Emotion Regulatory Strategies in Complicated Grief:
A Systematic Review

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Prolonged grief disorder, characterized by severe, persistent, and disabling grief, has recently been included in the International Classification of Diseases-11 (ICD-11). Emotional disturbances are central to such complicated grief responses. Accordingly, emotion regulation is assumed critical in the development, persistence, and treatment of complicated grief. Yet, a comprehensive review on this topic is lacking. We conducted a systematic review (PROSPERO: CRD42017076061) searching PsycInfo, Web of Science, and PubMed to identify quantitative research examining relationships between emotion regulation and complicated grief. Sixty-four studies on 7,715 bereaved people were identified, focusing on a variety of emotion regulation strategies (i.e., experiential avoidance, behavioral avoidance, expressive suppression, rumination, worry, problem solving, cognitive reappraisal, positive thought, and mindfulness). Our synthesis showed strong evidence that experiential avoidance and rumination play a role in the persistence of complicated grief. More generally, surveys support positive associations between putative maladaptive emotion regulation strategies and complicated grief, and negative associations between putative adaptive emotion regulation strategies and complicated grief. Laboratory research yielded mixed results. Emotion regulation is critical in complicated grief, and in particular experiential avoidance and rumination form important targets in complicated grief treatments. We advise expanding current knowledge, by employing more advanced, intensive data collection

methods and experiments across diverse samples. Increasing knowledge in this domain will improve clinical practice.

BEREAVEMENT IS ASSOCIATED WITH complications in the grieving process for a significant minority of people. For example, grief may remain intense and disabling over a long duration, beyond what would be expected given the characteristics of the loss. For current purposes, we adopt complicated grief (CG) as the label for such grief responses and the following as our working definition (cf. Stroebe, Schut, & van den Bout, 2013): *CG is a clinically significant condition which (a) deviates from normal grief [according to (cultural) norms] in the time course and/or intensity of grief symptoms (e.g., separation distress, difficulties accepting the loss and moving on); (b) is associated with impairment in significant areas of health, social, and occupational functioning.*

There are good reasons to focus scientific investigation specifically on the phenomena and manifestations of CG. CG is increasingly recognized as a distinct entity, related to (but distinguishable from) a number of other established mental health disorders, that requires specific psychological treatments (Doering & Eisma, 2016). CG is associated with severe psychological outcomes, including reduced quality of life and suicidal tendencies, beyond those predicted by depression, PTSD, or anxiety (e.g., Latham & Prigerson, 2011). In the DSM-5 system, a disorder characterized by severe, persistent, and disabling grief, called Persistent Complex Bereavement Disorder (PCBD; American Psychiatric Association, 2013), is listed as a condition for further research. A related but distinct

(cf. Boelen, Lenferink, & Smid, 2019) disorder known as Prolonged Grief Disorder (PGD) has recently become an established diagnostic category in the ICD-11 (World Health Organization, 2018). Clearly, understanding the nature of grief complications is relevant to the ongoing discussion about the diagnostic status and symptomatology of CG.

There are also good reasons to focus scientific research on emotion regulatory (ER) processes when investigating CG. Bereavement is associated with intense emotional pain, particularly for those experiencing complications in their grieving process. In the ICD-11 (World Health Organization, 2018) diagnostic system, many of the core symptoms of CG (PGD) are emotional: longing, sadness, guilt, anger, emotional numbing, and blame. It stands to reason that dealing with these emotional experiences is critical for recovery. Emotions can be regulated, and unlike other factors that increase the risk of poor adaptation to bereavement (e.g., traumatic death, spousal loss, attachment)—such ER processes are amenable to change. To illustrate: certain ER processes have not only been shown to lead to the persistence of CG, but have also featured as treatment targets in therapy programs for CG (e.g., exposure to target avoidance of loss-related cues and associated emotions) (e.g., Boelen, de Keijser, van den Hout, & van den Bout, 2007). This aligns with research in the broader field of psychopathology. For example, in a major review, Naragon-Gainey, McMahon, and Chacko (2017) affirmed the key role of ER strategies in mental disorders more generally, stressing the relevance for therapy, for example: "… improved emotion regulation is an important target in many psychological interventions" (p. 384).

