

Mending the heart and mind during times of loss: a review of interventions to improve emotional well-being during spousal bereavement



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Abstract: Spousal loss is one of life's greatest stressors. Bereaved spouses are at risk for aberrant cognitive and affective processing. Recent work in psychoneuroimmunology and cognitive neuroscience reveals physiological biomarkers and neural mechanisms underlying acute distress and grief during bereavement that may represent targets for future interventions. We review evidence from existing pharmacological and psychotherapeutic treatment approaches for normal bereavement, complicated grief, and bereavement-related depression. We propose promising future directions, namely the development and empirical validation of novel, personalised cognitive and neurostimulatory interventions to promote adaptive emotion regulation and reduce depressive symptoms following spousal loss. Future work may substantiate which interventions to improve emotional and physical health will be best matched to the needs of a particular surviving spouse.

Keywords: bereavement, spousal, interventions, emotion, grief.

Introduction

Spousal loss is unquestionably one of life's greatest stressors (Carr & Jeffreys, 2011). Grief is a natural response to loss, and is characterised by deep sorrow, somatic

disturbances (i.e., empty feeling in the abdomen) and subjective distress (Maciejewski, Zhang, Block, & Prigerson, 2007). Bereavement is associated with emotional pain, despair, dejection, and anxiety; cognitive reactions include

concentration or memory difficulty, and bodily reactions include muscular and stomach aches (Aneshensel, Botticello, & Yamamoto-Mitani, 2004; Carlsson & Nilsson, 2007; Clayton, Desmarais, & Winokur, 1968; Stroebe M., Schut, & Stroebe W., 2007). Insomnia is experienced by 43% to 48% of individuals 1-month to 13-months post-spousal loss, respectively, and fatigue is experienced by 64% to 15% of individuals 1-month to 13-months post-spousal loss, respectively (Carlsson & Nilsson, 2007). Approximately 28% of bereaved spouses are afflicted by major depressive disorder (Monk, Germain, & Reynolds, 2008). Cardiovascular disease (CVD) accounts for 20% to 53% of additional deaths during spousal bereavement (Mostofsky et al., 2012; Parkes, Benjamin, & Fitzgerald, 1969). Increased production of proinflammatory cytokines (i.e., cell signalling proteins that have been shown to exacerbate inflammation) represents a key mechanism linking spousal loss induced stress and depressive symptoms with increased CVD risk (Fagundes, Glaser, Hwang, Malarkey, & Kiecolt-Glaser, 2013; Mendall et al., 1997; Yudkin, Kumari, Humphries, & Mohamed-Ali, 2000). That said, important individual differences in emotional trajectory and grief severity exist according to psychological mechanisms that are now being explored (Bonanno, 2005; Diamond, Fagundes, & Cribbet, 2012; Fagundes & Schindler, 2012). Conflicting research alludes to the variable nature of grief: some studies have shown that widows experience more distress and grief than widowers, while other studies have shown that widowers are at higher risk for negative outcomes in the early aftermath of loss (Gauthier & Gagliese, 2012).

Alleviating the negative outcomes of bereavement is of utmost importance. Several clinical interventions focused on improving emotional and behavioural responses to bereavement are currently being utilised. The purpose of this article is two-fold. First, we provide a review of existing pharmacological and psychotherapeutic approaches to clinical treatment of grief in spousal bereavement. Second, we argue for the development of novel, personalised psychological interventions to promote adaptive emotion regulation and decrease depressive symptoms in this population. Finally, we discuss the potential for novel neurostimulatory interventions in bereavement based on recent developments in social cognitive neuroscience. We start by reviewing grief terminology and physiological and neurobiological mechanisms.

Responses to spousal loss are multifaceted and vary in their trajectory of grief severity (Bonanno, 2005; Carr & Jeffreys, 2011). Some interventions that will be discussed target normal (uncomplicated) grief, while others target complicated grief, persistent complex bereavement disorder, or bereavement-related depression.¹ Further,

while bereavement in different manifestations may occur in relation to the death of many important individuals in one's life (e.g., parent, grandparent, sibling, friend, or even child), this review will focus specifically on spousal bereavement. Biobehavioural processes related to all kinds of loss are similar (i.e., parent, child, sibling); however, the type of loss unquestionably promotes differences in psychological and physiological emotion processing (i.e., losing a spouse equates to losing one's primary attachment figure, which is different from losing a child). The stress relating to spousal loss is typically acute and relatively well-studied (Nseir & Larkey, 2013; Shear, Ghesquiere, & Glickman, 2013; Zisook, Shuchter, Sledge, Paulus, & Judd, 1994).

