group (18.7%).

Moment of death:

> *'I see him lying in the hospital bed. When he was in hospital, he always wore a T-shirt. And then because he'd gone into heart failure the day before they put one of these horrible hospital gowns on him. And it's white with black squares on it. And because it was so alien, he'd always been in his own clothes…And it sort of just brings it home that he's not going to home. He's not going to come back.'*

Illness-related. Illness-related distressing intrusions were reported by 100.0% of the PGD group and 81.2% of the no-PGD group. An example within this theme related to the physical deterioration of the deceased due to illness was described by 66.7% of the PGD compared with only 25.0% of the no-PGD group.

Physical deterioration:

> *'I see him dribbling, he lost sort of the use of his lips and he use to dribble an awful lot, he always had to have a tissue and this snood would keep it there.'*

Other recurrent examples of illness-related imagery included memories in which the deceased was in distress, and incidents of poor communication or lack of care from medical staff.

Deceased in distress:

> *'He was in hospital for a draining around his lungs, and he'd got very stressed. It was one single thing that really broke him, he was watching the football on his phone and we'd let two goals in the first five minutes and I remember he'd normally be angry but this time he just started sobbing and saying I'm so stressed and threw his phone away.'*

Lack of communication/care of medical staff:

Participant:	*'The medical people kept saying our aim is to get you back onto chemotherapy. This young doctor was only the same age as my son and he came from the same part of the country. And they got on… they were very friendly with each other; it was very nice. He whipped the curtain back. He says I'm going off shift now but I just want to say to you if your heart stops, I don't want to resuscitate you because you'll be a vegetable…And it frightened him, obviously. And I thought that was breathtakingly diabolical.'*
Interviewer:	*'So the young doctor was essentially saying to your son I'm recommending that you're D.N.R.'*
Participant:	*'Yes.'*
Interviewer:	*'And that was the way he told him?'*
Participant:	*'Yes.'*

Positive past memories. Non-treatment-related intrusive imagery was associated with positive memories from the past with 87.5% of the no-PGD group reporting these to be spontaneous and current, compared with only 50.0% of the PGD group.

> *'Just sitting in the pub Christmas Eve... There was three women in the pub and I was never one to talk to women and this sounds terrible, but there was one girl who was rather large in the chest area and one who was blonde, striking and then this other one. Realising after ten minutes that I hadn't noticed those two and was just chatting to the other one... And then I realised that we had something special going.'*

Deceased in the present. Another subordinate theme of non-treatment related intrusions was defined by images of the deceased in the present (PGD = 8.3%, no-PGD = 25.0%).

> *'He used to go to work in his black trousers and his Polo shirt. That was the uniform he had to wear and you know, I can still you know, I can just be sitting here and see it and I don't even have to be sitting in my living room. It's just so vivid.*

3.2.2 Memories are painful.

Negative memories take precedent. The majority of the PGD group (58.3%) and a proportion of the no-PGD group (25%), reported historically unpleasant memories largely taking precedent over pleasant memories. Those in the PGD group described trying to pull positive memories into their consciousness to counteract the negative memories they were experiencing:

Participant A: *'At the moment you know, what is absolutely full frontal in my brain is those last six months I spent with him. So it's very, very difficult for me to go back beyond that to… I mean as I said, there's one or two little holidays that I always try and recall because they're the good times. So I do try and recall those memories as often as I can.'*

Interviewer: *'So they don't arrive spontaneously?'*

Participant A: *'No. I have to actively seek that out. Because otherwise my memory of him are just in the awful, awful, awful last six months of his life and I don't want it to be like that.'*

Interviewer: *'And you said at the beginning that it's largely happy memories that come to your mind about your wife. But you've mentioned a few that actually sound very painful. How often do these memories come up at the moment?'*

Participant B: *'Well usually at the same time as I feel happy. I think of the bad things first and then I think of happy things. That gets me off it.'*

Interviewer: *'So you think of the last four weeks of her life first and then actively try and move on to something happier?'*

Participant B: *'Yes I go back to a few weeks before, I go back to when she was happy.'*

Happy memories cause pain. Participants in the no-PGD group (87.5%) more readily reported being able to experience positive emotional and psychological closeness in response to positive memories than the PGD group (75.0%). However, many described even happy memories in the early stages of their bereavement being closely associated with loss and pain as they only serve to remind the individual of the deficit between the happiness in the past memory and the loss of the deceased the present moment.

Interviewer: *'And when you think about your husband generally and they are happy memories. Do you associate that with any feelings in your body like feelings of warmth or a kind of relaxation?'*

Participant A: *'No. I'd say I'm not up to that stage yet. I would like to be. That is a stage where I feel maybe one day I'll be at but I don't feel that at this moment, no. It's overwritten with sadness really because I can't carry on doing nice things like that with him again.'*

Participant B: *'It brings up just missing him and it will end up like that. I mean it's not always, sometimes it will just make me smile but, you know, quite often it will... it just reminds me that I miss him. Even a positive memory.'*

3.2.3 Time. The superordinate theme Time was reported by both the PGD group (50.0%) and the no-PGD group (31.3%) and references extracts to a particular time of day or year acting as a trigger to difficult memories. An example of the way that time can act as a trigger is seen in this participant's description of the impact of the calendar in which every day is an anniversary linked to previous years' events during the deceased's treatment:

> *'And I just see every day as it was really. Tomorrow will be the day that they transported him back to his room, and then the grandchildren who came, who saw him, they just got out of the room and were crying in the corridor because they'd never seen him looking so unwell. I was there the whole time, you see, from morning until night, morning until night. And you know, it's something which I can't get out of my system. Probably if I get Alzheimer's it will leave me.'*

The calendar acts like a trigger to re-living memories from the final days of the deceased life. For some the calendar can remain a trigger for weeks and for some months. This process can be experienced as replaying the events of that day, as in the case above example, or can be a deliberate effort to remember the details of the day using diaries, text messages and emails as in the example below.

> *'And I think I just relive things, I go through my diary of last year and I see that what happened on that day, so this time last year, what he was, a brief time when he was at home and he was quite comfortable and in bed with his laptop. So I do that, quite, I do that a lot, I constantly look at the diary, and that's what I'm really scared about, is that once the year's up, I can't look at last year's diary and so at this time last year this is what we did this or so that's a sort of a bit of a fear that I have.'*

Another example of Time acting as a trigger can be seen here in this participant's description of how her journey to work every morning is the time of day in which loss-related memories most often arise. She hypothesises that this is a time when she is less likely to be distracted:

> *'It's mainly in the mornings on my way to work. Because I think most mornings is sort of like my brief half hour almost. It's not done like that deliberately but it is just, I think by the end of the day I've got other things on my mind, things that happened during the day whereas in the morning, that is my spare time.'*

3.2.4 Coping strategies. Eight categorical subordinate themes identified as recurrent coping strategies employed by the bereaved participants, their frequencies, and where appropriate, examples of each are presented in Table 3.3.

Avoidance. The avoidance subordinate theme referred to behaviours that participants discussed using to avoid thinking, feeling, or experiencing a rise in grief symptoms.

Distraction was an example of this and relates to behaviours aimed at keeping the mind distracted from grief reactions. For example:

> *'I find listening to Radio 4 is quite good, or I do crosswords. It's a sort of brain diversion.'*

Another example was moving house and a number of participants referenced having to move after their bereavement in order to cope with their grief.

> *'I couldn't stop in the house, living in my old house, I was there for 40 years and after my husband died everything that I saw and touched just brought back so many memories and I just wanted to go away. I just wanted to leave it. I would have locked the door and gone away anywhere.'*

Cognitive techniques. Within this subordinate theme two seemingly juxtaposed examples were identified: 'thought suppression' referred to extracts in which participants talked about pushing away their thoughts or feelings or actively trying to avoid thinking about them (e.g. *'I try to not think, I try to clear my mind you know. I think you know that's the only way I can do it. Just pretend it didn't happen, close your eyes and don't think about it'*) and 'sit with it' was used to describe those who allowed their thoughts and feelings to come without trying to change or alter them (e.g. *'It's a bit uncontrollable, the tears when it comes, but I'm not out of control I just let the tears roll and then I move on to whatever else is happening.')*. However, both examples could be mentioned by the same participant suggesting that it is not necessarily a cognitive style that one adopts but rather strategies for coping that might be implemented at different times.

Memory activation. Participants reported deliberately activating positive and, less commonly, negative memories as a way of coping with their grief reactions. They also

described a process in which they traced memories traced back in time to connect them in temporal order.

The following example of positive memory activation describes how the participant travels back in time to a happy memory with her husband as a way of relaxing.

> *'I often just close my eyes and go back to times and think of happy times when I need to relax. I think back when we lived in Finland and to a snowy landscape and of us skiing through the forest, because we loved living there as a family. That's the place I take myself off to, because it's still, quiet, bright, clean and crisp.'*

Here a participant describes activation of a negative memory by looking at pictures she took of her husband after he had died in an attempt to see if she could perceive anything in his eyes.

> *'I took photos of him in the last few days of his life when he was unconscious and even just after he died, his eyes were slightly open. I've always wanted to remember what he was like just as he died. Sometimes I have to look at them just to remind myself of what it was like at the very end… I was trying to see if there was any glimpse or any sort of sign or reason or feeling that he had, just to see if there was anything in his mind that I could pick up on and I mean, there was nothing.'*

When describing memory rehearsal some participants were able to appraise this process as one in which they looked for signs as to critical time points in which the cause and outcome could have been spotted and changed, usually a signal that the deceased was becoming ill for example:

Participant: *'Well, it doesn't help. I guess part of my mind thinks that something really, in a case like that, you know something really could be done and then I have to go through it all. Why couldn't something be done? And it's as though I can't accept that they couldn't treat it.'*

Interviewer: *'Okay. And do you feel like once the cycle has been closed that you get to a stronger place of acceptance?'*

Participant: *'Well, no, because now I'm going back further and I'm thinking well perhaps, maybe it was all that grapefruit juice because it's so sweet…And thinking back to lifestyle factors…I'm trying to make sense of it…Because it's senseless. I want someone to tell me exactly why it happened and when it happened. When it started. What caused it…Without an answer it feels harder to accept…Perhaps I don't want to accept it.'*

In a number of cases participants commented on their memories coming full circle with the outcome of the process the same each time for example:

Participant A: *'I go round in a circle, and it, you still end up with well, look, it was a very serious type of*

cancer. It was very unlikely that she would have survived, but you, I still need to seem to go through it.'

Participant B: *'It's probably why I have those five minutes on my own in the morning, because you wake up, and it's a real quick instant, you wake up and you think, shit. The realisation. Still not here.'*

Interviewer: *'So those five minutes in the morning feel necessary to do the kind of…'*

Participant B: *'Re-evaluating it, putting it all back into its place where it should be. No, he's not here, he's not coming back. I really miss you.'*

Both of these extracts also seem to refer to the ways in which memories are used as a coping strategy to counteract feelings of uncertainty or disbelief about the death or circumstances surrounding the death.

Proximity seeking. This subordinate theme reflected behaviours aimed at re-establishing or reinforcing a connection to the deceased. Within this subordinate theme three examples were identified representing conceptually different forms of proximity seeking. The following extract, describes imaginal conversations had between this participant and his wife as a way of feeling close to her.

'I was walking somewhere, it's a beautiful blue sky, fruit trees starting to come to blossom and I was saying to her, I hope you can see this, darling. I hope you can see this, what I'm looking at. A beautiful morning, or whatever. I associate it with connection, I suppose. I'm trying to stay connected to her.'

This example relates to bringing to mind images of the deceased in the present. This participant described imagining her husband was with her when she dropped her daughter off at the airport and the activities that they may have gone on to afterwards.

'I imagined what it would be like if he was with me, yes. If he and I had taken her to the airport and what you know, what we would have done. Or what we would have said or where we would have gone afterwards. Even though I'm very proactive and I don't sit at home and I get out and I go out and I do things with people. I imagine it because he's the one and only person I want to do things with such as you know, going on holiday or going out for the day or going on trips. I want him to be here. I want to do this with him.'

Finally, the last example describes the use of photographs as a way of coping with grief. Almost everyone in the PGD group (91.6%) and the majority of the no-PGD (68.7%) reported using photographs as a strategy to deal with difficult feelings. This participant

reports that she looks at photographs of her husband as a way of bolstering her memory and reducing her fear of forgetting him.

> *'I just worry that the whole memory of him is just going to slip away but you know I'm trying to counteract that again by having some photographs up of him in the house. And I've got some lovely photographs of him you know going way back, up to very recent ones.'*

Substances. This subordinate theme contained references to alcohol as a coping strategy (e.g. *'I think the realisation that I'd been drinking every night for about a year was quite scary. But there are times when that's just what I want to do is just get pissed and forget it all'*) and prescription drugs (e.g. *'They gave me the diazepam and they tried another one and then another one and none of them were doing anything. They were just making me feel terrible and then they put me on a different sort and it wasn't by magic, I can't say by magic, but I was able to function better on these tablets.'*)

Routine and keeping busy. This subordinate theme described the importance and ways in which the bereaved participants used routine and keeping busy as a coping strategy throughout the grieving process. This was mentioned by everyone in the PGD group (100.0%) and almost everyone in the no-PGD group (87.5%).

One example of the ways in which individuals kept busy was by spending time with others:

> *'I've got some really good friends, when I'm with other people, you know, I push all those sad, sad thoughts to one side and I'm able to regain a little bit of my former self.'*

Another example was the use of exercise. This participant comments that she walks the dog everyday as a way of coping with grief:

> *'I have a routine where I walk the dog every day and I try get into the park and watch other life going on, bird life and plant life'*

Another example within this theme was reading, a number of participants commented that reading about loss specifically was helpful in coping with their grief.

> *'So, you know, virtually every book at bedtime's about death and grief and poetry. I send off for all these books and things because it's like you just...When you hear someone saying what you can't say, because you don't have the quality of the prose and the expression, you're drawn to them.'*

Reassurance seeking. In this subordinate theme participants described a need to seek reassurance about a number of things since the loss as a way of managing grief. These might involve seeking reassurance from others regarding the afterlife, reassurance from medical professionals that there was nothing they could do, or, as in this example, the reassurance that your grief is acceptable and not out of the ordinary.

> *'When your child dies, you go off your head, you might say all sorts of nonsense, you might say all sorts of angry things, you might say anything. So you need a lot of reassurance, a lot of reassurance…that how you deal with your grief is alright.'*

Therapy. The final subordinate theme was the use of therapy as a coping strategy, which was mentioned by almost half of both the PGD and no-PGD group. Some participants found it helpful to access therapy:

> *'The last sort of two, three weeks of her life used to pop into my mind a lot and I went to see someone at [-] who did this really good thing with me where you put all the events on a timeline and it kind of just helped.'*

While other participants did not find it useful:

> *'We also went to one of those [-] gatherings. And I thought, can't do it. I can't stand this. And I say we're all having these conversations, you know, doing all this like therapeutic stuff. And then somebody said oh this is a club that none of us want to be in, isn't it? I just thought, no, I don't. And I got a taxi and came home.'*

Table 3.3

Coping strategies Themes by Group.

	Frequency *N (%)*			Frequency *N (%)*	
Subordinate theme	PGD	no-PGD	Examples	PGD	no-PGD
Avoidance	11 (91.6)	15 (93.7)	Distraction	9 (75.0)	15 (93.7)
			Moved house	3 (25.0)	2 (12.5)
Cognitive techniques	8 (66.7)	10 (62.5)	Thought suppression	3 (25.0)	3 (18.8)
			Sit with it	6 (50.0)	5 (31.2)
Memory Activation	6 (50.0)	7 (43.8)	Activating unpleasant memories	2 (16.7)	0 (0.0)
			Activating pleasant memories	4 (33.3)	5 (31.2)
			Going over events to reassure knowledge	3 (25.0)	3 (18.8)
Proximity Seeking	12 (100.0)	12 (75.0)	Imaginal conversations	10 (83.3)	11 (68.7)
			Imagining them in the present	7 (58.3)	5 (31.2)
			Use of photographs	11 (91.6)	11 (68.7)
Substances	7 (58.3)	7 (43.8)	Alcohol	1 (8.3)	3 (18.8)
			Prescription drugs	6 (50.0)	2 (12.5)
Routine and keeping busy	9 (75.0)	11 (68.7)	Being with others	5 (41.7)	10 (62.5)
			Exercise	3 (25.0)	5 (31.2)
			Reading	5 (41.7)	5 (31.2)
Reassurance seeking	3 (25.0)	1 (6.3)			
Therapy	5 (41.7)	7 (43.8)			

3.2.5 Felt Presence. Many participants in both groups (83.3% PGD, 87.5% no-PGD) reported feeling the deceased's presence after they had died. For some participants the act of feeling the deceased's presence arose in the form of hearing their voice commenting on a situation or offering advice about what to do.

> *'It's not a voice in my head, but it's almost I can hear her. That's the bit when I realise it's not all about... People say those things. They're still with me, it's not about some sort of spirit or religious ideal. It's because she was part of me. She was part of my life for so long that it had a profound effect on the way I think. After losing her, I realise when it's me talking and when it's her talking, if you see what I mean.'*

While for others felt presence was perceived in places in which the participant and the deceased had spent a lot of time.

> *'I've left everything in the house very, very much as it was. So the entire living room is as it was and, for some reason I don't feel any inclination to change it. I can just imagine him there. Because we had our set places where we sat on the sofa. So, I still sit on my end of the sofa and I can quite often imagine him sitting on the other end of the sofa.'*

Within this line of questioning participants were asked where they believed the deceased was now. While the majority of the participants reported feeling as though the deceased was at home some participants commented that they were in heaven or out *'in the big beyond.'* A small number of participants (17.8%) reported not feeling the deceased's presence post loss. One participant commented that they believed they may feel it more once they had worked through their anger about the loss, while three commented that they had not held expectations about whether they would feel the deceased's presence more than they do but that it was not a source of current distress.

3.2.6 Feelings of unreality. References to feelings of unreality, confusion and disbelief regarding the loss were referenced by almost everyone in both groups (83% PGD, 100% no-PGD). The content of this theme surrounded the uncertainty about the permanence of the separation between the bereaved and the deceased or the lack of certainty that the

illness and the death had in fact occurred. One participant in the PGD group commented that the realisation that her partner had died was only really felt in the weeks preceding the interview.

Participant: *'I can honestly say right up until after he died I never believed that he was going to die. Yes, even after he died, I thought he'd just rest now for a few hours and then he'd come back. It's kind of really strange perhaps the lack of acceptance you had you know throughout and he died at 1 o'clock. I didn't leave him until seven. I thought he would bargain his way back. You know he will banter, he will go up there and he'd say look you know hold on a second you know I'm a man you know who's good to get a job done and he'd put a case forward.'*

Interviewer: *'So when do you think you had the realization that he had died?'*
Participant: *'I would say probably only in the last few weeks perhaps really even if that and that's over a year ago now.'*

Another participant in the PGD group described the difficulty in moving her husband's shoes because she was concerned that he would not be able to find them if he were to return.

Participant: *'One side of my brain is saying my daughter needs to put her shoes in there and then the other side of the brain's going yes, but then he won't be able to find them. So I put them in a crate in the garage by the door so if he opened the door he'll see them.'*
Interviewer: *'And that's what it feels like, like two sides that are kind of competing with each other in a way?'*
Participant: *'Yes and if I move something, he won't be able to find it will he?'*
Interviewer: *'And does that create a kind of confusion, because one side sure he's coming back, and one side sure he's not coming back?'*
Participant: *'It's not confusion it's just overwhelming.'*

3.2.7 Social disconnection beliefs beliefs. A superordinate theme of social disconnection beliefs beliefs was used to classify exerts in which participants made reference to a disconnection between what they presented to the outside word and what they emotionally felt internally (91.7% PGD, 81.2% no-PGD). Participants described hiding their internal emotional state from those around them, a process that those with PGD more readily referenced as being 'exhausting' and resulted in them shying away from social situations and narrowing their social circles. Within this category subordinate themes (being with others,

masquerading, private grief, and protective buffering) were developed to describe the different aspects of emotional concealment that participants engaged in.

Being with others. This theme refers to difficulties in being around other people since the loss (PGD = 41.7%, no-PGD = 25.0%). One participant in the PGD group described a build-up of tension that arose when in the company of others who would not mention her husband. She experienced her social network as uninterested in her grief, resulting a desire to leave the situation.

> *'But when I'm with people, I feel like he's being ignored and forgotten because nobody wants to talk about it, so I feel I have to just get away and be on my own where I can bring him back and just think about it. No one wants to know I'm upset, so I tend to bottle it up but then that gets to a stage where you just desperately to want to get away.*

Another participant also in the PGD group described the experience of being in the company of others as one that took considerable effort. The energy required to socialise would eventually run out, resulting in a strong desire to leave the social situation. She reported pre-warning her social network that she may have to leave if being present became too much.

> *'I think it's okay as long I say to people okay you know if I want to go home and it's before everybody else I'll just go. I mean they're pretty good about it. They say fine. And sometimes if I give myself that permission, and say it to my friends I sometimes end up not going home. A couple of weeks ago I was at a wedding and I was really looking forward to it, but after a few hours I really wanted to leave. Number one because I missed him then so much because he would've been such good fun. And it's just this continuous talking you know and trying to be funny and you know try to upbeat all the time. It is hard work sometimes because the loneliness in being out without him wells up.'*

Masquerading. This theme referred to extracts in which participants described presenting a fake or inauthentic persona to those around them or in their lives (PGD = 50.0%, no-PGD = 18.8%). Both PGD participants below used the phrase 'acting' a way of describing the emotional disconnect with others and their lives.

Participant A *'I think with people. I think I don't fully feel that I'm connecting with people. I feel that I can be there, say all the right things, smile and I feel not always totally involved. I feel as if I'm*

an actress playing a part.

Interviewer *'Does it feel like there's a barrier there to the positive memories?'*
Participant B *'There's a barrier to absolutely everything. And it's like looking at the world through a thick sheet of glass, really. You know, not properly joining in, but doing a bloody good job of pretending to, because it's basically acting.'*

This participant also in the PGD group describes the experience of masquerading following a loss and how your background emotional state can make it more difficult to effectively maintain the illusion of normal functioning.

> *'A lot of the time it looks like you're normal and you're functioning well, but actually what you're doing is walking along a knife's edge, you're walking along this little balance and depending on how you are that day, whether you've had enough to eat or you've had enough to drink or sleep, it can push you off. It doesn't take a lot to knock you off and it takes you such a lot of effort to stay balanced upright and act normally.'*

Protective buffering. This theme refers to statements in which participants reported the need to maintain normal functioning and avoid outwardly demonstrating any negative emotion for the good of those around them resulting in a reduction or absence of authentic communication about participants' thoughts and feelings to those around them (PGD = 53.8%, no-PGD = 62.5%). This participant, whose son died, recounts the experience of sharing a dream about her son with her daughter. Her daughter's upset upon hearing this led her to believe that in future she should censor what she communicated about her grief to her daughter.

> *'My daughter will always talk about it but I'm careful, you know, what I say. Because sometimes… I said to her once, I was dreaming that I hadn't bought your brother any Christmas presents. And she looked so upset. I thought I mustn't say things like that. And like, you know, I've had really heart-breaking dreams and I just didn't say anything to my friends about them. Because they can't deal with it.'*

Another participant expressed a similar concealment of her feelings to her children and a discomfort about the change in dynamic that had resulted in their emotional support of her following the loss of her husband. She expresses a responsibility to be their mother again after having been a burden to them in the previous 18 months.

'I kept it to myself because I feel I need to return to them in some way, because I found the dichotomy of them parenting me for, however, the last year and a half, has been...I'm sure I wouldn't use the word burden, but yes, a turning of the tables in a way that has felt uneasy for me, and I'm sure difficult for them. You know, they've been very mothering and supportive and considerate. And you know, overwhelming, and I suppose I feel like I'm a massive burden.'

Private Grief. This theme contains extracts referencing a preference for solitude in an individual's grief (PGD = 58.3%, no-PGD = 18.8%). The following participant in the PGD group explains how he does not want to be asked if he is ok because he would become upset and he doesn't want to worry others with his grief, a statement that would also fit with the idea of protective buffering. However, he further clarifies that he does not want to express his grief to them because having them share in his grief would feel intrusive.

Participant:	*'They can't see what I can see and they can't grieve like I'm grieving.'*
Interviewer:	*'And what does that mean?'*
Participant:	*'It means that they mustn't know, in a way. They couldn't. We all have our grievances and I mean it's nice when there's somebody there for you but sometimes you don't want them to be there. You just, you just want to do what you want to do and they've got their own problems. It's nice that you can go and listen but I don't want them to be worried about me.'*
Interviewer:	*'What do you think they'll think if they see you upset?'*
Participant:	*'They'll probably think I'm grieving and that's okay. But, maybe I don't want them to see that I'm grieving, you know.'*
Interviewer:	*'And why is that?'*
Participant:	*'Because I want to grieve on my own. I don't want other people in my grief.'*
Interviewer:	*'What would it mean to have other people involved in your grief?'*
Participant:	*'They'll be in my space and it's nothing to do with them.'*
Interviewer:	*'It would feel intrusive?'*
Participant:	*'Yes.'*

3.2.8 Mortality communication. Some participants (33.3% PGD, 25% no-PGD) expressed regret in not having been able to discuss the death with the deceased. For many this was borne from a belief that the deceased was always going to beat their illness.

'I'm annoyed because we spent so much time trying to be positive, because you want to be positive that actually we threw away the opportunity to talk about death and say goodbye.'

For others, the decline of the illness was so quick that the opportunity to discuss the deceased's feelings about the death did not arise.

'Well, I guess it was always going to happen, and then the decline happened so rapidly there was, frankly, no time. He came in and he said, I'm going to be cremated, and I want you to spread my ashes in amongst the woods. And I just burst into tears, and I said, No, no, don't talk like that. And he was crying and I was crying and this was the first time we'd let ourselves say that he was going to die. Because I felt that I could hold the tide back and, you know, if we could just get him stronger, you know, we'd have that conversation. We were going to have it, but not just yet. You know, we were still talking about, Oh, we've got to buy a new car so we can get you up to Scotland, because my car's not comfy enough. You know, we were still sort of having those on the horizon conversations. Perhaps playfully, perhaps naively.'

Another participant reports not feeling emotionally ready to have had a conversation with her husband about dying.

'I suppose the one regret I did have is that we didn't really talk about how he felt. But in the last few days he had a list of things he wanted to do so he could sort out things for me and you know, he was very much focussed on I need to do this, this and that. And that was his way of coping with it I think. And I wasn't ready emotionally to talk about it. But, that was the one thing I would love to be able to talk to him now about.'

This lack of important conversations seemed to be a source of regret and distress for bereaved individuals in both groups. Conversely there were those who spoke of gaining great comfort from conversations triggered by terminal illness and the act of caregiving.

'Well, because I was his carer. I was with him all day. And he would say things like, don't you want to go out? I'm worried that you don't go anywhere. So I was able to stress to him that actually he mattered more than anything in the world; that I loved him more than anything. And my only thought, from the moment I woke to the moment I went to sleep, was actually how I was going to care for him. You don't normally have those sorts of conversations. And I would urge anybody going through the same situation to try and have those...As long as you don't feel they're going to go wrong, try and have those conversations. If he'd died suddenly of a heart attack, there would have been a lot of sort of unresolved stuff.'

3.2.9 Grief resilience. This superordinate code was used to describe statements relating to the ability or need to regain emotional strength following the loss (75% PGD, 68.7% no-PGD). This theme was further expanded to include four subordinate themes that represented different elements of expressed grief resilience (resignation to the death, living well to honour the deceased, a broadened sense of perspective, and rejection of a hopelessness life).

Resignation statements. This theme reflects an acceptance of, or resignation to, the death as something undesirable but inevitable (PGD = 58.3%, no-PGD = 43.8%). This was coded under grief resilience because it seems to represent an absence of struggle with the death and an emotional acceptance. This participant describes how he has come to feel content with his wife's death and is no longer angry with her doctors for failing to treat her cancer.

> *'There's nothing anyone could have done. She didn't know. I didn't know. The doctors didn't know. I'm not as angry with the doctors as I was prior to her diagnosis.'*

Living well to honour them. Descriptions here refer to a responsibility or drive by participants to cope and manage following the loss as a way of honouring the deceased or their wishes (PGD = 16.7%, no-PGD = 18.8%). Here a participant directly refers to a promise she made to her husband that his death would not ruin her or her children.

> *'I promised him that it wouldn't destroy us and that I've got to hope that I'm going to live a fulfilling life because otherwise cancer's won hasn't it? It's killed him and it will kill me and I won't let that happen, I promised him I wouldn't. And so I hope that I'm going to be able to live because as you see while I live, he lives.'*

Broadening of perspective. This theme represents statements about the inevitability of loss experiences and an acknowledgement that others are also in pain and are suffering (PGD = 25.0%, no-PGD = 37.5%). This participant feels thankful in some ways that her nephew died without fully realizing that he was going to die from cancer. This knowledge helped her gain a perspective of the situation that was on some level comforting.

> *'My sister has friends whose kids passed away who were maybe 12 and it went on for ages and it, sounded horrific and I, kind of, feel like we didn't have to deal with some of the stuff that other people did. In some ways because he was young it meant that he didn't have to fully realise what was going on and that meant that the family also didn't have to see him in a state in which he had fully realized.'*

Rejecting a hopeless life. The final subordinate theme related to grief resilience reflects participants desire not to let grief be the end of their lives or their happiness (PGD =

16.7%, no-PGD = 18.8%). This participant states that, while he would exchange his current life for his wife's return, he refuses to allow his grief to destroy him emotionally.

> *'It's either going to beat you or it's not. And I'm determined it's not going to beat me. I'm building another life. Not the one I want and I would swap, I'd give my right arm and my left arm to get her back. But that's not going to happen. I'm not going to be crushed. I refuse to be crushed.'*

3.2.9 Idolising. This superordinate theme was used to describe statements relating to an emphasis of admiration of the deceased or the relationship (20% PGD, 12.5% no-PGD). These statements were more than just strong love for the deceased but also communicated an inability of others to ever be comparable.

Participant	*'It's like I shouldn't be moving on'*
Interviewer	*'Okay. Why shouldn't you?'*
Participant	*'Because she was an extraordinary woman. She was a beautiful woman and she had a wonderful nature, loving nature. She was 19. I was 21 and I was just knocked out by that moment and I thought, my God, I'm not going to let her go. And I didn't.'*

4. Discussion

Semi-structured interviews with bereaved individuals with and without PGD who had lost someone to cancer resulted in three superordinate themes in response to questions about loss-related memories (i.e. intrusive imagery, time, and memories are painful) and eight subordinate themes relating to coping strategies (i.e. avoidance, cognitive techniques, memory rehearsal, proximity seeking, substances, routine and keeping busy, reassurance seeking, and therapy). Furthermore, four superordinate themes relating to feelings of unreality, social disconnection beliefs beliefs, mortality communication, and grief resilience were extracted from the data.

4.1 Loss-related memory characteristics

The superordinate theme of intrusive imagery contained four subordinate themes (change for the worse/loss of hope, illness-related imagery, positive past memories, deceased in the present). These themes described images that, at the time of this research, participants were experiencing intrusively and repeatedly. The most common type of intrusive imagery in this sample was illness-related imagery experienced by all of the PGD group and 81.5% of the no-PGD group. Within this, participants in the PGD group most readily described images of the deceased in a state of physical deterioration. Many commented on the sadness they felt in seeing their loved one physically disempowered and feeling helpless to respond.

Within this sample triggers of memory were varied and although it was often mentioned within the context of coping strategies such as needing to keep busy and move home, it was clear that the home and being alone was particularly triggering. Ehlers and Clark (2000) observed that within PTSD triggers often bear sensory resemblance to stimuli encountered at the time of the trauma. Multiple participants discussed the need to keep busy

particularly at the weekends, as periods of time spend alone without tasks to occupy themselves was a source of much anticipatory anxiety and distress. Being alone without distraction can be understood as an important trigger for grief; it is possible that with less distraction, sensory cues that are present that serve as a reminder of the deceased (e.g. objects, food, places) are more apparent. As explained in chapter 1, attachment theory suggests that relationships act in a regulatory capacity and would predict that being alone would trigger searching behaviours in an attempt to re-establish an emotional or physical connection (Shear et al., 2007).

Another trigger and superordinate theme described by participants was Time. The calendar acted as a reminder to the death year's important events that led up to, and was punctuated by, the death. This automatic memory activation was contrasted by the deliberate memory activation subordinate theme in which participants described a conscious process of memory review and repetition. This is consistent with previous research that reported the events leading up to the death are deliberately recalled and replayed (Parkes & Prigerson, 2013). Participants from both groups described a drive to understand or remember more about the events and their role in them. This process may be linked to image-based rumination or represent an attachment-based proximity seeking (Mikulincer & Shaver, 2012; Stroebe, Boelen, et al., 2007). Attachment theory suggests that, in the absence of their caregiver, children will inherently search for them, in an attempt to re-establish a proximal connection (Bowlby, 1973, 1982). It may be that this process of attempting to re-establish proximity is something that might persist into adulthood (Mikulincer & Shaver, 2007). This process might predict that following bereavement, in the face of overwhelming evidence to the contrary, an individual will continue to review memories, moments that could have changed the outcome, and how it could be that this happened in an attempt to reverse the distance from the deceased. Alternatively the process of repetitive thinking or going over

events that led up to the death is highlighted by Boelen, van den Hout, et al. (2006) in their cognitive behavioural model of prolonged grief disorder. Boelen and colleagues hypothesised rumination as an avoidant coping strategy that prevents full connection with the most painful aspects of the loss, namely the finality of the separation. Another explanation may come from a drive to ruminate, not as an avoidant strategy, but due to beliefs regarding the usefulness of rumination for remembering events or problem solving (Papageorgiou & Wells, 2001). Our results show that feelings of disbelief and unreality were reported by almost everyone in the sample and participants described a need to review events as a way of gaining acceptance or making sense of the situation. It may be that these attempts to gain certainty and clarity of the situation are inherently rewarding and thus reinforce the ruminative behaviour (May et al., 2014; Nolen-Hoeksema et al., 1997). Further research is needed into image-based rumination, like the kind described here, in order to elucidate the driving mechanisms at play.

Another notable discrepancy was between the PGD (50%) and the no-PGD group (87.5%) with regards to the frequency of spontaneous and current positive past imagery. Within PTSD, the encoding of trauma memories often results in hypervigilance to, and preoccupation with, threat related material (Fani et al., 2011), with some evidence suggesting that participants with PGD demonstrate bias towards loss-related events (Maccallum & Bryant, 2010a) which likely interferes with the spontaneous activation of positive memories. Given that the PGD group reported more intrusive imagery relating to the death event and illness-related imagery than the no-PGD group, and fewer past positive memories, it may be that a process similar to PTSD is occurring in PGD. Those in the PGD group more readily reported having to deliberately recall positive memories, a process that they described as effortful. The lack of spontaneous positive reminiscing is likely to contribute to feelings of low mood and a lack of psychological closeness to the deceased that does not also trigger intense pain and grief. Given the discrepancy between the PGD and the no-PGD group, it is

possible that as grief adapts over time and the loss becomes integrated into the autobiographical memory base and negative intrusive imagery naturally resolves allowing for more positive reminiscing.

4.2 Coping strategies

Results showed that coping strategies amongst the sample were varied but prominent strategies were reported in themes of avoidance, cognitive techniques, memory activation, proximity seeking, substances, routine and keeping busy, and therapy. Of the concepts not previously reported in Chapter 1 were strategies for maintaining control of one's emotions and substances. In particular cognitive control strategies (i.e. thought suppression) and behavioural strategies such as maintaining a busy schedule so as to minimise time spent alone without distraction. Control strategies here seem to serve as experiential avoidance, a coping strategy previously linked to increased grief severity (Boelen, van den Bout, et al., 2010; Cacciatore & Flint, 2012; Nam, 2016; Shear, 2010). Substances were mentioned by a proportion of the sample as a method of coping with loss. Previous research has shown that experiencing the unexpected death of a loved one increases the risk of developing an alcohol use disorder (Keyes et al., 2014) and alcohol problems are common in other stress-response syndromes (Horowitz, 2011).

4.3 Social disconnection beliefs beliefs

Catastrophic interpretations of emotional and bodily sensations are implicated in the development and maintenance of many psychological presentations (Boelen, van den Bout, et al., 2010; Clark, 1986; Ehlers & Clark, 2000; Rachman, 1997). However, at least within the grief research field, they principally refer to negative consequences for the individuals such as 'If I allow my feelings to come I will lose control.' Interestingly, within this sample

participants spoke about the negative consequences of emotional expression within a social context. In particular participants with PGD, more than those without, described feeling differently in the company of others since their loss in a way that led to avoidance of social situations or a significant reduction in their ability to tolerate social situations for prolonged periods. Participants with PGD were visibly more emotionally reactive in session. They talked about an unrelenting sense of sadness and loss when asked about their current experiences, and described changes to their sense of self and their confidence in the future. They described making effortful attempts to 'wear the mask' and appear 'normal' in the company of others whilst holding back strong negative emotions; an 'exhausting' process that resulted in them narrowing their social circles, reducing their activities, and spending more time home alone. This 'masquerading' provides an important extension of previous work on the role of negative interpretations of trauma reactions (Ehlers & Steil, 1995) and grief (P. A. Boelen, Jan van den Bout, & M. A. van den Hout, 2003) by explicitly detailing the beliefs held about the consequences of grief and emotional expression within a social context. These results suggest that interpersonal changes have an important role to play with individuals describing instances in which they did not feel comforted by those around them leading to a reduction in social activities. This fits with previous grief research that found bereaved individuals who self-identified as 'recovered' reported significantly less constraints against disclosure, a metric in which participants rated the extent to which their social network was present and willing to listen to their worries, than those who identified themselves as 'prolonged grievers' (Mancini, Sinan, & Bonanno, 2015). The subordinate themes private grief, protective buffering, masquerading and being with others offer alternative insights into the reasons behind social disconnection beliefs beliefs over and above the fear of allowing strong grief reactions to surface when an individual is alone.

4.4 Mortality communication

The theme mortality communication expresses gratitude for the extent to which participants were able to have conversations considered 'important' with the deceased before their death. Such conversations could take the form of them discussing their relationship or having the opportunity to say goodbye. Memories of these conversations were described as a source of comfort while those unable to have them described this as a source of regret. This theme fits with previous research that links grief and psychological distress to death attitudes and communication about death and dying (Davis, Deane, & Lyons, 2015; Vandenberg, 2001). Similarly, lower levels of grief were reported by families who advocated for open communication and expressions of emotion towards death and loss (Schoka Traylor, Hayslip, Kaminski, & York, 2003), and parents who had an opportunity to say goodbye to their children before death (Meij et al., 2008). Davis and colleges (2015) hypothesise that prior loss communication supports emotional processing of loss and reduces avoidance, which in turn facilitates personal growth.

4.5 Grief resilience

Here resilience statements were categorised into resignation or acceptance statements, a broadening of perspective, living well to honour the deceased, and rejection of a hopeless life. Given that only a small minority of bereaved individuals go on to develop grief-related difficulties such as PGD it would be correct to say that most individuals are resilient in the face of bereavement (Kersting et al., 2011). These extracted themes are in line with previous research into grief resilience that found acceptance of the death (Bonanno, Wortman, et al., 2002a), no difficulties in accessing positive memories (Mancini et al., 2015), a positive view of the self, sometimes called 'self-enhancement' (Bonanno, Field, Kovacevic, & Kaltman,

2002), and positive views of a just world (Mancini, Prati, & Bonanno, 2011) were associated with resilient grief trajectories.

4.6 Idolising

This concept, understood to be akin to putting the deceased or the relationship on a pedestal, was mentioned by a small number of the total sample with the PGD group reporting this theme slightly more. Despite the relatively low frequency of this theme it carried great significance for those who mentioned it, with participants commenting that they did not intend to pursue other relationships as a result of their strong feelings for the deceased. Although a topic not widely explored within the research field it could be suggested that idolising the deceased or the relationship has the potential to interfere with normal grief resolution if idolisation leads to a disregard of others in the bereaved person's social network in such a way that minimises engagement with others.

4.7 Limitations and Future Directions

These findings add important content domains to The Oxford Grief Study item pool not previously considered and ensure adequate representation of client testimony within this research. However, there are some limitations that should be considered. These interviews were conducted and analysed by the author of this thesis with only a proportion of interviews subject to double coding making the interpretation open to investigator bias. Similarly, the aims of this analysis were to enquire about and gain understanding of cognitive behavioural mechanisms important in the grief experience. The investigator, a clinical psychologist experienced in the treatment of PTSD, used the interview schedule to guide areas of questioning but would explore antecedents, behaviours, and consequences of a particular

experience to gain insight into factors relevant to the CBT model. Similarly, therapeutic interviewing techniques such as downward arrow and guided discovery were used to elucidate the underlying appraisals or meanings associated with the experience in question (Barlow et al., 2017). As such this method may deviate from other qualitative interview techniques in which no prior hypotheses are held prior to interviewing and the initial questioning is kept general so as not to unnecessarily narrow the focus of the interview. The principle aim of these interviews was to identify missing content domains as opposed to generating entirely new hypotheses, which may have limited the scope of the interviews. As such it is possible that concepts relevant to the grief experience, but not within a CBT framework, were not recorded such as childhood experiences. Future research focusing on the impact of childhood experiences on adult grief reactions would help bridge the gap between the line of questioning reported here and formative attachment relationships. Furthermore, qualitative work that is validated in full by multiple independent coders would bring further scientific rigour that was not possible here.

Finally, this sample consisted solely of participants bereaved by expected natural causes. Interviews conducted with individuals bereaved by sudden deaths would likely have impacted the results. Individuals bereaved by sudden deaths often don't have the time to ready a support network nor are they already in contact with services able to provide support such as a hospice or palliative care setting (Rodger, Sherwood, O'Connor, & Leslie, 2007). This delay may mean that sudden deaths prove higher risk with respect to long-term health consequences. Future research comparing the experiences of natural and sudden deaths would likely shed light on whether the impact of predictors differs by mode of death, a question explored in later chapters. However, in selecting items for new scales based on the themes derived in this chapter care was taken to choose concepts and content that would have relevance to losses by any means.

4.8 Conclusion

The results of chapter 3 provide new insights into topics not previously explored within the grief literature and contribute three new measures of memory characteristics (OGS-M; 38 items, Appendix VII), social disconnection beliefs beliefs (OGS-SD; 14 items, Appendix VIII), and grief resilience (OGS-GR; 10 items, Appendix IX). Furthermore, new concepts; mortality communication, death attitudes, idolising and control strategies were added to the appraisals and coping strategies item pool. Questionnaire items were operationalized from the language and content discussed in the themes presented in this chapter. These results in combination with chapter 2 make up the final item pool for the cross-sectional and longitudinal studies described in subsequent chapters.

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Chapter 4 - Exploratory and Confirmatory Factor Analyses and Psychometric Validation of The Oxford Grief Measures

1. Introduction

As mentioned in previous chapters, a number of authors have conducted research into questionnaires measuring appraisals and coping strategies prevalent in PGD (Baker, Keshaviah, Horenstein, Goetter, Mauro, Reynolds, Zisook, Shear, et al., 2016; Boelen & Lensvelt-Mulders, 2005; Boelen & van den Bout, 2010; Eisma et al., 2014; Skritskaya et al., 2016). However, to the author's knowledge, no papers have yet presented validated measures of loss-related memory characteristics, grief resilience, or social disconnection beliefs beliefs.

Given the work already done on cognitive behavioural factors in grief, this thesis aimed to make the following contributions to the literature: first, new areas of investigation not already described within the literature were identified and compared with pre-loss individual differences. Next, both new and established predictors were investigated in larger samples with improved methodology in order to ensure that the fewest number of variables are explaining the greatest amount of variance. Finally, in establishing the validity of these multiple factors, predictors are of greatest importance in maintaining grief severity, and therefore deserve the closest attention in therapy were investigated. The first point was addressed in chapters 2 and 3 and this chapter will address the second point regarding the new and established predictors. The final point will be addressed in chapters 5, 6 and 7.