What, though, is the potential range and what precisely the impact of ER strategies in CG? Has a causal role of ER strategies in CG yet been established? To what extent has empirical research actually demonstrated that ER-related interventions reduce CG? In the field of bereavement research and intervention specifically, we still need to establish which ER strategies underlie the phenomenology of CG and the nature of their impact (cf. Mancini & Bonanno, 2012). To our knowledge, no systematic review of the role of ER strategies in CG has yet been provided to clarify such questions.

To conduct such a review, we first need to establish what exactly ER processes are. Gross (1998) defined ER as *"…the process by which individuals influence which emotions they have, when they have them, and how they experience them. Emotion regulation strategies may be automatic or controlled, conscious or unconscious, and may have their effects at one point or many points in the emotion generative process"* (p. 275). Such principles have since been incorporated

into definitions in both general reviews and in empirical research across a variety of domains (for a conceptual review: Naragon-Gainey et al., 2017; for domain-specific information: Aldao, Nolen-Hoeksema, & Schweizer, 2010; in relation to specific psychopathologies: e.g., Seligowski, Lee, Bardeen, & Orcutt, 2015, for PTSD). Multiple category systems listing intrapersonal ER-related strategies have been developed. Within such systems, strategies are often classified as being either adaptive or maladaptive, and meta-analyses of surveys have generally confirmed that adaptive and maladaptive strategies are on average related to different types of psychopathology in predicted directions (e.g., Aldao et al., 2010; Seligowski et al., 2015). Despite the consistency of such findings, the adaptiveness of a specific ER strategy in a particular situation may depend on multiple factors, including the context in which it is applied and the flexibility with which one can apply ER strategies to different types of stressors (termed oscillation: Stroebe & Schut, 1999, or coping flexibility: Bonanno & Burton, 2013). Surveys, depending on retrospective, trait-like measures of emotion regulation, may not fully capture this complex process.

Therefore, to understand how ER strategies play a role in CG, we aim to examine which ER strategies relate to CG in all types of quantitative research on this topic. To do so, we need a list of common but specific strategies. This was provided in a review by Naragon-Gainey et al. (2017), who selected 10 frequently studied ER strategies (i.e., experiential avoidance, behavioral avoidance, expressive suppression, rumination, worry, acceptance, mindfulness, problem solving, reappraisal, and distraction), providing precise descriptions of each construct. Notably, while this list provides a useful inventarization of often-studied ER strategies, it is not all-inclusive, nor was it intended to be. Therefore, the ER strategies listed by Naragon-Gainey et al. (2017) will serve as a starting point for our review of ER in CG. However, we will evaluate the extent to which these strategies have been studied in bereaved samples, and whether ER strategy categories need to be altered, or added.

How do we go about reviewing the ER-CG relationship? Our approach differs in important ways from that of other reviews in this area. Some researchers have focused on fine-grained examination of a few or single, key ER-CG strategies (e.g., Eisma & Stroebe, 2017). Others have adopted more comprehensive, theory-driven CG-model-building approaches to include a wider range of factors, including but not limited to ER strategies (e.g., Maccallum & Bryant, 2013). By contrast, our focus is both more broadly on the range of different ER strategies (not just one strategy), as well as more narrowly just on ER strategies (and not on other

factors influencing ER or CG). This way, we put the ER strategies themselves under the magnifying glass. In our view, our approach complements the other approaches just described. Not only does our review cover the full range of ER strategies investigated in relation to CG, it does so "a-theoretically," without commitment to any particular theory, thereby remaining as unbiased, nonselective, and comprehensive as possible. To the best of our knowledge, this will be the first systematic review of ER strategies and CG.

In summary: Our main objective in this article is to examine which intrapersonal ER strategies are linked with CG symptoms. More specifically, we set out to review the state of knowledge about associations between ER strategies and CG in bereaved people, derived from quantitative empirical investigations that conducted since the emergence of measures that specifically assess CG symptoms. Our main goal is to provide a systematic overview of scientific research on ER strategies in CG, synthesizing knowledge about helpful and detrimental ER processing following bereavement to inform researchers and health care professionals, and improve psychotherapeutic interventions.

Methods

PREREGISTRATION

This study was preregistered at PROSPERO's international registry of systematic reviews under registration number CRD42017076061 (http://www. crd.york.ac.uk/PROSPERO/display_record.php?ID= CRD42017076061). A PRISMA checklist can be found in Appendix A.