Review of grief spectrum

Before delving into the interventional work, we must delineate the aforementioned different forms of grief. The grieving process is dependent on the nature of marriage, nature of death, co-stressors, social support availability, as well as the widow/widower's personality and mental health (Carr & Jeffreys, 2011). Some of the novel psychological interventions explored in this review benefit normal (uncomplicated) grief, which comes in two forms according to one theoretical framework we have chosen to adopt. First, *acute* grief, which is in the early aftermath of bereavement, is characterised by pining or yearning, accompanied by sadness, crying, disturbed thoughts, difficulty concentrating, unfamiliar dysphoric emotions, and anhedonia. Second, *integrated* grief, which is in the later stage, is when the deceased is easily called to mind; however, the thoughts and memories of the deceased are no longer disrupting and the bereaved individual is able to engage again in pleasurable activities (Shear & Mulhare, 2008). It is important to note that there are current controversies about when and for whom interventions are appropriate (Bonanno, 2004). Some interventions are intended for individuals who have already been diagnosed with complicated grief; however, the updated Diagnostic and Statistical Manual of Mental Disorders (5th ed., DSM-V, American Psychiatric Association, 2013) challenges this. Others are designed to prevent complicated grief and are administered earlier post-spousal loss. Lastly, some interventions are designed to aid individuals in navigating the normative process of recovery and in learning how to do practical tasks without a spouse. Neimeyer (2000) summarised that interventions for normal bereavement may be ineffective or even detrimental. However, that said, if interventions are appropriately tailored to an individual's personality, grief trajectory, and situation, and refrain from a 'one size fits all' approach, interventions may benefit even normal or resilient grievers.

We will also review interventional work on individuals with complicated grief and persistent complex bereavement disorder, which may be diagnosed only if at least 12 months have elapsed since the death of someone with whom the

¹ To note, in this article the term *bereavement* will be used to refer to the fact of loss, while the term *grief* will refer to the emotional, cognitive, and behavioural responses to death (Zisook & Shear, 2009).

bereaved had a close relationship. This condition involves persistent yearning/longing for the deceased, which may be associated with intense sorrow and frequent crying or preoccupation with the deceased (American Psychiatric Association, 2013). Within an attachment framework, complicated grief develops as a result of the nature of the 'continuing bond' with the deceased, which plays an integral role in one's grief trajectory (Field, Gao, & Paderna, 2005). Lastly, bereavement-related depression emerges when grief persists in an individual who has other vulnerabilities to depressive disorders, and recovery may be facilitated by antidepressant treatment (American Psychiatric Association, 2013). Thus, an individual who had an intimate and committed spouse who died suddenly, has limited social support, and is vulnerable to anxiety and depression, is at high risk for complicated grief, persistent complex bereavement disorder, or bereavement-related depression. Notably, 34% of individuals experiencing spousal bereavement fall under the 'resilient' category: lowest levels of grief and depression and the highest quality of life. Approximately 50% of individuals experiencing spousal bereavement fall under the normal (uncomplicated) or 'common' category: elevated levels of grief and depressive symptoms that decrease over time. 17% fall under the 'chronic' category: the highest levels of grief and depression, more sudden deaths, the lowest self-esteem, and the highest marital dependency (Ott, Lueger, Kelber, & Prigerson, 2007). A majority of 'chronic' individuals meet complicated grief diagnosis criteria. Additional research has demonstrated that approximately 10-12% of bereaved individuals experience grief that does not resolve naturally or persists indefinitely (Prigerson et al., 2009). Novel efficacious interventions may be of utility not only to individuals with chronic or complicated grief, but also to resilient individuals to keep depressive and grief symptoms at bay. In order to define potential biobehavioural targets for such bereavement interventions, we will also review research examining the physiological and neurobiological mechanisms underlying grief and bereavement.