A first step in the factor structure of a new measure involves conducting an exploratory factor analysis (EFA) on the final items chosen for a scale in order to determine how many distinct factors exist (Brown, 2014). A factor represents items that are more closely correlated with each other than the rest of the scale, usually representing a conceptual content domain. This process produces an empirically driven solution that balances conceptual interpretability (i.e. do all of the items loading on a particular factor make sense together?). The next step is to conduct a confirmatory factor analysis (CFA) with a new

sample of individuals to determine whether the chosen factor structure for the EFA fits the data in the new sample and is therefore generalizable to other samples (Brown, 2014; Henson & Roberts, 2006). If adhering to the gold standard, this is when researchers should proceed to posing predictive hypotheses (Terwee et al., 2007). Furthermore, whereas previous methods provided only estimates of factor loadings (i.e. how much variance of the questionnaire item was accounted for by the latent factor), advances in methodology now allow us to obtain model fit statistics for the chosen factor solution that confirm if the empirical model exists in reality (i.e. fits the data well) (Muthén & Muthén, 2007). Once an ideal factor solution has been found, scales must then be subject to tests of reliability (i.e. internal consistency/composite reliability, test-retest) and validity (i.e. convergent, discriminant, and criterion validity) to determine its suitability for use in psychometric research.

Previous scales of appraisals and coping strategies in PGD have not been subject to both EFA and CFA (Baker, Keshaviah, Horenstein, Goetter, Mauro, Reynolds, Zisook, Shear, et al., 2016; Boelen & Lensvelt-Mulders, 2005; Boelen & van den Bout, 2010; Robinaugh et al., 2015; Skritskaya et al., 2016). It is often difficult to collect enough data necessary for both steps; between 5 and 10 observations per variable has been suggested for factor analysis such that a questionnaire with 20 items would require between 200-400 participants for each stage of model building (EFA) and model testing (CFA) (Brown, 2014). As well as sample size constraints making EFA and CFA difficult, previous research has also used rudimentary methods of factor analysis in which model fit estimates were not obtained (Baker, Keshaviah, Horenstein, Goetter, Mauro, Reynolds, Zisook, Shear, et al., 2016; Boelen & Lensvelt-Mulders, 2005; Robinaugh et al., 2015). A recent study reported psychometrics for an avoidant coping strategies questionnaire (The Grief Avoidance Questionnaire) in a sample of treatment seeking sufferers of complicated grief (CG) (GRAQ; Baker, Keshaviah, Horenstein,

Goetter, Mauro, Reynolds, Zisook, Shear, et al., 2016). Authors report the avoidance items as skewed even after applying a square root transformation and yet continued with an EFA using an estimation based on parametric assumptions. Furthermore, they chose a three-factor solution, based on a previous study that had used some but not all of the items (Shear et al., 2007), going against the scree plot (i.e. a visual representation that indicates how many factors a set of items might generate) that suggested one factor. The software used did not report model fit statistics and as such it is impossible to know whether the three-factor model was superior to the one factor model suggested by the scree plot. Similarly, a recent study reporting levels of yearning in CG sufferers also conducted parametric EFA, despite moderate skew, and chose a one factor solution despite the eigenvalues (>1) indicating a three-factor solution (Robinaugh et al., 2015). As with Baker, Keshaviah, Horenstein, Goetter, Mauro, Reynolds, Zisook, Shear, et al. (2016), the chosen solution was unsupported by fit statistics making it difficult to ascertain whether conceptual interpretability also fit the data.

Boelen and colleagues (2005) were the first to report a grief-related appraisals measure (The Grief Cognitions Inventory; GCI) in a community sample and used a confirmatory factor analysis with fit statistics. They found that a nine-factor model with correlated factors was an adequate fit to the data. However, as with many grief studies, their original data were skewed with responses clustering around low frequencies and as such they performed a transformation to meet parametric assumptions. This process, by definition, distorts the true nature of the data and it has been reported that inferential statistics should be interpreted with caution because transformed data has little in common with the original data (Feng et al., 2014). Furthermore, instead of conducting an EFA, they chose to test their *a priori* nine-factor model from a previous study (Boelen et al., 2003a). While this strategy makes sense in studies only able to conduct either an EFA or CFA based on sample size, as previously mentioned, it does not allow comparison of multiple solutions.

Another example of more sophisticated statistical analyses were presented by Skritskaya et al. (2016) on their Typical Beliefs Questionnaire (TBQ) in a sample of treatment seeking CG sufferers. They performed an EFA and chose a five-factor model based on a good fit to their data and eigenvalues (>1). Factors were interpreted to represent 'Protesting the Death,' 'Negative Thoughts About the World,' 'Needing the Person,' ' Less Grief is Wrong,' and 'Grieving Too Much.' Two of their items did not load significantly on any of the factors and thus had to be excluded from the analysis. In choosing their estimation method they chose to treat their data as categorical, which would have been intuitive to preserve the Likert scale nature of the data (Carifio & Perla, 2007; Jamieson, 2004). However, instead of retaining the true distribution of the data, researchers dichotomised the responses so that a response of 'strongly' or 'very strongly' was categorised as 1 and 'not at all', 'somewhat' and 'moderately' were scored as zero, (i.e. a score of ≤ 3 on a 5 point Likert scale indicated a non-clinical response). This seems to contradict other research by the same team (Cozza et al., 2016) that specified a 'moderately' response (≥ 3 response on a 5 point Likert scale) was necessary to be endorsed as adequately suffering from a particular symptom of prolonged grief. In essence, a 'moderately' endorsement of a prolonged grief symptom was sufficient for diagnosis but a moderately endorsed appraisal was evidence of a non-clinical response.

When using traditional methods of factor analysis there is little way of comparing models beyond conceptual interpretability (i.e. do the items we expect cluster together and are their factor loadings sufficiently high?). Using these methods, a factor solution may appear to be the most interpretable but without fit statistics may unknowingly prove a very poor fit to the data. In addition, traditional methods do not allow us to compare the fit of competing models to determine the best one and are still mainly driven by a priori researcher decisions. Advanced methods allow us to combine empirically driven solutions and

conceptual interpretability by permitting statistical comparison of models that are optimised for conceptual interpretability (Brown, 2014; Muthén & Kaplan, 1985).

The aim of this chapter is to further refine the measures developed in chapters 2 and 3, and investigate their psychometric properties for use in the cross-sectional and longitudinal samples of The Oxford Grief Study reported in chapters 5 and 6, namely, appraisals; OG-A, coping strategies; OG-CS, loss-related memory characteristics; OG-M, social disconnection beliefs beliefs; OG-SD, grief resilience; OG-GR, and the adapted Desire Thinking Scale (DTS; Caselli & Spada, 2011).

2. Methods and Materials

2.1 Participants

Participants were 676 individuals aged over 18 years who had experienced a significant bereavement more than 6 months prior to the study. Participants were recruited through bereavement charity mailing lists, via social media advertisements and the Google content network and were compensated £15 for their participation. No upper restrictions were placed on the length of time since bereavement. This was based on findings that suggest prolonged grief disorder does not spontaneously remit and can be maintained in sufferers for many years post-loss (Fujisawa et al., 2010; Kersting et al., 2009). Participants were included in the study if the deceased represented a close loved one as opposed to an acquaintance, distant friend, or relative.

An additional sample of 50 bereaved individuals was used to investigate test-retest reliability of The Oxford Grief measures. Participants completed the final shortened measures twice with a one-week gap. Their mean age was 51.46 (SD = 14.54), 84.0% were women, 28 had lost a partner, 21 had lost a parent, 11 had lost a child, and 4 had lost a close relative. Individuals were bereaved on average 54 months prior and lost loved ones through illness (n = 37), sudden non-natural death (n = 6), suicide (n = 3), homicide (n = 1), and drug overdoses (n = 3).

2.2 Summary of measures and administration procedure

All questionnaire data were collected using online data collection software (Qualtrics, Provo, UT). All participants completed the study measures remotely. In order to minimize the effects of test fatigue, a break was suggested half way through and participants were encouraged to take more if necessary. Questionnaire formats were varied and item order on longer questionnaires developed in Chapters 2 and 3 was randomised. Questionnaires were

designed to tailor items to the user; participants chose a preferred name for the deceased that then appeared in all relevant items (e.g. *'Maggie's death should have been prevented'*). Furthermore, only items relevant to particular characteristics were displayed (e.g. items about avoiding the home were only shown to those who shared a home with the deceased). Participants received an email from the researcher the day after completing the questionnaires to ascertain whether further support was needed and to give them the opportunity to discuss any aspects that they had found distressing.

2.2.1 Measures. As a result of the qualitative analysis described in chapter 3 a number of items were added to the appraisals and coping strategies questionnaires detailed in chapter 2. Six items reflecting mortality communication (e.g. *'I avoided talking about death'*) and five items reflecting attitudes towards death were added to the appraisals measure based on the felt presence theme (e.g. *'I find it frightening to think that there may be nothing after death'*). Furthermore, two items reflecting death attitudes were added to the rumination subscale of the coping strategies measure (e.g. *'I worry that [-] has not found peace in the afterlife.'*) These items used previously answered questionnaire logic to present the participant with the correct item depending on their religious beliefs. For example, those who indicated they were not religious but believed themselves to be spiritual were presented with the item *'I worry that [-] has not found peace wherever they are.'* Six items reflecting idolisation of the deceased were added to the appraisals measure (*e.g. 'Since [-], I find it hard to love anyone'*). Five items reflecting control strategies for managing grief reactions were added to the coping strategies measure (e.g. *'I make an effort to hold back my feelings.'*) In addition, three new measures were developed to examine memory characteristics including aspects of felt presence and feelings of unreality (38 items, Appendix VII), social disconnection beliefs beliefs (14 items, Appendix VIII), and grief resilience (10 items, Appendix IX). Finally, following the statistical analysis of the pilot items in chapter 2 and

qualitative analysis of interview transcripts in chapter 3, the results were discussed in a consultation with Professor Don Baucom, expert in adult intimate relationships, and Anke Ehlers to identify any areas of interest not conceptually covered in the measures described above. This consultation led to the inclusion of seven new items that asked specifically about the extent to which the bereaved individual relied on the deceased for support, help, and daily functioning (Appendix X). These items were added to the ten items from the Healthy Dependency subscale of the Relationship Profile Test (RPT; Bornstein et al., 2003) which, as discussed in chapter 1, is highlighted in the literature as being relevant to prolonged grief (Fraley & Bonanno, 2004).

Measures are listed in protocol order in Table 4.1. Demographic, loss information, symptom measures, scales developed in Chapters 2 and 3 (i.e. appraisals, coping strategies, and desired thinking), and pre-loss individual differences (i.e. attachment) are described in detail in chapters 2 and 3. The appraisals scale (new items and items from the GCQ - 69 items) assessed beliefs relevant to the self, life, others, mortality communication, death attitudes, self-blame, idolisation of the deceased. The coping strategies scale (new items and items from Utrecht Grief Rumination Scale - 36 items) included behaviours relating to both behavioural and experiential avoidance, proximity seeking, and rumination. The Experiences in Close Relationships Scale revised (12 items, ECR-S;Wei et al., 2007) measures avoidance and anxious attachment behaviours. The adapted Desire Thinking Scale (10 items, DTS;Caselli & Spada, 2011) measures verbal perseveration and imaginal prefiguration relating to the deceased. In addition, four new measures were added based on the results from Chapters 2 and 3 as specified below.

Dependency. The dependency measure was made up of six items developed from data presented in chapter 3 referring to the extent to which the bereaved individual had depended on the deceased both emotionally (*'I had people other than [-] who I could confide in and*

share my worries with') and practically (*'[-] did everything for me in our relationship.')* In addition, ten items from the healthy dependency subscale of the Relationship Profile Test were included reflecting an individual's ability to trust and turn to others in times of need (Bornstein et al., 2003). Deceased dependency/healthy dependency items were measured on a 5-point scale (1 - not at all true of our relationship/of me to 5 - very true of our relationship/of me).

Grief resilience. The grief resilience measure consists of ten items developed from pilot interviews that reflected appraisals regarding self-efficacy (e.g. *'Even without them, I can deal with the ups and downs of life'*) and an ability to draw strength from the relationship with the deceased (e.g. *'I can still laugh about fun times we had together.')* Participants endorsed items on a 7-point scale (1 - totally disagree to 7 - totally agree).

Social disconnection beliefs beliefs. This scale has 16 items developed from pilot interviews to reflect how individuals feel about sharing their grief-related thoughts and feelings with others (e.g. '*Others will not be able to manage if I tell them how I feel about the loss*) and the sense of inauthenticity (e.g. '*When I am with other people, I feel I am putting on a performance'*) and a preference for solitude that arises from these difficulties (e.g. '*It is better to be by myself than to show others how I am really feeling.'*) Participants were asked to rate the extent to which they agreed with each statement on a 7-point scale (1 - totally disagree to 7 - totally agree).

Loss-related memory characteristics. This 38-item questionnaire asks participants to participants to rate on a 5-point scale (0 – not at all to 4 – very strongly) the extent to which each statement regarding their memory of the loss applied to them during the last month. Twenty-three items probed memory triggers and their consequences (e.g. '*I am reminded of the loss for no apparent reason')*, qualities of memory (e.g. '*Memories of things we did together are painful'*), the poor availability of positive memories (e.g. '*I struggle to*

remember positive times without [-]'), and the physical impact of loss-related memories (e.g. '*The memories of [-] 's death make my body ache with overwhelming fatigue').* Four further items, taken from the intrusiveness scale of the Trauma Memory Questionnaire (Halligan et al., 2003), asked about unintentional memories of the loss (frequency in the last week, distress, how much they seemed to be happening now instead of in the past, and the extent to which they felt as though they were reliving the memory). These items were originally rated on a different rating scale and rescored to 0 to 4 for equivalency. Due to the mix of continuous and categorical items in this scale, Cronbach's alpha was calculated for the 34 items on the 5-point scale ($\alpha = .95$) and the 3 items rated out of 100 ($\alpha = .86$).

Table 4.1

Measures in protocol order

Order	Online Measures	Number of items	Cronbach's α in this sample
1	Demographic and Loss Information (Adapted from; Neimeyer, 2006)		
2	Prolonged Grief Disorder Inventory (PG-13; Prigerson & Maciejewski, 2008)	17	.92
3	The Experiences in Close Relationships Scale – Short form (ECR-S; Wei et al., 2007)	12	.62
4	Deceased dependency and healthy dependency items from Relationship Profile Test (Bornstein et al., 2003)	16	.78
5	Updated appraisals measure	69	.96
6	Updated coping strategies measure	36	.93
7	Loss related memories measure	38	.95
8	Social disconnection beliefs beliefs measure	14	.94
9	Grief resilience measure	10	.78
10	Postraumatic stress disorder checklist for DSM-5 (PCL-5; Weathers et al., 2013).	20	.94
11	Patient Health Questionnaire (PHQ-9; Kroencke et al., 2001)	9	.92
12	Adapted Desire Thinking Scale (DTS; Caselli & Spada, 2011)	10	.94

2.3 Data analysis

2.3.1 Preparation of the data. Data cleaning was performed in the first instance to ensure accuracy of the data set. Scale minimum and maximum values were checked and participants for whom date of death had not been entered correctly (e.g. 00/00/00) were

contacted via email to provide correct dates. Data was further processed using Matlab (MathWorks, 2012) to identify "straight lining" (i.e. participants who repeatedly selected the same response throughout questionnaires). This process is important in determining data quality of measures collected online in which participants may be financially motivated to take part and thus not provide true information. Participants were flagged up if they chose the same frequency of response on more than 80% of the questionnaire's items. Participants with multiple flags were then examined on a case-by-case basis. Time taken to complete the measures is recorded automatically by Qualtrics and used to further corroborate if 'straight lining' participants had provided unreliable data. These data checks revealed that no participants had repeated flags and were quick to complete the measures. Therefore, no data were excluded.

2.3.2 Statistical analyses. In order to cross-validate the measurement models developed the data was subject to a 50% random split (Osborne & Fitzpatrick, 2012). Exploratory factor analyses (EFA) were used to build measurement models on one half of the data and the measurement model was tested on the other half using confirmatory factor analyses (CFA). If the conditions suitable for CFA were not met an exploratory factor analyses in a confirmatory structure (E/CFA) or exploratory structural equation modelling (ESEM) was employed. One issue that we had to address was whether data were treated as continuous or ordered categorical. Debate within the literature exists about the suitability of using parametric statistical procedures with Likert scales (Carifio & Perla, 2007; Jamieson, 2004). It has been suggested that Likert scales with 5-7 response points (7 being better) perform well on parametric techniques such as F-ratio and as such can be treated as continuous data (Glass, Peckham, & Sanders, 1972; Muthén & Kaplan, 1985; Rhemtulla, Brosseau-Liard, & Savalei, 2012). However, these results only held under moderate

deviations from normality (Carifio & Perla, 2007). In these data, the appraisals, social disconnection beliefs, and grief resilience scales have 7 response points; memory, coping strategies, and dependency measures have 5 points; desired thinking has 4 response points. In EFA, of importance is the rotation and extraction method of choice. As scale factors were expected to correlate, geomin oblique rotation was used (Muthén & Muthén, 2007). Analyses were conducted using Mplus version 7 which can utilize different extraction methods for normally distributed continuous data (maximum likelihood; ML), non-normal continuous (maximum likelihood robust; MLR), and ordered categorical data (robust weighted least squares; WLSMV) (Muthén & Muthén, 2007). If scale item data with 5-7 response points displayed deviations from normality on corresponding histograms or skew > 2 or kurtosis > 7 (Kim, 2013), both MLR and WLSMV estimation methods were computed in exploratory factor analyses to determine the most interpretable solution. Scales with fewer than 5 response points were treated as ordinal categorical and subjected to WLSMV estimation (Kaplan, 2008).

Taking into account conceptual interpretability, model adequacy was assessed by the χ^2 goodness-of-fit test where the χ^2:df ratio is smaller than 3:1 , a comparative fit index (CFI) of .90 or higher as acceptable and .95 or higher as good, and a root mean square error of approximation (RMSEA) of .08 or lower as acceptable and .06 as good (Hu & Bentler, 1999). In the case of WLSMV estimation, model choice was weighted towards CFI indices that have been shown to perform better than RMSEA and χ^2 with ordinal data in simulation studies (Garrido, Abad, & Ponsoda, 2016). Factor determinacy was assessed by factor loadings greater than .35 and items with comparable cross-loadings were placed where they made most conceptual sense. Items without strong factor loadings were ultimately placed on the factor where they loaded most strongly. Modification indices (i.e. the improvement in model's χ^2 by freeing the residual variance correlation between two items) were only

considered when very large (>30) and the suggested correlated errors fit with the conceptual interpretation (Brown, 2014).

To support the use of a total score of each scale in determining psychological correlates associated with PGD, a higher-order factor was fit to the data once an adequate confirmatory factor model had been established (Brown, 2014). Internal consistency and composite reliability was assessed by either Cronbach's alpha (α) for MLR estimations or McDonald's Omega ($\omega = (\Sigma|\lambda i|)^2 / ([\Sigma|\lambda i|]^2 + \Sigma\delta ii)$, where λi are the factor loadings and δii, the error variances) for WLSMV on the total scale and each subset of items that constitute the factors identified in the EFA (Gadermann, Guhn, & Zumbo, 2012). Criterion and convergent validity for the total scale was determined using correlations with measures of psychopathology (i.e. PGD, PTSD, and depression). An average variance extracted (AVE) score was also calculated for each factor to determine the average variance in the latent factor that is accounted for by its items (Fornell & Larcker, 1981). A score of .50 or higher confirms factorial convergent validity (Hair, Ringle, & Sarstedt, 2011). Discriminant validity of factors was determined if the average variance extracted from a latent construct was larger than the highest squared inter-construct correlation (Henseler, Ringle, & Sarstedt, 2015). This metric tells us if each questionnaire subscale is sufficiently different from the other subscales of the measure. The stability of the total scale and subscales over time was measured using the test-retest reliability sample. A correlation greater than .70 between two time points a week apart was used to indicate acceptable retest reliability.

3. Results

3.1 Participants

A 50% random split of the dataset was conducted to produce two sample populations: one for model building (EFA) and one for model testing (CFA, E/CFA, ESEM). Both sample sizes broadly met the criteria of 5-10 participant per item for the appraisals scale and are well within range for all other scales (Stevens, 2012).Whole sample, model building, and model testing participant demographics are presented in Table 4.2. The two random samples did not significantly differ on any demographic variables, loss characteristics, or psychopathology measures.

Table 4.2

Whole, model building, and testing sample demographics, loss demographics, and psychopathology symptoms

	Whole Sample	Model building	Model testing	
	(n = 676)	*(n = 348)*	*(n = 328)*	Statistic (t, χ^2)
Demographics				
Age in years *M (SD)*	49.22 (12.52)	49.28 (12.31)	49.16 (12.74)	*t* = -.13
Gender *N (%)*				
Female	551 (81.5)	279 (80.2)	272 (82.9)	.374[a]
Highest level of education *N (%)*				
No qualification	28 (4.1)	17 (4.9)	11 (3.4)	.644
O levels/GCSE	82 (12.1)	47 (13.6)	35 (10.7)	
A Levels	63 (9.3)	31 (9.0)	32 (9.8)	
Professional qualification (e.g. teaching, nursing)	111 (16.4)	54 (15.6)	57(17.4)	
NVQ/BTech	73 (10.7)	40 (11.6)	33 (10.1)	
University degree	184 (27.2)	87 (25.1)	97 (29.6)	
Postgraduate degree	133 (19.7)	70 (20.2)	63 (19.2)	
Ethnicity *N (%)*				
Caucasian	650 (92.2)	334 (96.0)	316 (96.3)	.844[a]
Not Caucasian	26 (3.8)	14 (4.0)	12 (3.7)	
Loss characteristics				
Months since loss *M (SD)*	56.81 (79.69)	58.25 (82.81)	55.28 (76.33)	*t* = -.48
Who died*? N (%)*				
Spouse/Partner	244 (36.1)	128 (36.8)	116 (35.4)	.823
Child	142 (21.0)	77 (22.1)	65 (19.8)	
Sibling	44 (6.5)	19 (5.5)	25 (7.6)	
Parent	191 (28.3)	98 (28.2)	93 (28.4)	
Other relative	41 (6.1)	19 (5.5)	22 (6.7)	
Close non-relative	14 (2.1)	7 (2.0)	7 (2.1)	
Length of relationship (months) *M (SD)*	345.04 (182.81)	339.02 (176.10)	351.43 (189.72)	*t* = .882
How did they die? *N (%)*				
Natural anticipated cause	409 (60.5)	203 (58.5)	207 (63.3)	
Natural sudden cause	132 (19.5)	64 (18.4)	68 (20.8)	
Unnatural sudden (e.g. road traffic collision, natural disaster)	51 (7.5)	26 (7.5)	25 (7.6)	
Homicide	6 (0.9)	4 (1.2)	2 (0.6)	
Suicide	52 (7.2)	36 (10.4)	16 (4.3)	
Drug overdose	14 (2.1)	8 (2.3)	6 (1.8)	
Other (e.g. medical negligence, unknown cause)	9 (1.3)	6 (1.7)	3 (0.3)	

	Whole Sample	Model building	Model testing	
	(n = 676)	*(n = 348)*	*(n = 328)*	Statistic (t, χ^2)
Psychopathology				
Prolonged grief score *M (SD)*	30.98 (10.63)	31.03 (10.70)	30.93 (10.57)	*t* = -.110
Depression *M (SD)*	10.22 (7.40)	10.17 (7.36)	10.27 (7.46)	*t* = .168
PTSD *M (SD)*	28.18 (17.71)	28.04 (17.37)	28.32 (18.09)	*t* = .198

Note. [a] Fisher's Exact Test (2x2). Prolonged grief score = PG-13, Depression = PHQ-9, PTSD = PCL-5
$p < .001^{***}$

3.2 Item reduction

Given that the newly developed scales administered would be used to identify psychological constructs relevant to the experience of PGD compared with those who had experienced a typical grief trajectory, criterion validity of items was established to aid with item reduction prior to exploratory and confirmatory factor analyses. Scatterplots of the relationship between total PGD score and each scale item rating were examined to determine the items most readily endorsed by those experiencing PGD. Plots showing a strong linear relationship were retained while items with a weak or flat relationship with grief intensity were discarded. Item responding rarely held a normal distribution - examination of histograms showed floor effects with the majority of responses clustering around low frequencies. This is not surprising in community sample datasets that use convenience sampling because participants meeting criteria for PGD are in the minority, reflecting rates in the general population (Boelen & Lensvelt-Mulders, 2005). Thus, effect size differences in responding between those with and without PGD were calculated using non-parametric Mann Whitney U tests and non-parametric Spearman's correlations for each item and PGD total score were examined. Items that did not show significant group differences or showed weak or very weak effect sizes (Cohen's *d*) were also discarded. Entire appraisals concepts that failed to demonstrate strong statistical association with prolonged grief were items pertaining to mortality communication (e.g. *I avoided talking about death*), attitudes towards death both

secular and religious (e.g. *I believe that we pay for our actions in the afterlife*), and self-blame about the death (e.g. *I am partially responsible for [-]'s death*). This item reduction process resulted in retention of 39 appraisals items, 23 coping strategies items, 15 social disconnection beliefs items, 27 memory items, 7 grief resilience items, and 9 desired thinking items.

The remaining items were then subject to exploratory factor analysis on half of the sample to determine the optimal factor structure balancing conceptual interpretability and model fit estimates. Following this, a confirmatory factor analysis was performed on each scale to test the suitability of the chosen model on the other half. [2]

3.3 Negative grief-related appraisals (OG-A)

3.3.1 Exploratory Factor Analyses – Negative appraisals.

Step 1. All 39 items were entered into two exploratory factor analyses, one using MLR and the other using WLSMV estimation. Using Kaiser's criterion of eigenvalues greater than 1 suggested a seven-factor structure. However, examination of the scree plot suggested a four or five-factor solution. The fit statistics for factors 7 (CFI = .95, RMSEA = .046, χ^2 = 844.18 on df = 489, χ^2:df = 1.73) and 6 (CFI = .94, RMSEA = .049, χ^2 = 940.96 on df = 522, χ^2:df = 1.80) were either adequate or good. The fit statistics for the MLR estimation of the five (CFI = .93, RMSEA = .052, χ^2 = 1068.55 on df = 556, χ^2:df = 1.92) and

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[2] Items on the dependency scale, while significantly distinguishing between groups, did not show strong effect sizes. Two items derived from the healthy dependency subscale of the Relationship Profile test did not significantly distinguish between bereaved individuals with and without PGD. However, as this subscale was included as a whole from a previously validated questionnaire it was decided to retain these items to preserve the previously established factor structure. Given the literature suggesting the importance of dependency on the development of PGD it was decided to include this measure in the EFA and CFA analyses to determine the latent factor structure for use in later analyses (Carr et al., 2000; Fraley & Bonanno, 2004). These results can be found in Appendix XI.

four-factor model (CFI = .91, RMSEA = .058, χ^2 = 1270.00 on df = 591, χ^2:df = 2.16) were all adequate. All factor solutions produced a number of weak items that loaded less than .35 on any factor. Four of the six weak items in the four-factor model were also weak items in the seven-factor model (i.e., *'I've done something bad and now I'm being punished'; '[-] was a much better person than everyone else'; 'No-one compares to [-]'; 'As long as I mourn I will still hold on to [-] '*). It was decided to remove these items and re-run the analyses to increase solution coherence and factor interpretability (Henson & Roberts, 2006).

Using WLSMV estimation, fit statistics followed a similar pattern with four and five factor models being acceptable and six and seven being good. Two of the four weak items reported above also appeared as weak in the five-factor model. However, using WLMSV estimation, factor loadings were very different and in the five, six, and seven models one factor was extracted with less than three items preventing viable interpretation.

Step 2. The EFA was re-run with the remaining 35 items on both MLR and WLSMV estimations. MLR estimation reported six eigenvalues greater than 1, while WLSMV reported five. The scree plot indicated between 4-5 factors. In these analyses MLR estimation suggested a six-factor solution that, while model fit was good (CFI = .96, RMSEA = .047, χ^2 = 704.62, on df = 400, χ^2:df = 1.76), interpretation was conceptually weak with 3 weak loading items and other items changing factors compared with the solution at step 1. The five-factor solution fit statistics were acceptable (CFI = .94, RMSEA = .053, χ^2 = 833.32, on df = 430, χ^2:df = 1.94) with two weak items but good conceptual interpretability.

The WLSMV estimation five-factor model indicated a close fit at CFI = .98, RMSEA = .061, χ^2 = 970.72 on df = 430, χ^2:df = 2.26 with only one item loading less than .35, but still significantly, on the highest loading factor (i.e., *It is unfair that I have to suffer while other people can just get on with their lives*). The four-factor solution had a good CFI = .96 and adequate RMSEA = .072, χ^2 = 1262.76, on df = 461, χ^2:df = 2.74) and no weak items. On

balance, the five-factor solution using WLSMV estimation was the most conceptually interpretable with the strongest model fit statistics. Item placement in the model was determined by factor loadings greater than .35. Four items in the model had cross loadings greater than .35 (i.e. *I can never feel any pleasure again; 'If I let go of him/her there will be nothing left in my life'; 'Life has got nothing to offer me anymore'; 'I can't imagine anything good in my future'*) and were ultimately placed on the factor where they loaded the strongest. The negative appraisals items and respective standardised factor loadings are presented in Table 4.3. Factors were labelled as 'negative interpretations of grief and its reactions', 'regret', 'loss of self and life', 'loss of future and relationships', and 'fear of losing connection to the deceased.'

3.3.2 Confirmatory Factor Analyses – Negative appraisals. The CFA assessed the fit of the five-factor structure using the CFA sample (N=328). The fit statistics for the five-factor model indicated a good model fit for CFI = .95, and an adequate fit for RMSEA = .071 and χ^2 = 1310.56, on df = 550, χ^2:df = 2.38. The five-factor solution was further validated by comparing it against the four-factor model using chi square difference testing, a significant χ^2 indicating that the 'larger' model with more freely estimated parameters fits the data better than the 'smaller' model in which the parameters in question are fixed (Schermelleh-Engel, Moosbrugger, & Müller, 2003). The chi square comparison of the four and five factor models was significant (χ^2 = 344.37, on df = 8, $p < .001$) indicating that the five-factor model was a superior fit to the data. A higher order factor solution that included all of the negative appraisals factors loading on a single 'negative appraisals' factor revealed a good fit for CFI= .95 and an adequate fit for RMSEA = .075 and χ^2 = 1401.73, on df = 555, χ^2:df = 2.53. All five-factor loadings were statistically significant ($p < .001$), supporting the use of an overall score of the negative appraisals items as well as subscale factor scores. Of the GCQ items tested for their ability to discriminate between individuals with and without probable

PGD seven items were retained for the OG-A and are indicated by [a] in Table 4.3. Table 4.3 summarises the standardised factor loadings for the five-factor and higher order factor solutions for the EFA and CFA, and the inter factor correlation matrix. Fitting the CFA model required no constraints on residual correlations.

Table 4.3

Factor analyses of the negative grief appraisals

		Factors									
		1		2		3		4		5	
	Negative Appraisals Item	EFA	CFA	EFA	CFA	EFA	CFA	EFA	CFA	EFA	CFA
1	I am not a whole person anymore.	.60	.80								
2	Without [-] I can never be strong again.	.46	.81								
3	I have lost my sense of who I am in the world.	.56	.81								
4	I can never feel any pleasure again.	.40	.79								
5	Since [-] died, I believe I am worthless.[a]	.58	.82								
6	I wish I had died instead of [-].	.68	.74								
7	I wish I could join [-] (in the afterlife) rather carrying on like this.	.82	.76								
8	My life has no purpose anymore, since [-] died.[a]	.68	.91								
9	Life has got nothing to offer me anymore.[a]	.58	.87								
10	My life is meaningless since [-] died.[a]	.71	.92								
11	I am full of regrets about missed opportunities during our time together.			.73	.77						
12	I will never be able to forgive myself for the things I did wrong in the relationship with [-].[a]			.81	.78						
13	I blame myself for things I did or did not do when [-] was alive.			.84	.88						
14	If I start to cry I won't be able to stop.					.71	.76				
15	If I let go of my emotions, I will go crazy.[a]					.86	.85				
16	If I allow my feelings to come, I will lose control.[a]					.88	.88				
17	If [-]'s death fully hit me, I would go crazy.					.73	.84				
18	I still cannot believe that [-] is gone.					.52	.63				
19	I will never be able to make sense of the death.					.47	.65				
20	It is unfair that I have to suffer while other people can just get on with their lives.					.31	.62				
21	I cannot maintain previous relationships without [-].							.62	.60		
22	I cannot make new relationships without [-].							.66	.83		

		Factors									
		1		2		3		4		5	
	Negative Appraisals Item	EFA	CFA	EFA	CFA	EFA	CFA	EFA	CFA	EFA	CFA
23	Investing in new relationships would be a waste of my time.							.65	.73		
24	I can never be close to other people again.							.76	.76		
25	I can't imagine anything good in my future.							.50	.87		
26	There is no point achieving anything if [-] is not here to see it.							.46	.86		
27	Since [-], I find it hard to love anyone.							.76	.73		
28	Since [-], I care less about friends and family.							.52	.67		
29	I do not care about other people.							.58	.57		
30	If I don't do everything I can to feel close to [-] I will lose them forever.									.75	.84
31	Letting go of my grief would mean betraying [-].									.73	.75
32	Keeping [-] alive in my mind is the most important thing in my life now.									.57	.74
33	Moving on with my life would betray them.									.62	.82
34	If I let go of them there will be nothing left in my life.									.44	.94
35	If I do not feel [-]'s presence, something is wrong with me.									.72	.73
	Correlations matrix of OG-A factors										
	Factor 1	-	-								
	Factor 2	.35	.36	-	-						
	Factor 3	.59	.69	.32	.45	-	-				
	Factor 4	.43	.91	.32	.31	.64	.57	-	-		
	Factor 5	.51	.78	.32	.42	.61	.68	.46	.76	-	-
	Higher order - Negative grief appraisals subscale loadings		.97		.42		.71		.91		.83

Note: EFA (N = 348) CFA (N=328). Factors labelled as follows: 1. Loss of self and life, 2. Regret, 3. Negative interpretation of grief and its reactions, 4. Loss of relationships and future, 5. Fear of losing connection to the deceased. All factor loadings significant to $p < .05$. [a] Retained Grief Cognitions Questionnaire items (Boelen & Lensvelt-Mulders, 2005).

3.3.3 Psychometric validation – Negative appraisals. Validity and reliability metrics are reported in Table 4.4. Correlations between the total score of the OG-A, its subscales and symptom measures of PGD, PTSD, and depression were all strong, except

regret which was moderate, and significant confirming criterion validity. Composite reliability and internal consistency for the total OG-A and its subscales were good or excellent. Test-retest reliability for the total scale was excellent and subscale reliability was either good or excellent.

Factorial convergent validity was confirmed in all five subscales. Factorial discriminant validity was confirmed for 3 out of 5 subscales. Loss of life and self and loss of future and relationships failed to meet discriminant validity due to their high correlation (r = .91). The squared correlation of these subscales (r^2 = .83) was larger than each subscales AVE score. However, as already described, a five-factor model fit the data significantly better than the four-factor model suggesting that these items should be on separate factors.

Table 4.4.

Psychometric validity of total appraisals scale and latent factors

			Factors				
Reliability/ Validity	Measure	Total scale	1	2	3	4	5
Composite	McDonald's Omega	.98	.95	.85	.90	.92	.92
Criterion	PGD *r*	.78***	.74***	.31***	.70***	.65***	.59***
	PTSD *r*	.71***	.65***	.40***	.67***	.60***	.49***
	Depression *r*	.67***	.66***	.35***	.55***	.60***	.45***
Test-retest	*r*	.91***	.90***	.89***	.87***	.88***	.85***
Convergent	AVE		.68	.66	.57	.55	.65
Discriminate	Largest Inter-construct r^2		.83	.20	.47	.83	.60

Note: Factors labelled as follows: 1. Loss of self and life, 2. Regret, 3. Negative interpretation of grief, 4. Loss of relationships and future, 5. Fear of losing connection to the deceased. r = correlation. Test-retest reliability confirmed if $r > .70$. Convergent validity of factors confirmed if AVE > .50. AVE = Average variance extracted. Factoral discriminant validity confirmed if AVE > largest inter-construct r^2. *** $p < .001$

3.4 Maladaptive Coping Strategies (OG-CS)

3.4.1 Exploratory Factor Analyses – Coping strategies. All 23 coping strategy items were entered into two exploratory factor analyses one using MLR and the other using

WLSMV estimation. Inspecting eigenvalues greater than 1 was suggestive of a four-factor structure in both estimation methods. Examination of the scree plot supported a three or four-factor solution. The fit statistics for the MLR estimation of the three-factor model (CFI = .92, RMSEA = .058, χ^2 = 390.56 on df = 187, χ^2:df =2.09) were acceptable. The four (CFI = .96, RMSEA = .046, χ^2 = 279.26 on df = 167, χ^2:df = 1.67) and five (CFI = .98, RMSEA = .035, χ^2 = 206.76 on df = 148, χ^2:df = 1.40) factor solutions were both good fits for the data. The three-factor solution had two items with weak loadings (i.e. *'I make an effort to hold back my feelings,' 'In the company of others I try hard to stop myself from breaking down'*). These items, as well as *'I spend a lot of time thinking about joining [-] (in the afterlife),'* loaded poorly (< .35) in both the four and five-factor solutions.

In the WLSMV estimation the three-factor solution had a good CFI at .97 and adequate RMSEA = .068 and χ^2 = 463.06 on df = 187, χ^2:df = 2.48. Both four (CFI = .98, RMSEA = .056, χ^2 = 336.15 on df = 167, χ^2:df = 2.01) and five-factor solutions (CFI = .99, RMSEA = .041, χ^2 = 230.49 on df = 148, χ^2:df = 1.56) indicated good model fit. The five-factor model had one weak loading item (i.e. *'I make an effort to hold back my feelings.'*) Taking into account the eigenvalues, fit statistics, and the number of weak loading items, a four-factor solution using WLMSV estimation was considered to fit the data best. The coping strategies items and respective standardised factor loadings are presented in Table 4.5. Factors were labelled as 'avoidance', 'proximity seeking', 'loss rumination', and 'injustice rumination.'

Two items cross-loaded above .35 on two factors '*I avoid making changes to my life since [-]'s death*,' loaded on both Factor 1 'Avoidance' (.44) and Factor 2 'Proximity seeking' (.40) factors and '*I dwell on the things we won't get to do together*' loaded on both proximity seeking (.45) and injustice rumination (.41) factors. These cross-loadings make conceptual sense given the content of the items; individuals who avoided making any changes to their

life may be doing this in an attempt to remain close to the deceased and the life they shared. Furthermore, dwelling on plans that will not be fulfilled could reasonably involve bringing the deceased to mind in an attempt to be close to them. However, considering these events that cannot be enacted could also reasonably lead to a sense of injustice. Items were ultimately placed on the factor on which they loaded the strongest.

3.4.2 Confirmatory Factor Analyses – Coping strategies. The CFA assessed the fit of chosen four-factor solution using the CFA sample (N=328). The fit statistics for the four-factor model indicated a good model fit (CFI = .96, RMSEA = .061, χ^2 = 474.68, on df = 224, χ^2:df = 2.12). A chi square difference test was significant in a comparison of the three versus four-factor model indicating that four factors fit the data better than three (χ^2 = 683.03 on df = 6, $p < .001$). A higher order factor solution that included all of the coping strategy factors loading on a single 'coping strategies' factor revealed a good fit for CFI = .95, and close to good fit on RMSEA = .06, and χ^2 = 502.19, on df = 226, χ^2:df = 2.22. All four-factor loadings were statistically significant ($p < .001$), supporting the use of an overall score of the coping strategies as well as subscale factor scores. Of the Utrecht Grief Rumination Scale four items tested for their ability to discriminate between individuals with and without probable PGD four items were retained for the OG-CS. Table 4.5 summarises the standardised factor loadings for the four-factor and higher order factor solutions for the EFA and CFA, and the inter factor correlation matrix. Fitting the CFA model required no constraints on residual correlations.

Table 4.5

Factor analyses of the coping strategies scale

	Coping strategies items	Factors 1 EFA	1 CFA	2 EFA	2 CFA	3 EFA	3 CFA	4 EFA	4 CFA
1	I avoid watching television programmes that remind me of [-] or death in general.	.61	.62						
2	I avoid places we went together.	.84	.58						
3	I avoid eating foods and meals that we shared or [-] liked.	.79	.65						
4	I avoid making any changes to my life since [-] 's death.	.44	.71						
5	I make an effort to hold back my feelings.	.39	.51						
6	In the company of others I try hard to stop myself from breaking down.	.39	.67						
7	I feel compelled to surround myself with things that they liked.			.81	.69				
8	I bring images of [-] to mind.			.72	.59				
9	I am still carrying out a routine as a way of caring for them.			.55	.66				
10	I neglect other things because I spend a lot of time doing things for [-] (e.g. creating memorials, fundraising).			.42	.76				
11	I feel compelled to touch things that [-] touched (e.g. belongings, chairs, beds).			.79	.73				
12	I spend a lot of time thinking about joining [-] (in the afterlife).			.40	.78				
13	I dwell on the things we won't get to do together.			.45	.84				
14	I can't stop thinking about how afraid [-] was.					.58	.75		
15	I think over and over about how others failed to prevent [-]'s suffering.[a]					.76	.77		
16	I think over and over about what I could have done to prevent [-]'s death/ease their suffering.[a]					.95	.86		
17	I go over and over how our last moments could have been more fulfilling.					.47	.70		
18	I dwell on moments that could have changed the outcome.					.81	.81		
19	I can't stop thinking about how much [-] suffered.					.68	.83		
20	I worry that [-] has not found peace (in the afterlife).					.59	.74		
21	I ask myself why I deserved this loss.[a]							.69	.71
22	I think about the unfairness of the loss.[a]							.78	.87
23	I think over and over about how it could be that this happened.							.49	.87
	Correlations matrix of OG-CS factors								
	Factor 1	-	-						
	Factor 2	.49	.73	-	-				

Coping strategies items	Factors							
	1		2		3		4	
	EFA	CFA	EFA	CFA	EFA	CFA	EFA	CFA
Factor 3	.47	.63	.51	.65	-	-		
Factor 4	.44	.57	.52	.65	.64	.72	-	-
Higher order – Coping strategies subscale loadings	.80		.82		.82		.91	

Note: EFA (N = 348) CFA (N=328). Factors labelled as follows: 1. Avoidance, 2. Proximity seeking, 3. Loss rumination, 4. Injustice rumination. All factor loadings significant to $p < .05$.
[a]Retained Utrecht Grief Rumination Scale items (Eisma et al., 2014).

3.4.3 Psychometric validation – Coping strategies. Composite reliability and internal consistency for the total OG-CS and its subscales were good or excellent, except avoidance, which was acceptable. Test-retest reliability for the total scale was good and subscale reliability was either acceptable or good. Validity and reliability metrics are reported in Table 4.6. Correlations between the total score of the OG-CS, its subscales, and symptom measures of PGD, PTSD, and depression were all moderate or strong and significant, confirming criterion validity. The avoidance subscale did not meet the requirements for factorial convergent validity (AVE > .5) and discriminant validity (AVE > max r^2). However, convergent and discriminant validity was confirmed for all other subscales.

Table 4.6

Psychometric validity of total coping strategies scale and latent factors

Reliability/ Validity	Measure	Total scale	Factors 1	2	3	4
Composite	McDonald's Omega	.96	.79	.88	.92	.85
Criterion	PGD *r*	.72***	.61***	.61***	.57***	.61***
	PTSD *r*	.74***	.67***	.56***	.64***	.58***
	Depression *r*	.61***	.59***	.50***	.48***	.48***
Test-retest	*r*	.86***	.79***	.76***	.89***	.82***
Convergent	AVE		.39	.53	.61	.67
Discriminate	Largest Inter-construct r^2		.53	.52	.52	.52

Note: Factors labelled as follows: 1. Avoidance, 2. Proximity seeking, 3. Loss rumination, 4. Injustice rumination. *r* = correlation. Test-retest reliability confirmed if $r > .70$. Convergent validity of factors confirmed if AVE > .5. AVE = Average variance extracted. Factoral discriminant validity confirmed if AVE > Largest inter-construct r^2.