SEARCH STRATEGY

We searched PsycInfo, Web of Science, and PubMed using the keywords "prolonged grief," "complicated grief," "persistent complex bereavement-related disorder," "traumatic grief," OR "pathological grief." No search terms were specified for ER, since searching for the most common phrases to indicate CG would ensure access to potentially relevant papers on ER and CG and would still yield a manageable number of articles. In total, our final search conducted on the January 17, 2019, returned 3,550 articles, of which 1,463 duplicates were removed, leaving 2,087 papers for screening. Screening and selection of papers was done independently by the two authors of this paper. Differences in opinion were discussed until mutual consensus was reached. Following title and abstract screening, 191 articles were retained and after full-text screening 64 articles were selected. Figure 1 shows a PRISMA flowchart.

INCLUSION AND EXCLUSION CRITERIA

Articles published after 1994 were included, as the first validated instrument for complicated grief was developed in 1995 (Inventory of Complicated Grief [ICG]; Prigerson et al., 1995). Articles were further included if they were quantitative, peer-reviewed, English-language scientific journal articles, to safeguard study quality, interpretability and comparability of study results. We considered only articles on ER in bereaved samples (i.e., people who have experienced the death of a close person, e.g., parent, child, spouse, friend) and not people who experienced other types of loss (e.g., missing relatives). Articles needed to include at least one standardized measure of CG, and at least one standardized measure of an ER strategy, the latter according to our previously presented definition (Gross, 1998). That is, a process was regarded as an ER strategy if it describes an automatic or controlled, conscious or unconscious process, which has an effect at one or many points in the emotion generative process, used by individuals to influence the emotions they have, when they have them and how they experience them.

A priori, it was decided to include not only papers of ER measures selected by Naragon-Gainey et al. (2017), but also articles that assessed ER strategies specific to the bereaved, where the strategy pertains to the loss experience, which is not measurable among nonbereaved people (e.g., loss-related avoidance; Boelen & van den Bout, 2010).

Further, a statistical relationship between CG and ER measures needed to be reported in the article. Among other things, this implied that intervention trials were only included if a direct one-on-one relationship could be established between an intervention exclusively targeting a specific ER strategy (e.g., exposure targeting loss-related avoidance) and CG. Thus, trials were included if they tested the effect of a single module of an ER-focused therapy on CG levels (e.g., Boelen et al., 2007), but not if the effect of a multicomponent intervention was tested (e.g., Shear et al., 2016). Moreover, a minimum sample size of bereaved persons was set at 20, so the included studies were (at least) adequately powered to detect strong correlations between constructs ($r = .80$, Cohen, 1988).