Physiological and neurobiological mechanisms underlying bereavement

Recent work has elucidated the aberrant physiological processes underlying the grieving process. For example, older individuals experiencing spousal bereavement exhibit higher vulnerabilities to stress and consequently may have elevated levels of cortisol and dehydroepiandrosterone-sulphate (DHEAS), an immune enhancer, relative to age-matched nonbereaved controls. Both are hypothalamic-pituitary adrenal axis outputs, and elevated cortisol levels with reduced ability to produce DHEAS leads to immune alteration (Buckley et al., 2012). In general, the negative emotions associated with stressful life events generate increased mitogenic stimulant phytohemagglutinin (PHA),

higher blood pressure, and significantly higher neutrophil counts, which are all associated with negative health outcomes (Buckley et al., 2012; Jaremka et al., 2014; Kiecolt-Glaser, Derry, & Fagundes, 2015). Bereavement also increases physiological biomarkers of inflammation, including interleukin-6 (IL-6) and C-reactive protein (CRP), which initiate atherosclerotic plaques within arteries (Cohen, Granger, & Fuller-Thomsen, 2015; Luc et al., 2003; Pai et al., 2004; Ridker, Rifai, Stampfer, & Hennekens, 2000; Varbo, Benn, Tybærg-Hansen, & Nordestgaard, 2013). Even low depression and anxiety levels may increase proinflammatory cytokine production, and the long-term nature of spousal grief-induced stress promotes chronic increases and/or acute spikes of cytokine response (Abbasi, Hosseini, Modabbernia, Ashrafi, & Akhondzadeh, 2012; Fagundes, Glaser, Hwang, Malarkey, & Kiecolt-Glaser, 2013; Glaser, Robles, Sheridan, Malarkey, & Kiecolt-Glaser, 2003; Irwin M., 2002; Johnson et al., 2002a; Johnson et al., 2002b; Maes et al., 1998; Zorrilla et al., 2001). Such abnormalities not only lead to increased risk of CVD, but also lead to increased susceptibility to depression, cancer, respiratory diseases, and alcohol-related diseases to name a few (Martikainen & Valkonen, 1996; Shear, Ghesquiere, & Glickman, 2013). The dysregulated physiology associated with spousal bereavement supports the necessity for interventions targeting these physiological foci to result in biobehavioural improvements.

Few studies have explored neural substrates and networks underlying bereavement as well. Silva and colleagues (2014) reviewed five studies and found that while viewing stimuli related to the participant's deceased loved one, there was activation of the dorsal, rostral, and subgenual anterior cingulate cortex (ACC). Dorsal ACC activation has been shown to predict the valuation of future outcomes (Bush et al., 2002; Shenhav, Cohen, & Botvinick, 2016; Shenhav, Botvinick, & Cohen, 2013), and rostral and subgenual ACC activation has been shown to predict depressive symptoms (Siegle et al., 2012; Webb et al., 2017). Thus, both regions are engaged while experiencing anxiety and sadness and while regulating emotion (Beauregard, Levesque, & Bourgouin, 2001; Critchley et al., 2003; Kalisch et al., 2005; Murphy, Nimmo-Smith, & Lawrence, 2003; Ochsner et al., 2004; Vassena, Holroyd, & Alexander, 2017). Activation of the posterior cingulate cortex (PCC) was also shown to be involved while viewing stimuli related to the participant's deceased loved one; the PCC has shown firm engagement with emotional salience and autobiographical memories (Maddock, Garrett, & Buonocore, 2003, 2001; Silva et al., 2014). The task engaged the prefrontal cortex (PFC) as well, which has been demonstrated to be involved in executive function, attention, and memory (Miller & Cohen, 2001). Silva and colleagues also found that the insula and amygdala were also employed while viewing

such stimuli, which have been shown to be involved in affective regulation and interoceptive awareness. Research has also indicated at a neural level that persistent complex bereavement disorder has overlapping but distinct network of depression symptoms (Robinaugh, LeBlanc, Vuletic, & McNally, 2014). These networks may be responsible for grief symptomology, as they are implicated in emotional pain, reward, and addiction, therefore explaining why individuals with complicated grief or persistent complex bereavement disorder may get carried away with daydreams of the deceased.

Various empirically-supported interventions exist to aid adaptive responses to normal spousal bereavement and/or alleviate the grieving process for individuals who have complicated grief, persistent complex bereavement disorder, or bereavement-related depression. The goal of this review is to integrate evidence from clinical (i.e. psychopharmacological and psychotherapeutic) studies as well as basic affective science and social cognitive neuroscience research, provide a brief overview of the literature on interventions that have been tested to alleviate symptoms of grief caused by spousal loss, and, in so doing, propose viable future directions.