*** $p < .001$

3.5 Loss-related memory characteristics (OG-M)

3.5.1 Exploratory Factor Analyses – Loss-related memory characteristics. Recent advances in statistical software have meant that both continuous and categorical variables can be entered into the same model within an EFA and CFA framework using WLSMV estimation (Muthén & Muthén, 2007). Therefore, all 27 loss-related items were entered into exploratory factor analyses using WLSMV estimation, which is recommended for outcomes with mixed distributions. Inspecting eigenvalues (14.12, 1.40, 1.33) greater than 1 suggested a three-factor structure. However, the scree plot suggested a one-factor solution. The fit statistics for the one-factor model indicated a good fit to the data (CFI = .99, RMSEA = .057, χ^2 = 636.55 on df = 324, χ^2:df = 1.97). The two-factor solution fit statistics indicated a slightly worse fit for the data (CFI = .98, RMSEA = .065, χ^2 = 664.72 on df = 298, χ^2:df = 2.23). The three-factor solution, while demonstrating the best fit (CFI = .99, RMSEA = .051, $\chi 2$ = 480.51 on df = 273, χ^2:df = 1.76), was not conceptually interpretable. No items loaded strongly on the second factor and only one item loaded strongly on the third. Therefore, a

one-factor solution was deemed to be to be most appropriate fit for the data. Inspection of the modification indices suggested that a correlated error should be added between *'When I remember things we did together it feels like I am no longer the same person'* and *'When I remember something I did in the past; it feels like I am no longer the same person'* (MI = 47.89). These correlated errors are likely due to very similar wording and as such it seems likely that some of the shared variance between these items can be attributed to item wording instead of the factor on which these items load (Sörbom, 1989).

3.5.2 Confirmatory Factor Analyses – Loss-related memory characteristics. The CFA assessed the fit of chosen one-factor solution with one correlated error using the CFA sample (N=328). The fit statistics for the one-factor indicated a close to good fit on the RMSEA = .06 and $\chi 2$ = 678.35 on df = 323 (χ^2:df = 2.10) and a good fit for CFI = .98. The one-factor could not be compared with the three-factor solution as the three-factor CFA produced an inadmissible solution.

3.5.3 Psychometric validation – Loss-related memory characteristics. The total loss-related memories scale demonstrated excellent internal consistency (ω = .98) and sufficient convergent validity (AVE > .5). Test-retest reliability for the OG-M was excellent (r = .90, p < .001). Correlations between the total score of the OG-M and symptom measures of PGD (r = .74, p < .001), PTSD (r = .69, p < .001), and depression (r = .56, p < .001) were all strong and significant, confirming criterion validity. Table 4.7 summarises the standardised factor loadings for the one-factor solution using EFA and CFA, McDonald's omega coefficient, and AVE score.

Table 4.7

Factor analyses of the loss-related memories scale

		Factor 1	
	Loss-related memories items	EFA	CFA
1	In the last week, approximately how often did unwanted memories of the loss pop into your mind?	.70	.65
2	How distressing were these memories?	.84	.81
3	To what extent did they seem to be happening now instead of being something from the past?	.73	.78
4	To what extent were you reliving your experience from the loss?	.87	.86
5	The memories of [-]'s death make my body ache with overwhelming fatigue.	.80	.81
6	The physical pain of loss is something I carry everywhere.	.85	.84
7	When I remember the loss it feels unreal.	.72	.58
8	Seeing other people with their partners or families makes me painfully aware of my loss.	.68	.65
9	Many different things trigger distressing memories of the loss.	.84	.83
10	If my mind is distracted from my grief for a while it will hit me like a wave later.	.81	.80
11	I am reminded of the loss for no apparent reason.	.77	.69
12	When I remember the loss, I feel the same emotions I felt at the time.	.64	.70
13	When I try to remember good times we have shared, memories of the loss pop up.	.69	.74
14	The loss feels as if part of my body is missing.	.80	.80
15	Many things in everyday life trigger overwhelming sadness.	.83	.80
16	When I think of [-] all I can remember is their suffering.	.57	.54
17	When I think about [-] I will always think about how they died.	.62	.60
18	My memories of [-] are so vivid it feels like they are here.	.47	.43
19	When I remember things we did together it feels like I am no longer the same person.	.82	.67
20	Memories of things we did together are painful.	.72	.67
21	Even nice memories cause me to feel significant pain.	.84	.72
22	I struggle to remember positive times without [-].	.66	.64
23	Looking at a calendar mainly reminds me of the bad things that happened on those days.	.58	.68
24	When I remember something I did in the past; it feels like I am no longer the same person.	.79	.65
25	I hardly remember anything that I did without [-].	.69	.55
26	I feel a strong urge to comfort [-].	.60	.67
27	I find myself suddenly overcome to find [-].	.66	.67
	McDonald's Omega	.97	
	AVE	.51	

Note: EFA (N = 348) CFA (N=328). Factor labelled as Loss-Related Memory Characteristics. All factor loadings significant to $p < .05$. AVE = Average variance extracted. Convergent validity of factors confirmed if AVE > .50

3.6 Social disconnection beliefs (OG-SD)

3.6.1 Exploratory Factor Analyses – Social disconnection beliefs. All 15 social disconnection beliefs items were entered into two exploratory factor analyses one using MLR and the other using WLSMV estimation. Inspecting eigenvalues greater than 1 was suggestive of a three-factor structure in both estimation methods. Examination of the scree plot could have supported a two, three, or four-factor solution. The fit statistics for the MLR estimation of the two-factor model (CFI = .90, RMSEA = .098, χ^2 = 305.28 on df = 76, χ^2:df = 4.02) did not indicate an acceptable fit. The three-factor model indicated a good fit for CFI = .95, and an acceptable fit for RMSEA = .073 and χ^2 = 168.87 on df = 63, χ^2:df = 2.68. The two-factor solution had two strong cross-loadings (i.e. '*When I am with other people, I feel I am putting on a performance, 'It is easier to be alone than to have to pretend to feel ok'*). The three-factor solution had the same strong cross-loadings and one weak loading item (i.e. *'Others will not be able to manage if I tell them how I feel about the loss'*).

The WLMSV estimation produced a two-factor solution with an acceptable fit according to CFI = .94, however other fit statistics were poor (RMSEA = .149 χ^2 = 600.60 on df = 76, χ^2:df = 7.90). Similarly, the three-factor solution had good fit according to the CFI = .98, but a poor fit was indicated on RMSEA = .096 and χ^2 = 242.78 on df = 63, χ^2:df = 2.27. While both estimations suggested the same conceptual interpretation the MLR estimation fitted the data more closely and thus the three-factor solution using MLR was chosen as the final model. Inspection of the modification indices suggested that a correlated error should be added between *'If I show my real feelings other people will think I am not normal'* and *'Others would judge me if I were to speak openly about my grief'* (MI = 43.86). These correlated errors are likely due to these items appearing in a different part of the study questionnaire pack among the appraisals and grief resilience items and represent a substantively irrelevant method effect (Brown, 2014).

The social disconnection beliefs items and standardised factor loadings are presented in Table 4.8. Factors were labelled as 'negative interpretation of others' reactions', 'negative interpretation of social situations', and 'safety in solitude.'

3.6.2 Confirmatory Factor Analyses – Social disconnection beliefs. The CFA assessed the fit of chosen three-factor solution with one correlated error using the CFA sample (N=328). The fit statistics for the three-factor model indicated acceptable fit (CFI = .94, RMSEA = .075, χ^2 = 230.13 on df = 86, χ^2:df = 2.68). A chi square difference test using the Satorra-Bentler correction for MLR estimations was significant in a comparison of the two versus three-factor model indicating that three factors fit the data better than two (χ^2 = 92.73 on df = 3, $p < .001$). If a first-order model has three factors, a solution that specifies a single higher-order factor will be just-identified (i.e. the higher-order solution will produce the same goodness of fit as the first-order model) (Brown, 2014). In these circumstances, standardized factor loadings are examined to determine the magnitude and statistical significance of the higher-order factor loadings. All three-factor loadings were statistically significant ($p < .001$), supporting a sum score of the social disconnection beliefs items as well as subscale factor scores. Table 4.8 summarises the standardised factor loadings for the three-factor and higher order factor solutions and the inter factor correlation matrix.

Table 4.8

Factor analyses of the social disconnection beliefs scale

		Factors					
		1		2		3	
	Social disconnection beliefs items	EFA	CFA	EFA	CFA	EFA	CFA
1	If I show my real feelings other people will think I am not normal.	.66	.62				
2	Others would judge me if I were to speak openly about my grief.	.97	.64				
3	Others will not be able to manage if I tell them how I feel about the loss.	.32	.84				
4	The company of others makes me feel uncomfortable.			.72	.76		
5	I need to be able to leave social situations when I want or I will break down.			.64	.75		
6	I can't be myself around other people the way I used to.			.72	.84		
7	I feel alien to those around me.			.83	.79		
8	I don't fit in socially the way I used to.			.89	.83		
9	I find it draining to be around other people.			.80	.81		
10	When I am around other people, it feels like I am ruining their enjoyment.			.76	.74		
11	When I am with other people, I feel I am putting on a performance.			.58	.81		
12	It is better to be by myself than to show others how I am really feeling.					.54	.79
13	I can only let my true feelings show when I am on my own.					.84	.84
14	I can only be myself when I am on my own.					.71	.85
15	It is easier to be alone than to have to pretend to feel ok.					.48	.78
	Correlations matrix of OG-SD factors						
	Factor 1	-	-				
	Factor 2	.54	.82	-	-		
	Factor 3	.42	.74	.60	.79	-	-
	Higher order – Social disconnection beliefs subscale loadings		.87		.85		.94

Note: EFA (N = 348) CFA (N=328). Factors labelled as follows: 1. Negative interpretation of others' reactions, 2. Negative interpretation of social situations, 3. Safety in solitude. All factor loadings significant to $p < .05$.

3.6.3 Psychometric validation – Social disconnection beliefs. Validity and reliability metrics are reported in Table 4.9. Composite reliability and internal consistency

for the total OG-SD and its subscales were good or excellent, except negative interpretation of others' reactions, which was acceptable. Test-retest reliability for the total OG-SD was good, as was the reliability of the negative interpretation of social situations subscale. However, both negative interpretation of other's reactions and safety in solitude had only moderate retest-reliability, indicating that these scales may be less stable over time. Correlations between the total score of the OG-SD, its subscales, and symptom measures of PGD, PTSD, and depression were all moderate or strong and significant, confirming criterion validity.

While factorial convergent validity was confirmed for the three subscales, factoral discriminant validity was only confirmed for the safety in solitude subscale. Negative interpretation of others reactions and negative interpretation of social situations failed to meet discriminant validity due to their high correlation (r = .82). The squared correlation of these subscales (r^2 = .66) was larger than each subscales AVE score. However, as already described, a three-factor model fit the data significantly better than the two-factor model suggesting that these items should be on separate factors.

Table 4.9

Psychometric validity of total social disconnection beliefs scale and latent factors

Reliability/ Validity	Measure	Total scale	Factors 1	2	3
Composite	Cronbach's alpha	.94	.78	.92	.89
Criterion	PGD *r*	.62***	.44***	.61***	.52***
	PTSD *r*	.67***	.50***	.67***	.56***
	Depression *r*	.63***	.43***	.64***	.52***
Test-retest	*r*	.80***	.60***	.81***	.69***
Convergent	AVE		.50	.63	.67
Discriminate	Largest Inter-construct r^2		.66	.66	.63

Note: Factors labelled as follows: 1. Negative interpretation of others' reactions, 2. Negative interpretation of social situations, 3. Safety in solitude. *r* = correlation. Test-retest reliability confirmed if *r* > .70. Convergent validity of factors confirmed if AVE > .5. AVE = Average variance extracted. Factoral discriminant validity confirmed if AVE > Largest inter-construct r^2.

*** $p < .001$

3.7 Desire thinking Scale (DTS)

3.7.1 Exploratory Factor Analyses – Desire thinking.

Step 1. Given that the desire thinking scale is answered on a four-point scale all 9 items were entered into an exploratory factor analyses using WLSMV estimation only. Inspecting eigenvalues greater than 1 was suggestive of a one-factor solution. However, the second eigenvalue was close to 1 at .90. Examination of the scree plot supported a two-factor solution. The fit statistics for the one-factor solution suggested a good fit for CFI = .97 but a very poor fit for RMSEA = .212 and $\chi^2 = 411.81$ on df = 27, χ^2:df = 15.25. Inspection of the modification indices revealed large expected parameter change if the correlations of error terms between three pairs of variables were allowed to vary (i.e. item 1 with item 2; MI = 56.86, item 2 with item 3; MI = 72.32, item 4 with item 5; MI = 100.46). High modification indices for items 1,2, and 3 together suggest that these items would be better accounted for by their own factor and in fact these three items (i.e. item 1 - *'I imagine myself being with [-] now,'* item 2 - *'I imagine what I would feel like if I were with [-] now,'* and item 3 - *'I bring*

to mind the sensations I would feel if we were together') loaded together in the two-factor solution. Finally, items 4 *('when I begin to think about them I find it difficult to stop'*) and 5 *('when I begin to think about them I continue until I am exhausted'*) share very similar wording and as such shared variance could be accounted for by wording as well as the latent factor. Failure to investigate and specify shared variance among items appropriately can lead to misspecified models because it assumes that all of the covariation among indicators loading on a given factor is due to that latent dimension and that all measurement error is random (Brown, 2014). Therefore, it makes conceptual sense in this instance to model a two-factor solution with items 1, 2, and 3 loading on the first factor. The second eigenvalue was close to 1 and a parallel analysis of raw data scree plot revealed that a two-factor solution would be appropriate (O'Connor, 2000). The fit of the two-factor solution was also very good for CFI = .99 but remained poor for RMSEA = .126 and χ^2 = 114.92 on df = 19.

Step 2. Given the very large expected parameter change for items 4 and 5 it was decided to model an E/CFA for the two-factor solution with correlated errors between item 4 and 5 to determine whether a viable solution could be reached. An E/CFA strategy applies the same number of identifying restrictions used in EFA by fixing factor variances to unity, by freely estimating the factor covariances, and by selecting an anchor item for each factor whose cross-loadings are fixed to zero while allowing for correlated errors to be modelled, as in CFA. It allows development of a realistic measurement structure prior to moving into the more restrictive CFA framework (Brown, White, & Barlow, 2005). Specifying the two-factor solution with a correlated error between item 4 and 5 indicated an excellent fit (CFI = .99, RMSEA = .056, χ2 = 35.54, on df = 18, χ^2:df = 1.97). The desire thinking items and standardised factor loadings are presented in Table 4.9. Factors were labelled as 'imaginal reunion' and 'mental preoccupation.'

3.7.2 Exploratory Structural Equation Modelling – Desire thinking. The CFA assessed the fit of chosen two-factor solution with one correlated error using the CFA sample (N=328). The fit statistics for the two-factor model indicated a good fit for CFI = .92 but was just above the acceptable threshold for RMSEA = .09, and $\chi^2 = 85.19$, on df = 25, χ^2:df = 3.41. Inspection of the modification indices suggested that a correlated error should be added between the latent factor "imaginal reunion' and item 7 (i.e. *'when [-] pops into my mind, I begin to imagine having her/him back with me;'* MI = 44.57). This cross loading makes conceptual sense because this item refers to imagining the deceased in present with them as well as the item representing mental preoccupation with the deceased. However, this correlated error was not necessary in the EFA sample and in fact the results of the E/CFA showed that this item did not load significantly on imaginal reunion (p = .34). To investigate this further an exploratory structural equation model (ESEM) was specified (Asparouhov & Muthén, 2009). ESEM allows for the integration of EFA and CFA measurement models within the same solution by taking into account small cross-loadings that may be well motivated by either substantive theory or by the formulation of the measurements. These small cross-loadings should be interpreted as reflecting the influence of the factor on the construct-relevant part of the item, rather than the item having an impact on the nature of the factor itself (Morin & Maïano, 2011). There is increasing evidence from simulation studies that cross-loadings do not confound the meaning of the latent factors and EFA/ESEM tends to provide more exact estimates of true population values for factor correlations when cross-loadings (even small ones) are present in the population model, and remain unbiased when the population model corresponds to the independent cluster model inherent to CFA (Asparouhov & Muthén, 2009; Howard, Gagné, Morin, & Forest, 2016). Using an ESEM approach to model a two-factor solution with one correlated error between item 4 and 5 it was found that item 7 loaded significantly on imaginal reunion in the confirmatory sample

(.37, $p < .001$). No other items significantly cross-loaded. The fit statistics for this model were all good (CFI = .99, RMSEA = .06) or close to good ($\chi^2 = 37.26$, on df = 18, χ^2:df = 2.07). This approach does not allow lower-order factors to be used in a hierarchical factor model so a total desire thinking latent factor was not modelled. Table 4.10 summarises the standardised factor loadings for the two-factor factor solution for the E/CFA, the ESEM, and the inter factor correlation matrix.

Table 4.10

Factor analyses of desire thinking items

		Factors			
		1		2	
	Desire thinking items	E/CFA	ESEM	E/CFA	ESEM
1	I imagine myself being with [-] now.	.83	.86***		.05
2	I imagine what I would feel like if I were with [-] now.	.99	1.05***		-.08
3	I bring to mind the sensations I would feel if we were together.	.82	.91***		.02
4	When I begin to think about them I find it difficult to stop.		.02	.77	.79***
5	When I begin to think about them I continue until I am exhausted.		-.09	.77	.87***
6	I repeat mentally to myself that I want them back.		-.02	.99	.92***
7	When [-] pops into my mind, I begin to imagine having her/him back with me.		.37***	.83	.57***
8	My mind is focused on feeling close to them and I repeat it to try and satisfy it.		.01	.88	.79***
9	I find myself repeatedly wishing for just one more minute with [-].		.14	.84	.69***
Correlations matrix of DTS factors					
	Factor 1	-	-		
	Factor 2	.75	.75	-	-

Note: EFA (N = 348) ESEM (N=328). Factors labelled as follows: 1. Imaginal reunion, 2. Mental preoccupation. ESEM factor loadings $p < .05^{*}$ $p < .01^{**}$ $p < .001^{***}$

3.7.3 Psychometric validation – Desire thinking. Evidence of total scale and subscale reliability and validity are presented in Table 4.11. The total scale demonstrated excellent composite reliability and test-retest reliability, suggesting stability of the scores. The scale showed moderate to strong significant correlations with symptoms of PGD, PTSD

and depression, confirming criterion validity. Subscales also met assumptions of composite and test-retest reliability, criterion validity, convergent validity, and discriminant validity.

Table 4.11

Psychometric validity of total desire thinking scale and latent factors

Reliability/ Validity	Measure	Total scale	Factors 1	2
Composite	McDonald's Omega	.95	.96	.90
Criterion	PGD *r*	.66***	.49***	.68***
	PTSD *r*	.61***	.45***	.63***
	Depression *r*	.53***	.39***	.56***
Test-retest	*r*	.90***	.81***	.88***
Convergent	AVE		.89	.61
Discriminate	Inter-construct r^2		.56	

Note: Factors labelled as follows: 1. Imaginal reunion, 2. Mental preoccupation. *r* = correlation. Test-retest reliability confirmed if *r* > .70. Convergent validity of factors confirmed if AVE > .5. AVE = Average variance extracted. Factoral discriminant validity confirmed if AVE > Inter-construct r^2.
*** $p < .001$

3.8 Grief resilience (OG-GR)

3.8.1 Exploratory Factor Analyses – Grief resilience. Grief resilience items are answered on a 7-point scale and demonstrated a left skew with items clustering around the higher answers. Therefore, both MLR and WLSMV estimations were computed on all 7 items. Using WLSMV estimation inspection of eigenvalues greater than 1 suggested a two-factor solution (3.14, 1.23), which was supported by a scree plot. The one-factor solution demonstrated poor fit (CFI = .85, RMSEA = .202, χ^2 = 201.88 on df = 14, χ^2:df = 7.28). The two-factor solution demonstrated an excellent fit for CFI = .99 and a close to good fit for RMSEA = .061, and χ^2 = 18.85, on df = 8, χ^2:df = 2.36. Although cross-loadings did not exceed .35 item 1 *'I am living my commitment to them by living as best I can'* and item 2 *'I can still laugh about fun times we had together'* significantly loaded on both factors.

Using MLR estimation inspection of eigenvalues greater than 1 also suggested a two-factor solution (2.93, 1.18). The one-factor solution was also a poor fit to the data (CFI = .84, RMSEA = .112, χ^2 = 72.25 on df = 14, χ^2:df = 5.16). However, the two-factor solution was an excellent fit to the data (CFI =1, RMSEA = .001, χ^2 = 8.09 on df = 8, p = .425). As above items 1 and 2 significantly loaded on both factors and item 1 *'I am living my commitment to them by living as best I can'* did not display any strong loadings (factor 1 = .31, factor 2 = .27), this item was also the weakest loading (.35) in the WLMSV estimation. Item 1 was ultimately placed on the factor on which it loaded the strongest.

Both solutions produced the same conceptual interpretation. Factor loadings were slightly lower in the MLR solution compared with the WLMSV but items loaded on the same factors. On balance the two factor-solution using MLR estimation was chosen to fit the data best. The grief resilience items, respective factor loadings, are presented in Table 4.12. Factors were labelled as 'continuing bonds' and 'self-efficacy.'

3.8.2 Exploratory Structural Equation Modelling – Grief resilience. The CFA assessed the fit of chosen two-factor solution using the CFA sample (N=328). The fit statistics for the two-factor model indicated an acceptable fit for CFI = .92 but was just above the acceptable threshold for RMSEA = .087, and χ^2 = 43.32, on df = 13, χ^2:df = 3.33). Given the significant factor loadings demonstrated in the EFA it was decided to run an ESEM to see if allowing these small cross-loadings instead of forcing cross-loadings to zero would improve model fit. The ESEM of the two-factor solution revealed a good fit (CFI = .98, RMSEA = .05, χ^2 = 14.59 on df = 8, p = .07). Examination of loadings revealed that items 1 (.26, p < .001) and 2 (.35, p < .001) significantly loaded on the second factor as suggested by the EFA. Therefore, although less parsimonious than CFA, a noncongeneric model in ESEM is more appropriate for this scale. As previously mentioned, this approach does not allow lower-order factors to be used in a hierarchical factor model so a total grief resilience latent

factor was not modelled. Table 4.12 summarises the standardised factor loadings for the two-factor factor solution for the EFA, ESEM, and the inter factor correlation matrix.

Table 4.12

Factor analyses of grief resilience items

		Factors			
		1		2	
	Grief resilience items	EFA	ESEM	EFA	ESEM
1	I am living my commitment to them by living as best I can.	.31	.41***		.26**
2	I can still laugh about fun times we had together.	.41	.40***		.35***
3	My memories of our time together give me confidence.	.96	.86***		.00
4	I am able to draw meaning from other relationships in my life.		.17	.50	.48***
5	Even without [-], I can deal with the ups and downs of life.		-.15	.75	.83***
6	I can cope with what life will bring next.		.03	.71	.72***
7	Without [-] I can still stick to my aims and accomplish my goals.		.00	.69	.66***
	Correlations matrix of OG-SD factors				
	Factor 1	-	-		
	Factor 2	.28	.35	-	-

Note: EFA (N = 348) ESEM (N=328). Factors labelled as follows: 1. Continuing bonds, 2. Self-efficacy. ESEM factor loadings $p < .05^{*}$ $p < .01^{**}$ $p < .001^{***}$

3.8.3 Psychometric validation – Grief resilience. Evidence of total scale and subscale reliability and validity are presented in Table 4.13. Correlations between the total score of the OG-GR, its subscales, and symptom measures of PGD PTSD, and depression demonstrated moderate to strong inverse correlations, supporting criterion validity. The total grief resilience scale demonstrated acceptable internal consistency (α = .76) and good test-retest reliability. While the continuing bonds factor failed to meet the requirements of convergent validity (AVE > .5) and reliability (α > .70), discriminant validity was confirmed. Self-efficacy met requirements of reliability and discriminant validity but failed to demonstrate convergent validity.

Table 4.13

Psychometric validity of total grief resilience scale and latent factors

Reliability/ Validity	Measure	Total scale	Factors 1	2
Composite	Cronbach's Alpha	.76	.64	.75
Criterion	PGD *r*	-.56***	-.30***	-.60***
	PTSD *r*	-.58***	-.36***	-.59***
	Depression *r*	-.57***	-.35***	-.60***
Test-retest	*r*	.89***	.81***	.88***
Convergent	AVE		.36	.47
Discriminate	Inter-construct r^2		.12	

Note: Factors labelled as follows: 1. Continuing bonds, 2. Self-efficacy. *r* = correlation. Test-retest reliability confirmed if $r > .70$. Convergent validity of factors confirmed if AVE > .5. AVE = Average variance extracted. Factoral discriminant validity confirmed if AVE > Inter-construct $r^{2.}$.

*** $p < .001$

4. Discussion

This study aimed to determine factor structure and provide psychometric validation for the five newly developed cognitive behavioural measures (i.e. appraisals, coping strategies, loss-related memory characteristics, social disconnection beliefs, and grief resilience) and one adapted scale (i.e. desire thinking). All five newly developed scales indicated a good or acceptable fit to the data. The adapted scale desire thinking also demonstrated a good fit to the data. With the exception of the grief resilience scale, which had acceptable internal consistency, all of the scales demonstrated excellent internal consistency/composite reliability. All six measures demonstrated good or excellent test-retest reliability. Criterion validity was confirmed in all scales via strong and significant correlations with measures of psychopathology.

Factor analyses of the OG-A supported a five-factor solution (i.e. 1. A hopelessness life, 2. Regret, 3. Negative interpretation of grief, 4. Loss of relationships and future, 5. Fear of losing connection to the deceased). Each factor demonstrated good or excellent internal consistency, test-retest reliability, and acceptable convergent validity was confirmed meaning that we can have confidence that the items chosen are a good measure of the latent factor (AVE > .5). Factoral discriminant validity was not confirmed in the loss of self and life and loss of relationships and future subscales due to a high correlation. However, a five-factor model demonstrated superior fit to the data over a four-factor model suggesting that these subscales should be separate. Furthermore, the second order factor model was also an acceptable fit to the data and provided near identical fit to the first order five-factor model supporting the use of a total score on the OG-A as an index of overall bereavement-related negative thinking.

The OG-CS was found to have four empirically supported factors (i.e. 1. Avoidance, 2. Proximity Seeking, 3. Loss rumination, 4. Injustice rumination). While most of the factors

of the OG-CS are self-explanatory, Loss rumination included items regarding a focus on the suffering of the deceased and counterfactual thinking (i.e. the human tendency to create possible alternatives to life events that have already occurred). Each factor demonstrated good or excellent internal consistency, test-retest reliability, and discriminant validity. Acceptable convergent validity was confirmed in each factor with the exception of the avoidance subscale. This suggests that the items chosen for the avoidance subscale account for less variance than the total error variance for the factor. However, it has been suggested that if Omega, a measure of composite reliability, is higher than .6, in this case .79, then the convergent validity of the construct can still be assumed (Fornell & Larcker, 1981).

The unidimensional OG-M, demonstrated excellent internal consistency, test-retest reliability, and convergent validity. The OG-SD supported a three-factor solution (i.e. 1. Negative interpretation of social situations, 2. Negative interpretation of others' reactions, 3. Safety in solitude) and demonstrated acceptable to excellent internal consistency and convergent validity. Factoral test-retest reliability was confirmed in the negative interpretation of social situations subscale but was only moderate for the other two subscales. Discriminant validity was also confirmed in the safety in solitude subscale. The OG-GR supported a two-factor solution (i.e. 1. Continuing bonds, 2. Self-efficacy) when small cross loadings were allowed within an ESEM framework. The continuing bonds factor failed to demonstrate acceptable internal consistency ($\alpha = .64$) and convergent validity ($AVE \geq .5$). However, given that Cronbach's alpha was above .6 convergent validity can still be considered acceptable (Fornell & Larcker, 1981). Self-efficacy demonstrated adequate reliability but not convergent validity, and both scales demonstrated discriminant validity and good test-retest reliability. Given the modified factor analysis necessary to obtain a well fitting solution and the failure of the scale to demonstrate stringent levels of validity and reliability it is likely that this scale could be improved in future research.

In terms of the adapted scales for which factor solutions were found, the two-factor solution (i.e. 1. Imaginal reunion, 2. Mental preoccupation) of the Desire Thinking Scale (DTS) demonstrated excellent internal consistency, good test-retest reliability, convergent, and discriminant validity. Taken together these results confirm the psychometric validity of the developed and adapted measures of The Oxford Grief study supporting the use of content specific subscales and total scores in subsequent chapters.

While important concepts were retained and tested for their validity, some concepts failed to show clear associations with grief. Mortality communication, while a prominent theme in the previous chapter, did not significantly correlate with symptoms of PGD. These results support previous research investigating variables associated with loss adjustment that found communication about the death to be unrelated to grief in a sample of bereaved students (Davis, Deane, & Lyons, 2016). As in chapter 1, self-blame about the death items were unrelated to PGD in this sample and were only weakly associated with PTSD in those who met criteria for PGD. Even among those bereaved by suicide, only one item *'I blame myself for not having cared better for [-]'* was moderately associated with PTSD symptoms. Taken together it suggests that the items chosen for self-blame about the death subscale were not as predictive as previously believed and as such were removed from the questionnaire.

4.1 Limitations and future research

These results are qualified by a number of limitations. As with previous chapters, data collection was done online; remote data collection risks unreliable data as it is difficult to ensure participants are not faking their data by repeatedly participating with different email addresses for financial gain. However, measures were taken to ensure the validity of the data. If responses had showed evidence of 'straight lining' or a particularly quick response time, then they were to be excluded from analysis. However, as mentioned, no entries met these

criteria. Another limitation is the reliance on self-report data. Particularly with respect to coping strategies, assessment of behavioural changes following loss would be strengthened by corroborating input from a family member or friend or through ecologically valid assessment (ECA) such as a daily tracker on an individual's phone.

These results provide psychometric validity of the measures used in The Oxford Grief study and represent a methodological advancement on previous research by deriving empirically driven solutions in one sample and confirmation of the chosen solution in another without transformation or manipulation of the original data set.

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Chapter 5 – Part II: Differences in Cognitive Predictors Between PGD, PTSD, PGD with Comorbid PTSD and Non-Clinical Responders Following the Loss of a Significant Other

1. Introduction

As mentioned in chapter 1, previous research investigating target cognitive behavioural variables in the development and maintenance of PGD have largely focused on selected cross-sectional comparisons of appraisals and coping strategies (Eisma, Schut, Stroebe, Boelen, et al., 2015; Eisma et al., 2013; Field & Bonanno, 2001; Shear, 2010; Shear et al., 2007; Stroebe et al., 2014; van der Houwen, Stroebe, Schut, Stroebe, & Bout, 2010). Few studies have examined the cognitive behavioural factors that predict PTSD following bereavement (Boelen et al., 2015; Boelen, Reijntjes, & Smid, 2016; O'Connor, 2010a).

Typically these studies have sought predictors of importance by correlating variables with symptom severity. A number of recent studies have sought to investigate correlates of PGD and PTSD symptom profiles by determining distinct groups of individuals suffering from each disorder (Boelen, Reijntjes, Djelantik, & Smid, 2016; Djelantik, Smid, Kleber, & Boelen, 2017; Lenferink, de Keijser, Smid, Djelantik, & Boelen, 2017; Nickerson et al., 2014). Nickerson et al. (2014) used latent class analysis to investigate PGD and PTSD symptom profiles and their correlates in a sample of adult refugees who had lost a loved one. They found four classes of individuals: resilient, PGD, PTSD, and combined PGD+PTSD. Interestingly, they found evidence of differential pathways to each clinical class in comparison to the resilient class. Membership in PGD+PTSD group was predicted by exposure to traumatic loss, detention, and abuse traumas. The PGD group were more likely to have reported adaptation difficulties since relocation and the PTSD group had experienced significantly more difficulties related to loss of culture and support. The authors highlight the importance of understanding the dual impact of loss and trauma on mental health characterised by high disturbance across both PGD and PTSD symptoms. Similarly, they suggest that by investigating the specific factors that are associated with distinct PGD or PTSD symptom profiles, pathways to psychopathology can be better understood and tailored

interventions administered. Authors only used the resilient class as the comparison group and as such it is unclear what, if any, differences could be observed between the clinical classes when compared to each other.

In a study using similar methodology, victims of displacement who had experienced trauma and loss were assessed for PGD, PTSD, and social support (Heeke, Stammel, Heinrich, & Knaevelsrud, 2017). In examining correlates of resilience, PTSD, PGD, and PGD+PTSD they found that losing a close relative and having a more recent loss increased the likelihood of being in the PGD groups in comparison to the PTSD group. In predicting PTSD group membership, only a perception of less social support distinguished PTSD from the resilient class. The PGD+PTSD group differed from the resilient group insofar as they were more likely to be female, exposed to more varied types of assaultive and accidental trauma, receiving less social support, and having lost a close family member. They did not find any differences between the single disorder classes and the comorbid class.

In the only study to examine the differences in appraisals between symptom profiles after loss, Boelen, Reijntjes, Djelantik, et al. (2016) investigated cognitive correlates of prolonged grief and depression classes following unnatural loss. They observed resilient, PGD alone, and PGD+Depression classes and were able to determine that negative cognitions about one's grief predicted membership of the PGD alone class and negative cognitions about the self, life, and grief predicted membership of the PGD+Depression class. PTSD was not measured in this sample but authors commented on the importance of future research investigating the cognitive profiles of those with and without PGD and PTSD.

As mentioned in chapter 1, PGD and PTSD share similarities (e.g. triggered by a stressful life event, results from a failure of memory integration)(Maercker & Znoj, 2010). However, there are also clear clinical differences such as the primary emotion prompted by the disorder (i.e. fear for PTSD and sadness or yearning for PGD) and the presence or

absence of hyperarousal (i.e. common in PTSD but not PGD) (Duffy & Wild, 2017). These clinical differences might suggest that memory characteristics, negative appraisals, and coping behaviours would be different for individuals suffering loss reactions compared to trauma. Given the Oxford Grief (OG) scales have been designed to specifically measure grief reactions it is expected that individuals suffering PGD will report more cognitive predictors than those suffering PTSD. Furthermore, it is expected that suffering from both disorders would result in the highest responding due to the overlap between grief and trauma-related stress.

The present study aims to investigate a number of cognitive behavioural factors (i.e. memory characteristics, appraisals, coping strategies, social disconnection beliefs, grief resilience, and desire thinking) in their association to four symptoms profiles following bereavement: No-PGD/PTSD, PTSD, PGD and PGD+PTSD. In keeping with the methods that will be most readily utilised in clinical settings, and to ensure direct comparison of these groups of interest, membership of the clinical groups will be determined by a probable diagnosis of PGD, using criterion proposed by Prigerson et al. (2009), and PTSD using DSM-5 criteria (American Psychiatric Association, 2013).

1.1 Hypotheses

The present study examined the following hypotheses:

Hypothesis 1: In line with previous literature, validated measures of attachment and dependency will be associated with PGD and PTSD.

Hypothesis 2: Cognitive predictors, as assessed with the Oxford Grief measures of memory characteristics, appraisals, coping strategies, social disconnection beliefs, grief resilience, and desire thinking will be associated with symptoms of PGD and PTSD.

Hypothesis 3a: Cognitive predictors (memory characteristics, appraisals, coping strategies, social disconnection beliefs, grief resilience, and desire thinking) will discriminate between non-clinical bereaved individuals and those meeting criteria for bereavement-related mental health problems (i.e. PTSD, PGD, PGD+PTSD).

Hypothesis 3b: Cognitive predictor variables (memory characteristics, appraisals, coping strategies, social disconnection beliefs, grief resilience, and desire thinking) will discriminate between bereaved individuals suffering from PTSD alone and those with PGD (i.e. PGD or PGD+PTSD).

Hypothesis 3c: Cognitive predictors will explain variance in group membership after controlling for the variables identified in hypothesis 1 and background and loss-related variables that have been found to influence grief severity.

2. Method and Materials

2.1 Participants

Participants were the same 676 adults bereaved presented in chapter 4 who were all at least 6 months prior to completing the questionnaires. Missing data preventing a clear diagnosis of whether an individual had PGD, PTSD, or neither resulted in the exclusion of 36 participants, leaving 640 participants (M = 55.68 months, SD = 79.87, range = 6 - 685). Participants were recruited through bereavement charity mailing lists, social media advertisements and the Google content network. No upper restrictions were placed on the length of time since bereavement. Participants were included if they indicated that the deceased was a close loved one as opposed to an acquaintance or a distant friend or relative.

2.2 Power analysis

The G*Power 3 computer program (Faul, Erdfelder, Lang & Buchner, 2007) was used to estimate the required sample size to detect a between group effect of PGD on cognitive predictor variables. Previous research has reported a moderate to large effect size (r = 0.35-0.67; Boelen et al., 2003a) of grief cognitions in distinguishing between PGD, depression, and anxiety. Specifying an *alpha* level of .05, and a medium (f=0.25) to large (f=0.4) effect size, with four comparison groups, and power at .9, a sample size of 232 was indicated for a medium effect size and 96 for a large effect size. Given that we were attempting to compare four groups, that would have suggested 58 participants for a moderate effect and 24 for a large effect in each group. Each participant's grouping was determined based on his or her answers to symptoms measures. An adequate sample size was reached in the non-clinical group soon after recruitment opened while relatively few participants met criteria for PGD without also meeting criteria for PTSD. Therefore, it was decided to keep

recruitment open in an attempt to reach 58 participants in each group. Although the PGD without PTSD group did not reach its optimal size of 58 (N = 54) the large sample (N = 640) meets the overall sample size and all other groups had at more than 58 participants.

2.2 Measures

2.2.1 Symptom measures

Participants completed the PG-13 (Prigerson & Maciejewski, 2008) to assess PGD symptoms, and the PCL-5 (Weathers et al., 2013) to measure PTSD symptoms. Participants who endorsed at least one item of separation distress daily (criterion b), at least five experiences of cognitive, emotional, and behavioural symptoms at least "once a day" or "quite a bit" (criterion D), and reported that these symptoms were currently resulting in significant impairment in their social, occupational, or other important areas of functioning (e.g., domestic responsibilities) were classified as having met criteria for PGD. Internal consistency of the PG-13 in this sample was excellent (α= .93). Participants who endorsed at least one re-experiencing symptom, (cluster B), one avoidance behaviour (cluster C), two negative alterations in cognitions or mood (cluster D), and two hyperarousal symptoms (cluster E) as being "Moderately" present or higher with a current impairment in functioning as a result of these symptoms were classified as having met criteria for PTSD. Internal consistency of the PCL-5 in this sample was excellent (α= .94).

2.2.2 Cognitive measures

Loss-related memory characteristics (OG-M). This 27-item questionnaire asks participants to rate on a 5-point scale (0 – not at all to 4 – very strongly) the extent to which each statement regarding their memory of the loss applied to them during the last month. Twenty-three items probed memory triggers and their consequences (e.g. '*I am reminded of*

the loss for no apparent reason'), qualities of memory (e.g. '*Memories of things we did together are painful'*), the poor availability of positive memories (e.g. '*I struggle to remember positive times without [-]'*), and the physical impact of loss-related memories (e.g. '*The memories of [-] 's death make my body ache with overwhelming fatigue').* Four further items, taken from the intrusiveness scale of the Trauma Memory Questionnaire (Halligan et al., 2003), asked about unintentional memories of the loss (frequency in the last week, distress, how much they seemed to be happening now instead of in the past, and the extent to which they felt as though they were reliving the memory). These items were originally rated on a different rating scale and rescored to 0 to 4 for equivalency. The total OG-M scale demonstrated excellent internal consistency (ω = .97).

Negative grief appraisals (OG-A). This 35-item questionnaire asks participants to indicate on a 7-point scale (1 - totally disagree to 7 - totally agree) the extent to which they agree with the statements. Items pertain to five content domains: 1. Loss of self and life (e.g. '*Without [-] I can never be strong again'),* 2. Regret (*e.g. 'I blame myself for things I did or did not do when [-] was alive'*), 3. Negative interpretation of grief and its reactions (*e.g. 'If I start to cry I won't be able to stop'*), 4. Loss of relationships and future (*e.g. 'I cannot maintain previous relationships without [-]'*), 5. Fear of losing connection to the deceased (*e.g. 'Letting go of my grief would mean betraying [-]'*). The total negative appraisals scale demonstrated excellent internal consistency (ω = .98).

Maladaptive coping strategies (OG-CS). This 23-item questionnaire asks participants on a 5-point scale (1 - never to 5 – always) to indicate how often they used particular strategies to cope with their loss. Items pertain to four content domains: 1. Avoidance (*e.g. 'I avoid places we went together'*), 2. Proximity seeking (*e.g.' I feel compelled to surround myself with things that they liked'*), 3. Grief rumination (*e.g. 'I dwell on moments that could have changed the outcome'*), and 4. Injustice rumination (*e.g. 'I think about the unfairness of*

the loss'). The total maladaptive coping strategies scale demonstrated excellent internal consistency (ω = .96).

Social disconnection beliefs (OG-SD). This 15-item questionnaire asks participants to indicate on a 7-point scale (1 - totally disagree to 7 - totally agree) the extent to which they agree with the statement. Items pertain to three content domains: 1. Negative interpretation of others' reactions (e.g. *'Others would judge me if I were to speak openly about my grief'*), 2. Negative interpretation of social situations (e.g. *'I can't be myself around other people the way I used to'*), 3. Safety in solitude (e.g. *'It is easier to be alone than to have to pretend to feel ok'*). The total social disconnection beliefs scale demonstrated excellent internal consistency (α = .96).

Grief resilience (OG-GR). This 7-item questionnaire asks participants to indicate on a 7-point scale (1 - totally disagree to 7 - totally agree) the extent to which they agree with the statement. Items pertain to two content domains: 1. Continuing bonds (e.g. *'My memories of our time together give me confidence'*), 2. Self-efficacy (e.g. '*Even without [-], I can deal with the ups and downs of life'*). The total grief resilience scale demonstrated acceptable internal consistency (α = .76).

Desire thinking (DTS). This 9-item questionnaire ask participants to indicate on a 4-point scale (1 – Almost Never to 4 – Almost Always) the extent to which each statement applied to them. Items pertain to two content domains: 1. Imaginal reunion (e.g. '*I imagine myself being with [-] now'*), 2. Mental preoccupation (e.g. '*My mind is focused on feeling close to them and I repeat it to try and satisfy it'*). The total desire thinking scale demonstrated excellent internal consistency (α = .94).

2.3.3 Pre-loss individual differences measures

The Experiences in Close Relationships Scale Revised (ECR-S; Wei et al., 2007). Attachment anxiety and avoidance were measured with a validated 12-item version of the ECR-S. Participants rated their agreement with six items measuring attachment anxiety (e.g. *'I need a lot of reassurance that I am loved by my close loved ones'*) and six items measuring attachment avoidance (e.g. *'I do not often worry about being abandoned'*) on seven-point scales from 1 (strongly disagree) to 7 (strongly agree). The anxious attachment subscale of the ECR-S demonstrated good internal consistency (α = .80), while the avoidant attachment subscale was acceptable (α = .80).

Dependency. This 16-item questionnaire asks participants to indicate on a 5-point scale (1 – Not at all true of our relationship to 5 – Very true of our relationship) to the extent to which the bereaved individual had depended on the deceased both emotionally (*'I had people other than [-] who I could confide in and share my worries with')* and practically (*'[-] did everything for me in our relationship')* as well as items from the healthy dependency subscale of the Relationship Profile Test were included reflecting an individual's ability to trust and turn to others in times of need (Bornstein et al., 2003). The 6-item deceased dependency subscale demonstrated good internal consistency (α = .81), as did the 10-item healthy dependency subscale (α = .86).

2.2.4 Administration procedure

Participants completed symptom measures and the Oxford Grief Study measures of memory characteristics, negative appraisals, maladaptive coping strategies, social disconnection beliefs, grief resilience, and desire thinking as well as validated measures of attachment and dependency and psychopathology online. All participants were sent a 'check-

in' email the next day to ascertain whether further support was needed and to give them the opportunity to discuss any aspects that they had found distressing; six participants requested a phone call to discuss how to access further support.

2.3 Data Analysis

Background variables.

Background variables (i.e. demographics, loss characteristics, and pre-loss individual differences) of potential importance to PGD and PTSD were determined by using bivariate correlations for continuous data and multinomial logistic regression for non-ordered categorical data (e.g. loss of a child, partner, parent etc.). Multinomial logistic regression is an extension of a basic logistic regression, which allows more than two categories of outcome variable. It is also considered more robust against violations of the assumptions of large and unequal sample group sizes, normally distributed errors and a linear relationship between the dependent and independent variables (Long & Freese, 2006), compared with statistical techniques with similar aims (e.g. analysis of variance).