Articles were excluded if they only focused on non-ER processes/constructs, such as personality traits (e.g., neuroticism), or more or less static, cognitive constructs (e.g., negative cognitions); if single ER strategies could not be derived from the constructs, including constructs that combine multiple ER strategies (e.g., problem-focused coping); that only partly reflect ER strategies, which cannot be separated from the generic construct (e.g., continuing bonds); potential outcomes of ER strategies (e.g., meaning made), or constructs of relevance to ER that are not specific ER strategies (e.g., emotional clarity). Articles reporting exclusively on symptom analyses,
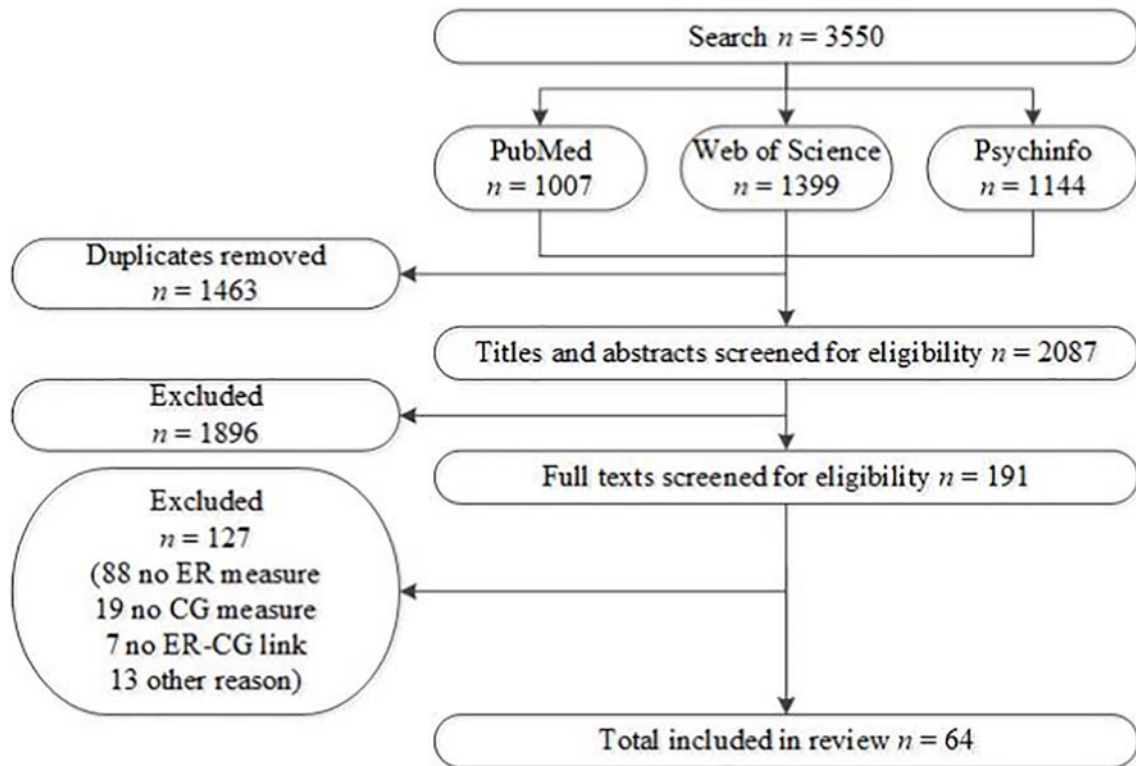
FIGURE 1   PRISMA flowchart of literature search

such as network analyses and latent class analyses, were excluded. Articles employing only measures not specifically designed to assess CG (e.g., normal grief, depression, posttraumatic stress) were also excluded.

DATA EXTRACTION PROCEDURE

We extracted sample characteristics (e.g., gender, age), loss-related characteristics (e.g., time since loss, kinship with deceased), characteristics of the ER measure, CG measure, and statistical associations between ER and CG measures. The second author extracted sample and loss-related characteristics. Both authors independently extracted all other information. Interrater agreement for double-extracted information was high (overall agreement: 95%). Differences in results of the data extraction were discussed until consensus was reached. We used no formal assessment of study quality, as our review covered a wide range of study designs (e.g., surveys, laboratory experiments, randomized controlled trials [RCTs]) and no existing quality assessment tool can provide reliable and valid comparisons of study quality for investigations using many different research designs. Instead, an estimate of the study quality was provided based on the following criteria: (a) inclusion of a control group (yes vs. no), (b) description of sample

characteristics (comprehensive vs. not), (c) study design (more advanced design vs. cross-sectional survey), (d) ER measure (established, oft-used, validated, lab task vs. unvalidated), (e) CG measure: as for ER measure, (f) Effect sizes reported (yes vs. no). Given the large variability in research design, methods, statistical techniques, dependent variables, and low anticipated number of studies for a majority of investigated ER strategies we did not conduct meta-analyses. However, we extracted information on study design to weigh the evidence for specific ER-CG associations, and effect sizes, if these were reported.

Results

Our search (see Figure 1) included 2,087 peer-reviewed papers. The 64 papers identified as eligible were based on 48 independent datasets, due to partial overlap. In total, papers reported on 7,715 bereaved participants (excluding overlapping datasets). Thirty-one reported on cross-sectional surveys (48%), 13 on longitudinal surveys (20%), 11 on quasi-experimental or correlational laboratory studies (17%), 8 on treatment trials (13%), and 1 on a diary study (2%). Forty-one studies (64%) employed a version of the ICG as a measure for CG symptoms.

To summarize the main (unweighted) sample characteristics across studies: Participants were on average 45.81 years old (SD = 11.92), with an average of 78% females. Seventy-two percent (n = 46) of the investigations included samples of people with varying kinship relations to the deceased. Those focusing on specific relationships most frequently studied the loss of a spouse/partner (14%; n = 9), followed by loss of a child (6%, n = 4). Causes of death were categorized into violent versus nonviolent types, with the former including murder, accidents, suicide, and various other traumatic deaths. The percentages of violent deaths in the samples generally comprised significant minorities (28%), with the majority of reports explicitly stating that people experiencing these types of deaths were included (66%, n = 42), and few studies focusing exclusively on people who experienced violent loss (8%, n = 5). The average duration of bereavement at baseline in the studies was 28.93 months (SD = 24.65), spanning recent to long-term bereavement.