I: A review of existing pharmacological and psychotherapeutic approaches to clinical treatment of grief in spousal bereavement

Pharmacological interventions

Clinical work has explored pharmacological agents as an intervention when major depressive disorder occurs alongside complicated grief or persistent complex bereavement disorder. Roughly 51% of treatment-seeking individuals with complicated grief have comorbid major depressive disorder (Simon et al., 2007). Bereavement-related depression is associated with depressed mood, anorexia, insomnia, fatigue, anhedonia, restlessness, and irritability. Furthermore, bereaved spouses are not only at high risk for major depression, but also at risk for lingering subsyndromal depressive symptoms. These symptoms may be associated with prolonged personal suffering, role dysfunction, and disability even in the absence of full depressive disorders (Zisook, Schuchter, Sledge, Paulus, & Judd, 1994). These findings sparked several investigational studies into using antidepressants to alleviate the grieving process. In most cases, clinicians report prescribing short-term selective serotonin reuptake inhibitors (SSRIs) including fluoxetine, sertraline, or citalopram to induce sleep; otherwise, antidepressants are prescribed when depressive symptoms are present (Toy & Klaman, 2016). Four studies specifically examine the use of antidepressants in individuals with bereavement-related depression due to spousal loss.

The few studies examining psychopharmacological agents in bereaved spouses suggest that antidepressants may be effective in reducing depressive symptoms more so than grief symptoms. A trial testing desipramine, a selective norepinephrine reuptake inhibitor that boosts transmission of norepinephrine, resulted in 70% of participants experiencing improvements in depressive symptoms ('much improved' or better on the Clinical Global Impression Improvement (CGI-I) scale and as measured by the Hamilton Depression Rating Scale), but only 30% of participants experiencing improvements in grief intensity (Jacobs, Nelson, & Zisook, 1987). It is important to note that this tricyclic is associated with severe cardiotoxic side effects and is no longer prescribed often. Similarly, two trials testing nortriptyline, a serotonin antagonist (i.e., a drug that inhibits activity at serotonin receptors), showed significant reductions in depressive symptoms, but marginal to no reductions at all in grief symptoms (Pasternak et al., 1991; Reynolds et al., 1999). In a trial of bupropion (i.e., an antidepressant), depression symptoms improved significantly for the treatment groups. Grief symptoms only improved for the intent-to-treat, which may have been because of the combination of the pharmacological agent and the psychological mindset of the participant (Zisook, Schuchter, Pedrelli, Sable, & Deaciuc, 2001). Thus, motivation and intention may play a role in improving grief symptoms. One should be aware that bupropion and nortriptyline are rarely used as first-line treatment today; bupropion is currently primarily used for addiction treatment and nortriptyline is associated with severe side effects. All in all, the results are mixed and interventions may benefit from a two-pronged pharmacological agent plus psychotherapy approach.

Psychotherapies

Across the entire spectrum of individuals experiencing spousal bereavement (severity ranging from normal bereavement to bereavement-related depression), perhaps the most extensively studied interventions in spousally bereaved individuals are psychotherapies. Several variations within psychotherapy exist depending on the intervention target; thus, this section will describe studies that target (a) cognitive behavioural therapy, (b) behavioural domains, (c) relaxation and mindfulness, as well as (d) vocal expression and interpersonal connectivity.

Cognitive behavioural therapy

There are limited published cognitive behavioural therapy (CBT) studies for spousal bereavement exclusively; however, CBT has been increasingly used due to its effectiveness in treating individuals with psychological distress (Malkinson, 1996). CBT is based on the premise that maladaptive thoughts contribute to the continuance of emotional distress

and behavioural difficulties. Thus, changing the maladaptive thoughts may in turn ameliorate the emotional and behavioural problems (Hofmann, Asaani, Vonk, Sawyer, & Fang, 2012). Several CBT therapies have been tailored to bereavement. For example, widows underwent group interventions that emphasised how thinking contributes to emotions that are specifically associated with bereavement: thinking catastrophically about being alone; fear of failure when undertaking new, traditionally masculine tasks; exaggerated social anxiety, so on. (Walls & Meyers, 1985).