Background variables are entered as the dependent variable and PGD and PTSD scores are entered as covariates in the model. Any background variables that significantly influenced continuous psychological distress variables of PGD and PTSD were retained and controlled for in subsequent analyses.

Group differences.

According to their PG-13 (Prigerson & Maciejewski, 2008) and PCL-5 scores (Weathers et al., 2013), participants were grouped into those with a PGD diagnosis only, PTSD diagnosis only, both PGD and PTSD, and no PGD or PTSD. The four groups were compared using multinomial logistic regression (MNLR). Univariate analyses of group differences were conducted using six MNLR, one for each cognitive predictor to determine

the influence of each predictor in isolation. To account for these multiple comparisons, Bonferroni alpha adjustment set the significance level for each univariate model to $p < .008$ ($\alpha/6$).

Multivariate analyses included background predictors identified in the previous step, which were entered using a backwards elimination method to avoid suppressor effects due to multicollinearity, -2 log-likelihood thresholds for entering and leaving the model were conservatively set to $p < .05$ so that only variables that statistically improved how well the model predicted the outcome variable were retained (Field, 2013). Cognitive predictor variables: memory characteristics, negative appraisals, coping strategies, social disconnection beliefs, grief resilience, and desire thinking were forced into the model as main effects. Multinomial logistic regressions are flexible enough to allow the researcher to alter the reference category, allowing for all possible group comparisons, while the overall model statistics remain unchanged. Overdispersion was corrected using the Pearson chi-square statistic.

3. Results

3.1 Prevalence of psychopathology

Evidence of a probable clinical problem was reported by 42.2% of the sample. Prevalence of probable PTSD was 19.4%, prevalence of PGD alone was 8.4%, and prevalence of PGD+PTSD was 14.5%. The non-clinical group (No-PGD/PTSD) represented 57.8% of the sample.

3.2 Demographics and loss characteristics

Group demographics, loss characteristics and previously established predictor variables for No-PGD/PTSD, PTSD, PGD, PGD+PTSD, are presented in Table 5.1.

Table 5.1

Group demographics, loss characteristics and previously established predictor variables for No-PGD/PTSD, PTSD, PGD, PGD+PTSD,

	No-PGD/PTSD	PTSD	PGD	PGD+PTSD
	(*n* = 369)	(*n* = 124)	(*n* = 54)	(*n* = 93)
Demographics				
Age in years *M (SD)*	50.21 (11.97)	46.82 (13.62)	52.22 (11.48)	47.67 (13.21)
Gender *N (%)*				
Female	70 (81.0)	99 (79.8)	43 (79.2)	83 (89.2)
Highest level of education *N (%)*				
No qualification	9 (2.4)	2 (1.6)	8 (15.1)	3 (3.2)
O levels/GCSE	36 (9.8)	14 (11.4)	6 (11.3)	18 (19.4)
A Levels	33 (8.9)	13 (10.6)	5 (9.4)	11 (11.8)
Professional qualification	61 (16.5)	24 (19.5)	6 (11.3)	15 (16.1)
NVQ/BTech	31 (8.4)	16 (13.0)	9 (17.0)	8 (8.6)
University degree	108 (29.3)	28 (22.8)	13 (24.5)	25 (26.9)
Postgraduate degree	91 (24.7)	26 (21.1)	6 (11.3)	13 (14.0)
Ethnicity *N (%)*				
Caucasian	357 (96.7)	118 (95.9)	52 (96.3)	90 (96.8)
Not Caucasian	12 (3.3)	5 (4.1)	2 (3.7)	3 (3.2)
Loss characteristics				
Months since loss *M (SD)*	66.23 (87.81)	44.39 (59.06)	55.28 (106.27)	28.94 (30.86)

	No-PGD/PTSD	PTSD	PGD	PGD+PTSD
	(*n* = 369)	(*n* = 124)	(*n* = 54)	(*n* = 93)
Who died*? N (%)*				
Spouse/Partner	145 (39.3)	41 (33.1)	20 (37.0)	32 (34.4)
Child	72 (19.5)	24 (19.4)	18 (33.3)	27 (29.0)
Sibling	20 (5.4)	12 (9.7)	2 (3.7)	5 (5.4)
Parent	102 (27.6)	38 (30.6)	12 (22.2)	25 (26.9)
Other relative	21 (5.7)	6 (4.8)	0 (0.0)	3 (3.2)
Close non-relative	9 (2.4)	3 (2.4)	2 (3.7)	1 (1.1)
Length of relationship (months) *M (SD)*	339.73 (181.88)	354.68 (186.75)	315.00 (177.99)	330.67 (176.62)
How did they die? *N (%)*				
Non-violent	305 (82.7)	96 (78.7)	41 (75.9)	71 (76.3)
Violent (e.g. accident, homicide, suicide, drug overdose, medical negligence)	64 (17.3)	26 (21.3)	13 (24.1)	22 (23.7)
Pre-loss individual differences				
Anxious attachment *M (SD)*	19.20 (7.63)	22.31 (7.78)	23.00 (8.74)	23.13 (7.97)
Avoidant attachment *M (SD)*	18.00 (7.00)	21.22 (7.51)	20.94 (7.61)	23.84 (7.54)
Independence from deceased *M (SD)*	21.91 (5.59)	21.57 (5.39)	18.40 (5.95)	19.57 (6.07)
Healthy dependency *M (SD)*	33.73 (7.22)	29.93 (6.82)	30.51 (8.82)	28.09 (8.07)
Cognitive predictors				
Memory characteristics *M (SD)*	37.45 (18.80)	61.15 (16.46)	74.52 (15.21)	80.87 (11.75)
Negative Appraisals *M (SD)*	92.30 (31.78)	124.90 (30.86)	156.20 (37.93)	164.86 (34.05)
Coping strategies *M (SD)*	42.01 (11.22)	56.96 (14.38)	63.14 (16.55)	71.75 (14.63)
Social disconnection beliefs *M (SD)*	54.93 (19.96)	69.72 (15.60)	74.54 (16.31)	83.36 (12.19)
Grief resilience *M (SD)*	37.23 (5.98)	31.83 (6.40)	27.42 (8.45)	27.35 (7.78)
Desire thinking *M (SD)*	15.97 (5.39)	20.73 (6.78)	24.57 (7.54)	26.22 (6.36)

Being female was associated with significantly higher PGD ($r = .15$, $p < .001$), but not PTSD. While age was significantly related to PTSD ($r = -.17$, $p < .001$) but not PGD, with younger participants scoring higher on traumatic stress symptoms. Time since loss was significantly associated with both PGD ($r = -.20$, $p < .001$) and PTSD ($r = -.20$, $p < .001$) with those with more recent losses reporting higher psychological distress. Length of relationship to the deceased was not significantly associated with either PGD or PTSD. In a comparison of level of education, PGD score contributed significantly to the model fit ($\chi^2 =$

37.60 df = 6, $p < .001$). Individuals with lower levels of education (No qualifications OR = 1.22, O-Level/GCSE OR = 1.11, A levels OR = 1.11, Professional qualification OR = 1.11, NVQ/BTech/Apprenticeship OR = 1.04, University degree OR = 1.04) were more likely have a higher PGD score compared with those who obtained a postgraduate degree. Losing the deceased by violent means was associated with higher PGD ($r = .13$, $p < .001$) and PTSD ($r = .12$, $p < .001$) in this sample. Losing a child was significantly associated with higher PGD scores compared with any other type of loss (partner OR = .96, sibling OR = .94, parent OR = .92, close non-relative OR = .89, other relative OR = .87). With respect to PTSD symptoms, bereaved parents reported significantly fewer trauma symptoms compared with those who had lost a parent (OR = 1.03), a close non-relative (OR = 1.05) or another relative (OR = 1.05). Given their association with PGD and PTSD, age, gender, education, months since loss, violent loss, and losing a child were retained as background variables of importance for the multivariate analysis.

3.3 Psychological predictors

Zero order correlations of pre-loss individual differences, cognitive predictors and symptoms measures of PGD and PTSD are presented in Table 5.2.

Table 5.2

Zero order correlations of PGD, PTSD, cognitive predictors, and pre-loss individual differences

		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
1.	PGD	-																
2.	PTSD	.72***	-															
3.	Sex	.15***	.06	-														
4.	Age	.01	-.17***	.01	-													
5.	Months	-.20***	-.20***	.05	.13**	-												
6.	LR	-.03	-.02	-.01	.41***	-.20***	-											
7.	Mode	.13**	.12**	.09*	.05	.03	-.18***	-										
8.	Childloss	-.03	-.10*	-.07	.24***	-.14***	-.18***	-.23***	-									
9.	AxECR-S	.23***	.32***	-.07	-.19***	.05	-.08	-.05	-.14**	-								
10.	AvECR-S	.30***	.36***	.02	-.06	.05	-.01	-.001	-.08*	.26***	-							
11.	InD	-.25***	-.11**	.09*	-.09*	-.07	.22***	.14***	.16***	-.16**	-.20***	-						
12.	HD-RPT	-.28***	-.37***	-.05	.15***	-.01	-.03	.04	.14***	-.40***	-.58***	.20***	-					
13.	OG-M	.83***	.77***	.15***	-.01	-.19***	-.08	.14**	.22***	.20***	.25***	-.22***	-.21***	-				
14.	OG-A	.78***	.71***	.04	-.05	-.17***	-.14**	.12**	.18***	.32***	.40***	-.29***	-.41***	.78***	-			
15.	OG-CS	.72***	.74***	.09*	-.09*	-.21***	-.10*	.16***	.20***	.25***	.28***	-.21***	-.26***	.81***	.78***	-		
16.	OG-SD	.61***	.67***	.13**	-.06	-.11**	-.11**	.14**	.18***	.30***	.45***	-.15***	-.46***	.65***	.71***	.60***	-	
17.	OG-GR	-.56***	-.58***	.01	.03	.10**	.01	-.05	-.04	-.24***	-.43***	.17***	.48***	-.50***	-.65***	-.48***	-.50***	-
18.	DTS	.66***	.60***	.05	-.12***	-.20***	-.13**	.07	.12**	.20***	.17***	-.26***	-.14***	.75***	.70***	.78***	.48***	-.36***

Note. Zero order correlations for cross-sectional data (n = 640). PG-13 = Prolonged grief disorder scale; Months = Months since loss; LR = Length of relationship; Mode = Mode of death; Childloss = Parental relationship to deceased; AxECR-S = Anxious attachment style Experiences in Close Relationships – Short version; AvECR-S = Avoidant attachment style Experiences in Close Relationships – Short version; InD = Independence from deceased; HD-RPT = Healthy dependency subscale – The Relationship Profile Test; OG-M = Loss-related memory characteristics; OG-A = Negative grief-related appraisals; OG-CS = Maladaptive coping strategies; OG-SD = Social disconnection beliefs; OG-GR = Grief resilience; DTS = Desire thinking

Pearson's correlation (two-tailed) $p < .05^{*}$ $p < .01^{**}$ $p < .001^{***}$

3.3.1 Pre-loss individual differences. The measure of anxious attachment was significantly associated with both PGD ($r = .23$, $p < .001$) and PTSD ($r = .32$, $p < .001$) with a higher anxious attachment relating to higher psychological distress. Avoidant attachment showed similar results (PGD; $r = .30$, $p < 0.001$, PTSD; $r = .32$, $p < .001$). Individuals who reported higher healthy dependency ($r = -.28$, $p < .001$) and independence from the deceased ($r = -.25$, $p < .001$) had lower levels of PGD. This pattern was also reflected for PTSD (healthy dependency; $r = -.39$, $p < .001$, independence; $r = -.11$, $p = .006$). These results supported hypothesis 1. All pre-loss individual differences were retained for the multivariate analysis.

3.3.2 Cognitive predictors. All six cognitive predictor variables were significantly associated with both PGD (memory characteristics; $r = .83$, $p < .001$, appraisals; $r = .78$, $p < .001$, coping strategies; $r = .72$, $p < .001$, social disconnection beliefs; $r = .62$, $p = .001$, grief resilience; $r = -.56$, $p < .001$; desire thinking; $r = .66$, $p < .001$) and PTSD (memory characteristics; $r = .77$, $p < .001$, appraisals; $r = .71$, $p < .001$, coping strategies; $r = .74$, $p < .001$, social disconnection beliefs; $r = .67$, $p = .001$; grief resilience; $r = -.58$, $p < .001$; desire thinking; $r = .60$, $p < .001$), supporting hypothesis 2.

3.2 Group differences in cognitive predictors univariate analyses

After alpha correction for multiple comparisons, all six predictors significantly predicted variance in the dependent variable group (memory characteristics; χ^2 (3, N = 640) = 434.91, Nagelkerke $R^2 = .55$, $p < .001$, appraisals; χ^2 (3, N = 640) = 347.37, Nagelkerke $R^2 = .47$, $p < .001$, coping strategies; χ^2 (3, N = 640) = 330.68, Nagelkerke $R^2 = .45$, $p < .001$, social disconnection beliefs; χ^2 (3, N = 640) = 213.05, Nagelkerke $R^2 = .31$, $p < .001$, grief

resilience; χ^2 (2, N = 640) = 212.65, Nagelkerke R^2= .32, p < .001; desire thinking; χ^2 (3, N = 640) = 212.46, Nagelkerke R^2= .32, p < .001).

Results of univariate group differences in cognitive predictors are presented in Table 5.3.

Table 5.3

Univariate parameter estimates of group comparisons for cognitive predictor variables

		Reference group					
		No-PGD/PTSD		PTSD		PGD	
		B (SE)	OR (95% CI)	B (SE)	OR (95% CI)	B (SE)	OR (95% CI)
PTSD	Memory characteristics	.07 (.01)	1.07 (1.05 – 1.08)***				
	Appraisals	.03 (.00)	1.03 (1.02 – 1.04) ***				
	Coping strategies	.09 (.01)	1.09 (1.07– 1.11) ***				
	Social disconnection beliefs	.05 (.01)	1.05 (1.03 – 1.06) ***				
	Grief resilience	-.14 (.02)	.87 (.84 – .91) ***				
	Desire Thinking	.13 (.02)	1.14 (1.10 – 1.18) ***				
PGD	Memory characteristics	.11 (.01)	1.12 (1.10 – 1.15) ***	.05 (.01)	1.05 (1.03 – 1.07) ***		
	Appraisals	.06 (.01)	1.06 (1.05 – 1.07) ***	.03 (.01)	1.03 (1.02 – 1.04) ***		
	Coping strategies	.11(.01)	1.12 (1.09 – 1.15) ***	.03 (.01)	1.03 (1.01 – 1.05) *		
	Social disconnection beliefs	.06 (.01)	1.07 (1.04 – 1.09) ***	.02 (.01)	1.02 (1.00 – 1.04)		
	Grief resilience	-.21 (.02)	.81 (.77 – .85) ***	-.08 (.02)	.93 (.89 – .97) ***		
	Desire Thinking	.21 (.02)	1.23 (1.17 – 1.29) ***	.08 (.02)	1.08 (1.03 – 1.13) ***		
PGD+	Memory characteristics	.15 (.01)	1.16 (1.14 –1.19) ***	.09 (.01)	1.09 (1.06 – 1.11) ***	.04 (.01)	1.04 (1.01 – 1.07)**
PTSD	Appraisals	.06 (.01)	1.07 (1.06 – 1.08) ***	.03 (.01)	1.03 (1.02 – 1.04) ***	.01 (.01)	1.01 (1.00 – 1.02)
	Coping strategies	.15 (.01)	1.16 (1.13 – 1.19) ***	.06 (.01)	1.07 (1.04 – 1.09) ***	.04 (.01)	1.04 (1.01 – 1.06) **
	Social disconnection beliefs	.11 (.01)	1.11 (1.09 – 1.14) ***	.05 (.01)	1.05 (1.02 – 1.07) ***	.05 (.01)	1.05 (1.02 – 1.07) ***
	Grief resilience	-.22 (.02)	.80 (.77 – .83) ***	-.09 (.02)	.91 (.88 – .95) ***	-.01 (.02)	.99 (.95 – 1.03)
	Desire Thinking	.24 (.02)	1.27 (1.22 – 1.33) ***	.11 (.02)	1.12 (1.07 – 1.17) ***	.03 (.03)	1.03 (.98 – 1.08)

Note. $p \leq .05^{*}$ $p \leq .01$ $^{**}p \leq .001^{**}$

3.3.1 Non-clinical group versus clinical groups (i.e. PTSD, PGD and PGD+PTSD). All six cognitive predictor variables distinguished between non-clinical bereaved individuals and each of the three clinical groups in the expected directions. The largest OR's indicating higher scores, or in the case of grief resilience lower scores, were seen in the PGD+PTSD comparison, followed by the PGD group. The PTSD group comparison demonstrated the smallest, but still highly significant differences on cognitive predictors compared to the no-PGD/PTSD group.

3.3.2 Comparison of PTSD alone with PGD and PGD+PTSD. All but one of the cognitive predictors distinguished between individuals suffering from PTSD and those in the PGD alone group. The PGD group had higher scores on all scales other than social disconnection beliefs, which did not differ between groups.

In the PTSD versus PGD+PTSD comparison, an increase in all six predictors significantly increased the likelihood of being in the comorbid group.

3.3.3 Single disorder grief group (PGD) versus comorbid group (PGD+PTSD). Of the six cognitive predictors, three distinguished between the PGD alone and the PGD+PTSD group. An increase in memory characteristics (OR = 1.04), coping strategies (OR = 1.04), and social disconnection beliefs (OR = 1.05) significantly increased the likelihood of additionally suffering from PTSD as well as PGD.

Taken together the findings in section 3.3 support hypothesis 3a and 3b.

3.4 Group differences in cognitive predictors multivariate analyses

To determine the unique variance explained by the cognitive predictor variables after accounting for the variance shared between them and examining the relative contribution of

background variables (i.e. age, gender, education), loss characteristics (i.e. months since loss, losing a child, and violent loss), and pre-loss individual differences (i.e. attachment style and dependency), three MNLR were run using the backwards selection method. Of these variables, only months since loss (χ^2 (3, N = 640) = 8.27, p = .04) and age (χ^2 (3, N = 640) = 9.63, p = .02) significantly contributed to model fit and therefore remained in the final model. Five out of six cognitive predictor variables made unique contributions to the model (memory characteristics; p < .001, appraisals; p = .01, coping strategies; p = .02, social disconnection beliefs; p = .02, and grief resilience; p < .001). Desire thinking failed to make a significant contribution to the model (p = .15).

The final model containing months since loss, age, and the six cognitive predictors significantly improved the fit between model and data χ^2 (24, N = 640) = 519.71, Nagelkerke R^2= .64, p < .001. Three reference groups were used to establish all combinations of group comparison. Table 5.4 presents the parameter estimates for group comparisons. Every extra month post bereavement increased the likelihood of being in the PGD, PTSD, or non-clinical group by 1% compared with the PGD+PTSD group. No other groups differed significantly on time since loss. Every one year increase in age decreased the likelihood of a participant being in the PTSD group by 3% in comparison to the non-clinical group and the PGD group. No other group comparisons were significant. With the exception of the desire thinking scale, these results provide support for hypothesis 3c.

3.4.1 Non-clinical group versus clinical groups (i.e. PTSD, PGD and PGD+PTSD).

After accounting for the variance shared between them, as well as the contribution of age and months since loss, memory characteristics, appraisals, coping strategies and grief resilience contributed significant variance in distinguishing between the clinical groups and the non-clinical group.

A one-point increase on the memory characteristics scale increased the likelihood of being in the PTSD group by 6%, the PGD group by 10% and the PGD+PTSD group by 13%. Individuals were equally likely to be in the PTSD or the PGD+PTSD group (1/OR= 1.11) as grief resilience decreased and were most likely to be the PGD group (1/OR = 1.15) compared to the no-PGD/PTSD group.

A one-point increase in appraisals predicted a 2% rise in the likelihood that a participant would be in the PGD alone or the PGD+PTSD group in comparison to the non-clinical group. However, appraisals did not contribute unique variance to the distinction between the PTSD group and the non-clinical group. Finally, as coping strategies increased by one-point participants were 4% more likely to be in the PTSD group or the PGD+PTSD group compared with the non-clinical group. However, coping strategies did not contribute unique variance to the distinction between the PGD group and the non-clinical group. To understand whether this non-significant group difference resulted from multicollinearity between memory characteristics and coping strategies (r = .81), these predictors were split into two separate MNLR along with all of the other cognitive predictors. When in a model without memory characteristics, coping strategies were significantly elevated in the PGD group in comparison to the non-clinical group (OR = 1.04, p = .02).

3.4.2 Single disorder groups (i.e. PTSD, PGD) versus each other and comorbid PGD+PTSD. A one-point increase in memory characteristics and appraisals significantly increased the likelihood of being in the PGD and the PGD+PTSD groups in comparison to the PTSD group. Social disconnection beliefs was found to increase the likelihood of being in the comorbid PGD+PTSD group in comparison to the PTSD alone and PGD alone group.

Table 5.4

Parameter estimates of group comparisons for months since loss and cognitive predictor variables

		Reference group					
		No-PGD/PTSD		PTSD		PGD	
		B (SE)	OR (95% CI)	B (SE)	OR (95% CI)	B (SE)	OR (95% CI)
PTSD	Memory characteristics	.06 (.01)	1.06 (1.04 – 1.08)***				
	Appraisals	.00 (.01)	1.00 (.99 – 1.01)				
	Coping strategies	.04 (.02)	1.04 (.01 – 1.07)**				
	Social disconnection beliefs	-.00 (.01)	1.00 (.98 – 1.02)				
	Grief resilience	-.10 (.02)	.90 (.86 – .95)***				
	Desire thinking	-.06 (.03)	.95 (.89 – 1.01)				
	Months since death	.00 (.00)	1.00 (1.00 – 1.01)				
	Age	-.03 (.01)	.97 (.95 – .99)**				
PGD	Memory characteristics	.10 (.02)	1.10 (1.06 – 1.14)***	.04 (.02)	1.04 (1.01 – 1.07)*		
	Appraisals	.02 (.01)	1.02 (1.01 – 1.04)**	.02 (.01)	1.02 (1.01 – 1.04)**		
	Coping strategies	.01 (.02)	1.01 (1.97 – 1.05)	-.03 (.02)	.97 (.93 – 1.01)		
	Social disconnection beliefs	-.03 (.02)	.98 (.95 – 1.00)	-.02 (.01)	.98 (.95 – 1.01)		
	Grief resilience	-.15 (.03)	.87 (.81 – .92)***	-.04 (.03)	.96 (.91 – 1.01)		
	Desire thinking	-.03 (.04)	.97 (.89 – 1.06)	.03 (.04)	1.03 (.95 – 1.11)		
	Months since death	.00 (.00)	1.00 (1.00 – 1.01)	.00 (.00)	1.00 (1.00 – 1.01)		
	Age	.00 (.02)	1.00 (.97 – 1.4)	.03 (.02)	1.03 (1.00 – 1.06)*		
PGD+	Memory characteristics	.12 (.02)	1.13 (1.09 – 1.17)***	.06 (.02)	1.06 (1.03 – 1.10)***	.02 (.02)	1.02 (.99 – 1.06)
PTSD	Appraisals	.02 (.01)	1.02 (1.00 – 1.03)*	.02 (.01)	1.02 (1.03 – 1.10)*	-.01 (.01)	.99 (.98 – 1.01)
	Coping strategies	.04 (.02)	1.04 (1.01 – 1.08)*	.00 (.02)	1.00 (.97 – 1.04)	.03 (.02)	1.03 (1.00 – 1.07)
	Social disconnection beliefs	.02 (.02)	1.02 (.99 – 1.01)	.03 (.01)	1.03 (1.00 – 1.06)*	.05 (.02)	1.05 (1.02 – 1.09)**
	Grief resilience	-.11 (.03)	.90 (.84 – .95)***	-.01 (.03)	.99 (.94 – 1.05)	.04 (.03)	1.04 (.98 – 1.10)
	Desire thinking	-.08 (.04)	.92 (.85 – 1.00)*	-.03 (.03)	.98 (.91 – 1.04)	-.05 (.04)	.95 (.88 – 1.03)
	Months since death	-.01 (.01)	.99 (.98 – 1.00)*	-.01 (.01)	.99 (.98 – 1.00)*	-.01 (.04)	.99 (.98 – 1.00)*
	Age	-.02 (.02)	.98 (.95 – 1.01)	.01 (.01)	1.01 (.98 – 1.04)	-.02 (.02)	.98 (.95 – 1.01)

Note. $p \leq .05^{*}$ $p \leq .01^{**}$ $p \leq .001^{***}$

4. Discussion

This study reports the differences in cognitive predictors (i.e. memory characteristics, appraisals, coping strategies, social disconnection beliefs, grief resilience, and desire thinking) between four groups of bereaved individuals. While almost 60% of the community sample demonstrated resilience to both PGD and PTSD, a substantial proportion of individuals reported bereavement-related mental health problems. This is in line with findings that suggest resilience to grief is shown by 45-65% of grievers (Bonanno, Wortman, et al., 2002a; Mancini, Bonanno, & Clark, 2011). The largest clinical group was the PTSD only group (19.4%), followed by the comorbid group PGD+PTSD (14.5%), and the PGD alone group (8.4%). These prevalence rates are consistent with previous research that reports rates of PGD to between 5-10% in the general population (Prigerson et al., 2009). In our sample, a probable diagnosis of PTSD was observed in 63.2% of individuals suffering from PGD. This rate of comorbidity is slightly higher than that reported in a sample of treatment seeking complicated grief sufferers in which 48.5% of CG sufferers also met criteria for PTSD (Simon et al., 2007). Rates of PTSD are also broadly consistent with findings reporting 14% of a sample of elderly grievers met criteria for a PTSD diagnosis (O'Connor, 2010b).

4.1 Univariate analysis

The results provide evidence that there are differential cognitive pathways to PGD, PTSD and PGD+PTSD related to specific cognitive risk factor profiles. Individually all six of the cognitive predictors distinguished between the no-PGD/PTSD group and the clinical groups (PTSD, PGD, PGD+PTSD). Of the clinical groups, apart from grief resilience, which was the highest, the PTSD group reported the lowest levels of cognitive predictors, followed next by the PGD group, with the PGD+PTSD group reporting the highest levels. When

comparing the PGD and the PTSD group, only social disconnection beliefs did not differ between groups. This pattern of results suggests that the Oxford Grief measures are more clearly reflecting the difficulties associated with loss responding compared with trauma reactions. Interestingly, three cognitive predictors (memory characteristics, coping strategies, and social disconnection beliefs) were elevated in the comorbid PGD+PTSD class compared to the PGD alone class. This suggests that the memories, arising from the same bereavement, associated with grief severity and trauma symptoms may be different in nature leading to more diverse or intense memory characteristics. Similarly, it is understandable that individuals suffering both grief and trauma-related symptoms might engage in more frequent or varied coping strategies in an attempt to manage both conditions. In addition, when dealing with two types of unpleasant symptoms, individuals also seem to hold more negative beliefs about sharing or expressing their grief in front of others or in social situations. Problems with social disconnection beliefs were further confirmed in the comorbid group in the multivariate analysis highlighting an important social consequence of loss and trauma that has yet to be articulated in the literature.

4.2 Multivariate analysis

Similar to the univariate analysis, memory characteristics and appraisals were associated with a clinical problem following bereavement. In particular the grief groups (PGD, PGD+PTSD) reported more memory characteristics and negative appraisals in comparison to the PTSD group, further supporting that these concepts are more clearly associated with grief, as opposed to trauma symptoms. However, while an individual was equally likely to be in one of the grief groups as appraisals increased, membership of the PGD+PTSD group was more likely than the PGD alone group as memory characteristics increased. This suggests, at least for memory characteristics, that suffering from both grief

and trauma symptoms is more than just the sum of each disorder alone. There appears to be additional difficulties associated with comorbidity that may mean a therapeutic focus on memory processes may be particularly important for this group.

For some cognitive variables the results differed between the univariate and multivariate analysis. This can be understood by the fact that highly correlated variables are left with less predictive power in explaining unique variance in group membership as the shared variance of predictors is essentially removed from the model. Despite desire thinking being one of the strongest predictors in the univariate analysis, in the multivariate analysis it no longer distinguished between the PGD, PTSD, and non-clinical group. In fact, when the cognitive variables were considered together, higher desire thinking predicted a reduction in the likelihood of being in the PGD+PTSD group compared to the non-clinical group, switching direction from the univariate. This suppressor effect is likely due to multicollinearity with coping strategies (r = .78). Desire thinking has qualitative similarities to rumination, measured in the coping strategies scale. However, despite this shared variance the unique effect of coping strategies persists suggesting that the OG-CS has predictive utility beyond the variance it shares with desire thinking. Similarly, grief resilience was also a strong predictor of group membership in the univariate; however, despite decreasing the likelihood of being in one of the clinical groups it failed to distinguish between clinical groups in the multivariate analysis. The lack of disparity between clinical groups might suggest that grief resilience items reflect general resilience to pathology following bereavement as opposed to resilience of specific grief symptoms. These results are unable to elucidate whether lower grief resilience beliefs act a risk factor for developing a bereavement-related mental health problem or whether a reduction in grief resilience is a stress-related consequence of developing PGD, PTSD or PGD+PTSD.

Finally, the impact of coping strategies differed in the univariate and multivariate analysis. Instead of being reported more frequently by the grief groups, as suggested by the univariate analysis, the likelihood of being in one of the PTSD groups (i.e. PTSD, PGD+PTSD) was significantly higher and of the same magnitude when compared with the non-clinical group. The PGD group did not differ from the no-PGD/PTSD group. Coping strategies' high correlations with memory characteristics (r = .81), appraisals (r = .78), and desire thinking (r = .78) meant that the variance remaining in the model, after what was shared was removed, appears more trauma than grief-related. Some of the coping strategies reported by the PTSD group may therefore represent responses to traumatic memories. One explanation for this might be that the OG-CS more clearly represents maladaptive coping consistent with PTSD when other cognitive variables are held constant. However, an alternative explanation might be the close theoretical connection between memory and coping strategies (i.e. cognitive theory would suggest that difficulties in memory predicts engagement with maladaptive coping strategies) alongside the fact that memory characteristics is the strongest predictor of grief group membership in the multivariate analysis. Therefore, when removing the shared variance between the strongest predictor of grief and coping strategies this may remove the joint variance between coping strategies and grief, leaving only that which is trauma-related to explain group membership. In fact, when separating memory and coping strategies into two separate multivariate models with the other predictors, coping strategies again predicted PGD group membership in comparison to the non-clinical group. This does not necessarily detract from the utility of the OG-CS but perhaps adds to our understanding of the strength of the OG-M in predicting grief.

4.3 Background variables

Results suggested that a more recent loss increased the likelihood of being in the PGD+PTSD group compared with all of the other groups. These results are broadly in line with a recent study that found the resilient classes' losses had occurred longer ago than the comorbid PGD+Depression class (Boelen, Reijntjes, Djelantik, et al., 2016). Furthermore, younger participants were more likely to be the PTSD alone group in comparison to the PGD group and the no-PGD/PTSD group. This is in contrast to previous research that found no impact of age on whether an individual suffered from PGD, PTSD, or PGD+PTSD in a community sample (Djelantik et al., 2017), but in line with previous research that found younger bereaved participants were more likely to suffer from PTSD (Boelen, van Denderen, et al., 2016; Zisook et al., 1998).

Very few studies have compared the cognitive risk profile of a resilient group with that of a group of PGD, PTSD and PGD+PTSD sufferers; one example is that of Djelantik and colleagues (Djelantik et al., 2017). They compared the correlates of resilient, PGD, PGD+PTSD groups in a Dutch community sample. In comparison to the resilient class, participants in the PGD group were more likely to have lost a partner or a child, while those in the PGD+PTSD class were more likely to have lost a partner or a child, experienced bereavement via violent means, and have a lower level of education. In the present study, relationship to the deceased was associated with symptoms of PTSD and PGD; however, when included in a model with the cognitive predictors it failed to contribute to model fit and as such was removed from the model. These results suggest that cognitive variables have more to offer in explaining variance in grief and trauma symptoms following loss than background variables, loss characteristics and pre-loss individual differences. By highlighting the relative importance of modifiable cognitive predictors over and above fixed

moderator variables such as relationship to the deceased or level of education, these results are encouraging for future treatment development. However, it remains possible that background variables such as gender or type of loss may act as moderators of the relationship between cognitive predictors, grief, and trauma symptoms. Future research investigating these relationships is likely to add to our understanding of 'what works best for whom' when developing tailored interventions.

4.4 Limitations and future studies

The current study extends the literature on cognitive behavioural factors and their association to grief severity and traumatic stress symptoms in a bereaved community sample. Nonetheless, there are some limitations that are worth noting. The groups in this sample were derived using probable diagnoses of PTSD from DSM-V and probable PGD criteria likely to be included in ICD-11. However, by contrast the studies cited in this chapter used latent class analyses to derive class membership. Latent class analysis determines whether subgroups of individuals exist within the data based on similar symptom profiles. This method has been developed as an alternative to the binary diagnostic system as it allows for more categories of individuals to be represented (i.e. low, moderate, and high probability of PGD). However, this method only allows comparison of statistically extracted classes. For example, in a study of disaster bereaved individuals, Lenferink et al. (2017) found 3 classes (resilient, PGD, PGD+PTSD+Depression). No distinct PTSD group was found eliminating the opportunity to examine the pathways to PGD and PTSD alone classes. While latent class analysis has much to offer in terms of flexibility of modelling, our interest in this study was to investigate whether the Oxford Grief measures were able to distinguish between non-clinical responders, PGD, PTSD and how comorbid PGD+PTSD changed the profile. Given our a priori hypotheses, our chosen analysis was deemed the most appropriate. However, it

would be of interest to determine whether these groups with probable diagnoses exist within the data when using a latent class approach and how these classes differ in their reporting of cognitive variables.

Another limitation worthy of consideration is multicollinearity. In the multivariate analysis, when the variance shared by variables was held constant some predictors failed to distinguish between clinical and non-clinical groups. When predictors share variance that leaves a smaller proportion of unique variance left in the model to explain the outcome. This means that, for correlated predictors, a larger sample size is needed to detect an effect. However, when desire thinking was included in a multivariate model, the effect changed direction compared to the univariate analysis, indicating a suppressor effect. Further studies on this data set should aim to answer theoretical questions for which a smaller set of important variables are examined to limit the effects of multicollinearity and suppression (see Chapter 6).

While a variety of loss characteristics were represented in our sample, the demographics of grievers was predominantly Caucasian and female. Women tend to be over represented in grief research with previous research in community samples reporting between 73.5-87% (Djelantik et al., 2017; Johnson et al., 2007; Mancini, Prati, et al., 2011). Given the lack of a significant contribution of gender in our multivariate analysis we currently have no reason to assume that associations between cognitive predictors and symptom levels are different for men and women. However, future research should aim for gender equality within samples to further confirm these assumptions. In terms of ethnic diversity within the sample our rate of white respondents (96.5%) was marginally higher than that reported by the UK census (87.1%) (Office for National Statistics, 2011). In light of this discrepancy, and to ensure the cultural sensitivity of these results, it will be important for future studies to

investigate whether the clinical correlates reported here hold for grievers from different ethnic backgrounds and cultural contexts.

Notwithstanding these limitations, this study provides evidence of the cognitive behavioural variables that are associated with PGD, PTSD, and comorbid symptom profiles, highlighting distinct pathways to psychopathology. These results add to the body of literature that supports tailoring interventions for bereaved individuals suffering from different mental health problems following loss.

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Chapter 6 - Coping Strategies as a Mediator of the Effect of Loss-Related Memory Characteristics and Negative Grief-Related Appraisals on Symptoms of PGD, PTSD and Depression.

1. Introduction

Chapter 5 demonstrated that loss-related memory characteristics, negative appraisals, and coping strategies successfully distinguished between non-clinical individuals and those suffering bereavement-related mental health problems such as PGD and PTSD. While correlates of mental health problems are useful in understanding potential targets for treatment, it is also important to understand potential maintenance factors of distress. These can be defined as variables that block natural resolution or self-correction of negative cognitions or problems of memory. Cognitive theory makes a theoretical prediction that maladaptive coping strategies have this effect (Beck, 1979). Within a grief context, it is hypothesised that any failure to integrate new information about the loss in the autobiographical memory base will give rise to feelings of disbelief, confusion, and yearning. Typically, these failures are predicted by the extent to which an individual actively blocks integration via maladaptive coping strategies. (Boelen, van den Hout, et al., 2006; Shear et al., 2007). Similarly, when negative beliefs about the self, the world, the future, and others form following a loss, concomitant avoidance of situations, places, or people prevents individuals from making positive experiences that have the potential to shift unhelpful cognitions (i.e. the belief that the future is hopeless without the deceased persists if new activities or previously enjoyed ones are avoided).

Within Ehlers and Clark's (2000) cognitive model for PTSD, maladaptive coping strategies are hypothesised to maintain symptoms of PTSD by blocking restructuring of excessively negative meanings of the trauma and its aftermath and by preventing the trauma memory from being updated with information that changes threatening meaning of its worst moments (Ehlers & Clark, 2000; Ehlers, Hackmann & Michael, 2004). Boelen and colleagues proposed a similar role for coping strategies in PGD (Boelen, van den Hout, et al., 2006). They categorised maladaptive coping strategies as either being anxious coping (i.e.

avoiding confrontation of the loss to ward off threat by avoiding situations, places, people, or thinking about the loss) or depressive coping (i.e. patterns of inactivity and withdrawal driven by beliefs that activities will not make them feel better or will be disrespectful to the deceased). Anxious avoidance is hypothesised to block integration of the loss in the existing memory base while depressive avoidance reduces opportunities for engagement in meaningful or pleasurable activities. Within this contextualisation Boelen also categorises repetitive ruminative thinking and proximity seeking behaviours as anxious avoidance proposing that both function as a means of avoiding confronting the loss. Previous measures of loss-related coping strategies such as the depressive and anxious avoidance in prolonged grief questionnaire (DAAPGQ; Boelen & van den Bout, 2010) have been parsimonious in their measurement of these constructs and used single items to measure avoidance (i.e. *I avoid situations and places that confront me with the fact that [–] is dead and will never return*) and proximity seeking (i.e. *I deliberately retrieve positive memories related to [–] as a means to avoid thinking about the fact that [–] is dead and will never return*). The Oxford Grief – Coping Strategies Scale (OG-CS) was developed in collaboration with experienced therapists and from client testimony as a unified and comprehensive measure of the behaviours relevant in prolonged grief disorder covering avoidance and proximity seeking behaviours, loss rumination and injustice rumination[3]. Each subscale uses multiple items in an attempt to capture and directly measure a variety of avoidant, proximity seeking, and ruminative strategies employed throughout the grief experience.

A number of observational longitudinal studies have demonstrated the mediating role of coping strategies on the relationship between predisposing factors such as attachment (Boelen & van den Bout, 2010; Delespaux, Ryckebosch-Dayez, Heeren, & Zech, 2013),

[3] Four items were retained for the OG-CS from the Utrecht Grief Rumination Scale (Eisma et al., 2014).

neuroticism (van der Houwen et al., 2010), violent loss (Boelen et al., 2015), loss-centrality (Boelen, 2012) and psychopathology following bereavement. These studies have helped elucidate how coping strategies are employed by different personality types with different loss circumstances and how these relationships influence symptoms of PGD. However, to our knowledge, no studies have yet utilised a bereavement sample to examine the core hypotheses of Ehlers and Clark's (2000) cognitive model of PTSD and the CBT model of PGD (Boelen, van den Hout, et al., 2006) i.e. that difficulties in memory integration and negative appraisals lead to bereavement-related mental health problems such as PGD, PTSD and depression, and that these effects are mediated by maladaptive coping strategies. One reason for this may be the lack of adequate measurement tools for loss integration. Previous research aimed at measuring whether PGD is associated with the extent to which a bereavement has been integrated into the autobiographical memory base has focused on overgeneral memory using the autobiographical memory task (Boelen, Huntjens, et al., 2010; Maccallum & Bryant, 2010b) or memory intrusiveness from a trauma questionnaire (Boelen, 2012; Halligan et al., 2003). While reduced memory specificity and memory intrusiveness are important candidate processes in failures of loss integration, it is also possible that they represent only two of a number of components that likely play a role. Here we used the newly developed OG-M as a measure of the frequency, intrusiveness, consequences, and characteristics of loss memories and hypothesised it to act as a metric for the extent to which a loss has been integrated into the autobiographical memory base. The OG-A was used to measure the negative grief-related appraisals developed following loss, and the OG-CS was used to measure the extent to which an individual engages in behaviours proposed to block memory integration and self-correction of negative appraisals.

Of further interest is whether the relative importance of coping behaviours on grief severity changes over the course of the grief process. As mentioned in chapter 1, previous

research using an experimental design has shown that continuing bonds, i.e. the extent to which an individual engages in behaviours aimed at restoring an emotional connection to the deceased, were associated with reduced grief severity in the first 6 months of loss but later associated with poorer outcomes five years later (Field et al., 2003). Similarly, Boelen and Eisma (2015) found that that anxiously avoiding loss-related cues predicted increased symptom-levels of PGD, depression, and PTSD one year later, but only in those who were in their first 5 months of loss. They argued that this highlighted the importance of maladaptive coping in the first few months of loss and the importance of early assessment. Given that a diagnosis of PGD requires the death to have occurred at least 6 months ago, these results suggest that specialist interventions targeting PGD may be implemented too late for optimal targeting of maladaptive coping. However, previous research has shown that interventions aimed at facilitating adaptation to bereavement in the first 6 months of loss are ineffective and have the potential to interfere with the 'natural resolution' (Schut & Stroebe, 2005). Clearly, identifying stages in the grieving process when an intervention targeting maladaptive coping might be more successful in reducing grief symptoms is of clinical interest.

Following the theoretical predictions of Ehlers and Clark's (2000) cognitive model of PTSD (Ehlers & Clark, 2000) and Boelen et al.'s (2006) Cognitive Behavioural model of PGD, we aimed to determine whether data collected from The Oxford Grief Study were compatible with the hypothesis that the effects of memory characteristics and negative appraisals on symptoms of PGD and PTSD would be in part mediated by maladaptive coping strategies. Given that the OG measures were developed using principles relevant to PTSD, but specifically for grief responding, it is important to investigate whether and in what ways these cognitive predictors work together to maintain symptoms of grief and trauma following bereavement. Since it is also important to understand whether depression, as a common comorbid difficulty with PGD and PTSD, develops and is maintained via similar

processes, we also aimed to determine the specificity of these predictions by investigating mediation models in their association with symptoms of depression. While it has been suggested that cross-sectional mediation designs may not always be informative with regard to temporal causal processes (Cole & Maxwell, 2003; Maxwell & Cole, 2007), previous research has suggested that when interferences regarding causal direction are based on well-founded theoretical foundations, in conjunction with prior findings from experimental and non-experimental studies, cross-sectional mediation has the potential to reveal causal mechanisms (MacKinnon, Fairchild, & Fritz, 2007; Shrout, 2011).

In order to understand whether these relationships vary at different time points in the grieving process this analysis will be implemented in two separate samples. First, these models will be investigated in a sample of individuals at least six months post loss as they represent those who would qualify a diagnosis of PGD and therefore be able to access treatment. Second, these models will be conducted in a sample whose loss is less than 6 months old. Conducting the same analyses in a sample of newly bereaved individuals (in first 6 months after loss, i.e. those who would not ordinarily be offered treatment for PGD) and a sample of those bereaved 6 months or longer, we can compare the pattern of direct and indirect effects, which can give further clues into the development of chronic PGD symptoms.

1.2 Hypotheses

In sum, the present study examined the following hypotheses:

Hypothesis 1a: There will be a relationship between negative grief-related appraisals, loss-related memory characteristics, maladaptive coping strategies, and grief intensity in a community sample of bereaved individuals.

Hypothesis 1b: Maladaptive coping strategies will mediate both the relationship between negative grief-related appraisals and grief intensity as well as the relationship between loss-related memory characteristics and grief intensity.

Hypothesis 2a: There will be a relationship between negative grief-related appraisals, loss-related memory characteristics, maladaptive coping strategies, and posttraumatic stress symptoms (PTSD) in a community sample of bereaved individuals.

Hypothesis 2b: Maladaptive coping strategies will mediate the relationship between negative grief-related appraisals and PTSD and the relationship between loss-related memory characteristics and PTSD.

Hypothesis 3a: There will be a relationship between negative grief-related appraisals, loss-related memory characteristics and maladaptive coping strategies and depression in a community sample of bereaved individuals.

Hypothesis 3b: Maladaptive coping strategies will mediate both the relationship between negative grief-related appraisals and depression as well as the relationship between loss-related memory characteristics and depression.

Hypothesis 4*:* The results of 1b, 2b, 3b, will differ across the two selected samples (6+ months since loss versus 0 – 6 months post loss).

2. Methods and Materials

2.1 Participants

Participants in sample 1 were 695 adults (age; M = 49.20 SD = 12.58, 82% women) bereaved at least 6 months prior to completing the questionnaires. No upper restrictions were placed on the length of time since bereavement in sample 1 (months since loss; M = 56.79, SD =80.86, range 6 to 685 months). Participants in sample 2 were 275 adults (age; M = 46.43 SD = 13.24, 79% women) recruited between 0 and 6 months after bereavement (months since loss; M = 2.94, SD =2.01, range 0 to 8 months). Participants were recruited through bereavement charity mailing lists, via social media advertisements and through the Google content network.

2.2 Administration procedure and summary of measures

Participants completed the measures developed in previous chapters (see Chapter 4 for final versions) of loss-related memory characteristics, negative appraisals and maladaptive coping strategies, as well as measures of psychopathology online. Measures were developed in consultation with clinicians experienced in the treatment of traumatic bereavement and posttraumatic stress disorder and qualitative interviews with bereaved individuals with and without PGD. All participants were sent a 'check-in' email the next day to ascertain whether further support was needed and to give them the opportunity to discuss any aspects that they had found distressing.

2.2.1 Cognitive measures

Loss-related memory characteristics. This 27-item questionnaire asks participants to rate on a 5-point scale (0 – not at all to 4 – very strongly) the extent to which each statement

regarding their memory of the loss applied to them during the last month. Twenty-three items probed memory triggers and their consequences (e.g. '*I am reminded of the loss for no apparent reason')*, qualities of memory (e.g. '*Memories of things we did together are painful'*), the poor availability of positive memories (e.g. '*I struggle to remember positive times without [-]'*), and the physical impact of loss-related memories (e.g. '*The memories of [-] 's death make my body ache with overwhelming fatigue').* Four further items, taken from the intrusiveness scale of the Trauma Memory Questionnaire (Halligan et al., 2003), asked about unintentional memories of the loss (frequency in the last week, distress, how much they seemed to be happening now instead of in the past, and the extent to which they felt as though they were reliving the memory). These items were originally rated on a different rating scale and rescored to 0 to 4 for equivalency. Factor analyses revealed a unidimensional structure. The total loss-related memory characteristics scale demonstrated excellent internal consistency (ω = .98).

Negative grief appraisals. This 35-item questionnaire asks participants to indicate on a 7-point scale (1 - totally disagree to 7 - totally agree) the extent to which they agree with the statement. Items pertain to five content domains: 1. Hopelessness of self and life (e.g. *Without [-] I can never be strong again),* 2. Regret (*e.g. I blame myself for things I did or did not do when [-] was alive*), 3. Negative interpretation of grief (*e.g. If I start to cry I won't be able to stop*), 4. Loss of relationships and future (*e.g. I cannot maintain previous relationships without [-]*), 5. Fear of losing connection to the deceased (*e.g. Letting go of my grief would mean betraying [-]*). Factor analyses confirmed these content domains as latent factors and supported a higher order latent factor of total appraisals. The total negative appraisals scale demonstrated excellent internal consistency (ω = .98).

Maladaptive coping strategies*.* This 23-item questionnaire asks participants on a 5-point scale (1 - never to 5–always) to indicate how often they used particular strategies to

cope with their loss. Items pertain to four content domains: 1. Avoidance (*e.g. I avoid places we went together*), 2. Proximity seeking (*e.g. I feel compelled to surround myself with things that they liked*), 3. Grief rumination (*e.g. I dwell on moments that could have changed the outcome*), and 4. Injustice rumination (*e.g. I think about the unfairness of the loss*). Factor analyses confirmed these content domains as latent factors and supported a higher order latent factor of total coping strategies. The total maladaptive coping strategies scale demonstrated excellent internal consistency (ω = .96).

2.2.2 Symptom measures

Prolonged Grief Disorder Inventory (PG-13). This questionnaire (PG-13; Prigerson & Maciejewski, 2008) assesses the prevalence and severity of PGD symptoms (e.g., yearning for the deceased, feelings of emotional numbness/detachment from others, feeling that a part of oneself died along with the deceased). The PG-13 is a subset of 13 items from the Inventory of Complicated Grief (ICG; Prigerson et al., 1995). A continuous PGD total score can be determined by summing the items.

Posttraumatic stress disorder checklist for DSM-V *(PCL-5; Weathers et al., 2013).* The PCL-5 is a self-report instrument assessing distress associated with the 20 symptoms of PTSD in DSM-5 over the past month. Items were rated on a five-point scale, from 0 (not at all) to 4 (extremely) with respect to symptoms arising as a result of their bereavement.

Patient Health Questionnaire (PHQ-9; Kroencke et al., 2001). The PHQ-9 is a self-report measure based on the Diagnostic and Statistical Manual, 4th Edition, Text Revision criteria for major depressive disorder (DSM IV-TR, American Psychiatric Association, 2000). It mirrors the nine major depressive symptoms, with each item scored on a 0 (not at all) to 3 (nearly every day) Likert scale in the last two weeks.

2.3 Data Analysis

Data were analysed using structural equation modelling (SEM; Mplus, Version 7.0 Muthén & Muthén, 2007). The robust weighted least squares (WLSMV) extraction method suitable for outcomes with mixed distributions was used to evaluate hypotheses. In order to use the full information available in an attempt to minimize measurement error, all three models specified all observed variables (86), their latent factors (10), and higher order factors (2) where applicable, resulting in a high degree of parameters to estimate. Traditionally researchers have suggested between 5-10 observed cases per parameter (Kline, 2011). However, recent simulation studies have suggested that smaller sample sizes of around 200 cases may be enough to run structural equation models (Wolf, Harrington, Clark, & Miller, 2013). Latent factors with high factor loadings that explain a large degree of variance in the dependent variable and have low rates of missing data are said to be indicators that statistical power can be achieved with smaller sample sizes (Wolf et al., 2013), all of which applies to the present study. Furthermore, authors reported that sample size requirements decreased when the number of items of a factor increased from three or four items to six, rather than increasing linearly with number of estimated parameters or number of variables. All latent factors on the negative appraisals scale apart from regret (3 items), and on the maladaptive coping strategies scale apart from injustice rumination (3 items), have at least six indicators each, likely contributing to successful model convergence.

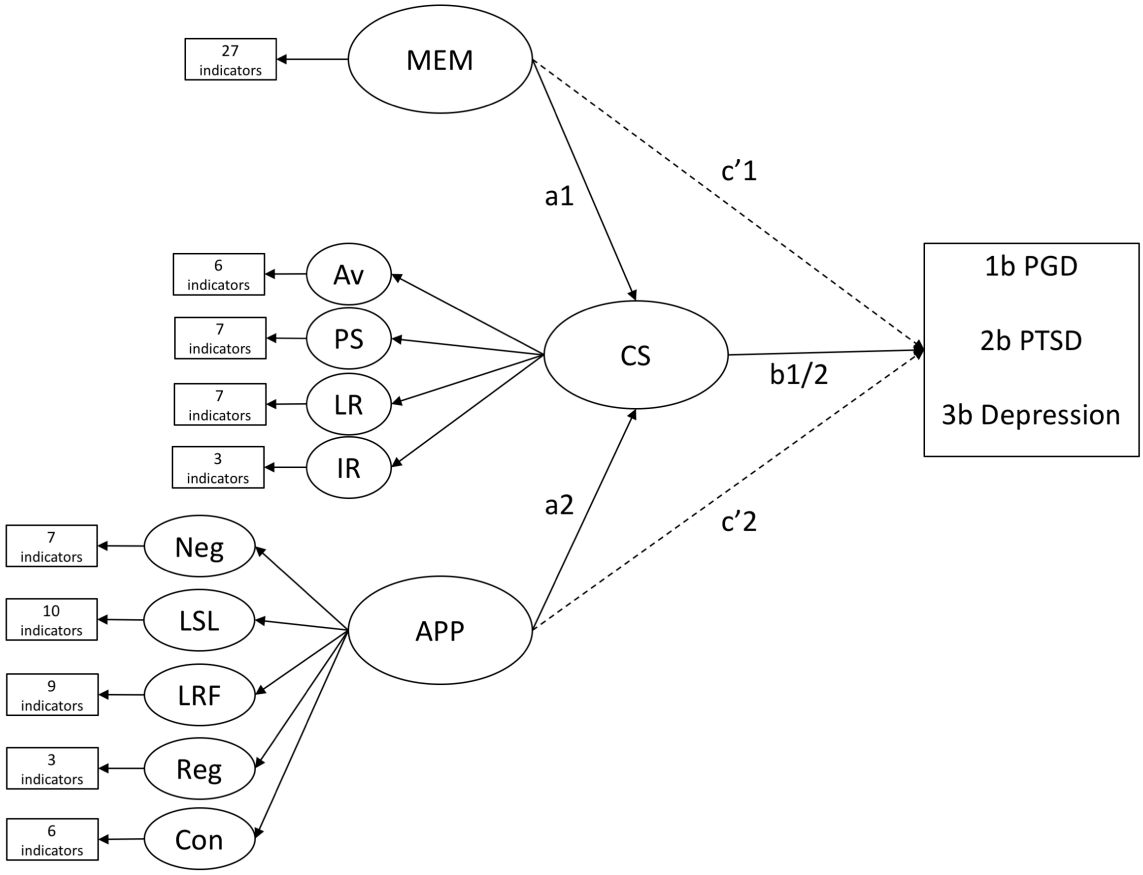
As a precursor to mediation analyses, and to preserve the latent factor structure of the data, confirmatory factor analyses were run on hypotheses 1a, 2a, and 3a to determine whether models specifying a relationship between memory characteristics, appraisals and coping strategies and prolonged grief disorder, PTSD, and depression were an adequate fit to the data. Next, structural equation modelling was used to specify three mediation models (Fig. 6.1) in which coping strategies was entered as a mediator between appraisals and memory

characteristics and symptom outcomes of PGD, PTSD and depression (Hypotheses 1b, 2b, 3b, respectively). If the mediation models demonstrated superior fit compared to a constrained model in which paths between latent variables are fixed to be equal, then the mediation model was accepted (Hayes, 2017).

Model adequacy was assessed by the χ^2 goodness-of-fit test where the χ^2:df ratio is smaller than 3:1 (Kline, 2015), comparative fit index (CFI) of .90 or higher as acceptable and .95 or higher as good, and root mean square error of approximation (RMSEA) of .08 or lower as acceptable and .06 as good (Hu & Bentler, 1999). Significance of paths in the mediation analyses was determined using 100 bootstrap resamples and examining bias-corrected confidence intervals. Bootstrapping is a nonparametric resampling method that generates an empirical approximation of the sampling distribution of a statistic from the data and, as such, avoids the power problems associated with non-normality in the sampling distribution (Preacher & Hayes, 2008).

Figure 6.1

Mediation models 1b, 2b, and 3b.



Note: APP = appraisals, Neg = negative interpretation of grief, LSL = loss of life and self, LFR = loss of future and relationships, Reg = regret, Con = fear of losing connection to the deceased, CS = coping strategies, Av = avoidance, PS = proximity seeking, LR = loss rumination, IR = injustice rumination, MEM = memory characteristics, PGD = prolonged grief disorder, PTSD = posttraumatic stress disorder. Paths a1, b1, and *c'*1 correspond to the mediation model between memory characteristics, coping strategies and psychological outcome. Paths a2, b2, and *c'*2 correspond to the mediation model between appraisals, coping strategies, and psychological outcome.

3. Results

3.1 Confirmatory factor analyses

Confirmatory factor analyses were run to determine whether models including cognitive predictor variables memory characteristics, appraisals, and coping strategies with psychological distress post-loss (either PGD, PTSD or depression) demonstrated adequate fit to the data. Table 6.1 shows the goodness of fit estimators for these analyses. All six models demonstrated adequate fit according to χ^2 and CFI and good fit according to RMSEA. All cognitive predictors were significantly associated with the psychological distress outcomes ($p < .001$) supporting hypotheses 1a, 2a, and 3a.

Table 6.1

Goodness of fit indicators and predictor outcome estimates for CFA models

Sample	Model	χ^2	Df	$\chi^{2/df}$	CFI	RMSEA	Predictor estimate
1	**1a PGD**	8944	3555	2.51	.93	.047	
	Appraisals						$.79^{***}$
	Memory characteristics						$.77^{***}$
	Coping strategies						$.79^{***}$
	2a PTSD	8957	3555	2.52	.93	.048	
	Appraisals						$.71^{***}$
	Memory characteristics						$.72^{***}$
	Coping strategies						$.78^{***}$
	3a Depression	8985	3555	2.53	.93	.048	
	Appraisals						$.67^{***}$
	Memory characteristics						$.61^{***}$
	Coping strategies						$.64^{***}$
2	**1a PGD**	5610	3555	1.58	.94	.046	
	Appraisals						$.82^{***}$
	Memory characteristics						$.76^{***}$
	Coping strategies						$.86^{***}$
	2a PTSD	5608	3555	1.58	.94	.046	
	Appraisals						$.71^{***}$
	Memory characteristics						$.68^{***}$
	Coping strategies						$.76^{***}$
	3a Depression	5611	3555	1.58	.94	.046	
	Appraisals						$.68^{***}$
	Memory characteristics						$.63^{***}$
	Coping strategies						$.67^{***}$

Note: Predictor estimates are correlations between predictors (memory characteristics, appraisals and coping strategies) and psychological symptoms (PGD, PTSD, and depression). Sample 1 = 6+ months post loss. Sample 2 = 0 – 6 months post loss.
*** $p < .001$

3.2 Mediation analyses

Model 1b Sample 1 (6+ months post loss). The first mediation model examined the hypothesis that maladaptive coping strategies would mediate the relationship between loss-related memory characteristics and PGD symptoms, and the relationship between negative appraisals and PGD symptoms. Model fit indicators demonstrated acceptable fit for $\chi^2 =$ 8907.85, df=3555 and CFI = .93 and a good fit for RMSEA = .047. The χ^2 comparison of the

mediation and the constrained model was significant (χ^2 = 149.97, on df = 3, p < .001) indicating that the mediation model was a superior fit to the data.

As shown in Table 6.2, higher loss-related memory characteristics (a = .52) and negative appraisals (a = .46) were associated with higher maladaptive coping, and increased coping strategies led to higher levels of grief intensity (b = .23). This model accounted for 68% of the variance in PGD symptoms. A bias-corrected bootstrapped confidence interval for the indirect effects (*ab1* = .12, *ab2* = .11) based on 100 bootstrap samples was entirely above zero indicating that the paths from memory characteristics to PGD and appraisals to PGD were mediated by coping strategies, supporting hypothesis 1b. The direct paths (*c'*) for both predictors were also statistically significant suggesting that negative appraisals and loss-related memory characteristics also have unique effects on PGD that are not accounted for by the respective indirect relationship via coping strategies.

Model 1b Sample 2 (0-6 months post loss). The results of the mediation models for sample 2 are presented in Table 6.3. Model fit indicators demonstrated acceptable fit for χ^2 = 5610.46.85, df=3555 and CFI = .94 and a good fit for RMSEA = .046. The χ^2 comparison of the mediation and the constrained model was significant (χ^2 = 82.94, on df = 3, p < .001) indicating that the mediation model was a superior fit to the data. This model accounted for 76% of the variance in PGD symptoms. The indirect paths from memory characteristics to PGD and appraisals to PGD were significant indicating mediation via coping strategies, confirming hypothesis 1b. The direct paths (*c'*) for appraisals was also statistically significant. Memory characteristics (*c'* = -.13, *p* = .49) did not influence PGD symptoms independent of their effect on coping strategies. The results of model 1b differed across samples supporting hypothesis 4 for PGD.

Model 2b Sample 1 (6+ months post loss). The next mediation model investigated hypothesis 2b that coping strategies would mediate the relationship between memory characteristics and PTSD symptoms, and the relationship between appraisals and PTSD symptoms. This model was also an acceptable fit to the data as indicated by $\chi^2 = 8919.93$, df=3555 and CFI = .94 and demonstrated a good fit on RMSEA = .047. The χ^2 comparison of the mediation and constrained model was significant ($\chi^2 = 162.17$, on df = 3, $p < .001$) indicating that the mediation model was a superior fit to the data.

Results showed higher loss-related memory characteristics (a = .52) and negative appraisals (a = .46) were associated with higher maladaptive coping, and increased coping strategies led to higher levels of PTSD (b = .63). This model accounted for 61% of the variance in PTSD symptoms. A bias-corrected bootstrapped confidence interval for the indirect effects (*ab1* = .32, *ab2* = .29) was entirely above zero indicating that the paths from memory characteristics to PTSD and appraisals to PTSD were mediated by coping strategies, confirming hypothesis 2b. Neither loss-related memory characteristics ($c' = .09$, $p = .54$) nor negative grief appraisals ($c' = .08$, $p = .34$) influenced PTSD symptoms independent of their effect on coping strategies.

Model 2b Sample 2 (0-6 months post loss). Model fit indicators were adequate for $\chi^2 = 5608.13$, df=3555 and CFI = .94 and good for RMSEA = .046 and the χ^2 comparison to the constrained model was significant ($\chi^2 = 84.75$, on df = 3, $p < .001$) indicating superior fit to the data in the mediation model. This model accounted for 58% of the variance in PTSD symptoms. The indirect paths were significant indicating that the influence of memory characteristics and appraisals on PTSD is mediated by coping strategies, confirming hypothesis 2b. Neither loss-related memory characteristics ($c' = -.08$, $p = .63$) nor negative grief appraisals ($c' = .17$, $p = .10$) influenced PTSD symptoms independent of their effect on

coping strategies. The results of model 2b did not differ across samples. Therefore, hypothesis 4 is not supported for PTSD.

Model 3b Sample 1 (6+ months post loss). The final mediation model investigated hypothesis 3b that coping strategies would mediate the relationship between memory characteristics and depression, and the relationship between negative appraisals and depression. Model fit indicators were adequate for $\chi^2 = 8947$, df=3555 and CFI = .93 and good for RMSEA = .048 and the χ^2 comparison to the constrained model was significant ($\chi^2 = 149.19$, on df = 3, $p < .001$) indicating superior fit to the data in the mediation model. Results showed that higher loss-related memory characteristics (a = .52) and negative appraisals (a = .46) were associated with higher maladaptive coping, however the path between coping strategies and depression was not significant (b = .15). Both indirect effects were also not significant as confidence intervals included 0. The direct path between loss-related memory characteristics and depression was not significant while the direct path between negative appraisals and depression was highly significant ($c' = .44$, $p < .001$). This model accounted for 46% of the variance in depressive symptoms.

Model 3b Sample 2 (0-6 months post loss). Model fit indicators were adequate for $\chi^2 = 5611.62$, df=3555 and CFI = .94 and good for RMSEA = .046 and the χ^2 comparison to the constrained model was significant ($\chi^2 = 82.14$, on df = 3, $p < .001$) indicating superior fit to the data in the mediation model. Results showed that higher loss-related memory characteristics (a = .54) and negative appraisals (a = .44) were associated with higher maladaptive coping, and the path between coping strategies and depression was significant (b = .37). The indirect paths from memory characteristics to depression and appraisals to depression were significant indicating mediation via coping strategies, confirming hypothesis

3b. The direct path between loss-related memory characteristics and depression was not significant while the direct path between negative appraisals and depression was significant (c' = .35, p =.003). This model accounted for 50% of the variance in depressive symptoms. The results of model 3b differed across samples supporting hypothesis 4 for depression.

Table 6.2

Standardised Path Coefficients and Indirect Effect Estimates for the PGD, PTSD, and Depression in sample 1 (6+ months post-loss)

Model	Path	Coefficient	SE	Lower CI	Upper CI	P_M	R^2
1b PGD							.68
Memory characteristics	a1	.52***	.04	.44	.64		
	b1	.23*	.10	.10	.55		
	c'1	.27***	.09	.11	.47		
	Indirect effect ab1	.12*	.06	.05	.29	30.90	
Appraisals							
	a2	.46***	.04	.34	.56		
	b2	.23*	.10	.10	.55		
	c'2	.36***	.07	.24	.51		
	Indirect effect ab2	.11*	.05	.05	.28	22.51	
2b PTSD							.61
Memory characteristics	a1	.52***	.05	.44	.66		
	b1	.63***	.17	.37	.99		
	c'1	.09	.15	-.10	.42		
	Indirect effect ab1	.32***	.10	.20	.61	79.32	
Appraisals	a2	.46***	.05	.39	.56		
	b2	.63***	.17	.37	.99		
	c'2	.08	.09	-.04	.22		
	Indirect effect ab2	.29***	.09	.13	.51	78.83	
3b Depression							.46
Memory characteristics	a1	.52***	.05	.44	.66		
	b1	.15	.15	-.06	.61		
	c'1	.11	.11	-.09	.33		
	Indirect effect ab1	.08	.08	-.03	.32	NA	
Appraisals	a2	.46***	.05	.39	.56		
	b2	.15	.15	-.06	.61		
	c'2	.44***	.10	.29	.74		
	Indirect effect ab2	.07	.07	-.03	.26	NA	

Note. Path a represents the effect of the predictor (memory characteristics or appraisals) on the mediator variable (coping strategies). Path b represents the effect of the coping strategies on psychological symptoms PGD, PTSD and depression. Path *c'* represents the effect of the predictor on psychological distress controlling for the effect of coping strategies. Coefficients are standardized. P_M = percent mediation (i.e. the percentage of the total effect the predictor that is accounted for by the mediated path ab). *$p < .05$, **, $p <. 01$, ***$p < .001$

Table 6.3

Standardised Path Coefficients and Indirect Effect Estimates for the PGD, PTSD, and Depression in sample 2 (0 - 6 months post-loss)

Model	Path	Coefficient	SE	Lower CI	Upper CI	P_M	R^2
1b PGD							.76
Memory characteristics	a1	.54***	.06	.40	.58		
	b1	.74**	.21	.46	1.14		
	c'1	-.13	.18	-.56	.13		
	Indirect effect ab1	.40**	.06	.26	.68	76.05	
Appraisals							
	a2	.44***	.06	.34	.56		
	b2	.74**	.21	.46	1.14		
	c'2	.26**	.10	.02	.39		
	Indirect effect ab2	.33*	.10	.17	.48	55.27	
2b PTSD							.58
Memory characteristics	a1	.54***	.06	.40	.64		
	b1	.69*	.29	.25	1.28		
	c'1	-.08	.25	-.45	.34		
	Indirect effect ab1	.37*	.17	.14	.79	82.26	
Appraisals	a2	.44***	.06	.35	.58		
	b2	.69*	.29	.25	1.28		
	c'2	.17	.13	-.15	.32		
	Indirect effect ab2	.30*	.13	.12	.55	64.24	
3b Depression							.50
Memory characteristics	a1	.54***	.06	.40	.64		
	b1	.37*	.23	.02	.73		
	c'1	-.001	.17	-.40	.20		
	Indirect effect ab1	.20**	.14	.03	.50	99.50	
Appraisals	a2	.44***	.06	.35	.58		
	b2	.37*	.23	.02	.73		
	c'2	.35***	.13	.18	.60		
	Indirect effect ab2	.16*	.09	.02	.34	31.37	

Note. Path a represents the effect of the predictor (memory characteristics or appraisals) on the mediator variable (coping strategies). Path b represents the effect of the coping strategies on psychological symptoms PGD, PTSD and depression. Path *c'* represents the effect of the predictor on psychological distress controlling for the effect of coping strategies. Coefficients are standardized. P_M = percent mediation (i.e. the percentage of the total effect the predictor that is accounted for by the mediated path ab). $p < .05$*, $p <. 01$**, $p < .001$***

4. Discussion

The present study investigated the core cognitive processes (loss-related memory characteristics, negative appraisals, and maladaptive coping strategies) in Ehlers and Clark's (2000) cognitive model for PTSD and Boelen et al.'s CBT model for PGD (2006) and their contribution to the prediction of symptoms of PGD and PTSD in two cross-sectional community samples of bereaved individuals. The specificity of these hypotheses were tested by comparing them with symptoms of depression. The first set of hypotheses pertained to the association between these cognitive processes and PGD, PTSD and depression. In three confirmatory factory analyses with sample 1, loss-related memory characteristics, negative appraisals, and maladaptive coping strategies were significantly associated with measures of PGD, PTSD and depression; this association was further confirmed in sample 2. Mediation models in the two samples (Sample 1: 6 + months since loss; Sample 2: in first 6 months since loss) examined whether the extent to which individuals engaged in maladaptive coping strategies mediated the relationship between (1) loss-related memory characteristics or (2) negative grief-related appraisals and symptoms of psychopathology. These models estimated direct and indirect relationships of cognitive predictors simultaneously controlling for the shared variance between memory characteristics and appraisals.

Coping strategies were found to partially mediate the relationship between negative grief-related appraisals and PGD and the relationship between loss-related memory characteristics and PGD in both samples. These results fit with predictions from both the cognitive model for PTSD (Ehlers & Clark, 2000), the CBT model for PGD (Boelen, van den Hout, et al., 2006) and previous research that found therapies targeting maladaptive coping strategies such as avoidance through exposure to avoided emotions or stimuli were effective in reducing symptoms of PGD, PTSD and depression (Bryant et al., 2014; Eisma, Boelen, et al., 2015).

In addition to the indirect effects, direct effects of appraisals on PGD were significant in both samples, whereas memory only had a direct effect in the sample who were bereaved more than 6 months ago. This suggests that focusing only on coping strategies may not be enough in the treatment of PGD as memory characteristics and negative appraisals also directly influence symptoms of PGD independent of coping strategies. This is in line with previous research that found that participants in sessions of group CBT focusing on future directions and cognitive restructuring of negative appraisals, who also received additional exposure sessions, in which they were instructed to stop avoiding their emotional memories and actively engage with them prior to the group, experienced more reductions in PGD than those who only received group CBT (Bryant et al., 2014). This study did not have an exposure alone condition and thus it is not possible to know how effective an approach focused solely on reducing avoidance may have been. However, another therapeutic approach that targeted strictly behavioural activation reported that 95% of their sample could be classified as recovered or improved in terms of PGD symptoms at follow-up, 75% in terms of MDD symptoms, and 45% for PTSD symptoms (Papa et al., 2013).

For memory characteristics, the results suggest that in the first 6 months of loss the influence of memory characteristics on grief symptoms is fully explained by the extent to which individuals engage in maladaptive coping strategies. Furthermore, in comparing the percent mediation between sample 1 and 2 in model 1b, we can see that the indirect relationships via coping strategies accounts for more than double the variance of the total model in the newly bereaved sample compared with those 6 months post-loss. This suggests that engagement in coping strategies has the most influence over grief symptoms in the first 6 months of loss and become less important over time. This finding is consistent with previous research that found baseline coping strategies, such as avoidance of reminders of the loss, was only predictive of grief severity, PTSD and depression one year later when measured in

first 5 months of loss (Boelen & Eisma, 2015). Coping strategies reported beyond 6 months were not predictive of prospective psychopathology. Taken together these results suggest that the first 6 months of loss may be the optimal time within which to utilise a therapeutic approach targeting maladaptive coping, while an integrated approach that also targets negative appraisals would be the most beneficial. Beyond this, the impact of coping strategies decreases suggesting that negative appraisals and memory characteristics risk becoming more entrenched and a multi-faceted intervention that includes cognitive restructuring and memory elaboration and integration work may be necessary.

The second mediation analyses tested these same hypotheses for symptoms of PTSD following the loss. Results from sample 1 showed full mediation, suggesting that the effect of memory characteristics and appraisals on PTSD symptoms can be fully explained by the extent to which an individual engages in maladaptive coping. These relationships were further confirmed in sample 2, suggesting that treatments focusing solely on coping strategies may be sufficient to produce significant reductions in trauma symptoms. Previous research with earthquake survivors found that significant reductions in PTSD symptoms were seen in a treatment protocol that only focused on reducing behavioural avoidance through exposure to feared stimuli, situations, and places (Şalcıoğlu, Başoğlu, & Livanou, 2007). One explanation for the larger mediation relationship observed in sample 1 with PTSD as opposed to PGD might be that the OG-CS more clearly captures strategies employed as a result of trauma symptoms and that other maladaptive coping strategies relevant to grief may exist that are not measured here. Perhaps this adds more weight to the findings of chapter 5, that saw maladaptive coping more frequently observed in PTSD groups (PTSD, PGD+PTSD) compared with the non-clinical group but not the grief groups (PGD, PGD-PTSD) when the variance shared between memory characteristics, appraisals, and coping was controlled. However, examining the results across samples 1 and 2 for PGD and PTSD symptoms

suggests that while the influence of coping strategies remains relatively stable over time for trauma symptoms, this relationship grows weaker with time in grief. In cognitive therapy for PTSD treatment, memory contextualisation and unhelpful appraisals are targeted by engagement with memories, discussion and reconsideration of the meaning of the worst moments, followed by incorporation of the updated meanings into the memory to reduce the sense of current threat. In other forms of trauma-focused CBT, repeated exposure to the memories and feared situations and discussion of the experience during exposure are used to bring about change of trauma memories, extinction of fear responses and cognitive change. Similarly, the reintroduction of meaningful and rewarding activities in treatment facilitates cognitive restructuring of negative beliefs regarding the self, the world, and others. For PGD, it is possible that there are other factors, outside of maladaptive coping, that, over time, come to influence the extent to which loss-related memories are integrated into the autobiographical memory base and negative appraisals self-correct. Future studies should seek to explore whether other variables developed in this thesis, such as social disconnection beliefs or grief resilience may have a role to play. Alternatively, a recent model of PGD, outlined by Maccallum and Bryant (2013), stated that the extent to which an individual's sense of self is entwined or dependent on the deceased is the key risk factor in developing PGD. Within this model, an independent self-identity would predict a balance of positive and negative memory characteristics along with more adaptive appraisals and coping styles. Future studies might seek to investigate the extent to which dependency on the deceased moderates the relationship between cognitive predictor variables and grief intensity in line with Maccallum and Bryant's cognitive attachment model.

Finally, the results of the third mediation model of depression did not reveal a significant indirect effect of coping strategies on the relationship between memory characteristics and negative appraisals with depression in sample 1 (6 months post-loss).

Negative appraisals via the direct path significantly predicted depressive symptoms, while loss-related memory characteristics did not. However, contrary to this, significant mediation was found in sample 2 (up to 6 months post loss), the indirect path via coping strategies explained a third of the variance accounted for in depression symptoms by negative appraisals and all of variance explained by memory characteristics. This disparity between sample 1 and 2 suggests that in the initial stages of grief, the coping strategies used impact levels of depression but that beyond 6 months, negative appraisals play the key role in maintaining depression (while both memory characteristics and coping strategies do not) (Teasdale, 1983). Previous studies have failed to find an association between memory specificity, a metric for loss integration in the autobiographical memory base, and depression in bereaved people (Boelen, Huntjens, et al., 2010; Eisma, Schut, Stroebe, Voerman, et al., 2015). However, both studies used samples of participants bereaved beyond 6 months (Boelen, M = 39.7; Eisma, M = 12.6). Future studies should seek to confirm whether loss-related memory characteristics are more clearly associated with depression in the early months of loss.

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4.1 Limitation and future directions

Several limitations of the current study should be noted. Most importantly, these data were cross-sectional, which prevents conclusions regarding causation and the direction of relationship among variables. For example, it may be possible that maladaptive coping impacts appraisals and memory characteristics. Repetitive thinking about the loss may serve to enhance interpretations of a changed sense of self and proximity seeking behaviours may trigger painful memories that highlight the sense of loss. Longitudinal studies are needed to test the directionality of the observed effects.

Given the complexity of the model estimated in this chapter it was not possible to investigate additional predictors (e.g. social disconnection beliefs, grief resilience, dependency on the deceased) for their contribution to symptom measures. Further studies could simplify the model estimated here by using factor scores of the latent subscales as observed variables. This process would significantly reduce the number of parameters estimated in the model and would allow exploration of additional variables for their contribution to PGD, PTSD and depression. The study also relied on self-report measures to assess the predictors, mediator, and outcomes, which share method variance, and can be influenced by demand characteristics and thus be susceptible to bias. Finally, the study participants were predominantly Caucasian. As such, the observed patterns may not generalise to other populations. Future studies would benefit from confirming these results in different cultural contexts.

Notwithstanding these limitations, the current study has clinical implications, even though further research is necessary to confirm the directionality of the relationships between memory characteristics, appraisals, coping strategies and PGD, PTSD, and depression. Given that memory characteristics, appraisals, and coping strategies are modifiable, they are appropriate targets for interventions with bereaved individuals seeking help. In addition, our finding that the relationship between memory characteristics, appraisals and PTSD was fully mediated by maladaptive coping suggests that interventions aimed at reducing maladaptive strategies, and developing healthy coping, such as behavioural activation (Papa et al., 2013), "then versus now" discrimination (Ehlers & Clark (2000), exposure to avoided memories (Bryant et al., 2014; Shear et al., 2014) or stimuli (Eisma, Boelen, et al., 2015) may be particularly helpful in reducing trauma symptoms following bereavement. If the directionality of these relationships is confirmed, clinicians offering bereavement support may want to consider initial levels of loss-related memory characteristics, and appraisals

when developing a treatment plan and assess maladaptive coping (e.g. using the measures developed in this thesis) to promote successful implementation. Finally, given the relative importance of maladaptive coping strategies in the first 6 months of loss in symptoms of PGD, PTSD and depression, early assessment and intervention may prove beneficial in reducing distress.

In conclusion, this study highlights the importance of maladaptive coping strategies in understanding the relationship between loss-related memory and negative appraisals on symptoms of PGD and PTSD and how the importance of these relationships differ at various stages of the grieving process.

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Chapter 7 - Part III: Cognitive Predictors of Grief Trajectories in the First Months of Loss: A Latent Growth Mixture Model

1. Introduction

Chapter 5 demonstrated the measures of cognitive behavioural variables developed in this thesis (i.e. memory characteristics, negative grief-related appraisals, maladaptive coping strategies, social disconnection beliefs, grief resilience and desire thinking) distinguish between bereaved people with and without PGD, PTSD and PGD+PTSD. The PGD+PTSD group reported significantly higher levels of maladaptive coping strategies and social disconnection beliefs than the PGD or PTSD alone groups, suggesting that suffering from both conditions results in more intense and varied coping strategies and more beliefs about the importance of concealing one's grief from others. These results help us understand the concurrent associations between cognitive predictors, PGD, PTSD and non-clinical mourning. However, since the study design was cross-sectional, it is unclear whether these cognitive concepts act as maintenance factors in bereavement-related distress. Identifying modifiable maintenance factors is of clinical and theoretical importance for directing improvements to CBT treatments for PGD and the development of early interventions following loss.

In studying covariates of grief severity, and similar to our approach in chapter 5, previous research has used diagnostics classifications to distinguish between clinical and typical grief reactions (Maccallum & Bryant, 2010b, 2010c; Saavedra Perez et al., 2014). Given the lack of clarity in the conceptualisation of severe and enduring grief, as discussed in chapter 1, new methods of characterising grief can be helpful in understanding individuals' differences (Bonanno, Boerner, & Wortman, 2008; Bonanno, Wortman, et al., 2002a). Within grief research, Bonnano pioneered trajectory analysis that identifies subgroups or classes of individuals who report similar item-response patterns (i.e. grief symptom profiles). This approach allows a more nuanced perspective on the way grief changes over time by allowing more diversity in the experiences of grief (i.e. resilience, moderate grief with fast and slow resolution and severe and enduring grief) to be modeled than is afforded by a

clinical versus non-clinical diagnostics system (Galatzer-Levy & Bonanno, 2012). These approaches can help us identify not only the predictors associated with PGD, but also characteristics that distinguish between those whose grief resolves slowly or quickly. This can be done by investigating individual covariates of class membership or by modelling, using structural equation modelling (SEM) techniques, how covariates influence each other within classes. These techniques give insight into the equivalence of the relations between predictors across grief trajectories.

As mentioned in chapter 1, cognitive behavioural factors implicated in development and maintenance of PGD have largely focused on appraisals, avoidance and rumination (Boelen & Lensvelt-Mulders, 2005; Boelen, van den Bout, et al., 2010; Eisma et al., 2014). Studies investigating the influence of memory have largely focused on autobiographical memory specificity (Boelen, Huntjens, et al., 2010; Golden, 2013; Maccallum & Bryant, 2010b) with few aiming to develop measures of loss-related memories and their characteristics. In one study, Boelen and Huntjens (2008) reported that the frequency of four types of specific intrusive images (i.e. positive intrusive memories of the lost person; intrusive images of the death event; re-enactment fantasies; and negative images of the future) were correlated with symptoms of PGD in a sample of mourners. However, to the author's knowledge, no studies have yet assessed how the frequency, quality, and consequences of loss-related memories are associated with grief severity over time. Another concept not explored within the literature is social disconnection beliefs (i.e. the extent to which an individual holds negative beliefs about being in the company of others or sharing their grief with those around them). We hypothesised that social disconnection beliefs might contribute to grief severity by reducing social support and increasing avoidance of social situations which would increase social isolation. In identifying new concepts important in the prediction of grief severity it seemed important to further demonstrate the predictive

utility of these modifiable cognitive concepts over and above static moderator variables such as demographics and loss-characteristics as well as predictors previously shown to be associated with grief severity such as attachment style, and dependency.

Chapter 6 demonstrated that coping strategies act as a mediator of the influence of both memory characteristics and appraisals on the symptoms of PGD. These results are consistent with the role maladaptive coping strategies play in maintaining PTSD, outlined in Ehlers and Clark's (2000) cognitive model for PTSD. Maladaptive coping strategies prevent correction of unhelpful negative cognitions and the integration of new information (i.e. my loved one is not coming back) into autobiographical memory. In chapter 6 we used a continuous grief severity score as the outcome variable in the mediation model. In this study, using SEM, we modelled related hypotheses, that an increase in memory characteristics and appraisals would be associated with a concurrent increase in coping strategies. However, here we used a multi-group SEM to examine whether this relational model was equivalent across grief trajectory classes.

This study used a three wave longitudinal design to investigate whether distinct grief trajectories exist in the first 12-18 months following loss, and if so which factors contribute to membership of a particular trajectory. This was assessed in three ways: First we investigated whether the cognitive predictors developed in this thesis individually predict class membership. Next we determined in a multivariate analysis whether these associations remain significant after controlling for background variables and pre-loss individual differences and joint variance between the cognitive predictors. Finally, a multi-group SEM was modelled to investigate whether memory characteristics and appraisals predict coping strategies in each of the grief classes.

Hypotheses

The present study examined the following hypotheses:

Hypothesis 1: Memory characteristics, negative grief-related appraisals, maladaptive coping strategies, social disconnection beliefs, grief resilience, and desire thinking will be associated with grief intensity at all three time points.

Hypothesis 2a: Memory characteristics, negative grief-related appraisals, maladaptive coping strategies, social disconnection beliefs, grief resilience, and desire thinking at baseline will distinguish between bereaved individuals whose grief remains severe and enduring 12-18 months after a loss from those whose grief remits over time.

Hypothesis 2b: Hypothesis 2a will also apply after controlling for background variables and pre-loss individual differences shown to be associated with grief intensity.

Hypothesis 3: The extent to which an increase in memory characteristics and appraisals is associated with an increase in maladaptive coping strategies will differ by grief trajectory.

2. Methods and Materials

2.1 Participants

Participants were 275 adults (age; M = 46.43 SD = 13.24, 79% women) recruited within a few weeks to 6 months after bereavement through location targeted social media advertising and the Google content network. Eleven participants indicated they were in the first 6 months of loss at recruitment but did not complete the measures until some weeks later or reported a date of death just beyond 6 months (8 participants were 7 months and 3 participants were 8 months post loss). Results did not change after excluding these participants and as such they were included in the final analysis.

2.2 Procedure

Participants were asked to complete questionnaires at recruitment (T1), and 6 (T2) and 12 (T3) months later. T1 took place on average at M =2.94 months post-bereavement, (SD = 2.01, range = 0 to 8 months), T2 on average at M = 9.10 months, (SD = 2.23, range = 6 to 16 months), and T3 on average at M = 14.95 months, (SD = 2.08, range = 12 to 21 months), All measures were completed online.

2.3 Measures

Participants completed symptom measures and the newly developed measures (see chapter 4 for items and chapter 5 for descriptions) of loss-related memories, negative appraisals, maladaptive coping strategies, social disconnection beliefs, grief resilience, and desire thinking as well as validated measures of attachment, dependency, and psychopathology online (described in chapter 5).

2.4. Data Analyses

2.4.1 Preparation of the data. In line with the procedure detailed in chapter 5, no participants were excluded due to 'straight lining' of responses or an unacceptably fast response time.

2.4.2 Statistical analysis. Latent growth mixture models (LGMM) were used to measure heterogeneity of grief responses over time. This method calculates a growth trajectory for each individual based on their intercept (starting point) and slope (change over time) that is derived from the observed repeated measures, in this instance PGD score at baseline, 6-month follow-up, and 12-month follow-up. Two continuous latent variables representing the average starting point of the sample (intercept) and the average trajectory over time (slope) are also calculated. Using this method it is possible to determine whether unobserved latent 'classes' of individuals emerge (i.e. participants whose scores are more alike to each other than they are to the rest of the sample and thus can be grouped together). Once an optimal class solution has been derived, the latent variable class can then be used as a dependent variable in a multinomial logistic regression or a structural equation model. Cognitive risk factors (i.e. memory characteristics, appraisals, coping strategies, social disconnection beliefs, grief resilience, and desire thinking) can then be tested for their ability to predict class membership (i.e. grief trajectory over time).

To minimize the bias associated with attrition and missing data, we used the full information maximum likelihood (FIML) approach implemented in Mplus to estimate missing data. A majority of participants had data at all three time points (84.7%) with almost all participants responding to two time points (95.6%); no participants were excluded. Covariance coverage, which measures the impact of missing data, ranged from .93 to .86 for each pair of variables, well above the minimum threshold of .10 for model convergence (Muthén, 2003).

The analyses described in this chapter were conducted in five steps:

1. A well fitting single growth curve was established in the first instance to determine if a linear line fit the overall sample trajectory (latent curve growth analysis; LCGA).
2. A one-to-five class solution was run to determine the optimal number of classes (latent growth mixture model; LGMM).
3. Class was used as the dependent variable in a multinomial logistic regression (MNLR) to test how classes differed on scores in the individual cognitive predictors in univariate analyses. To account for these multiple comparisons, Bonferroni alpha adjustment set the significance level for each univariate model to $p < .008$ ($\alpha/6$).
4. All six standardized cognitive predictors were entered together into a MNLR controlling for background variables and pre-loss individual differences that were significantly associated with grief intensity at least one time point. A backwards elimination method was used to ensure that only background predictors that significantly improved model fit were allowed to remain in the model.
5. Finally, a structural equation model (SEM) based on the cognitive model of PTSD (Ehlers & Clark, 2000) was subject to a multi-group analysis in Mplus. Regression paths were specified from coping strategies to memory characteristics and appraisals. This model asks whether memory characteristics and negative appraisals predict coping strategies in each grief trajectory class. The beta coefficients for the regression paths indicate the strength of these relationships for each class.

In a single growth curve analysis, the following fit indices determine adequate fit: CFI > .90, TLI > .90, RMSEA <. 90, SRMR <. 08 (Hu & Bentler, 1999; Wickrama, Lee, O'Neal, & Lorenz, 2016). To determine the appropriate class solution, we examined a variety of fit statistics. In particular, we examined the Bayesian, (BIC), sample-size adjusted Bayesian

(SSBIC), and Aikaike (AIC) information criterion indices, entropy values, the Lo-Mendell-Rubin likelihood ratio test (LRT: Lo, Mendell, & Rubin, 2001), and the bootstrap likelihood ratio test (BLRT). We sought a model with lower values for the criterion indices, higher entropy values, and significant *p* values for both the LRT and the BLRT (Muthén, 2003). Fit indices in combination with theoretical interpretability guided the final model selection. Growth Mixture Models (GMM) were estimated using robust maximum likelihood method with 1000 initial stage random starts and 120 final stage optimizations to determine if the best log-likelihood value was obtained and replicated. Finally, 100 bootstrap draws were used in the BLRT.