A quantitative meta-analysis of 11 studies of CBT interventions in bereavement found that in individuals who suffered a nuclear family loss (i.e. including but not limited to cases of spousal bereavement), CBT-based interventions outperformed non-CBT based interventions immediately following the interventions and at later follow-up assessments (Currier, Holland, & Niemeyer, 2010). However, after controlling for the studies' researchers' allegiance to CBT, the reductions in grief, depression, anxiety, trauma, and overall distress between groups were no longer significant. Therefore, Currier and colleagues conclude that studying various cognitive behavioural change strategies from a variety of theoretical orientations is imperative.

Behavioral domains

Some research has demonstrated that focusing on functioning issues (lifestyle and sleep regularity) could result in behavioural benefits and subsequently, emotional improvements. For example, one-on-one therapy sessions that include discussions on active lifestyle maintenance and sleep accrue benefits in sleep and depression (Pfoff, Zarotney, & Monk, 2014). This suggests that targeting healthy sleep and lifestyle habits may be an efficacious indirect way of aiding the grieving process. The Dual Process Model of coping and bereavement engages loss orientation (coping with issues directly related to bereavement like loneliness and sadness) and restoration orientation (coping with practical issues that come with bereavement like lifestyle maintenance and finances) by targeting behavioural domains (Stroebe & Schut, 1999). One study demonstrated that individuals who focus on both loss and restoration orientation show similar rates of loss improvement as individuals who focus only on loss even with six fewer loss sessions (Lund, Caserta, Utz, & de Vries, 2010). Thus, the restoration component, which focuses on learning daily life skills and activities, may play an integral part in facing the negative emotions associated with spousal grief. However, other studies targeting emotional and behavioural domains have not demonstrated such promise. For example, group therapies for recently bereaved spouses that discuss functional lifestyle adjustment, diet, exercise, the grief process, how to live despite loss, and the upheaval

experienced did not result in significant findings relative to the control groups (Lieberman & Yalom, 1992; Tudiver et al., 1992).

Relaxation and mindfulness

Some studies incorporating relaxation and mindfulness have demonstrated to be effective therapeutic modalities to alleviate grief from spousal loss. One study showed that mindfulness-based cognitive therapy (MBCT), which involved meditation techniques and mindful yoga exercises in 2-2.5 hour blocks over eight weeks, resulted in a significant reduction in depressive symptoms in intervention completers at follow-up compared to wait list controls (O'Connor, Piet, & Hougaard, 2014). Interestingly, the significant effect was only found after completion of the 8-week program. Other research does not demonstrate such promise. For example, one study showed that relaxation training involving a quasihypnotic stress-management technique, which involved progressive muscle relaxation, guided imagery, and debriefing strategies, resulted in increased psychological distress, and therefore decreased immune function (Houldin, McCorkle, & Lowery, 1993). Importantly, several other mindfulness-based interventions such as mindfulness-based stress reduction (MBSR) may reduce the negative consequences of mourning by redirecting the bereaved spouse's attention to their own emotional processes; however, current mindfulness-based interventions leverage standardised formats that are not dynamic to individual differences and varying grief trajectories (Cacciatore, Thielemann, Osborn, & Orłowski, 2014). Thus, additional work must be done to understand if relaxation and mindfulness techniques designed to lessen grief intensity and depressive symptomology can be adapted to account for individual differences and delivered via more optimised, efficient mechanisms.

Vocal expression and interpersonal connectivity

Several studies have cited the benefits of talking out loud, whether it is to yourself, to someone else, or to a group when coping with something painful (Lyubomirsky, Sousa, & Dickerhoof, 2006; National Health Service UK, 2017). Research has demonstrated that a verbal expression treatment in which individuals talk about the loss of their spouse and their deepest thoughts alone in a room results in reduced hopelessness, intrusive thoughts, obsessive-compulsive symptoms, and depression (Segal et al., 1999). The findings allude to the cathartic effect confronting painful feelings may have to reduce psychological distress among older individuals experiencing bereavement. Furthermore, research demonstrates that self-help groups in which bereaved spouses share stories of success and disappointment during the grieving process, aid in coping

with spousal bereavement aid in grief and depression symptoms, life satisfaction, and stress and health (Lund & Caserta, 1992). However, in that study, there were no significant differences between short-term (8 weeks) and long-term (10 months) treatments.