3. Results

3.1 Background variables and pre-loss individual differences

Zero order correlations of dichotomous and continuous background variables: gender, age, months since loss, length of relationship, mode of death (e.g. violent vs. non-violent), and pre-loss individual differences (e.g. anxious and avoidant attachment, dependency on the deceased and levels of healthy dependency) with grief intensity at baseline (T1), 6-month follow-up (T2), and 12-month follow-up (T3) are presented in Table 7.1. The association of grief with the categorical background variable level of education was assessed using rank order correlations and type of loss (e.g. partner, child, parent, sibling, other relative, close non-relative) was assessed using repeated measures ANOVA.

Gender and length of relationship were significantly associated with PGD. Females (T1; $r = .22$, $p < .001$, T2; $r = .21$, $p < .001$, T3; $r = .19$, $p = .001$) and those with shorter relationships to the deceased (T1; $r = -.20$, $p = .001$, T2; $r = -.19$, $p = .003$, T3; $r = -.19$, $p = .003$) had significantly higher grief intensity at all three time points. Level of education was significantly negatively associated with PGD score at each time point (T1, $r = -.15$, $p = .02$; T2, $r = -.24$, $p < .001$; T3, $r = -.13$, $p = .04$) with a lower level of education predicting a higher PGD score. When examining all levels of kinship to the deceased, the interaction between grief symptoms at T1, T2 and T3 and kinship was not significant. There was a main effect of kinship $F(1, 5) = 12.98$, $p < .001$ and post hoc tests (Bonferroni) revealed significant differences between child loss and all other relationships on PGD score. No other relationships significantly differed.

To explore whether the association between a short duration of the relationship and grief severity could, in part, be explained by the loss of a child, participants who had lost a child were compared to those who had lost another person. Losing a child was associated

with significantly higher grief at all three time points (T1; $r = .26$, $p < .001$, T2; $r = .30$, $p < .001$, T3; $r = .37$, $p < .001$). To explore whether the effect of shorter relationships may in part be due to shorter spousal or romantic relationships resulting in higher grief intensity, an additional analysis was restricted to participants who had lost partners. Length of relationship with their partner was not significantly associated with grief intensity at any time point.

Attachment style and dependency were significantly associated with grief intensity at all three time points in the expected direction. Lower grief was associated with lower levels of dependency and anxious and avoidant attachment styles. Participants in longer relationships with the deceased reported lower avoidant attachment ($r = -.16$, $p = .007$) but higher independence from the deceased ($r = .30$, $p < .001$) and more healthy dependency ($r = .16$, $p = .008$).

Thus, four background variables (losing a child, gender, level of education and length of relationship) and two pre-loss individual differences (attachment style and dependency) were significantly associated with grief intensity at least one time point and therefore were controlled for in subsequent analyses.

3.2 Cognitive predictors

Zero order correlations of cognitive predictor variables and grief intensity at baseline (T1), 6-month follow-up (T2), and 12-month follow-up (T3) are presented in Table 7.1. All cognitive predictors at T1 were significantly associated with grief intensity at all three time points in the expected directions, with moderate to high effect sizes, supporting Hypothesis 1. Loss-related memory characteristics and negative grief-related appraisals were most strongly associated with grief intensity, followed by coping strategies, social disconnection beliefs, desire thinking, and grief resilience.

Table 7.1

Zero order correlations of PGD at baseline (T1), 6-month follow-up (T2), and 12-monts follow-up, (T3), background variables, and pre-loss individual differences

		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.
1.	T1-PG-13	-																	
2.	T2-PG-13	.82***	-																
3.	T3-PG-13	.76***	.85***	-															
4.	Sex	.21***	.22***	.19**	-														
5.	Age	-.02	.03	.10	.00	-													
6.	Months	.04	.07	.12	-.06	.08	-												
7.	LR	-.20**	-.19**	-.19**	.07	.37***	-.10	-											
8.	Child	.25***	.30***	.33***	.07	.23***	.13*	-.09	-										
9.	Mode	.11	.03	.09	.11	.01	.03	-.11	.20**	-									
10.	AxECR-S	.30***	.29***	.20**	.00	-.16**	.02	-.09	.02	-.11	-								
11.	AvECR-S	.31***	.28***	.23***	.06	-.14*	.07	-.17**	-.03	-.01	.32***	-							
12.	InD	-.42***	-.40***	-.38***	.14*	-.16*	-.05	.30***	.12	.05	-.09	-.15*	-						
13.	HD-RPT	-.41***	-.36***	-.38***	-.11	.14*	-.02	.15*	-.08	.00	-.50***	-.62***	.19**	-					
14.	OG-M	.86***	.76***	.70***	.20**	-.03	-.02	-.17**	.20**	.11	.24**	.25***	-.43***	-.31***	-				
15.	OG-A	.81***	.74***	.73***	.09	-.03	.11	-.28***	.24***	.06	.42***	.38***	-.51***	-.49***	.81***	-			
16.	OG-CS	.79***	.71***	.70***	.13*	-.09	.07	-.28***	.26***	.10	.31***	.26***	-.41***	-.32***	.83***	.80***	-		
17.	OG-SD	.70***	.59***	.59***	.14*	-.10	-.01	-.21***	.13*	.02	.33***	.55***	-.30***	-.54***	.71***	.75***	.66***	-	
18.	OG-GR	-.50***	-.44***	-.44***	-.15*	-.05	-.05	.18***	-.15*	-.14*	-.26***	-.38***	.27***	.54***	-.47***	-.61***	-.41***	-.51***	-
19.	DTS	.68***	.61***	.58***	.12*	-.14*	.02	-.23***	.14*	.00	.31***	.18**	-.43***	-.27***	.76***	.73***	.79***	.54***	-.33***

Note. Zero order correlations for longitudinal data (n = 275). PG-13 = Prolonged grief disorder scale; Months = Months since loss; LR = Length of relationship; Child = Child Loss; Mode = Mode of death; AxECR-S = Anxious attachment style Experiences in Close Relationships – Short version; AvECR-S = Avoidant attachment style Experiences in Close Relationships – Short version; InD = Independence from deceased; HD-RPT = Healthy dependency subscale – The Relationship Profile Test; OG-M = Loss-related memory characteristics; OG-A = Negative grief-related appraisals; OG-CS = Maladaptive coping strategies; OG-SD = Social disconnection beliefs; OG-GR = Grief resilience; DTS = Desire thinking

Pearson's correlation (two-tailed) $p < .05^{*}$ $p < .01^{**}$ $p < .001$

3.3 Simple Growth Curve

A single linear growth curve of PGD scores over time demonstrated an excellent fit to the data for CFI = .98, TLI = .98 and SRMR = .048, but a poor fit for RMSEA=.12. The RMSEA tends not to perform well with growth curve models due to the few degrees of freedom (Kenny, Kaniskan, & McCoach, 2015). Given that three out of four fit indices demonstrated a close fit to the data it was decided to proceed to growth mixture modelling (GMM) to determine whether subsets of individuals with differing trajectories of change over time could be identified within the data.

3.4 Growth Mixture Modelling

A comparison of models 1, 2, 3, 4, and 5 suggested that a 4-class model provided the best fit to the data (Table 7.2) on the majority of the metrics; only entropy suggested a different class solution. The two-class solution demonstrated a non-significant BLRT indicating that two classes is not a better fit to the data than one class, however BLRT returned to significance at three and four classes, suggesting improvements in model fit beyond two classes.

Table 7.2

Fit Indices for Latent Class Growth Analysis Examining Prolonged Grief Disorder Symptoms from Baseline to 12 month Follow-up (N = 275).

Fit indices	1-class	2-class	3-class	4-class	5-class
AIC	5188	5167	5128	5109	5109
BIC	5217	5207	5175	5167	5177
SSBIC	5191	5172	5133	5117	5117
Entropy	-	.67	.82	0.77	.74
VLMR-LRT *p* value	-	< .001	< .001	< .001	0.30
BLRT *p* value	-	0.14	< .001	0.01	0.79

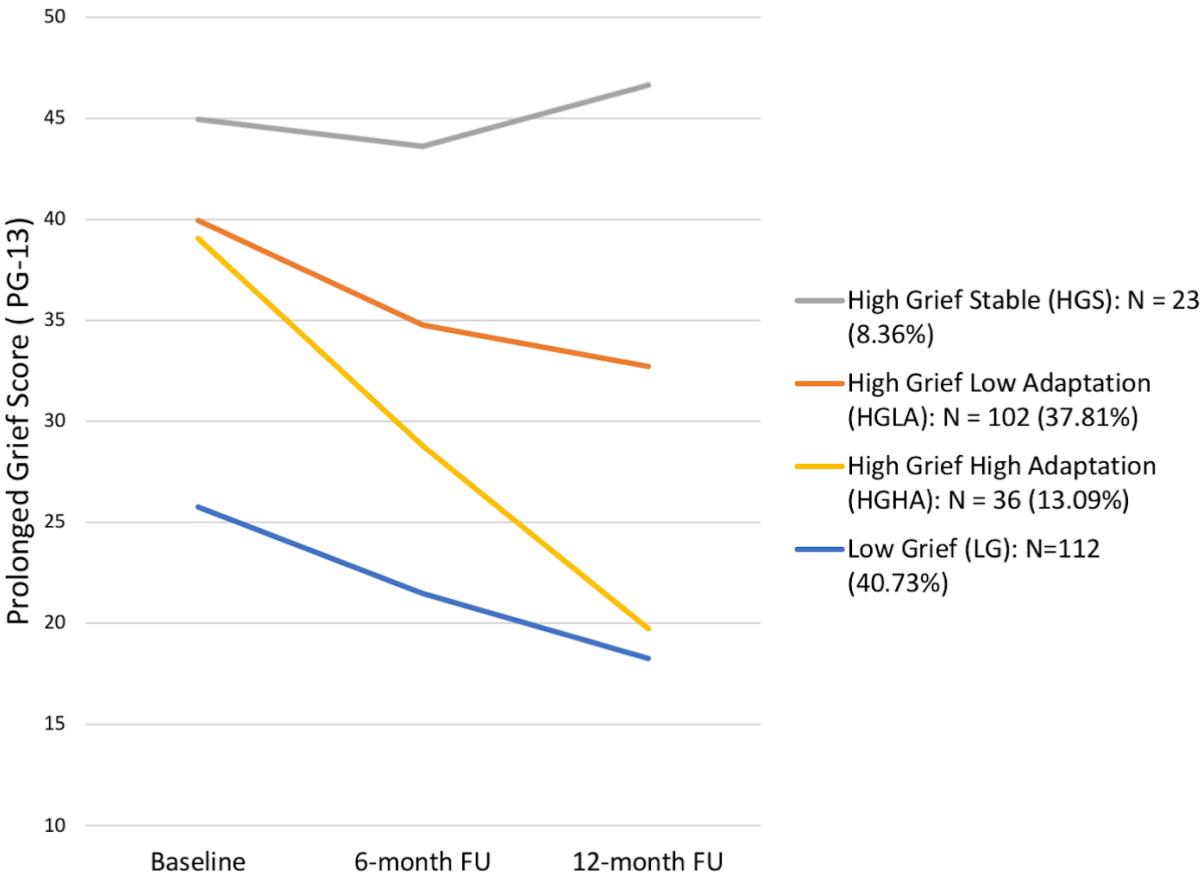
The 4-class GMM can be seen in Figure 7.1. Each class has been given a description fitting of its trajectory. The first class 'High Grief Stable' has a high intercept and no decrease in the slope of their grief symptoms over time; in fact this class finishes the study with slightly higher grief than they started with. The next class 'High Grief Low Adaptation' has a high intercept and a small decrease in slope, indicating maintenance of distressing grief symptoms. Next is the 'High Grief High Adaptation' class with a high intercept and a large decreasing slope, indicating resolution in their grief over time. The final class, 'Low Grief' start below clinical cut-off and have a small decreasing slope. All classes defined as 'high grief' begin the study above clinical cut off for grief severity as indicated by a PGD score of 33 or above.[4]

[4] It should be noted that nearly all participants at the beginning of the study were in their first 6 months of loss and as such would not have met diagnostic criteria for PGD. Eleven participants had lost someone 7 or 8 months previously, of these 4 met diagnostic criteria for PGD at baseline.

At T2, only the HGLA class (M= 34.78) and the HGS class (M= 43.60) were above clinical cut off for PGD. At the final time point only the HGS group remained above clinical cut off. The HGLA class scores at the final time point were subsyndromal with a mean score of 32.71.

Figure 7.1

Four-class Growth Mixture Model for Prolonged Grief Disorder Symptoms from baseline to 12-month follow-up (N=275)



3.5 Demographics, loss characteristics, and psychopathology

Class demographics, loss characteristics and psychopathology are presented in Table 7.3.

Table 7.3

Demographics, loss characteristics, and psychopathology by class.

	LG	HGHA	HGLA	HGS
	(n = 112)	*(n = 36)*	*(n = 104)*	*(n = 23)*
Demographics				
Age in years *M (SD)*	45.18 (13.91)	44.53 (11.88)	47.37 (12.99)	51.30 (12.18)
Gender *N (%)*				
Female	81 (72.3)	30 (83.3)	85 (81.7)	20 (87.0)
Highest level of education *N (%)*				
No qualifications	2 (1.8)	1 (2.8)	3 (2.9)	3 (13.0)
High School Education	34 (30.4)	9 (25.0)	37 (35.6)	5 (21.7)
University degree	43 (38.4)	19 (52.8)	41 (39.4)	8 (34.8)
Postgraduate degree	33 (29.5)	7 (19.4)	23 (22.1)	7 (30.4)
Ethnicity *N (%)*				
Caucasian	103 (92.0)	35 (97.2)	94 (90.4)	22 (95.7)
Loss characteristics				
Months since loss *M (SD)*	2.90 (2.07)	2.53 (1.79)	2.98 (2.01)	3.61 (2.02)
Who died*? N (%)*				
Spouse/Partner	21 (18.8)	14 (38.9)	39 (37.5)	9 (39.1)
Child	2 (1.8)	1 (2.8)	13 (12.5)	8 (34.8)
Sibling	9 (56.3)	2 (5.6)	4 (3.8)	1 (4.3)
Parent	51 (45.5)	15 (41.7)	36 (34.6)	3 (13.0)
Other relative	25 (22.3)	3 (8.3)	9 (8.7)	2 (8.7)
Close non-relative	4 (3.6)	1 (2.8)	3 (2.9)	0 (0.0)
Length of relationship (months) M *(SD)*	431.97 (182.15)	348.33 (197.67)	382.64 (179.29)	338.91 (208.80)
How did they die? *N (%)*				
Non-violent	104 (92.9)	29 (80.6)	97 (93.3)	18 (78.3)
Violent (e.g. accident, homicide, suicide, drug overdose, medical negligence)	8 (7.1)	7 (19.4)	7 (6.7)	5 (21.7)
Meets criteria for PTSD *N (%)*				
T1 Yes	26 (23.2)	17 (47.2)	64 (62.7)	15 (65.2)
T2 Yes	8 (7.5)	9 (25.0)	56 (61.50)	16 (72.7)
T3 Yes	3 (3.0)	4 (12.5)	39 (46.4)	17 (77.3)

	LG	HGHA	HGLA	HGS
	(n = 112)	*(n = 36)*	*(n = 104)*	*(n = 23)*
Pre-loss individual differences				
Anxious attachment *M (SD)*	19.13 (6.96)	20.66 (7.63)	22.30 7.60)	24.13 (10.14)
Avoidant attachment *M (SD)*	16.50 (7.32)	17.17 (8.05)	20.46 (7.54)	19.83 (6.47)
Independence from deceased *M (SD)*	25.03 (4.30)	21.17 (6.12)	20.43 (6.17)	18.65 (6.15)
Healthy dependency *M (SD)*	35.33 (6.99)	35.25 (6.24)	30.97 (7.27)	28.22 (7.09)
Cognitive predictors				
Memory characteristics *M (SD)*	33.47 (17.84)	66.12 (16.44)	66.60 (18.71)	78.56 (21.40)
Appraisals *M (SD)*	78.80 (27.80)	115.17 (39.19)	136.49 (38.94)	167.65 (42.91)
Coping strategies *M (SD)*	40.83 (10.43)	57.33 (15.44)	60.00 (16.97)	75.08 (19.08)
Social disconnection beliefs *M (SD)*	49.70 (21.82)	63.375 (22.39)	71.37 (17.53)	83.57 (12.60)
Grief resilience *M (SD)*	37.60 (6.79)	33.00 (8.86)	32.66 (8.67)	26.39 (8.32)
Desire thinking *M (SD)*	14.95 (4.32)	21.63 (7.20)	23.14 (7.38)	26.09 (7.84)

Note. LG = Low Grief, HGHA = High Grief High Adaptation, HGLA = High Grief Low Adaptation, HGS = High Grief Stable.

3.5.1 PTSD comorbidity by class. To establish whether the trajectory classes differed on PTSD comorbidity three MNLR were conducted. A diagnosis of PTSD at the first time point (χ^2 (3, N = 275) = 39.78, Nagelkerke R^2= .15, $p < .001$) significantly contributed to model fit and explained 15% of the variance in class membership. Compared with the low grief class, individuals with a probable diagnosis of PTSD were 6.21 times more likely to be in the high grief stable class ($p < .001$), 5.56 times more likely to be in the high grief low adaptation class ($p < .001$), and 2.96 times more likely to be in the high grief high adaptation class ($p = .007$). The three high grief classes did not significantly differ from each other in terms of PTSD comorbidity.

3.6 Class differences in cognitive predictors - univariate analyses

In order to assess the individual predictive ability of each cognitive factor on class membership the six cognitive predictor variables were each individually entered into three multinomial logistic regressions. These analyses allow us to understand how these cognitive factors in isolation are associated with grief trajectories before trying to understand how they

work together. After alpha correction for multiple comparisons, all six predictors significantly predicted variance in the dependent variable group (memory characteristics; χ^2 (3, N = 275) = 166.16, Nagelkerke R^2= .50, p < .001, appraisals; χ^2 (3, N = 275) = 153.74, Nagelkerke R^2= .47, p < .001, coping strategies; χ^2 (3, N = 275) = 144.60, Nagelkerke R^2= .45, p < .001, social disconnection beliefs; χ^2 (3, N = 275) = 83.04, Nagelkerke R^2= .29, p < .001, grief resilience; χ^2 (2, N = 275) = 42.99, Nagelkerke R^2= .16, p < .001; desire thinking; χ^2 (3, N = 275) = 102.24, Nagelkerke R^2= .34, p < .001). Results of univariate class differences in cognitive predictors are presented in Table 7.4. These results provide support for hypothesis 2a.

3.6.1 What distinguishes high grief from low grief individuals? All six cognitive predictor variables distinguished between the low grief class and each of the three high grief classes in the expected directions, supporting hypothesis 2a. The largest ORs indicating higher scores, or in the case of grief resilience lower scores, were seen in the HGS comparison, followed by the HGLA. The HGHA comparison demonstrated the smallest, but still highly significant differences on the cognitive predictors compared to the LG class.

3.6.2 Among those whose grief starts high, what distinguishes whether the grief resolves over time or remains severe and enduring? In those whose initial grief severity was similarly high (HGHA vs HGLA), higher appraisals, coping strategies, and social disconnection beliefs significantly increased the likelihood that grief would not resolve over time. Memory characteristics, desire thinking, and grief resilience did not differ between the high and low adaptation classes.

In the HGHA versus HGS comparison greater endorsement of all six cognitive predictors significantly increased the likelihood of being in the HGS class.

Finally, all but one of the cognitive predictors significantly increased the likelihood of being in the HGS in comparison to the HGLA class. The HGS group had higher scores on all scales other than desire thinking, which did not differ between groups.

Table 7.4

Univariate analyses of cognitive predictors on class membership

		Reference group					
		LG		HGHA		HGLA	
		B (SE)	OR (95% CI)	B (SE)	OR (95% CI)	B (SE)	OR (95% CI)
HGHA	Memories	.09 (.01)	1.09 (1.06 – 1.12)***				
	Appraisals	.03 (.01)	1.03 (1.02 – 1.05)***				
	Coping strategies	.10 (.02)	1.11 (1.07 – 1.14)***				
	Social disconnection beliefs	.03 (.01)	1.03 (1.01 – 1.05)***				
	Grief resilience	-.08 (.02)	.93 (.88 – .97)**				
	Desire thinking	.19 (.04)	1.21 (1.13 – 1.29) ***				
HGLA	Memories	.09 (.01)	1.10 (1.07 – 1.13) ***	.01 (.01)	1.01 (.98 – 1.03)		
	Appraisals	.05 (.01)	1.05 (1.04 – 1.06)***	.02 (.01)	1.02 (1.01 – 1.03)**		
	Coping strategies	.13 (.02)	1.13 (1.10 – 1.17)***	.02 (.01)	1.02 (1.00 – 1.05)*		
	Social disconnection beliefs	.05 (.01)	1.05 (1.04 – 1.07)***	.02 (.01)	1.02 (1.00 – 1.04)*		
	Grief resilience	-.09 (.02)	.92 (.87 – .95)***	-.01 (.02)	.99 (.95 – 1.04)		
	Desire thinking	.22 (.03)	1.25 (1.18 – 1.32) ***	.04 (.03)	1.04 (.98 – 1.09)		
HGS	Memories	.13 (.02)	1.13 (1.09 – 1.18)***	.04 (.02)	1.04 (1.01 – 1.07)*	.03 (.01)	1.03 (1.01 – 1.06)*
	Appraisals	.06 (.01)	1.07 (1.05 – 1.08)***	.03 (.01)	1.03 (1.02 – 1.05)***	.02 (.01)	1.02 (1.00– 1.03)**
	Coping strategies	.16 (.02)	1.17 (1.13 – 1.22)***	.06 (.02)	1.06 (1.03 – 1.09)***	.03 (.01)	1.03 (1.01 – 1.06)*
	Social disconnection beliefs	.10 (.02)	1.10 (1.06 – 1.14)***	.07 (.02)	1.07 (1.03 – 1.11)***	.05 (.02)	1.05 (1.01 – 1.08)**
	Grief resilience	-.16 (.03)	.86 (.81 – .91)***	-.01 (.03)	.92 (.87 – .98)*	-.07 (.03)	.93 (.86 – .98)**
	Desire thinking	.27 (.04)	1.31 (1.13 – 1.29) ***	.09 (.04)	1.09 (1.01 – 1.17) *	.05 (.03)	1.05 (.99 – 1.12)

Note. LG = Low Grief, HGHA = High Grief High Adaptation, HGLA = High Grief Low Adaptation, HGS = High Grief Stable. Pearson's correlation (two-tailed) $p \leq .05^{*}$ $p \leq .01^{**}$ $p \leq .001^{**}$

3.7 Class differences in cognitive predictors: multivariate analyses

To determine the unique variance explained by the cognitive predictor variables after controlling for the variance shared between them and examining the relative contribution of background variables (i.e. losing a child, gender, level of education and length of relationship) and pre-loss individual differences linked to PGD (i.e. attachment style and dependency) three MNLR were run using the backwards selection method in order to compare all combinations of classes. Of these variables, losing a child (p = .03) and healthy dependency (p = .045) significantly contributed to model and therefore remained in the final model. Of the cognitive predictor variables desire thinking, social disconnection beliefs and coping strategies did not contribute significantly to model fit (social disconnection beliefs p = .24; desire thinking p = .89; coping strategies p = .23). The remaining three cognitive predictor variables all made unique contributions to the model (memory characteristics; $p < .001$, appraisals; p = .004, grief resilience; p = .03).

The final model containing child loss and healthy dependency and the six cognitive predictors significantly improved the fit between model and data χ^2 (24, N = 275) = 227.13, Nagelkerke R^2= .63, $p < .001$ and explained 63% of the variance in class membership. Three reference groups were used to establish all combinations of group comparison. Table 7.5 presents the parameter estimates for class comparisons.

No predictors in the model violated the assumption of multicolliearity (i.e. no VIF values above 10 and no tolerance statistics below .2) (Field, 2013). These results provide partial support for hypothesis 2b.

Table 7.5

Multivariate analysis parameter estimates of class comparisons for cognitive predictor variables, child loss, and healthy dependency

		Reference group					
		LG		HGHA		HGLA	
		B (SE)	OR (95% CI)	B (SE)	OR (95% CI)	B (SE)	OR (95% CI)
HGHA	Memories	.09 (.02)	1.10 (1.05 – 1.14)***				
	Appraisals	.01 (.01)	1.01 (.98 – 1.03)				
	Coping strategies	.02 (.03)	1.02 (.97 – 1.07)				
	Social disconnection beliefs	-.03 (.02)	.98 (.94 – 1.01)				
	Grief resilience	-.04 (.04)	.96 (.90 – 1.03)				
	Desire thinking	.02 (.05)	1.02 (.92 – 1.13)				
	Child loss = 0	.01 (1.41)	1.07 (.07 –16.89)				
	Healthy dependency	.04 (.04)	1.04 (.96 – 1.14)				
HGLA	Memories	.05 (.02)	1.06 (1.02 – 1.09)**	-.04 (.02)	.96 (.93 – 1.00)*		
	Appraisals	.03 (.02)	1.04 (1.00 – 1.09)**	.03 (.01)	1.03 (1.01 – 1.05)*		
	Coping strategies	.04 (.02)	1.05 (1.00 – 1.10)T	.02 (.02)	1.03 (.98 – 1.07)		
	Social disconnection beliefs	-.02 (.01)	.98 (.95 – 1.01)	.01 (.02)	1.01 (.97 – 1.04)		
	Grief resilience	.06 (.04)	1.06 (.98 – 1.14)	.10 (.04)	1.10 (1.03 -1.18)**		
	Desire thinking	.00 (.05)	1.00 (.92 – 1.10)	-.02 (.04)	.99 (.90 – 1.07)		
	Child loss = 0	-1.34 (.99)	.27 (.04– 1.80)	-1.40 (1.10)	.25 (.03 – 2.16)		
	Healthy dependency	-.06 (.04)	.94 (.88 – 1.01)	-.10 (.04)	.90 (.84 - .98)**		
HGS	Memories	.06 (.03)	1.06 (1.00 – 1.12)*	-.04 (.03)	.97 (.91 – 1.02)	.02 (.03)	1.00 (.95 – 1.05)
	Appraisals	.04 (.02)	1.04 (1.01 – 1.07)*	.03 (.02)	1.03 (1.00 – 1.06)*	.01 (.01)	1.01 (.98 – 1.03)
	Coping strategies	.06 (.03)	1.06 (.99 – 1.12) T	.04 (.03)	1.04 (.99 – 1.11)	.01 (.03)	1.01 (.96 – 1.07)
	Social disconnection beliefs	.01 (.03)	1.01 (.96 – 1.06)	.03 (.03)	1.03 (.98 – 1.01)	.03 (.02)	1.03 (.98 – 1.08)
	Grief resilience	.01 (05)	1.01 (.91 – 1.13)	.06 (.05)	1.06 (.96 – 1.17)	-.04 (.05)	.96 (.88 – 1.05)
	Desire thinking	-.03 (.07)	.97 (.01 – .76)	-.05 (.07)	.95 (.83 – 1.08)	-.04 (.06)	.96 (.86 – 1.08)
	Child loss = 0	-2.44 (1.11)	.09 (.89– 1.07)*	-2.51 (1.17)	.08 (.001 – .81)*	-1.12 (.60)	.33 (.10 – 1.05)T
	Healthy dependency	-.05 (.05)	.95 (.86 – 1.06)	-.09 (.05)	.91 (.82 – 1.01)	.01 (.04)	1.01 (.93 – 1.10)

Note. LG = Low Grief, HGHA = High Grief High Adaptation, HGLA = High Grief Low Adaptation, HGS = High Grief Stable. Pearson's correlation (two-tailed) $p \leq .10^{T}$, $p \leq .05^{*}$ $p \leq .01^{**}$ $p \leq .001^{***}$

3.7.1 Low grief versus high grief groups (i.e. HGHA, HGLA, HGS). Two out of the six cognitive predictor variables distinguished between the low grief class and the high grief classes (i.e. HGHA, HGLA, HGS) after accounting for the variance shared between them and the contribution of child loss and healthy dependency. Memory characteristics significantly increased the likelihood of being in the HGHA class by 10% and the HGLA and HGS class by 6%. A one-point increase on the appraisals measure increased the likelihood of being in the HGLA class by 4% and the HGS by 4%.

Higher coping strategies demonstrated increases of 5% for the HGLA and 6% for HGS which were significant at trend level (HGLA, $p = .07$; HGS, $p = .09$). The HGHA class did not significantly differ from the LG class on any of the other cognitive predictors. Finally, losing a child increased the likelihood of being in the HGS class by 91%.

3.7.2 High grief high adaptation versus low adaptation and high grief stable.

Three out of the six cognitive predictor variables distinguished between the high grief classes (i.e. HGHA, HGLA, HGS). In comparison to the HGHA, higher appraisals increased the likelihood of little reduction in grief severity (HGLA) and severe and enduring grief (HGS) by 4%. While, memory characteristics did not significantly differ between HGHA and HGS, it did contribute significant variance to the distinction between the HGLA class and the HGHA class (1/OR = 1.04).

In contrast to the univariate analysis, increased grief resilience predicted HGLA class membership when compared with HGHA once the other factors were taken into account. Finally, the HGHA class reported significantly more healthy dependency than the HGLA class.

3.7.3 High grief low adaptation versus high grief stable. Of the variables in the final model, when considered together, only losing a child approached significance ($p = .06$) increasing the likelihood of being in the HGS class by 67% compared to the HGLA class.

Taken together these results provide partial support for hypothesis 2a.

3.8 Cognitive predictor correlations by class

As described in chapter 5, when shared variance between predictors is held constant in a multivariate model, a lesser proportion of each cognitive predictor's variance is left to predict group membership. Highly correlated predictors and small sample size reduce the likelihood that significant group differences will be found. Therefore, in order to understand factors that may have contributed to different findings between the univariate and multivariate analyses, class specific correlations between cognitive variables were calculated. Of these comparisons, only the HGS class demonstrated extremely high correlations between cognitive predictors (i.e. $r > .75$). Coping strategies correlated with memory characteristics ($r = .83$), appraisals ($r = .82$), and desire thinking ($r = .84$), while memory characteristics and appraisals also demonstrated an extremely strong association ($r = .83$).

3.9 Does the predictive strength between cognitive variables differ by grief class?[5]

A multi-group structural equation model tested the hypothesis derived from the cognitive model for PTSD (Ehlers & Clark, 2000) that higher levels of appraisals and memory characteristics would predict higher levels of maladaptive coping strategies for all 4 grief classes .

[5] In addressing this hypothesis, the model had to first meet the assumptions of measurement invariance. Detailed steps of the measurement model can be found in Appendix XII.

3.9.1 Multi-group structural equation model. The initial model without correlated residuals was a poor fit to the data CFI = .82, TLI = .82, RMSEA = .20 (CI.19 - .22), χ^2 = 701.46 df = 182 (χ^2:df = 3.85). Three correlated errors were suggested by modification indices. The first between regret beliefs and loss rumination, the second between loss of self-concept and life, and loss of relationships and future and the last between the two rumination subscales of the coping strategies scale. The two within scale correlated errors (i.e. loss of self-concept and life and loss of relationships and future; loss rumination and injustice rumination) were the subscales most closely related in the EFA and CFA analyses and as such their shared variance could be attributed to the items measuring very similar constructs. The correlated error between regret and loss rumination might suggest that those with higher regret beliefs were more likely to engage in ruminative thinking regarding their loss in particular over and above that which is explained by the relationship between the general factors of appraisals and coping strategies. Adding these correlated residuals, that were fixed to be equal across groups, resulted in a significant improvement to model fit. The majority of fit indices suggested an excellent fit CFI = .95, SRMR = .07, χ^2 = 325.72 df = 171 (χ^2:df = 1.90), or near excellent TLI = .94. However, the RMSEA did not display acceptable fit (RMSEA = .12). Overall fit was deemed suitable for interpretation. Multi-group regression coefficients are shown in Figure 7.2.

Figure 7.2

Multi-group structural equation model of relationship between cognitive predictors memory characteristics and negative appraisals on maladaptive coping

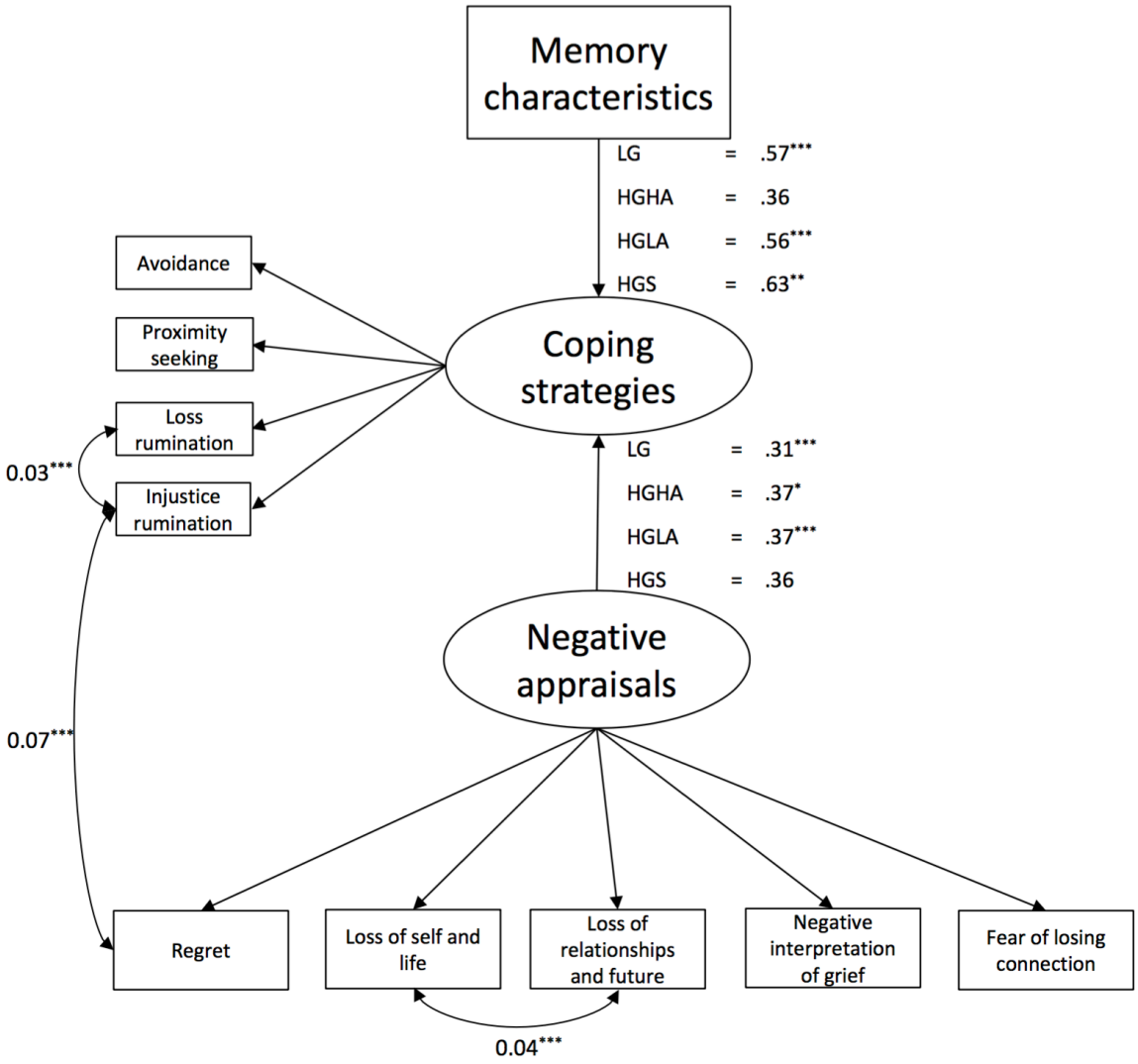


Figure 7.2 Multi-group SEM of the regression paths from memory characteristics and negative appraisals to maladaptive coping. Unstandardised coefficients are reported. Correlated residuals are represented with double-headed arrows and were constrained to be equal across groups. Ovals represent latent constructs and rectangles represent raw observed scores for each subscale. LG = low grief, HGHA = high grief high adaptation, HGLA = high grief low adaptation, HGS = high grief stable.
$p < .001^{***}$ $p < .01^{**}$ $p < .05^{*}$

3.9.2 Negative appraisals predict coping strategies. Negative appraisals significantly predicted maladaptive coping strategies within three of the classes (LG, β = .31, SE = .08, $p < .001$; HGHA, β = .37, SE = .16, $p = .02$; HGLA, β = .37, SE = .10, $p < .001$). The HGS group did not demonstrate a significant predictive relationship between appraisals and coping strategies (HGS, β = .36, SE = .23, $p = .11$), even though the ß coefficient was similar to that in the other classes. From section 3.7 we know that the HGS group reported significantly higher appraisals and coping strategies than the low grief group and significantly more appraisals than those in the HGHA group. The HGLA class and the HGS groups were equally likely to report appraisals and coping strategies in a multivariate model that controlled for background predictors and pre-loss individual differences. Examining the beta coefficients regression between appraisals and coping strategies of the HGS group (β = .36) and the HGLA class (β = .37) it is clear that they are very similar. However, the groups did differ on their standard errors (HGS, SE = .23; HGLA, SE = .10), a metric influenced by the sample size. Standard errors determine whether a beta coefficient is significantly different from zero. The HGLA group comprised 102 individuals compared to 23 individuals in the HGS group, suggesting that with a larger sample size and greater power the HGS group may have shown a significant predictive relationship.

3.9.3 Memory characteristics predict coping strategies. Loss-related memory characteristics significantly predicted maladaptive coping strategies within three of the classes (LG, β = .57, SE = .08, $p < .001$; HGLA, β = .56, SE = .10, $p < .001$; HGS, β = .63, SE = .22, $p = .005$). The HGHA class did not show a significant predictive relationship (HGHA, β = .36, SE = .20, $p = .07$) suggesting that, for individuals whose grief resolves over time, a rise in memory characteristics did not predict a rise in maladaptive coping strategies. These results provide partial support for hypothesis 3.

4. Discussion

This study explored trajectories of grief intensity in the first months of loss in a sample of 275 bereaved individuals. Baseline measures of the cognitive factors described in this thesis (i.e. loss-related memory characteristics, negative grief-related appraisals, coping strategies, social disconnection beliefs, grief resilience, and desire thinking) were tested for their ability to predict grief intensity over time. Four distinct grief trajectories were identified: Low Grief (LG, N=112), High Grief High Adaptation (HGHA, N=36), High Grief Low Adaptation (HGLA, N=104), and High Grief Stable (HGS, N=23). Trajectories indicate that the vast majority of bereaved individuals saw resolution to their grief over the course of the study. The HGS class made up 8% of the total sample and remained above clinical cut off for PGD by the end of the study. This is in line with previous research that suggests rates of PGD are between 5-10% in the general population (Prigerson et al., 2009). Similarly, 41% of the sample (LG) demonstrated sub-clinical levels of grief throughout the course of the study, which is broadly in line with findings that suggests resilience to grief for 45-65% of grievers (Bonanno, Wortman, et al., 2002a; Mancini, Bonanno, et al., 2011).

4.1 Univariate Analyses

Individually all six cognitive predictors distinguished between the high grief classes and the low grief class. Only a small subgroup of those with high grief (HGHA, 22%) saw full resolution of their grief over the course of 12 months. This indicates that the cognitive factors investigated in this thesis may be useful in identifying those likely to suffer prolonged clinical and nonclinical grief reactions.

Looking only at the high grief classes, the pattern of results suggests that, the HGS class reported the most cognitive predictors, followed by the HGLA, and then the HGHA class. This suggests that the increases in cognitive predictors are closely related to the

severity and intensity of grief reactions. When investigating the cognitive correlates of high grief but fast resolution (HGHA), negative appraisals, maladaptive coping strategies, and social disconnection beliefs beliefs were found to be lower compared with the HGLA class, while memory characteristics, grief resilience and desire thinking did not differ. This suggests that the presence of difficulties with memory, a preoccupation with the deceased, and low resilience beliefs are sufficient to predict clinically significant grief symptoms.

4.2 Multivariate analysis

4.2.1 Background variables and pre-loss individual differences. Of the background predictors investigated for their relative importance in predicting class membership only losing a child contributed to model fit. Other variables such as mode of death, and age, which have previously been found to influence the course of grief (Stroebe & Schut, 2001), were not predictive of grief severity in the present study. Child loss was the strongest predictor, along with memory characteristics and appraisals, of membership to the severe and enduring grief class (HGS), 35% of the group had lost a child. Very few studies have reported an increased risk of severe grief for bereaved parents compared with other losses (Sanders, 1980). A small four-wave longitudinal study (n=110) found that bereaved parents reported significantly higher grief symptoms than bereaved spouses and adults who had lost parents (Middleton, Raphael, Burnett, & Martinek, 1998). Authors suggested that children are more likely to die from sudden or accidental causes, which may play a role in grief responding. This is further supported in our data with 75% of the HGS group who lost a child (n= 8) reporting the death to be natural but sudden (n =3) or violent (n=3). In comparison to non-bereaved parents, losing a child has been shown to increase the risk of anxiety, depression, prolonged grief, poor quality of life, and suicide (Hendrickson, 2009; Kreicbergs, Valdimarsdóttir, Onelöv, Henter, & Steineck, 2004; Qin & Mortensen, 2003). These results

implicate bereaved parents as a particularly vulnerable group, a large proportion of whom see no resolution to their grief in the first 12-18 months following loss.

Of the pre-loss individual differences investigated, only healthy dependency contributed significant variance to group membership. The HGLA class were less likely to report a healthy dependency style compared with the HGHA class. These results fit with previous research conducted by Bonanno and colleagues (2002) that examined prospective data from 205 bereaved spouses collected several years prior to death and followed up at 6 and 18 months post-loss. They found that pre-loss interpersonal dependency and dependency on the spouse was associated with a chronic grief and chronic depression trajectory (Bonanno, Wortman, et al., 2002a). Our results suggest that alongside negative appraisals, low interpersonal dependency can contribute to slow resolution in those with high grief.

4.2.2 Cognitive predictors. When controlling for the variance shared between them and, after examining the relative contribution of background variables and pre-loss individual differences of importance, lower scores on negative appraisals were associated with low grief and fast resolution of high grief (HGHA). Higher appraisals increased the odds of being in the HGLA class compared with the HGHA class. Together, these findings indicate that low negative appraisals in people with high grief symptoms are a good prognostic sign, whereas highly negative appraisals are linked to the maintenance of grief symptoms. **C**omparisons of the low grief class with the HGLA and the HGS showed a trend for maladaptive coping strategies, indicating that the high grief classes that saw little or no resolution to their grief might employ more maladaptive coping.

The results were more complex for memory characteristics as the univariate and multivariate analyses showed somewhat different findings. In the univariate analyses, all high grief groups showed greater loss-related memory characteristics than the low grief class, and

the HGS class had higher scores than the HGHA and the HGLA classes. However, the adaptation classes (HGHA, HGLA) did not differ from each other. Overall, this suggests a relationship between memory characteristics and severity of grief. However, in the multivariate analysis, when all the cognitive variables were considered simultaneously, together with child loss and healthy dependency, the comparison between HGHA and HGLA showed a significant unique effect in the opposite direction, indicating a suppressor effect. This result may indicate that while the shared variance between cognitive predictors and pre-loss individual differences was predictive of the maintenance of grief symptoms, memory characteristics also helped suppress variance unrelated to maintenance. A similar effect was observed for grief resilience between HGHA and HGLA, with a non-significant OR<1 in the univariate and significant OR>1 in the multivariate.