Overall, the psychotherapies tested for individuals experiencing spousal bereavement have reported mixed results. Findings from cognitive behavioural therapies in bereaved individuals (although not spouses exclusively) indicate that there are no significant differences between intervention and control groups when researcher allegiance is taken into account (Currier, Holland, & Niemeyer, 2010). Furthermore, the findings suggest that studying the relative benefits of particular cognitive change strategies may be useful. Among the psychotherapies targeting behavioural domains, the one-on-one behavioural therapies that indirectly target emotion were readily accepted by older adults experiencing spousal bereavement. Implementing coping and bereavement dual process model principles is promising as well, and future therapies may explore the model's underlying mechanisms and how to enhance oscillation (between loss and restoration orientation) as a coping strategy (Lund, Caserta, Utz, & de Vries, 2010). Lastly, the long-term and short-term vocal expression and interpersonal connectivity interventions have valuable implications, as they decreased hopelessness, intrusive thoughts, obsessive-compulsive symptoms, and depression (Lund & Caserta, 1992; Segal et al., 1999). However, the effect on grief intensity is unclear. The remaining studies did not show efficacy, thereby demonstrating the need for additional psychotherapy research in spousally-bereaved individuals (Houldin, McCorkle, & Lowery, 1993; Lieberman & Yalom, 1992; Tudiver et al., 1993). Overall, a recent quantitative meta-analysis of 61 studies that reviewed the effectiveness of psychotherapeutic interventions for bereaved individuals (not spouses exclusively) over time found that interventions had no statistically significant benefit at follow up; however, interventions that focused on emotionally adapting to loss were generally more successful (Currier, Niemeyer, & Berman, 2008). This highlights the importance of developing interventions that specifically target increasing emotion regulation efficacy.

II: Development of novel interventions to promote adaptive emotion regulation and reduce depressive symptoms

Understanding how individuals respond to loss at a neurobiological, psychophysiological, and psychological level allows us to formulate interventions with specific targets. Such targets should be dynamic and customisable

depending on the bereaved individual's personality and background as well as the nature of their situation. The literature reviewed to this point alludes to the potential for development and validation of novel interventions to address the complex cognitive, emotional, and physiological nature of grief. While many of the psychotherapeutic interventions above utilised a range of cognitive and behavioural strategies to alleviate distress, short-acting interventions examining particularly promising emotion regulation strategies in isolation may help elucidate both the underlying mechanisms of action training in those strategies and lead to a more personalised account of which strategies are the best fit for a given bereaved individual (Doré, Silvers, & Ochsner, 2016).

Reappraisal

Reappraisal is a cognitive change-based emotion regulation strategy involving thinking differently about the meaning of a stimulus in a way that alters one's initial appraisal (Gross, 1998; Gross & Thompson, 2007). Interventions utilising reappraisal training may be among the most promising and suitable for coping with death. Reappraisal is one of the most well-studied emotion regulation strategies in healthy adults (Gross, 1998; Gross & Thompson, 2007; Gross, 2015), and a particularly promising one in the context of bereavement (Berking et al., 2008; Troy, Wilhelm, Shallcross, & Mauss, 2010). Research has found training in reappraisal to be effective in reducing distress in healthy adults (Denny & Ochsner, 2014) and across a variety of psychopathologies, including anxiety and depression (Aldao, Nolen-Hoeksema, & Schweizer, 2010). Despite this, limited work has explored reappraisal in the context of bereavement.

Reappraisal can be operationalised via one or more tactics, including distancing (e.g. appraising a situation as a rational, impartial observer), reinterpretation (e.g. reflecting upon positive aspects and emphasising their importance to a situation), and acceptance (e.g., acceptance of the situation as a part of life) (Denny & Ochsner, 2014; McRae, Ciesielski, & Gross, 2012). Future intervention research may substantiate which of these tactics may represent the optimal active ingredient or combination for certain bereaved individuals (e.g., as a function of baseline stress reactivity) and certain contexts (e.g., strength of surrounding social support).

Reappraisal may be a suitable intervention for persistent complex bereavement disorder because it is the linchpin process in adjustment to stressful life events (McRae & Mauss, 2016). Thus, exposure to death may lead to powerful emotional responses that block effective coping processes, which may be mitigated with reappraisal training. Thus, as normal bereavement progresses, one may reappraise by reflecting on the positive experiences

and memories associated with the deceased individual. Reappraisal training can be operationalised to teach an individual how to reframe their thinking sooner than they may have on their own, resulting in a more manageable grief trajectory.