In contrast to the univariate analyses, memory characteristics did not contribute unique variance to the distinction between the HGS group and the other high grief groups. This is likely to be a problem of power and multicollinearity as the HGS group only comprised 23 individuals and showed extremely high correlations between memory characteristics, appraisals, and coping strategies. These intra-class correlations are, perhaps, unsurprising given that these individuals reported the highest grief symptoms and also the highest PTSD symptoms. However, models suffering lack of power are also more susceptible to problems of multicollinearity (i.e. the extent to which predictors share variance) such as higher standard errors or suppressor effects. This means that larger sample sizes are needed to detect unique variances in models with correlated predictors. As further data collection was not possible an alternative method of analysis was employed to understand significant differences in memory characteristics between classes.

4.3 Multi-group SEM

A multi-group SEM, based on the cognitive model for PTSD, tested whether appraisals and memory characteristics differed in their predictive utility on coping strategies by grief class. It was found that all four grief classes showed a similar strength of predictive association between appraisals and coping strategies. In contrast, all but one class showed a significantly predictive relationship between memory characteristics and coping strategies. For those whose grief started high but quickly resolved over time (HGHA), a rise in memory characteristics was not associated with a concurrent rise in maladaptive coping strategies. In section 3.6 we found that the HGHA class reported similar levels of memory characteristics compared to the HGLA class but significantly fewer appraisals and coping strategies. An adequate theory of the relationships between predictors should explain why the high grief, high and low adaptation groups started with the same level of grief intensity at the beginning of the study but why one class of individuals goes on to adapt quickly to their grief over time. These results suggest that the comparable grief severity starting level of these classes may, in part, be explained by the level of memory characteristics reported at the first time point as this was the only cognitive predictor that was similar between the HGHA and the HGLA class. However, the HGHA group do not hold a predictive relationship between memory characteristics and maladaptive coping strategies, perhaps explaining why these individuals are able to adapt to their grief over time. It is possible, for this group at least, that initial levels of memory characteristics (e.g. intrusiveness, 'nowness', predominance of negative reactions and visceral consequences) in the bereavement process are not experienced as threatening or dangerous and thus do not result in maladaptive coping. Memory characteristics in this group may also reflect active engagement with the memories and less avoidance, which may help processing the grief. Alternatively, fear about losing connection to the deceased might also influence the way memory characteristics are perceived; if they

signal that the connection to the deceased is waning then individuals in the other classes may engage in coping strategies aimed at restoring the connection. Future studies might seek to investigate whether specific cognitions, such as threatening interpretations of grief reactions or fear of losing connection beliefs, are associated with the predictive relationship between memory characteristics and coping strategies.

Previous research has found grief-related appraisals and coping strategies to be important in the prediction of prolonged grief disorder (Boelen et al., 2015; Boelen & Eisma, 2015; Boelen et al., 2003a) but few studies have investigated a number of cognitive predictors for their relative importance (Boelen, van den Bout, et al., 2006, 2010; Boelen & van den Hout, 2008) and none have investigated loss-related memory characteristics, social disconnection beliefs, or desire thinking. Boelen and colleagues (2006) investigated the impact of four types of negative cognitions (i.e. negative beliefs about the self, life, and the future and threatening interpretations of grief reactions) and avoidance coping strategies on grief severity in a longitudinal sample of mourners in their first 5 months of loss. They found that after controlling for background predictors (i.e. gender, age, education, cause of death) avoidance behaviours were associated with higher grief severity at the initial time point. Appraisals regarding grief reactions as threatening were associated with grief at the 2nd time point (6 months), and appraisals regarding fear of the future as well as an interaction of threatening appraisals and avoidance were associated with grief at the final time point (15 months). Our results are in line with the results of Boelen and colleagues, appraisals, and to a certain extent coping strategies, distinguish between the low and high grief groups. However, our results also offer support that loss-related memory characteristics have a unique role to play in predicting grief severity over time. We further demonstrate the utility of cognitive behavioural factors over and above not only background variables and some loss characteristics as demonstrated by Boelen et al. (2006), but also with regards to pre-loss

individual differences such as dependency and attachment style (Denckla et al., 2015; Mancini et al., 2009).

Some of the anticipated predictors, despite performing well in the univariate analysis, did not discriminate between classes when assessed alongside other predictors. Desire thinking and grief resilience did not contribute significant variance to class membership. Similar to chapter 5, it is possible that the similarities between desire thinking and rumination on the coping strategies measure may have resulted in insufficient variance left in the multivariate model to predict group membership. Alternatively, as was shown in chapter 4, desire thinking and grief resilience's psychometric properties may not have been robust enough to predict grief reactions in comparison to the other scales with stronger metrics of reliability and validity. Finally, when considered with the other variables, in contrast to the univariate analysis, social disconnection beliefs was not significantly elevated in any of the grief groups in the multivariate analysis and predicted an increased likelihood of being in the low grief class in comparison to the HGLA class, which is likely the result of a suppressor effect. More circumscribed hypotheses regarding the impact and triggers of social disconnection beliefs in a model with fewer predictors may help elucidate the role of beliefs regarding the withholding or suppression of one's feelings in the development and maintenance of grief severity.

4.4 Limitations and future studies

The current study extends the literature on cognitive behavioural factors and their role in predicting grief severity over time. Nonetheless, there are some limitations that are worth noting. While overall the sample size was sufficient for LGMM analyses the size of each class limited the power to detect group differences on some variables in the multivariate analysis. With respect to memory characteristics in particular, it is possible that limited

sample size in the HGS class and shared variance prevented some comparisons from reaching significance. Further, examination of beta coefficients and standard errors suggested that sample size played a role in the failure to find a predictive relationship between appraisals and coping strategies in the HGS group in the multi-group SEM. An alternative strategy worthy of investigation is to use the probabilities of class membership as the dependent variable in a regression model. This would transform class membership from a categorical variable into continuous one resulting in an increase in power and the ability to test more covariates while reducing the impact of multicollinearity.

As with the previous chapters reported in this thesis the use of self-report questionnaires to measure dependent and independent variables may have contributed to shared method variance. Furthermore, cognitive predictors were highly correlated meaning large sample sizes would be necessary to highlight unique variance in a multivariate analysis. One technique for controlling for multicollinearity comes from the SEM literature: a bi-factor model allows a general factor to be extracted from items of a questionnaire leaving the measure's subscale factors uncorrelated (Chen, West, & Sousa, 2006). This allows the researcher to investigate the individual contribution of each subscale (minus the variance accounted for by the general factor) without multicollinearity in the model. This strategy would allow more clear comparison of the different types of appraisals (e.g. negative interpretation of grief, loss of self and life, loss of relationships and future, regret, and fear of losing a connection), coping strategies (e.g. avoidance, proximity seeking, loss rumination, and injustice rumination), and social disconnection beliefs beliefs (e.g. negative interpretation of social situations, negative interpretation of others reactions, safety in solitude) and their relative importance in predicting grief intensity and severity. Finally, caution should be taken when interpreting the results of the multi-group structural equation model as these data were cross-sectional, which prevents conclusions regarding causation and the direction of

relationships among variables. Future research should seek to confirm these findings using longitudinal data such as ecological momentary assessment (EMI) or via experimental studies in which the direction of causality is controlled.

This study provides evidence of specific grief trajectories in the first 14 to 20 months following bereavement. Cognitive predictors were able to distinguish between those in low and high grief groups. Further, by comparing cognitive predictors with loss-characteristics and pre-loss individual differences, we can be confident that within a grief context a focus on cognitive factors is likely to prove helpful in explaining grief adaptation.

Finally, while the vast majority of individuals experienced reductions in their grief over time, this study points to cognitive factors that, if targeted in treatment in first six months of loss, may prove useful in facilitating grief resolution.

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Chapter 8: General Discussion

This thesis built on Ehlers and Clark's (2000) cognitive model for posttraumatic stress disorder (PTSD) and the highly effective treatment programme derived from this model (e.g., Ehlers et al., 2014) to investigate cognitive aspects of PGD. PTSD and PGD have in common that they are reactions to highly negative events that are beyond the individual's control. The thesis investigated whether three cognitive factors central to Ehlers and Clark's theory of PTSD, characteristics of the memories of the event, excessively negative appraisals, and problematic coping strategies, distinguish between bereaved people with and without PGD, and predict PGD prospectively. It further investigated whether additional cognitive factors relevant to prolonged grief can be identified that enhance our understanding of this condition and could potentially be targeted in treatment to improve treatment response. Within the grief literature some validated psychometric instruments of grief-related appraisals (Boelen & Lensvelt-Mulders, 2005; E. Bailley, 2000; Gillies, Neimeyer, & Milman, 2015; Skritskaya et al., 2016) and coping strategies (Avoidance behaviours, Baker, Keshaviah, Horenstein, Goetter, Mauro, Reynolds, Zisook, Katherine Shear, et al., 2016; Avoidance behaviours, Boelen & van den Bout, 2010; Rumination, Eisma et al., 2014) have already been developed. This thesis aimed to develop a more in-depth understanding of the ways in which cognitive factors such as loss-related memory characteristics, negative grief-related appraisals, and maladaptive coping strategies influence grief reactions following the loss of a significant person. Four key research questions were investigated in three parts of the thesis.

Part I

- Are the cognitive factors relevant in the treatment of PTSD (e.g. memory characteristics, appraisals, and coping strategies) important in PGD?
- Are there cognitive concepts missing from the literature that are relevant to PGD?

Part II

- Are these cognitive factors associated with bereavement-related mental health problems such as PGD, PTSD and depression?

Part III

- Do the cognitive concepts developed in this thesis predict grief severity over time?

Six studies investigated these research questions. This discussion will briefly summarise the key findings of the thesis for each research question, and then discuss the potential theoretical and clinical implications of the results. Limitations and future directions for further research will then be discussed.

Summary of key findings and conclusions

Part I – Development and validation of questionnaires of cognitive factors in PGD (*Are the cognitive factors relevant in the treatment of PTSD (e.g. memories, appraisals, and coping strategies) important in PGD? Are there cognitive concepts missing from the literature that are relevant to PGD*?)

Chapters 2, 3 and 4 describe the step-wise development of a comprehensive set of cognitive measures relevant to PGD. In chapter 2, an initial item pool of appraisals and coping strategies relevant to PGD was developed and tested in a sample of bereaved individuals with and without PGD. In line with previous research indicating the importance of grief-related appraisals (Boelen & Lensvelt-Mulders, 2005; E. Bailley, 2000; Gillies et al., 2015; Skritskaya et al., 2016) and coping strategies (Avoidance behaviours, Baker, Keshaviah, Horenstein, Goetter, Mauro, Reynolds, Zisook, Katherine Shear, et al., 2016; Avoidance behaviours, Boelen & van den Bout, 2010; Rumination, Eisma et al., 2014), all

subscales of the appraisals and coping strategies measures significantly differed between groups. In addition, on an adapted version of the *Desire Thinking Scale* (DTS; Caselli & Spada, 2011) bereaved individuals with PGD were more likely to report both imaginal and verbal desire thinking behaviours compared with those without PGD.

Chapter 3 used semi-structured interviews with bereaved people with and without PGD to identify features of loss-related memories and explored whether further cognitive concepts previously missing from the grief literature could be identified. Thematic coding resulted in the development of three new scales measuring memory characteristics, social disconnection beliefs, and grief resilience.

Chapter 4 investigated the factoral validity and psychometric properties of the cognitive measures developed in chapter 2 and 3 in a large community sample of bereaved adults (Oxford Grief Study, OG). The psychometric properties of the measures were found to be acceptable to excellent. The scales had high internal consistencies and correlated highly with symptoms of PGD, and also with PTSD and depression symptoms. Exploratory and confirmatory factor analyses identified empirical dimensions that were characteristic of the experience of those suffering from PGD. For the appraisal measure (OG-A), a 5-factor structure had the best fit. The dimensions were interpreted as: **loss of self and life, loss of relationships and future, regret, negative interpretation of grief and its reactions**, and **fear of losing connection to the deceased**. The measure of memory characteristics (OG-M) showed a unidimensional structure. The coping behaviour scale (OG-CS) showed 4 factors, which were interpreted as **avoidance, proximity seeking, loss rumination, and injustice rumination**. For the measure of social disconnection beliefs (OG-SD) a 3-factor structure had the best fit: **negative interpretation of others reactions, negative interpretation of social situations, and safety in solitude**. The measure of grief resilience (OG-GR) had two factors, **self-efficacy** and **continuing bonds**. The DTS reduced down to 2 factors, **mental**

preoccupation and **imaginal reunion**. The content of the questionnaires is described in greater detail in the following sections.

Dimensions of Appraisals in PGD.

In chapter 2, *a priori* content domains in grief-related appraisals were derived from the literature and interviews with clinicians experienced in the treatment of PTSD and PGD. These included beliefs regarding a change to an individual's **sense of self** (e.g. *'I am not a whole person anymore'*), beliefs about the **meaninglessness of life or the future** (e.g. *'I can't imagine anything good in my future'*), and **negative interpretation of grief and its reactions** (e.g. *'My reactions mean I am a weak person'*) that have been suggested in previous studies (Boelen et al., 2015; Boelen, van Denderen, et al., 2016). The relevance of these concepts was supported by significant differences between bereaved people with and without PGD in chapters 2 and 4. While the items were somewhat refined in chapter 3 and 4, the dimensions were validated and shown to represent 3 of 5 dimensions supported in the exploratory and confirmatory factor analysis in chapter 4.

New appraisal content domains were also included on the basis of suggestions by therapists (chapter 2) that successfully distinguished between those with and without PGD (chapter 2). **Difficulty accepting the death** described beliefs relating to disbelief surrounding the death, an anticipated inability to be able to come to terms with the loss in the future, and a desire to join the deceased (e.g. *'I wish I had died instead of [-]'*). **Relationships with others** detailed the extent to which losing the deceased has interfered with current and future relationships for the bereaved individual (e.g. *'I cannot maintain previous relationships without [-]'*). **Fear of losing connection to the deceased** highlighted beliefs regarding the importance of holding on to one's grief so as not to betray their loved one or to prevent losing them forever (e.g. *'Moving on with my life would betray them'*). **Self-blame** and **self-blame**

about the death measured beliefs referencing the extent to which the bereaved felt they were at fault for previous actions they took towards the deceased or surrounding the death (e.g. *'I am full of regrets about missed opportunities during our time together').* The semi-structured interviews described in chapter 3 added additional content domains: mortality communication, death attitudes, and idolising. **Mortality communication** measured how much the bereaved and the deceased were able to discuss death and prior to the loss (e.g. '*I avoided talking about death'*). **Death Attitudes** referenced beliefs about the persistence of the deceased after death and, if an afterlife was believed in, whether it was peaceful or punishing (e.g. '*I believe that we pay for our actions in the afterlife'*). **Idolising** described the extent to which the deceased was revered and worshipped uncritically in comparison to others (*e.g. 'No-one compares to [-]'*).

However, in chapter 4 some of these concepts were deleted from the final scales as they failed to demonstrate a relationship with symptoms of PGD, namely mortality communication, attitudes towards death both secular and religious, and self-blame about the death (e.g. '*I am partially responsible for [-]'s death'*), idolising. The final 5-factor solution of the scale includes the factors **loss of self and life** (e.g. *'I can never feel any pleasure again'*), **loss of relationships and future** (e.g. *'There is no point achieving anything if [-] is not here to see it'*, **regret** (e.g. *'I blame myself for things I did or did not do when [-] was alive')*, **negative interpretation of grief and its reactions** (e.g. *'If [-]'s death fully hit me, I would go crazy'*), and **fear of losing connection to the deceased** (e.g. *'If I let go of them there will be nothing left in my life'*).

Dimensions of Coping Strategies in PGD

In chapter 2, the *a priori* content domains for the coping strategies scale derived from the literature and in consultation with experienced therapists were defined as behaviours

relating to avoidance, proximity seeking, and rumination. These concepts have received some attention in the literature for their relationship to grief severity (Baker, Keshaviah, Horenstein, Goetter, Mauro, Reynolds, Zisook, Shear, et al., 2016; Boelen & van den Bout, 2010; Eisma et al., 2014). **Avoidance** referred to behaviours in which situations, places, or people that may have reminded the bereaved individual of their loved one or their loss were actively avoided (e.g. *'I avoid places we went together'*). **Proximity seeking** highlighted behaviours aimed at restoring a sense of connectedness to the deceased (e.g. *'I feel compelled to surround myself with things that [-] liked'*). **Rumination** detailed the content of repetitive thinking following bereavements such as what could have eased the suffering of the deceased or changed the outcome as well as dwelling on things that the bereaved individual wishes they had done differently (e.g. *'I go over and over how our last moments could have been more fulfilling'*). In chapter 3, additional items measuring control strategies (e.g. *'I make an effort to hold back my feelings'*) and rumination about attitudes towards the death (e.g. *'I worry that [-] has not found peace (in the afterlife)'*) were added to the item pool. In chapter 4, as with the appraisals scale, rumination about death attitudes items failed to demonstrate a relationship to grief severity and was deleted from the coping strategies scale. The final 4-factor solution retained the **avoidance** and **proximity seeking** concepts defined above and split the rumination items into two categories: **Loss rumination** described repetitive thoughts relating to the deceased's suffering, both past and present, and the ways in which the bereaved individual might have behaved differently (e.g. *'I dwell on moments that could have changed the outcome'*). **Injustice rumination** reflected recurring thoughts regarding the unfairness of the loss (e.g. *'I ask myself why I deserved this loss'*).

Loss-Related Memory Characteristics in PGD

Although factor analyses in chapter 4 revealed the OG-M to be unidimentional in nature the scale indicated multiple features of memory that are more commonly reported by individuals suffering from PGD than those without PGD. People with PGD were more likely to describe their loss-related memories as intrusive and distressing in nature. Memories of the deceased were closely connected to the death event (e.g. *'When I think about [-] I will always think about how they died'*) and gave rise to predominantly negative emotion (e.g. *'Even nice memories cause me to feel significant pain'*). Distressing memories were reported as easily triggered (e.g. '*Many different things trigger distressing memories of the loss'*) and activated in response to specific cues such as the calendar and seeing others with their partners of families. Prior memories of the past and experiences with the deceased highlighted the incongruence of self-image since the loss (e.g. *'When I remember things we did together it feels like I am no longer the same person')* and memories without the deceased both positive and neutral were less accessible (e.g. '*I struggle to remember positive times without [-]'*). Memories of the loss were also connected to the emotions felt at the time of the loss (e.g. *'When I remember the loss, I feel the same emotions I felt at the time'*) and had a sense of 'nowness' (e.g. *'My loss-related memories seem to be happening now instead of being something from the past'*). Memories also had the capacity to create visceral changes in the bereaved individual's body, either in the form of pain (e.g. '*The physical pain of loss is something I carry everywhere'*), fatigue (e.g. *'The memories of [-]'s death make my body ache with overwhelming fatigue'*) or physical deficit (e.g. '*The loss feels as if part of my body is missing'*). Taken together, these results are in line with a failure of loss integration into the autobiographical memory base that is hypothesized to be central to PGD (Boelen, van den Hout, et al., 2006; Maccallum & Bryant, 2013; Shear et al., 2007), and provides insight into the phenomenology of these memories that can inform therapeutic targets and may be useful as a process measure for changes in treatment.

Dimensions of Social disconnection beliefs, Grief Resilience, and Desire Thinking in PGD

Participants with PGD, compared to those without PGD, described feeling differently in the company of others since their loss in a way that led to avoidance of social situations or a significant reduction in their ability to tolerate social situations for prolonged periods. Factor analysis of items related to changes in the social self after bereavement suggested three dimensions of social disconnection beliefs. **Threatening interpretations of social situations** (e.g. *'I need to be able to leave social situations when I want or I will break down'*), **threatening interpretations of other's reactions** (e.g. *'Others will not be able to manage if I tell them how I feel about the loss'*), and **safety in solitude** which described a sense that being alone provided safety by allowing authenticity of the self and of one's grief (e.g. *'I can only be myself when I am on my own'*).

Cognitive resilience to grief reactions reduced down to two dimensions. Beliefs borne out of a sense of **self-efficacy** (e.g. *'Even without [-], I can deal with the ups and downs of life'*) and **continuing bonds** that measured connectedness to the deceased (e.g. *'My memories of our time together give me confidence'*), were more readily reported by those experiencing PGD in the qualitative interviews in chapter 3 and were correlated with symptoms of PGD in chapter 4. As in chapter 2, desire thinking was also associated with PGD and factor analyses revealed behaviours to be linked to **mental preoccupation with the deceased** (e.g. *'When I begin to think about them I continue until I am exhausted'*) and repeated **imagining of moments of reunion** (e.g. *'I imagine what I would feel like if I were with [-] now'*).

Part II ***(Are these cognitive factors associated with bereavement-related mental health problems such as PGD, PTSD and depression?)***

Chapter 4 provided preliminary support that all cognitive measures strongly correlate with PGD, PTSD and depression, this research question was further investigated in chapters 5 and 6. The results of chapter 5 showed that bereaved individuals suffering from PGD, PTSD and PGD+PTSD showed greater endorsement of appraisals, coping strategies, loss-related memory characteristics, social disconnection beliefs, and desire thinking compared to the non-clinical group and lower scores on grief resilience. These results suggest that the cognitive factors identified in Part I of this thesis are suitable candidates for characterising the cognitive profile of those with PGD and PTSD in a bereaved sample. Furthermore, only social disconnection beliefs did not differ between the PGD and PTSD alone groups, indicating that nearly all cognitive factors developed in this thesis are more clearly associated with symptoms of grief than trauma. Finally, three of the cognitive factors (memory characteristics, social disconnection beliefs, and coping strategies) were elevated in individuals suffering both PGD and PTSD in comparison to those with PGD alone. These three factors, in particular, have relevance for both PGD and PTSD and point to an additive effect of suffering from both grief and trauma symptoms.

The results of chapter 6 tested the specificity of a core theoretical assumption of the cognitive model for PTSD (Ehlers & Clark, 2000), namely that an increase in memory characteristics and negative appraisals leads to increased symptoms of PGD and PTSD via maladaptive coping strategies. Cross-sectional mediation analyses in a sample of individuals at least 6 month post-loss supported this hypothesis and demonstrated specificity for these relationships in PGD and PTSD because mediation was not seen for symptoms of depression. However, in a second sample of newly bereaved participants, significant mediation was also observed for depression. Together, the results indicated that the indirect effects of appraisals

and memory characteristics on PGD symptoms via coping behaviours were comparatively weaker in those bereaved longer. This suggests that the influence of maladaptive coping on the relationship between memory characteristics, negative appraisals and grief severity degrades over time. The results of these studies provide support for the relevance of the cognitive factors developed in this thesis in symptoms of PGD, PTSD, and depression.

Part III ***(Do the cognitive concepts developed in this thesis predict grief severity over time?)***

Chapter 7 presented a prospective study of participants recruited in the first six months after bereavement and found four distinct trajectories of grief severity in the first 12-18 months of loss. The study also identified which of the 6 cognitive predictors developed in the previous chapters (appraisals, coping behaviours, memory characteristics, social disconnection beliefs, desire thinking and grief resilience) were associated with these trajectories. Three trajectory classes started with clinically significant grief at the beginning of the study (in total 59% of the sample). By the end of the study 8% remained above clinical cut off (High Grief Stable, HGS), 38% saw a small gradual reduction in their grief severity but remained subsyndromal (High Grief Low Adaptation, HGLA), and a sharp decline in grief severity from initially high levels was observed in 13% (High Grief High Adaptation, HGHA). Nearly half of participants (41%) demonstrated resilience in response to their loss with a grief severity below clinical cut off at the beginning of the study and a further decline during follow-up (Low Grief, LG).

All six cognitive predictors were associated with grief intensity at the beginning of the study. When considered together with significant background factors (child loss) and pre-loss individual differences (dependency) in regression analyses, memory characteristics and appraisals consistently distinguished between the low grief and high grief groups. A

clinically interesting question is what distinguishes those who recover from severe grief symptoms from those who do not. In a comparison of the adaptation classes, slow grief resolution was predicted by more negative appraisals and low interpersonal dependency. Interestingly, memory characteristics did not differ between the adaptation classes in the univariate analysis and showed a suppressor effect in the multivariate. Therefore, to establish the relationship between high initial grief and memory characteristics a further analysis was conducted. This indicated that the HGHA class were the only class for whom memory characteristics did not predict a concurrent rise in maladaptive coping strategies. This would suggest that if difficult memories are not avoided or ruminated on, then individuals are able to adapt to their grief more quickly. The importance of maladaptive coping strategies in maintaining grief was further supported by near significant elevated responding in the HGS and the HGLA class compared with the LG class. Finally, the HGS class, as well as having difficulties with memory and negative beliefs were also more likely to have lost a child compared to those with low grief throughout the course of the study.

Theoretical implications

The results of these studies hold a number of theoretical implications. In line with previous research negative appraisals and maladaptive coping strategies were associated with greater grief severity and a chronic grief trajectory over time (Eisma, Schut, Stroebe, Boelen, et al., 2015; Eisma et al., 2013; Field & Bonanno, 2001; Shear, 2010; Shear et al., 2007; Stroebe et al., 2014; van der Houwen et al., 2010). In addition, the studies identified features of loss-related memories characteristics more common in people with severe grief symptoms. These may prove useful indicators of a loss that the individual still has to come to terms with, and as Boelen, van den Hout, et al. (2006) & Shear et al. (2007) hypothesise has yet to be integrated into the autobiographical memory base, resulting in symptoms of PGD. As

mentioned in chapter 1, many studies have focused on overgeneral memory to understand memory mechanisms important in PGD (Golden et al., 2007; Maccallum & Bryant, 2010b). Previous studies using the autobiographical memory task found that individuals with PGD were less able to remember specific past events without the deceased (Robinaugh & McNally, 2013). In line with this, our results also suggest that those suffering from PGD have more difficulty accessing autobiographical memories that do not involve the deceased, albeit assessed by self-report.

In chapter 1 it was suggested that the 'felt presence' of the deceased may be similar to the concept of 'affect without recollection' observed in PTSD (i.e. re-experiencing of affect without a conscious recollection of the trauma). Cues strongly associated with the deceased have the potential to involuntarily trigger a sense of the deceased's presence. This was hypothesised as a potential parallel process to the internal and external cues that trigger a sense of current threat in PTSD, a process that might lead to maladaptive coping and subsequent maintenance of the disorder (Ehlers, 2006). In responding to a 'felt presence' of the deceased an individual might then engage in coping behaviours aimed at restoring the connection to the deceased (e.g. proximity seeking) or avoiding reminders of the loss in an attempt to prevent the grief symptoms arising from the incongruence of the loss and the 'felt presence'. However, our results did not demonstrate a clear association between the memory items pertaining to the presence of the deceased (e.g. *'When something reminds me of [-], it feels as if they is here'*) and grief symptoms.

Given this, another possible candidate variable relevant to grief may be the temporal disjointedness of the loss memories. In PTSD, the worst moments of the trauma are thought to be insufficiently connected other relevant moments during the trauma memory and relevant information obtained after the trauma. Therefore, when involuntarily activated these memories give rise to a sense of threat that is happening in the present, as they are retrieved

without a context of information that gives them a less threatening meaning such as *'I did not die'* or '*It was not my fault'* (Ehlers & Clark, 2000). Within PGD, a similar process may be at play, if loss memories are disconnected in memory from other autobiographical information such as the finality or irrevocable nature of the loss, then activation of them may give rise to a sense that the loss has just happened or is happening in the present moment. Memories in PGD are often reported as different from PTSD in that they are bittersweet and therefore both positive and negative (Boelen, van den Hout, et al., 2006). However, in chapter 3, participants in the PGD group more readily reported experiencing involuntary or spontaneous negative memories and painful reactions to memories of pleasant events. Perhaps this is explained by the temporal disjointedness of the loss that activates a sense that the loss is happening now creating a lens through which both activated positive and negative memories can cause pain. The correlation of our memory scale with PGD symptoms provides some support for this hypothesis, with items such as *'when I think about [-] I will always think about how they died,' 'when I remember the loss, I feel the same emotions I felt at the time,' and 'my memories are like reliving my experience from the loss'*, but further research is needed to support this hypothesis.

Our results suggest that memory characteristics are not only associated with symptoms of grief severity measured at the same time but also predict grief severity over time. Individuals whose grief started high but showed quick resolution over the first year of loss (HGHA) over the first year of loss reported high loss-related memory characteristics but low levels of maladaptive coping and negative appraisals. From a cognitive perspective these results would suggest that features of loss-related memories pose an initial risk for grief symptoms but that the absence of cognitive factors that might block resolution of grief such as maladaptive coping and negative appraisals results in gradual integration of loss and the observed reduction in symptoms over time. Similarly, the observation that the HGHA class

reported more healthy dependency (i.e. a readiness to seek support when needed and a balanced satisfied view of one's relationships) fits with the reporting of lower levels of negative appraisals and maladaptive coping. Taken together these results suggest that this group may not have the necessary cognitive risk factors that make adaptation difficult in the presence of high memory characteristics. However, further research is needed to identify risk factors important in the development of the features of memory described here. One area worthy of further investigation may be cognitive processing style during the death. In a study of 265 mourners Boelen (2015) investigated, via cross-sectional mediation, whether peritraumatic emotional state (i.e. fear, helplessness, or horror) and peritraumatic dissociation mediated the relationship between violent or unexpected loss and symptoms of PGD and PTSD. They found that peritraumatic helplessness and peritraumatic dissociation independently mediated the effects of violent loss and suddenness of loss on PGD severity and PTSD severity. Previous research in PTSD has highlighted the importance of cognitive processing style (Halligan et al., 2003) such as data-driven processing (i.e. processing sensory impressions of the event) and mental defeat during the trauma (Ehlers, Maercker, & Boos, 2000) in predicting subsequent symptom severity. Future studies might aim to understand whether similar processes are relevant in predicting grief severity.

Additional theoretical implications can be taken from the results of chapter 6 that supported the prediction adapted from Ehlers and Clark's (2000) cognitive model that the effect of appraisals and memory characteristics on both PGD and PTSD symptoms is mediated via coping behaviours, in individuals at least 6 months post loss. The lack of mediation for depressive symptoms confirmed the specificity of these results. Somewhat contrasting results were observed in the mediation models of the recently bereaved (0-6 months) where significant mediation via coping strategies was observed for both memory characteristics and appraisals on all symptoms, including depressive symptoms suggesting

that, at least for PGD and depression, the influence of maladaptive coping gets weaker over time. These results are in line with previous research demonstrating that anxiously avoiding reminders of the loss predicted PGD and depression one year later, but only in those who were in their first 5 months of loss (Boelen & Eisma, 2015). The study found that beyond 12.5 months there was a trend for anxious avoidance to be associated with *reduced* depression one year later. The authors suggested that initially after a loss anxiously avoiding reminders of the loss interferes with loss elaboration and integration. However, they also suggested that later on after loss *not* avoiding may signal deliberately confronting the loss or maladaptive preoccupation with the loss which, might predict increased depression. While our results cannot elucidate whether there may be subtypes of coping strategies that actually become adaptive over time, our results suggest that for the newly bereaved the maladaptive coping strategies measured in the OG-CS have a particularly important role to play in grief severity.

Alongside this theory, there is some evidence from these data that the impact of cognitive predictors on grief severity can become more important over time. This can be observed in the results of chapter 5 and chapter 7. In the cross-sectional study reported in chapter 5 both social disconnection beliefs and grief resilience were associated with more severe grief reactions in the multivariate analysis. However, when measured in the first 6 months of loss in chapter 7 neither variable contributed unique variance to class membership. Perhaps this disparity can be explained by the extent to which social disconnection beliefs and grief resilience gain importance over time. Typically, early on in loss individuals are afforded the time to grieve by their social network; others 'check in' with them and offer support when needed. However, after the first few months social networks disengage from the loss, less time is offered to the bereaved individual for their grief, and an expectation that the bereaved person 'moves on' is perpetuated. It is likely that this promotes experiences of

social disconnection beliefs and fosters fears regarding expressions of grief in social situations. Given this definition it is possible that social disconnection beliefs acts as a precursor to loneliness which has previously been shown to act as a maintenance factor to both PGD (Robinaugh, LeBlanc, Vuletich, & McNally, 2014) and depression (Cacioppo, Hawkley, & Thisted, 2010). Similarly, the concept of grief resilience in the first 6 months following loss may be relatively meaningless because it represents something which cannot yet be known, an expectation about one's resilience that is yet to be borne out. Given that grief resilience beliefs were reduced in all of the clinical groups (PTSD, PGD, PGD+PTSD) compared to those with low symptoms in the cross-sectional study in chapter 5 it is possible that they reflect whether mental health problems have occurred or not as opposed to being necessarily predictive of persistent problems.

A number of studies have shown that the influence of cognitive predictors on grief severity can change over time (Boelen & Eisma, 2015; Field et al., 2003). As mentioned in chapter 1, using fond memories to feel connected to the deceased was adaptive in the first 6 months of loss (Field et al., 1999), while any form of continuing bonds either internal (via memories or appraisals), or external (through use of possessions) was associated with more severe grief reactions 5 years post-loss (Field et al., 2003). Future studies using this data set could repeat the analyses of chapter 5 using the subscales of predictors at each time point of the longitudinal data set presented in chapter 7 to further elucidate whether the association of grief severity and cognitive predictors changes over time and the extent to which certain predictors are adaptive or maladaptive.

Clinical implications

The findings of this thesis have a number of clinical implications. The OG-A and the OG-CS provide a comprehensive assessment of appraisals and coping behaviours associated

with PGD, and thus could be used to identify cognitive targets for therapy. For example, an individual who fears losing connection to the deceased and engages in proximity seeking behaviours aimed at restoring emotional closeness with the deceased may benefit from behavioural experiments involving dropping these behaviours to test out whether their worst fears regarding losing connection to the deceased are confirmed. In the interviews conducted in chapter 3 a participant worried that she would forget her husband if she did not have multiple pictures in every room. She was concerned that she would forget the good times she had with him and would only remember his death, as this was the most prominent memory in her mind at the time. Here a behavioural experiment might be designed to see if the individual was able to deliberately recall any positive memories if the photographs were covered for one day. This could then be gradually increased to two days and so on to alter the beliefs that the deceased would be forgotten if multiple external memory aids were not present.

Given the availability of the death event in memory and easy triggering, elaboration of this traumatic memory and discrimination of triggers would be expected to lead to a reduction in automatic cue-driven activation (Ehlers & Clark, 2000). Working with unwanted memories to reveal the underlying meaning of the worst moments may reveal insights that point to objective updates that can be linked to these moments in memory. As already mentioned, what might be activated in response to grief-related memories is the 'nowness' of the loss that leads to it feeling as if it has just happened or is happening now. This feeling of nowness creates incongruence with the sense of self and a clash in awareness regarding the permanence of the death. For example, an individual who witnessed his best friend die had the thought "Oh my god, he's going to die" benefited from an update that affirmed the temporal position of the memory and emphasised the aspects of the death that

brought him comfort (i.e. "He did die but he wasn't alone, I was with him.") This in turn might lead to positive memories being more readily accessible.

Similarly, understanding the features of loss-related memories that are disconnected from the full realization of the loss and are incongruent with an individual's current self-image is likely to prove useful in therapeutic contexts. The OG-M can act as metric of loss-memory resolution and can guide clinicians by highlighting the features of memory most problematic for their clients. For example, someone who reports strong bodily sensations of loss may benefit from gently building their tolerance to what is felt in their body and getting to know these sensations without trying to interpret them by making an anchor such as the breath or the sounds in the room the main focus. In this respect, attention training and mindfulness exercises may be beneficial in building tolerance to the bodily sensations that accompany grief (e.g. pain and fatigue).

Results from chapter 7 suggested that regret beliefs were significantly associated with grief rumination (e.g. items regarding the deceased's suffering, and counterfactual thinking such as 'what if' and 'if only I had' thoughts). Here cognitive restructuring could be explored to determine the origin of the regret beliefs and establish if any evidence contrary to these beliefs can be derived. Alternatively post loss conversations with the deceased can be role-played in an attempt to gain access to the deceased's perspective on these beliefs, or to allow the bereaved individual to express what they wish had happened instead. In line with these techniques, education and strategies for recognising and limiting rumination (e.g. worry time, distraction with self-care) may be beneficial.

The results of chapter 5 indicate that suffering from both PGD and PTSD is associated with elevated memory characteristics and this elevation is more than just the sum of the consequences of each disorder. Previous research investigating risk factors for PGD+PTSD, have either not compared this group to a PGD or PTSD alone group (Djelantik

et al., 2017; Lenferink et al., 2017) or failed to find a unique effect (Maccallum & Bryant, 2018). Our results suggest that comorbidity of PGD and PTSD is associated with additional difficulties of memory that may make memory work with this clinical group particularly useful.

Time course of symptoms

The results of chapter 6 suggest that in the first 6 months of loss coping strategies wield greater influence over the impact of memory and appraisals on grief severity than 6 months post-loss. However, interestingly the impact of coping behaviours did not seem to change with time in PTSD. One possible explanation for this difference in the relative importance of coping strategies may come from the time frame of 'natural resolution' expected for both disorders. Following, a trauma, if symptoms persist, a PTSD diagnosis can be obtained after one month while natural resolution of grief is expected in 6-12 months. This distinction points to disparate speeds of natural resolution that may also point to differences in the emphasis on maladaptive coping. Even assuming the absence of maladaptive coping, it is likely that grief memories and related negative appraisals may take longer to self-correct than trauma memories and yearning may take longer to resolve than fear. Therefore, when presented with the absence of an attachment figure it is possible that even low levels of coping behaviours have the ability to stall loss integration and self-correction of negative appraisals in a process that already takes on average 6-12 months to complete. Therefore, these results suggest that early assessment and intervention may be suitable if only to encourage a reduction in maladaptive coping strategies that may interfere with natural resolution of grief responding. These results are further supported by the cognitive correlates of the HGHA class in chapter 7. Higher endorsement of loss-related memory characteristics were not associated with concurrent maladaptive coping in this class, which may explain

their reduction in grief severity over the first 12 months of loss. However, the implications of these findings may prove controversial given that they point to intervening within the time frame of 'natural recovery.' Research has shown that very brief interventions for all in the aftermath of traumatic events (Rose, Bisson, Churchill, & Wessely, 2002) and bereavement (Schut & Stroebe, 2005) are at best ineffective and at worst can interfere with natural resolution and prove harmful to the individual. However, rather than suggesting that a high level of grief is in itself a risk factor for PGD we have identified modifiable cognitive predictors that when assessed in the first 6 months of loss could help in evaluating whether an individual is high risk and may therefore benefit from specialist support. For example, high grief in the presence of less upsetting interpretations about the bereavement and low engagement with maladaptive coping styles was shown to be associated with faster resolution. A number of reviews regarding the efficacy studies for bereavement interventions found increased efficacy in outreach interventions that screened for high risk individuals such as those bereaved through homicide or the concurrent loss of multiple family members under traumatic conditions (Currier, Neimeyer, & Berman, 2008; Schut & Stroebe, 2005). However, the therapeutic effects were either very modest (Schut & Stroebe, 2005), or disappeared at follow-up (Currier et al., 2008). In the studies presented in this thesis mode of death was not associated with grief severity over time therefore, perhaps screening for a constellation of cognitive factors may be more effective in identifying high risk individuals for whom specialist support may prove beneficial.

In chapter 7 we found that losing a child was a significant predictor of a severe and enduring grief reaction in the first 12-18 months of loss. Interestingly, although this group demonstrated significantly elevated memory characteristics, appraisals, and, at trend level, coping strategies in comparison to the low grief class, they did not differ in these cognitive factors from the next most severe group (HGLA) when all of the shared variance between

variables was accounted for. In addition, in a comparison of the HGS and the HGLA classes, losing a child approached significance and was the only predictor to distinguish between them. This suggests that losing a child is the strongest predictor of unrelenting grief in the first 12-18 months and implies that natural grief resolution may be unrealistic for bereaved parents within this time frame. However, the cognitive factors identified in this thesis point to potential targets that may be explored with bereaved parents in an attempt to build resilience to grief symptoms.

Social processing and grief

The identification of social disconnection beliefs as an additional concept relevant to grief severity has potential clinical implications. This process of appearing to be one way in social situations while being in a different internal state likely requires a number of emotion regulation strategies and is particularly relevant after trauma or bereavement. As life for those around them continues, the bereaved individual is left to navigate the mourning process in which their internal working models of their relationship to the deceased, the world and others are revised. During this time individuals must employ a number of strategies to keep from becoming overwhelmed by the emotion of their loss. Gross (2014) suggested five processes of emotional regulation (i.e. situation selection, situation modification, attentional deployment, cognitive change, and response modulation) that are relevant to the social disconnection beliefs described in this thesis. Excerpts from the qualitative data from chapter 3 evidence that all five strategies are employed when trying to adapt to bereavement. Situation selection and modification *('I only go if I know I can leave when I want to, or I do sometimes tell a lie saying I need to be elsewhere when I don't'*), attentional deployment ('*I can be there, say all the right things, smile and I feel not always totally involved. I feel as if I'm an actress playing a part'*), cognitive change ('*If I'm worried about being around others sometimes if I just give myself the permission to go home that's enough to relax me and I*

sometimes end up not going home'), response modulation *('I make it up, I say I have 4, 5, 10 children. Anything to avoid saying I had 2 but one died'*). Given the effort involved in these processes it is understandable how some individuals go on to experience the social disconnection beliefs described here. Clinical approaches targeting social disconnection beliefs might start by helping an individual build a range of the emotion regulation strategies described here so that social situations can become less threatening. Alternatively, if the individual is very socially isolated, strategies aimed at building support networks or educating those in the existing network about grief responding may be helpful to address social disconnection beliefs.

Limitation and future studies

This thesis has a number of limitations. Throughout this thesis subjective self-report measures were employed to measure both independent and dependent variables. Therefore, in chapter 5 only probable diagnoses of PGD and PTSD could be determined, and the influence of response bias such as social desirability and method variance cannot be ruled out in other chapters. The high correlation between predictors necessitates large samples to reveal unique effects and although all studies were adequately powered for their chosen analyses, more participants may have allowed for further correlates to be identified. We also note that our sample was predominantly white and female therefore our findings may not generalise to other samples and should be confirmed in future studies to ensure gender equality and cultural sensitivity.

Conclusion

Notwithstanding these limitations, this thesis makes a number of theoretical and clinical contributions to the grief literature, building on predictions derived from Ehlers and

Clark's (2000) cognitive model for PTSD and the corresponding highly successful treatment programme (e.g., Ehlers, Clark, Hackmann, McManus, & Fennell, 2005; Ehlers et al., 2014). It shows that modifiable cognitive predictors (appraisals, memory characteristics, coping strategies) identified early in loss predict concurrent and subsequent grief severity over time. These cognitive predictors explained more variance in grief symptoms than pre-loss individual differences and loss characteristics such as mode of death, attachment style, and kinship in those bereaved at least 6 months. The thesis systematically developed psychometrically validated measures for these constructs for use in future studies. The results of this thesis point to a number of cognitive concepts that may be targeted in therapy to make grief support more effective, efficient, and evidence-based.

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Appendices

Appendix I – Ethical approval

CONFIDENTIAL

Ref: MS-IDREC-C1-2015-032

Dr Kirsten Smith
Department of Experimental Psychology
University of Oxford
South Parks Road
Oxford

19th February 2015

Dear Dr Smith

CUREC checklist

I am writing to acknowledge receipt of your CUREC-1 form for your project: **Memory Processes, thoughts and coping strategies in complicated grief**

On the basis of the information you have provided this has now been approved by the Medical Sciences IDREC **subject to:**

a) **your following the BPS guidelines for online research;**

b) **your agreeing to follow protocol MSD-IDREC-2006-P4.2**

c) **it is your responsibility to comply with the requirements for administering any tests or questionnaires and if in doubt to contact the publisher of those tests or questionnaires.**

The reference number for this project is **MS-IDREC-C1-2015-032** and is valid for a period of **9 months** from the CUREC 1 approval date, **18th February 2015.** Please may I remind you that your project may be reviewed at some stage during an annual audit of projects.

Amendments

Should you at some stage alter some of the techniques or procedures then you should first undertake a checklist (CUREC-1) to see whether these changes alter the ethics of the research. If these remain the same then the committee will require notification of the changes to lodge with the project. If they do not remain the same then you may need to complete a CUREC-2 form and undergo further scrutiny by the committee.

Please do not hesitate to contact me if you have any queries about this.

Yours sincerely

Gill Halstead

Gill Halstead
Research Ethics Co-ordinator, Medical Sciences

Appendix II – Information sheet for participants

Memory processes, thoughts, and coping strategies in prolonged grief

Information sheet for participants

Invitation

You are being invited to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

What is the purpose of the study?

Grief is often one of the most heart-breaking experiences that any of us will ever go through. It can involve distressing thoughts, feelings and memories that come to mind on a daily basis. This research is aimed at understanding more about memories during a loss, the ways in which we think about and respond to our loss and how these things relate to each other. We aim to use this information to develop more effective treatments for those who have lost someone important to them. We are looking for about 30 participants in total.

Why have I been chosen?

We are looking for participants aged 18 and above who have lost a close loved one and are willing to answer questions about their experiences of grief.

Do I have to take part?

It is up to you to decide whether or not to take part. If you decide to participate you would be given this information sheet and be asked to sign a consent form. You will be free to withdraw at any time, without giving a reason and without penalty. If you are a student or

member of staff of the University of Oxford, whether or not you participate does not in any way affect your course or employment. Any information about you arising from the research will not be disclosed to your college, department or faculty. The study is not part of the NHS and does not affect any treatment you receive in the NHS at the moment or in the future.

What will happen to me if I take part?

The study will consist of one research session taking approximately 2 hours of your time.

1. If you agree to take part, you will first be asked to sign a consent form and given some questionnaires to complete either online or in a paper pack. They measure a range of factors, such as how you feel and how you sleep, for example. All questionnaires are confidential and there are questions you do not want to answer you may leave them blank. You will then be contacted by the researcher to arrange a convenient time to meet.

2. At your appointment, the researcher will then talk to you about certain aspects of your bereavement. This session will be video taped or audio taped depending on your preference. There will also be a memory task that involves trying to remember some events. This should not take more than 2 hours.

You will be given £20 for taking part in this study to compensate you for your time.

Please note that:

- You can decide to stop participating at any point.
- You need not answer questions that you do not wish to.

What are the possible risks and benefits of taking part?

It is possible that a discussion about grief may result in feelings of distress. This is a normal reaction when discussing difficult experiences and would be expected to subside back to pre-interview levels within a short space of time. We hope that, by carrying out this research, we can get a better understanding of prolonged grief reactions that may help with the development of more effective treatments for those that need it.

What if something goes wrong?

If you have a concern or complaint about any aspect of this project, please speak to the projects' director, Professor Anke Ehlers (01865 618600). The researcher should acknowledge your concern within 10 working days and give you an indication of how she intends to deal with it. If you remain unhappy or wish to make a formal complaint, please contact the chair of the Research Ethics Committee at the University of Oxford (Chair, Medical Sciences Inter-Divisional Research Ethics Committee; Email: ethics@med-sci.ox.ac.uk; Address: Research Services, University of Oxford, Wellington Square, Oxford, OX1 2JD). The chair will seek to resolve the matter in a reasonably expeditious manner.

Would my taking part in this study be kept confidential?

Information that is collected about you during the course of the research would be kept confidential. Any information about you will be assigned a number, and will not have your name on it, so you cannot be recognised from it. Confidentiality would be breached only in the very rare circumstance that it was judged that you or someone else was at immediate risk of serious harm. In these circumstances only information necessary to ensure safety would be released.

What would happen to the data collected as part of this research?

Data collected as part of this research will be stored in accordance with the data protection act, will be accessible only to members of the research team, and will be destroyed after a period of 10 years.

What would happen to the results of the research?

The results will be published in a research journal and used as part of a doctoral thesis. Any research publications would not identify you individually. If you wish to obtain a copy of the published results, please inform the researcher. We will be delighted to send them to you when they are available.

Who is funding and organising the research?

This is one of a series of studies that has been funded by The Wellcome Trust (a medical charity).

Who has reviewed the study?

This study has been reviewed by, and received ethics clearance through, the University of Oxford Central University Research Ethics Committee.

Contact for further information: Dr Kirsten Smith (Clinical Psychologist, Oxford University), Tel: 01865 618606, email: kirsten.smith@psy.ox.ac.uk)

Professor Anke Ehlers, (Professor of Experimental Psychopathology, Oxford University), Tel: 01865 618600, email: anke.ehlers@psy.ox.ac.uk)

Appendix III – Negative grief-related appraisals

Chapter 2 - Grief-related appraisals 52 items.

Changed self 6 items

A_1 Changed self I am not a whole person anymore.

A_2 Changed self Without [-] I can never be strong again.

A_3 Changed self I have lost my sense of who I am in the world.

A_4 Changed self I have changed and can never be my old self again

A_5 Changed self I can never feel any pleasure again

A_6 Changed self Since [-] died, I believe I am worthless.[a]

Self blame 6 items

A_7 Self blame I've done something bad and now I'm being punished

A_8 Self blame I was a bad spouse/ parent/ child/ friend to [-] and now I am being punished.

A_9 Self blame I am full of regrets about missed opportunities during our time together.

A_10 Self blame I blame myself for saying unpleasant things to [-].

A_11 Self blame I will never be able to forgive myself for the things I did wrong in the relationship with [-].[a]

A_12 Self blame I blame myself for things I did or did not do when [-] was alive.

Negative interpretations 5 items

A_13 Negative interpretation of grief My reactions mean I am a weak person.

A_14 Negative interpretation of grief If I start to cry I won't be able to stop.

A_15 Negative interpretation of grief If I let go of my emotions, I will go crazy.[a]

A_16 Negative interpretation of grief If I allow my feelings to come, I will lose control.[a]

A_17 Negative interpretation of grief If [-]'s death fully hit me, I would go crazy.

Not accepting the death 5 items

A_18 Not accepting the death I still cannot believe that [-] is gone.

A_19 Not accepting the death I wish I had died instead of [-].

A_20 Not accepting the death [-]'s death should have been prevented.

A_21 Not accepting the death I will never be able to make sense of the death.

A_22 Not accepting the death I wish I could join [-] in the afterlife rather carrying on like this.

Self blame about the death 4 items

A_24 Self blame about the death I blame myself for not having cared better for [-].[a]

A_25 Self blame about the death [-] must have suffered at the end and I was not there to comfort them.

A_26 Self blame about the death I am partially responsible for [-]'s death.[a]

A_27 Self blame about the death I should have prevented the death because I had a feeling something bad was going to happen.

Fear of losing connection to the deceased 8 items

A_35 Fear of losing connection If I don't do everything I can to feel close to [-] I will lose them forever.

A_36 Fear of losing connection Letting go of my grief would mean betraying [-].

A_37 Fear of losing connection Keeping [-] alive in my mind is the most important thing in my life now.

A_38 Fear of losing connection As long as I mourn I will still hold on to [-][a].

A_39 Fear of losing connection Moving on with my life would betray them.

A_40 Fear of losing connection If I let go of [-] there will be nothing left in my life.

A_41 Fear of losing connection If I do not feel [-]'s presence, something is wrong with me.

A_42 Fear of losing connection If I cannot bring [-]'s face to mind, I have lost my connection with him/he forever.

Relationships with other 9 items

A_44 Relationships with others If I show my real feelings other people will think I am not normal.

A_45 Relationships with others If I am seen to be enjoying myself socially other people will think I am behaving disrespectfully.

A_46 Relationships with others Many people have let me down after [-]'s death.

A_47 Relationships with others I cannot maintain previous relationships without [-].

A_48 Relationships with others I cannot make new relationships without [-].

A_49 Relationships with others Investing in new relationships would be a waste of my time.

A_50 Relationships with others I do not care about other people.

A_51 Relationships with others Other's would judge me if I were to speak openly about my grief.

A_52 Relationships with others I can never be close to other people again.

Hopelessness of life 9 items

A_55 Hopelessness of life/future I cannot make any plans for the future.

A_56 Hopelessness of life/future I can’t imagine anything good in my future.

A_57 Hopelessness of life/future I don’t expect that I will feel better in the future.

A_58 Hopelessness of life/future There is no point achieving anything if [-] is not here to see it.

A_59 Hopelessness of life/future My life has no purpose anymore, since [-] died.[a]

A_60 Hopelessness of life/future Life had got nothing to offer me anymore.[a]

A_61 Hopelessness of life/future My life is meaningless since [-] died.[a]

A_62 Hopelessness of life/future The death of [-] has taught me that the world is a worthless place.[a]

A_63 Hopelessness of life/future It is unfair that I have to suffer while other people can just get on with their lives.

[a] Indicated items retained from the Grief Cognitions Inventory (Boelen & Lensvelt-Mulders, 2005)

Chapter 3 - Grief-related appraisals additional 17 items.

Death Attitudes 5 items

A_28 Death attitudes I find it frightening to think that there may be nothing after death.

A_29 Death Attitudes (secular) I like to think that [-] is still out in the universe somewhere.

A_30 Death Attitudes (secular) I get comfort from the idea that [-]'s essence still exists somewhere.

A_31 Death attitudes (religious) I believe that we pay for our actions in the afterlife.

A_32 Death attitudes (religious) I believe in an afterlife that is free from suffering.

Mortality communication 6 items

MC_1 Mortality communication I avoided talking about death.

MC_2 Mortality communication [-] was unable to talk about death.

MC_3 Mortality communication I knew what their wishes would be in the event of their death

MC_4 Mortality communication I did not talk to [-] about what my life would be like after they were gone.

MC_5 Mortality communication I had the opportunity to say goodbye

MC_6	Mortality communication	I had the opportunity to tell [-] what they meant to me.

Idealisation of the deceased 6 items

A_66	idealisation of the deceased	Since [-] died, I find it hard to love anyone.
A_67	idealisation of the deceased	Since [-] died, I care less about friends and family.
A_68	idealisation of the deceased	[-] was a much better person than everyone else.
A_69	idealisation of the deceased	No-one compares to [-].
A_70	idealisation of the deceased	I never had stress in my relationship with [-].
A_71	idealisation of the deceased	[-] was one of a kind and no-one can fill his/her place.

Boelen, P. A., & Lensvelt-Mulders, G. J. (2005). Psychometric properties of the grief cognitions questionnaire (GCQ). *Journal of Psychopathology and Behavioral Assessment, 27*(4), 291-303. doi:10.1007/s10862-005-2409-5

Appendix IV – Maladaptive coping strategies

Chapter 2 – Maladaptive Coping Strategies 28 items.

Proximity seeking 7 items

Cb_1 Proximity seeking I bring images of [-] to mind even if they are painful.

Cb_2 Proximity seeking I bring images of [-] to mind.

Cb_3 Proximity seeking I feel bad if I don't visit the grave/where ashes were scattered.

Cb_4 Proximity seeking I feel compelled to touch things that [-] touched (e.g. belongings, chairs, beds).

Cb_5 Proximity seeking I feel compelled to surround myself with things that [-] liked

Cb_6 Proximity seeking I am still carrying out a routine as a way of caring for [-].

Cb_7 Proximity seeking I neglect other things because I spend a lot of time doing things for [-] (e.g. creating memorials).

Avoidance 7 items

Cb_8 Avoidance of grief I avoid eating foods and meals that we shared or [-] liked.

Cb_9 Avoidance of grief I avoid making any changes to my life since [-] death.

Cb_10 Avoidance of grief I avoid places we went together.

Cb_11 Avoidance of grief I avoid certain places in the home we shared.

Cb_12 Avoidance of grief I try to avoid spending time in the home we shared.

Cb_13 Avoidance of grief I avoid watching television programmes that remind me of [-]_ or death in general.

Cb_14 Avoidance of grief I avoid people who knew [-].

Rumination 14 items

Cb_15 Rumination I can't stop thinking about how much [-] suffered.

Cb_16 Rumination I think over and over about how it could be that this happened.

Cb_17 Rumination I can't stop thinking about how afraid [-] was

Cb_18 Rumination I think about the unfairness of the loss.[a]

Cb_19 Rumination I think over and over about how others failed to prevent [-] suffering.

Cb_20 Rumination I dwell on moments that could have changed the outcome

Cb_21 Rumination I think over and over about what I could have done to prevent the death/ease [-] suffering.

Cb_22 Rumination I go over and over how our last moments could have been more fulfilling.

Cb_23 Rumination I ask myself why I deserved this loss.[a]

Cb_24 Rumination I think repeatedly about the ways in which I wronged [-]

Cb_25 Rumination I spend a lot of time thinking about joining [-] in the afterlife.

Cb_26 Rumination I think about how I would like others to react to the loss.[a]

Cb_27 Rumination I ask myself whether I get adequate support from friends or family members?[a]

Cb_28 Rumination I dwell on the things we won't get to do together.

[a] Items retained from the Utrecht Grief Rumination Scale (UGRS) (Eisma et al., 2014)

Chapter 3 – Maladaptive Coping Strategies 8 additional items.

Death attitudes 3 items

Cb_29 Rumination (secular) I worry that [-] has not found peace wherever they are.

Cb_30 Rumination (religious) I worry that the afterlife has not been kind to [-].

Cb_29 Rumination (religious) I worry that [-] has not found peace in the afterlife.

Control strategies 5 items

Cb_34 control strategies I make an effort to hold back my feelings

Cb_35 control strategies In the company of others I try hard to stop myself from breaking down.

Cb_36	control strategies	If I don’t have a plan for the next day then I feel panicked.
Cb_37	control strategies	If I don’t have a full diary to keep me occupied then I worry I won't cope.
Cb_38	control strategies	If a painful thought comes to mind I immediately distract myself

Eisma, M. C., Stroebe, M. S., Schut, H. A., van den Bout, J., Boelen, P. A., & Stroebe, W. (2014). Development and Psychometric Evaluation of the Utrecht Grief Rumination Scale. *Journal of Psychopathology and Behavioral Assessment, 36*(1), 165-176.

Appendix V – Research Support Leaflet

FIND YOUR LOCAL NHS PSYCHOLOGY SERVICE

IAPT (Increasing access psychological to therapies) - This national service provides evidence-based treatment for many psychological difficulties. Staff are trained therapists and psychologists and most services accept self-referrals.

To find your local service visit: **http://www.nhs.uk/Service-Search/Counselling-NHS-(IAPT)-services/LocationSearch/396**

Supported by wellcome trust

ASSIST Trauma Care (01788 560800) - ASSIST therapists are available following a traumatic bereavement to provide both specialist therapy and also telephone and face-to-face support. If you are taking part in this research as an **ASSIST client** and would like support then you can call the above number 24 hours a day and leave a message. **This mailbox is monitored and you will receive a response ASAP.**

http://www.assisttraumacare.org.uk/

OTHER HELPFUL ORGANISATIONS

SANEline (0845 767 8000) Confidential emotional support, practical help and information for people with mental health problems.

Mind Infoline (0300 123 3393) - Provides information on a range of mental health topics as well as advocacy and legal advice. Open 9am to 6pm, Monday to Friday (except for bank holidays).
www.mind.org.uk/
info@mind.org.uk

Depression Alliance is a charity for people with depression. It does not have a helpline, but offers a wide range of useful resources and links to other relevant information. You can find them online at **www.depressionalliance.org**

UNIVERSITY OF OXFORD

THE OXFORD GRIEF STUDY

Sometimes things can feel out of control and hopeless. This leaflet contains information about how you will be looked after during this research and services that may be helpful if you feel that you need some extra support throughout this research or throughout the grieving process.

If you have any questions please contact the chief investigator:

Dr Kirsten Smith
01865618606
kirsten.smith@psy.ox.ac.uk

the LOSS foundation

WHAT TO DO IN A MENTAL HEALTH CRISIS



If you are finding it difficult to cope and struggling to keep yourself safe then we recommend contacting your GP in the first instance.

If you are unable to get in touch with your GP then your local **Accident and Emergency Department** will be able to make sure that you feel supported**.**

Talking to someone can help you see beyond feelings of loneliness or despair and help you realise there are options.

The following services can be helpful in times of need:

Helplines / Other organisations

Samaritans (08457 90 90 90) Samaritans have heard many people's stories and you can discuss anything with them in complete confidence. You **don't** have to be suicidal to call for help. They operate a 24-hour service available every day of the year. If you prefer to write down how you are feeling, or if you are worried about being overheard on the phone, you can email Samaritans at **jo@samaritans.org**

Cruse Bereavement Care (0808 808 1677) The Cruse National Helpline is staffed by trained bereavement support volunteers who offer emotional support to anyone affected by bereavement. Their volunteers are there to help you talk things through. They can also help you find your local Cruse service, or signpost you to support groups, financial advice, and other useful sources of information. The telephone helpline is open Monday-Friday 9.30-5pm, with extended hours on Tuesday, Wednesday and Thursday evenings, when they are open until 8pm.

Bereavement Advice Centre (0800 634 9494) - Helpline (9.00-5.00 Mon-Fri) & web-based information service offering support, information & advice about what to do after a death & the practical issues & procedures that people may face.

Charities offering loss specific services

The Loss Foundation is a charity for those who have lost loved ones to cancer, it does not have a helpline however it does run monthly supportive events and has a wealth of online bereavement resources. **www.thelossfoundation.org**

Maggie's - Offers bereavement support to those affected by cancer through support groups & individual counselling. The Maggie's national website hosts an on-line facilitated bereavement support group. **www.maggiescentres.org**

Compassionate Friends (0845 123 2304) Bereaved parents who offer support & friendship to parents whose child has died at any age & from any cause. Support is also available for bereaved adult siblings. Open daily 10-4, 7pm -10pm
www.tcf.org.uk
helpline@tcf.org.uk

Appendix VI – Semi-structured interview schedule

Prompts are in red

Memories

Do you have memories of your loved one that pop into your mind repeatedly?

Can you describe these memories?

Can you recall a recent memory that has come to mind? Tell me a little about it, what happens then, sensory information, *then summarise it back to them*. "So you see ……"

What does this memory mean to you? What does it say about you as a person/your loved one/other people/the world?

If seems to be associated with negative emotion - What is so bad about that?

In the memory is your loved one alive and well/alive and unwell/not alive?

Can you describe what happens in your body when these memories come up?

Feelings?

Saddness, pain, anger, guilt any others?

What triggers these memories?

What do you do when these memories come into your mind?

Felt Presence

Do you sometimes feel that your loved one is present NOW?

If yes:

How do you see or feel the presence of your loved one?

How do you feel when this happens?

What triggers it?

What do you do when you feel the presence? Do you talk to them?

In your mind? Aloud

If no, did you expect to feel them more than you do? How does it make you feel that you don't? Can you think of a recent time when you expected to feel them and didn't? Did any thoughts go through your mind? Images? Feelings? Physical sensations?

Where do you think your loved one is now?

Yearning

Do you find yourself overcome with strong feelings of yearning/longing/wishing for your loved one?

What is this like, can you describe how it feels?

Sadness, pain, anger, guilt any others?

Does it come with any Physical Sensations?

Where in body? Describe, how long does it go on for, constant, intermittent

Do any images come to your mind during this time?

Are these images you've seen or experienced before? New ones?

Can you recall a recent image that has come to mind? Tell me a little about it, what happens then, sensory information, *then summarise it back to them.* "So you see ……"

What does this image mean to you? What does it say about you as a person/your loved one/other people/the world?

If seems to be associated with negative emotion - What is so bad about that?

What does it mean to you that you have images of your loved one?

Does it involve any thoughts?

Recent example as above

Are they the same ones every time or different one? Similar meaning?

When you feel a longing for your loved one, do any thoughts come to mind?

What triggers this experience for you?

How about when you sit and think about them?

Seeing belongings of theirs (clothes/photographs/personal items)

Places you used to go

Things you used to do together

What is it you yearn for? To be with them? If participant says 'to be with them' then ask:

What is it about being with them that you long for: Feeling understood/ supported? To talk to them? To be held by them? To be touching them?

What do you do when you find yourself yearning?

What brings it to an end?

Coping Behaviours

Are there things that you do to make yourself feel better when things feel particularly difficult?

Look at photographs? Go to grave? Talk/imagine I am talking to them?

Can you recall a recent time you have done this? Tell me a little about it, what happens then, sensory information, *then summarise it back to them.* "So you see ……"

What does doing this mean to you? What does it say about you as a person/your loved one/other people/the world?

If seems to be associated with negative emotion - What is so bad about that?

(Explore meanings)

When you do X(whatever they say), what goes through your mind?

Reduce/increase thoughts?

What effect do these activities have on the way you?

feel emotionally

Reduce/increase emotion?

in your body

Reduce/increase sensations?

Are there things that you do to try and avoid thinking about your loss or your loved one?

Belongings? Other people? Recent example as above

Are there things that you do to try and feel close to your loved one?

Look at photographs? Go to grave? Talk/imagine I am talking to them? Recent example as above

When you do X coping behaviour, what goes through your mind? (to get at thoughts)

what goes through your mind?

Reduce/increase thoughts?

How does that make you feel emotionally?

Reduce/increase emotion?

In your body

Reduce/increase sensations?

Rumination

Do you find yourself going over and over the loss of your loved one?

What is it you mainly think about when this happens? (ALSO USE QUESTIONNAIRE TO HELP WITH PROMPTS)

The death?

The circumstances surrounding the death?

What they would be like now?

The gap they left in your life?

How your loss could have been avoided?

How unfair it is?

Do any images come up when thinking about these things?

Are these about something that has already happened?

Something that might happen in the future?

What triggers these thoughts?

Seeing items that belonged to them? Doing a particular activity? Being around others?

Is there anything that you go over again and again in relation to the death?

What others could have done? What you could have done? What the deceased could have done?

Is there anything you imagine telling them over and over/wish they knew?

Support from others

How do you feel others have supported you since the death?

Friends? Other family members? Those you expected to be there?

How have they been helpful and unhelpful?

How does this make you feel?

What effect does their behaviour have on the way you?

Feel about the death?

Yourself and your life?

Others?

Related to them and others in the future?

Since the death:

Do you feel different relating to other people?

Do you think that other people relate differently to you?

Do you think other people view you differently?

How do you feel in the company of others?

Is there anything that stops you socialising with others?

Do you avoid the company of others?

Are there activities you have now given up that you used to enjoy?

Considering everything that we have talked through what is the worst thing for you about losing that person?

What is the most difficult thing for you in every day life for you since the loss?

Appendix VII – Loss-related memory characteristics

The following question are related to the ways in which people sometimes describe **HOW THEY REMEMBER THE LOSS OF THEIR LOVED ONE.**

Please rate the extent to which these statements applied to how you remembered your loss **IN THE PAST MONTH** by circling the appropriate number. There are no right or wrong answers.

		Statement applies to me				
SINCE THE DEATH ...		**Not at all**	**A little**	**Moderately**	**Strongly**	**Very strongly**
1.	The memories of [-]'s death make my body ache with overwhelming fatigue.	0	1	2	3	4
2.	The physical pain of loss is something I carry everywhere.	0	1	2	3	4
3.	When I remember the loss it feels unreal.	0	1	2	3	4
4.	Seeing other people with their partners or families makes me painfully aware of my loss	0	1	2	3	4
5.	Many different things trigger distressing memories of the loss	0	1	2	3	4
6.	If my mind is distracted from my grief for a while it will hit me like a wave later.	0	1	2	3	4
7.	I am reminded of the loss for no apparent reason.	0	1	2	3	4
8.	When I remember the loss, I feel the same emotions I felt at the time.	0	1	2	3	4
9.	When I try to remember good times we have shared, memories of the loss pop up.	0	1	2	3	4
10.	The loss feels as if part of my body is missing,	0	1	2	3	4
11.	Many things in everyday life trigger overwhelming sadness.	0	1	2	3	4
12.	Music triggers upsetting memories.	0	1	2	3	4
13.	When I think of [-] all I can remember is their suffering.	0	1	2	3	4
14.	When I think about [-] I will always think about how they died.	0	1	2	3	4
15.	I have trouble bringing to mind an image of [-].	0	1	2	3	4
16.	It is difficult to remember times when [-]	0	1	2	3	4

SINCE THE DEATH ...		Statement applies to me				
		Not at all	A little	Moderately	Strongly	Very strongly
	was well.					
17.	It is comforting to feel how [-] would have reacted in situations.	0	1	2	3	4
18.	When I an unsure about something I remember what [-] would have said.	0	1	2	3	4
19.	My memories of [-] are so vivid it feels like they are here.	0	1	2	3	4
20.	When something reminds me of [-], it feels as if they are here.	0	1	2	3	4
21.	[-]'s presence still feels very real.	0	1	2	3	4
22.	When I remember things we did together it feels like I am no longer the same person.	0	1	2	3	4
23.	Our memories together are a source of strength for me to keep going	0	1	2	3	4
24.	Memories of things we did together are painful.	0	1	2	3	4
25.	Funny memories of our time together can still make me smile without upsetting me.	0	1	2	3	4
26.	I have difficulty remembering events from before [-]'s illness/ death.	0	1	2	3	4
27.	Even nice memories cause me to feel significant pain.	0	1	2	3	4
28.	I struggle to remember positive times by myself	0	1	2	3	4
29.	Looking at a calendar mainly reminds me of the bad things that happened on the days.	0	1	2	3	4
30.	When I remember something I did in the past, it feels like I am no longer the same person.	0	1	2	3	4
31.	I hardly remember anything that I did without [-].	0	1	2	3	4
32.	I feel a strong urge to comfort [-].	0	1	2	3	4
33.	I find myself suddenly overcome to find [-].	0	1	2	3	4
34.	I sense that [-] is suffering now.	0	1	2	3	4

UNWANTED MEMORIES OF THE TRAUMA

1. In the LAST WEEK, approximately how often did **unwanted** memories of the loss pop into your mind?	Never	Once	Twice	Every other day	Once a day	Several times a day	Many times a day
2. How *distressing* were these memories?	0 -- 10 -- 20 -- 30 -- 40 -- 50 -- 60 -- 70 -- 80 -- 90 -- 100 Not at all Moderately Very strongly						
3. To what extent did they seem to be happening *now* instead of being something from the past?	0 -- 10 -- 20 -- 30 -- 40 -- 50 -- 60 -- 70 -- 80 -- 90 -- 100 Not at all Moderately Very strongly						
4. To what extent were you *reliving* your experience from the loss?	0 -- 10 -- 20 -- 30 -- 40 -- 50 -- 60 -- 70 -- 80 -- 90 -- 100 Not at all Moderately Very strongly						

Appendix VIII – Social disconnection beliefs scale

This questionnaire lists different thoughts that people may have after the death of a loved one. We are interested in the way that **YOU** have been thinking, **IN THE LAST MONTH**, in regard to the bereavement that you have experienced. Please read each statement carefully and choose a number from the scale below which **BEST DESCRIBES HOW MUCH YOU AGREE** or **DISAGREE WITH THE STATEMENT**. People react in many different ways; there are no right or wrong answers to these statements.

	Totally disagree	Disagree very much	Disagree slightly	Neither agree nor disagree	Agree slightly	Agree very much	Totally agree
The company of others makes me feel uncomfortable.	❍	❍	❍	❍	❍	❍	❍
I need to be able to leave social situations when I want or I will break down.	❍	❍	❍	❍	❍	❍	❍
I can't be myself around other people.	❍	❍	❍	❍	❍	❍	❍
It is better to be by myself than to show others how I am really feeling.	❍	❍	❍	❍	❍	❍	❍
I can only let my true feelings show when I am on my own.	❍	❍	❍	❍	❍	❍	❍
I can only be myself when I am on my own.	❍	❍	❍	❍	❍	❍	❍
It is easier to be alone than to have to pretend to feel ok.	❍	❍	❍	❍	❍	❍	❍
I feel alien to those around me.	❍	❍	❍	❍	❍	❍	❍
I don't fit in socially the way I used to.	❍	❍	❍	❍	❍	❍	❍
Others are uncomfortable when I am around.	❍	❍	❍	❍	❍	❍	❍
I find it draining to be around other people.	❍	❍	❍	❍	❍	❍	❍
When I am around other people, it feels like I am ruining their enjoyment.	❍	❍	❍	❍	❍	❍	❍
When I am with other people, I feel I am putting on a performance.	❍	❍	❍	❍	❍	❍	❍
Others will not be able to manage if I tell them how I feel about the loss.	❍	❍	❍	❍	❍	❍	❍

Appendix IX – Grief resilience scale

This questionnaire lists different thoughts that people may have after the death of a loved one. We are interested in the way that **YOU** have been thinking, **IN THE LAST MONTH**, in regard to the bereavement that you have experienced. Please read each statement carefully and choose a number from the scale below which **BEST DESCRIBES HOW MUCH YOU AGREE** or **DISAGREE WITH THE STATEMENT**. People react in many different ways; there are no right or wrong answers to these statements.

	Never true	Sometimes true	True about half of the time	True most of the time	Always true
I am living my commitment to them by living as best I can.	❍	❍	❍	❍	❍
I have to live a fulfilling life otherwise the bad parts win.	❍	❍	❍	❍	❍
I can still laugh about fun times we had together.	❍	❍	❍	❍	❍
I am able to draw meaning from other relationships in my life.	❍	❍	❍	❍	❍
I carry them inside me and that gives me strength.	❍	❍	❍	❍	❍
My memories of our time together give me confidence.	❍	❍	❍	❍	❍
Even without them, I can deal with the ups and downs of life.	❍	❍	❍	❍	❍
I can cope with what life will bring next.	❍	❍	❍	❍	❍
Without ____ I can still stick to my aims and accomplish my goals.	❍	❍	❍	❍	❍
I must keep going for them.	❍	❍	❍	❍	❍

Appendix X – Dependency scale

The following questions ask about your relationship with your loved one before they died. Please use the following scale to rate each of the statements below. If a statement is **"VERY TRUE OF OUR RELATIONSHIP"**, you'd circle a high number, like 4 or 5. If a statement is **"NOT VERY TRUE OF OUR RELATIONSHIP"**, you'd circle a low number, like 1 or 2.

There are no right or wrong answers; we are interested in your personal reaction.

	Not at all true of our relationship (1)	**(2)**	**(3)**	**(4)**	**Very true of our relationship (5)**
We did everything together.	❍	❍	❍	❍	❍
I always had some friends I saw on my own.	❍	❍	❍	❍	❍
There were parts of my life that did not involve _____.	❍	❍	❍	❍	❍
I had activities that I enjoyed by myself.	❍	❍	❍	❍	❍
We didn't have many friends because we had each other. (REMOVED)	❍	❍	❍	❍	❍
I had people other than _____ who I could confide in and share my worries with.	❍	❍	❍	❍	❍
_____ did everything for me in our relationship.	❍	❍	❍	❍	❍

The following questions ask about how you feel about relationships in general. Please use the following scale to rate each of the statements below. If a statement is **"VERY TRUE OF YOU"**, you'd circle a high number, like 4 or 5. If a statement is "**NOT VERY TRUE OF YOU",** you'd circle a low number, like 1 or 2.

There are no right or wrong answers; we are interested in your personal reaction.

I must keep going for them.	**Not at all true of me (1)**	**(2)**	**(3)**	**(4)**	**Very true of me (5)**
I believe that most people are basically good and well-meaning.	❍	❍	❍	❍	❍
I am able to share my innermost thoughts and feelings with people I know well.	❍	❍	❍	❍	❍
I am comfortable asking for help.	❍	❍	❍	❍	❍
I don't worry about how other	❍	❍	❍	❍	❍

people see me.					
Most of my relationships involve give-and-take, with both people contributing their share.	❍	❍	❍	❍	❍
My relationships are pretty much the way I want them to be -- even if I could, I wouldn't change things.	❍	❍	❍	❍	❍
I see myself as a capable person who copes well with disappointments and setbacks.	❍	❍	❍	❍	❍
In my relationships, I am comfortable offering support when the other person needs it, and asking for support when I need it.	❍	❍	❍	❍	❍
When I have a falling-out with someone, I am confident that the relationship will survive.	❍	❍	❍	❍	❍
It is easy for me to trust people.	❍	❍	❍	❍	❍

Appendix XI – Exploratory and confirmatory factor analysis of the dependency scale

Exploratory Factor Analyses – Dependency.

Dependency items are answered on a 5-point scale and inspection of histograms revealed no evidence of significant skew. Therefore, MLR estimation was tried in the first instance. Inspection of eigenvalues greater than 1 suggested a three-factor solution (5.00, 2.71, 1.11). However, the scree plot supported both a two and a three-factor solution. The three-factor solution demonstrated close to good fit (CFI = .94, RMSEA =.06, χ^2 = 171.14 on df = 75, χ^2:df = 2.28). However, conceptual interpretation was limited, with only two items loading on the third factor. The two-factor solution demonstrated an acceptable fit (CFI = .91, RMSEA = .07, χ^2 = 236.07 on df = 89, χ^2:df = 2.65) and no weak items. The two-factor solution had a clearer conceptual interpretation with items relating to dependency on the deceased loading together on the first factor and the ten healthy dependency items from the Relationship Profile Test (Bornstein et al., 2003) loading on the second factor. Inspection of modification indices revealed a correlated error should be added between item 1 (we did everything together) and item 6 ([-] did everything for me in our relationship) (MI = 36.66). These were the only reverse scored items in the deceased dependency factor and the correlation likely represents a method factor. Using an exploratory structural equation model (ESEM) to specify the correlated error between item 1 and 6 model fit improved to good for RMSEA = .06, χ^2 = 176.87 on df = 88 (χ^2:df = 2.01) and close to good for CFI = .94.

Using WLMSV estimation the conceptual interpretation was the same as above but the model did not fit the data as closely, therefore the two-factor solution with one correlated error using MLR estimation was chosen as the final model. The dependency items and standardised factor loadings are presented in Table 9.1. Factors were labelled as ‘deceased dependency’ and ‘healthy dependency.’

Confirmatory Factor Analyses – Dependency. The CFA assessed the fit of chosen two-factor solution with one correlated error using the CFA sample (N=328). The fit statistics for the two-factor model indicated an acceptable fit for CFI = .91, and a close to good fit for RMSEA = .066, and χ^2 = 227.86, on df = 102, χ^2:df = 2.23). Given that the three-factor solution was not conceptually interpretable a chi square difference test using the Satorra-Bentler correction for MLR estimations in a comparison of the one versus two-factor model was calculated. The chi-square was significant indicating that two factors fit the data better than one (χ^2 = 102.04 on df = 1, $p < .001$). A second order factor model was specified in an attempt to support a total score for the dependency scale. However, this model did not converge and negative variance of the second order factor rendered the solution inadmissible. Correlations between the total score of the dependency measure and symptom measures of PGD (r = -.29, $p < .001$), PTSD (r = -.33, $p < .001$), and depression (r = -.34, $p < .001$) were all inversely related and significant, supporting convergent validity. Subscale correlations are presented in Table 9.1. Subscales met the requirements for reliability and discriminant validity but failed to demonstrate convergent validity.

Table 9.1 summarises the standardised factor loadings, and Cronbach's alpha coefficients, AVE scores, and subscale correlations with symptom measures for the two-factor factor solution for the CFA. The total dependency scale demonstrated good internal consistency (α = .84). However, neither subscale exceeded the threshold for convergent validity.

Table 9.1

Factor analyses of dependency items

	Factors			
	1		2	
Dependency items	EFA	CFA	EFA	CFA
1 We did everything together.	-.58	.62		
2 I always had some friends I saw on my own.	.80	-.71		
3 There were parts of my life that did not involve [-].	.78	-.81		
4 I had activities that I enjoyed by myself.	.81	-.72		
5 I had people other than [-] who I could confide in and share my worries with.	.69	-.61		
6 [-] did everything for me in our relationship.	-.38	.27		
7 I believe that most people are basically good and well-meaning.			.50	.56
8 I am able to share my innermost thoughts and feelings with people I know well.			.61	.62
9 I am comfortable asking for help.			.67	.64
10 I don't worry about how other people see me.			.43	.45
11 Most of my relationships involve give-and-take, with both people contributing their share.			.60	.72
12 My relationships are pretty much the way I want them to be - even if I could, I wouldn't change things.			.66	.70
13 I see myself as a capable person who copes well with disappointments and setbacks.			.54	.53
14 In my relationships, I am comfortable offering support when the other person needs it, and asking for support when I need it.			.73	.73
15 When I have a falling-out with someone, I am confident that the relationship will survive.			.61	.59
16 It is easy for me to trust people.			.61	.71
Cronbach's Alpha	.82		.85	
AVE	.41		.40	
PGD correlation	-.23***		-.29***	
PTSD correlation	-.15***		-.40***	
Depression correlation	-.16***		-.39***	

Note: EFA (N = 348) CFA (N=328). Factors labelled as follows: 1.Dependency on deceased, 2. Healthy dependency. All factor loadings significant to $p < .05$. AVE=Average variance extracted. Convergent validity confirmed if ≥ .5

$p < .001^{***}$

The dependency measure supported a two-factor solution (i.e. 1. Dependency on deceased, 2. Healthy dependency) and demonstrated good internal consistency, and

discriminant validity but neither scale met the requirements for convergent validity (AVE ≥ .5). However, as previously stated in chapter 4, the level of reliability demonstrated by each scale allows assumption of convergent validity.

Appendix XII - Confirming the measurement model for the multi-group structural equation model in chapter 7.

Statistical Analyses

Despite being the statistical procedure set as default within Mplus for computing how predictor variables differ between trajectory classes the multinomial logit (MNL) model used in chapter 7 has its limitations. Correlated predictors entered into the same model reduce the likelihood that individual effects will be found, especially at small sample sizes. The MNL model also only helps the researcher to learn how predictors differ in magnitude between classes. Recent advances in statistical modelling now allow researchers to not only answer questions regarding magnitude of responding but to investigate how specific relationships between predictors contribute to a particular class membership. Multi-group structural equation modelling is made up of two components: a measurement model and a structural model. Crucially the measurement model allows the researcher to confirm that the measurement instrument, in this case cognitive questionnaires, are being used in a uniform fashion by the groups in question. Before comparing groups on their scores the researcher must determine whether the scores mean the same thing for each group. Following this the structural model allows the researcher to compare groups of individuals on their scores on predictors and the relational paths between predictors. The following fit indices determine adequate fit: CFI>.90, TLI>.90, RMSEA<.90, SRMR<.08, and a chi square to degrees of freedom ratio of less than 3:1 (Hu & Bentler, 1999; Wickrama et al., 2016).

Measurement model.

Measurement invariance. When a series of equality constraints (i.e. configural invariance, metric invariance, and scalar invariance) are placed on the model in succession and the model fit does not decrease substantially then assumptions of measurement invariance are said to have been met (Chen, 2007; van de Schoot, Lugtig, & Hox, 2012).

Configural invariance confirms that the components the factor consists of are the same for all groups (i.e. avoidance, proximity seeking, loss rumination, and injustice rumination make up the latent factor coping behaviours). Metric invariance assumes that the strength of the relationship or the 'weighting' of each component on the factor is the same across groups confirming that respondents across groups attribute the same meaning to the latent factor (van de Schoot et al., 2012). Finally, when scalar invariance is confirmed the intercepts of each item can be fixed across groups without compromising model fit (i.e. a score of 4 by a respondent in one group means the same thing as a 4 by a respondent in another group). These assumptions taken together allow the researcher to compare groups on their scores on a particular instrument by defining and testing the structural model.

Structural model. A structural equation model based on the cognitive model of PTSD was subject to a multi-group analysis in Mplus (Ehlers & Clark, 2000). Regression paths were specified from coping behaviours to both memory characteristics and appraisals. This model asks whether memory characteristics and negative appraisals predict coping behaviours in each class. The beta coefficients for the regression paths indicate the strength of these relationships for each class (see section 3.8 of chapter 7).

Results

Measurement model

The measurement model employed here was a first order CFA modeled in two steps. First, second order factors were modeled for both appraisals (i.e. 35 items loading on 5 subscale factors loading on 1 second order factor) and coping behaviours (i.e. 23 items loading on 4 factors loading on 1 second order factor), a first order factor was modeled for memory characteristics (i.e. 27 items loading on 1 first order factor). Second, latent variable factor scores for the above model were saved as new variables and reimported into the dataset to be used in subsequent analyses, this represents a methodological advancement to

the sum score typically used in quantitative research. This process turns a second factor model into a first factor by subsuming the item responses into a factor score. Figure 1 illustrates how the measure model changed as a result of these steps. This process substantially reduced the amount of parameter estimates making it more suitable for the study's sample size. The first order CFA measurement model confirmed configural ($\chi 2$ = 16.62 df = 21, p = .73), scalar ($\chi 2$ = 42.47 df = 42, p = .45), and metric invariance ($\chi 2$ = 25.85 df = 21, p = .21) supporting the assumption of measurement invariance.

Structural model

The results of the structural model are presented in section 3.8 of chapter 7.

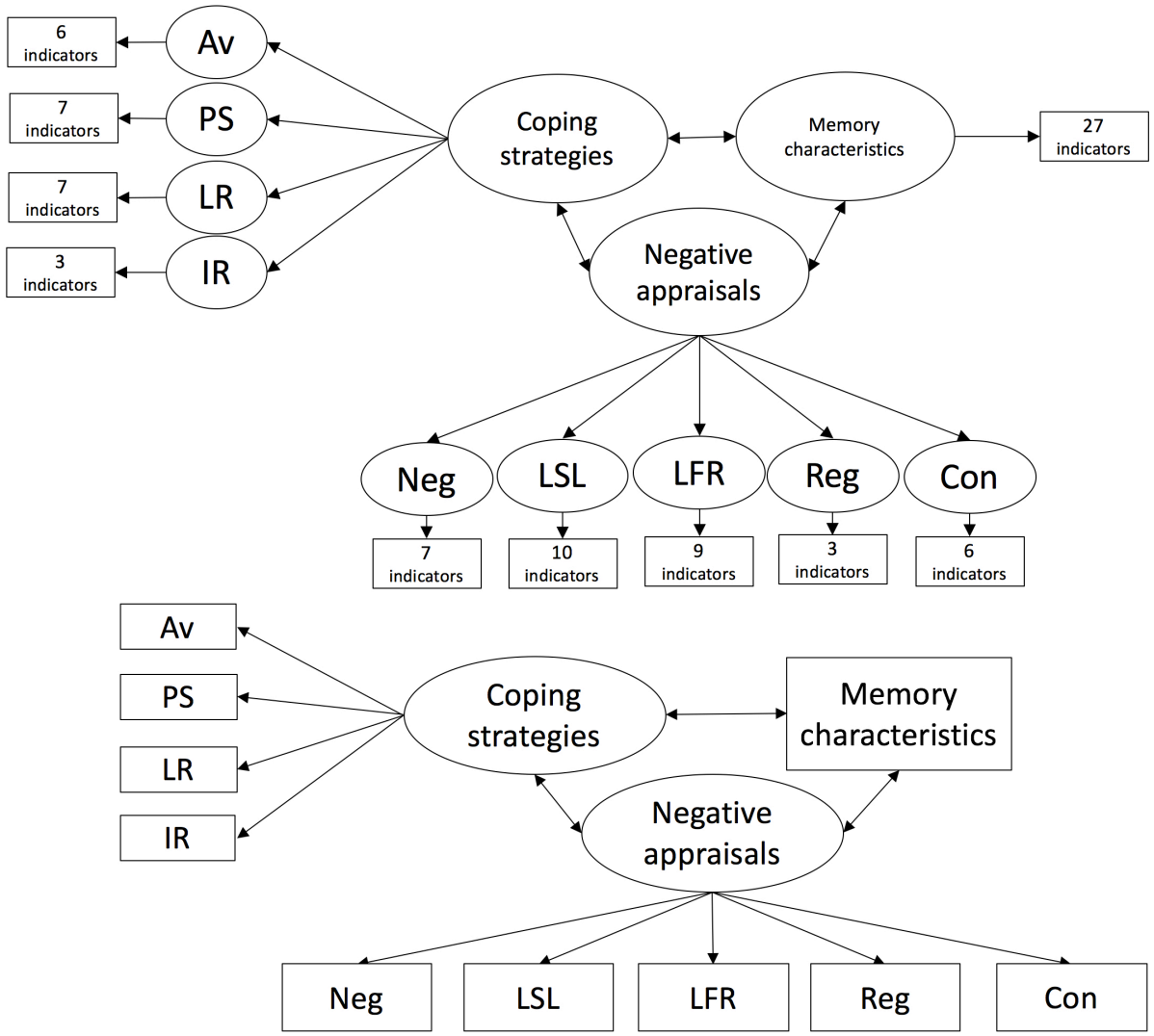


Figure 1. The top panel shows the second order CFA including all questionnaire items. The bottom panel shows the new first order model that results from saving the factor scores of the top panel. Ovals represent latent constructs and rectangles represent observed scores. Av = Avoidance; PS = Proximity seeking; LR = Loss rumination; IR = Injustice rumination; Neg = Negative interpretation of grief reactions; LSL = Loss of self and life; LFR = Loss of future and relationships; Reg = Regret; Con = Fear of losing connection to the deceased.

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