Psychological distancing is a form of cognitive reappraisal that involves appraising an emotional stimulus as an impartial observer. There is evidence to suggest that there are benefits of objective, rational appraisal in bereavement and in other populations in reducing negative affect (Denny & Ochsner, 2014; Denny, Inhoff, Zerubavel, Davachi, & Ochsner, 2015). It is imperative to emphasise that distancing does not entail avoidance or distraction, but rather rational engagement with negative stimuli. Distancing prompts affective labelling (putting feelings into words), which is associated with the cognitive and linguistic psychological mechanisms that may contribute to the efficacy and feasibility of distancing training (Burkland, Cresswell, Irwin, & Lieberman, 2014; Kross & Ayduk, 2017; Lieberman et al., 2007). Distancing may be appropriate for grieving since distancing strategies become 'natural' over time, and the implementation is conducive to training given the 'global mindset' rather than stimulus-specific reframing (Denny & Ochsner, 2014). Future research may examine whether some amount of reappraisal training (utilising one or more reappraisal tactics) may benefit not only persistent complex bereavement disorder and bereavement-related depression, but also uncomplicated bereavement.

Neurostimulation

Neurostimulation, including repeated transcranial magnetic stimulation (rTMS), electroconvulsive therapy (ECT), and deep brain stimulation (DBS), is another method that has demonstrated efficacy in reducing depressive symptoms in related diseases and that may be relevant as a grief intervention. Neurostimulation may be especially promising for bereavement-related depression given evidence that indicates its efficacy in major depressive disorder. For example, in an early rTMS trial, medication-free patients who received rTMS over the left prefrontal cortex (anterior to the right-hand motor thumb area) for two weeks showed a marked decrease in self-reported depression symptoms (George et al., 2000). Several other studies have concluded rTMS to be an efficacious, non-invasive, and painless stimulation technique (Akhtar, Bukhari, Nazir, Anwar, & Shahzad, 2016). A systemic literature review that reviewed meta-analyses on major depressive disorder management concluded that rTMS is now a first-line recommendation for patients who have failed at least one antidepressant (Milev et al., 2016). According to a quantitative meta-analysis, ECT is also considered one of the more efficacious depression treatments, as 18 trials demonstrated that ECT was more

effective than pharmacotherapy (Allan, Kalu, Sexton, & Ebmeier, 2012; UK ECT Review Group, 2003). Thus, when persistent complex bereavement disorder is resistant to extant pharmacological and psychotherapeutic approaches, neurostimulation techniques may be usefully explored as an intervention alternative (Lipsman et al., 2014).

Discussion, limitations, and future directions

We began with the exploration of pharmacological agents' use in the context of bereavement. The studies reviewed showed efficacy in relieving depressive symptoms although the effect on grief intensity was limited. Results from the psychotherapy literature were mixed. The current literature suggests that cognitive behavioural therapy success is subject to researcher allegiance influence, and thus the efficacies must not be overestimated. Behavioural interventions (i.e., healthy sleep habits) that target emotional domains are moderately successful, and behavioral interventions in conjunction with mindfulness and relaxation may also have potential. However, that said, even greater benefits may lie in focusing on customised interventions tailored to the specific needs of individuals, such as cognitive emotion regulation strategies directly. Given how the spousal bereavement grieving process depends on several different factors (i.e., the bereaved individual's personality and mental health, nature of spouse's death, nature of marriage, social support, etc.) 'one size fits all' intervention approaches may not suit the individualised needs of bereaved spouses (Bergman & Haley, 2009).

Conclusion

Losing one's spouse is a profoundly stressful life event. More than thirteen million people in the US alone are widows or widowers (American Association of Retired Persons, 2001). As one ages, the likelihood of experiencing spousal bereavement only increases. Spousal bereavement comes with psychological, physiological, and neurobiological changes that may be debilitating to health and well-being. All forms and trajectories of grief (uncomplicated, persistent, or bereavement-related depression) may benefit from some degree of intervention. Overall, continued research into the factors and mechanisms underlying increasingly personalised emotion regulation interventions is warranted (Doré, Silvers, & Ochsner, 2016), and developing ecologically-valid, empirically-validated interventions attuned to the needs of particular bereaved individuals who suffer emotion dysregulation in specific situations or in response to specific cues will be a crucial project going forward. ■

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