Studies of the ER-CG relationship fell mostly within the major categories listed by Naragon-Gainey et al. (2017); only distraction was not covered. The most-investigated strategies were experiential avoidance (n = 23; 36%) and behavioral avoidance (n = 25; 39%).[1] Notably, experiential acceptance [willingness to experience one's current emotions, even if they are aversive] was mainly studied as the opposite of experiential avoidance assessed with versions of the AAQ (e.g., Bond et al., 2011), and will thus not be discussed separately. Rumination (n = 13; 20%), worry (n = 3; 5%), cognitive reappraisal (including meaning making) (n = 3; 5%), problem solving (n = 2; 3%), mindfulness (n = 1; 2%), and expressive suppression (n = 1; 2%), were also studied in relationship to CG. A few ER-CG studies investigated additional strategies such as positive repetitive thought (n = 3; 5%). Additionally, four studies (6%) examined dynamic ER constructs such as coping flexibility.

MAIN FINDINGS

The ER-CG relationship studies are presented in detail in Appendix B. Here we summarize the emerging patterns from the ER-CG studies listed above, following the definitions of Naragon-Gainey et al. (2017, cf. pp 389-390; presented in square brackets below) and established definitions for the additional strategies. In this section, we distinguish

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[1] Given that multiple ER strategies are included in some studies, the total N does not add up to 64.

between concurrent correlational evidence for an ER-CG relationship (cross-sectional surveys), longitudinal correlational evidence (longitudinal surveys, open trials, secondary analyses of RCTs, laboratory studies with or without a control group), and causal evidence (RCTs). If longitudinal analyses controlled for baseline symptoms (n = 7) or analyzed change scores (n = 2), this is highlighted in-text and Appendix B. If any analyses controlled for comorbid (non-CG) symptoms (n = 13), this is shown in Appendix B.

Table 1 shows study quality characteristics. One-fifth of all included studies employed a control group (20%). Sample characteristics were described comprehensively in nearly all papers (97%). Half of all papers employed study designs that were more advanced than cross-sectional surveys (50%). The use of unvalidated measures for ER (12%) and CG (6%) was rare. Effect sizes were reported in about two-thirds of papers (63%).

Given the limited variability in sample characteristics reporting and validity of ER and CG measures, this information is only shown in Table 1. In addition to information about designs (including control group use), reported effect sizes for ER-CG relationship are mentioned below in line with common standards for effect sizes (e.g., r = .10 = small; r = .30 = moderate; r = .50 = large; Cohen, 1988).

Experiential Avoidance

Experiential avoidance [avoiding unwanted internal stimuli, such as thoughts, physical sensations, or emotions], has been studied in two main ways. First, researchers have examined the association between general experiential avoidance (including cognitive avoidance strategies) and CG. Second, researchers have tested associations between cognitive avoidance of loss-related stimuli (i.e., thoughts, memories) and CG.

General Experiential Avoidance

A number of surveys demonstrated moderate to strong positive associations between experiential avoidance and CG symptoms, concurrently and longitudinally (Boelen & Reijntjes, 2008; Boelen et al., 2010; Davis et al., 2016; Eisma et al., 2013; Morina, 2011; Nam, 2016). However, in a small-scale longitudinal survey, experiential avoidance did not predict CG symptoms over and above baseline symptoms (Boelen et al., 2010). Other experiential avoidance strategies, e.g., thought suppression, showed large positive associations with CG symptoms concurrently and longitudinally in surveys (Eisma et al., 2013; Harper et al., 2014; Terhorst & Mitchell, 2012; for a null-result see: Coelho et al., 2016).

Table 1

Quality Assessment of Included Studies

Study (authors, date)	Criterion 1: Control group	Criterion 2: Sample characteristics	Criterion 3: Study design	Criterion 4: ER measure	Criterion 5: CG measure	Criterion 6: ER-CG results, effect size given	Total score (6=highest quality assessment)
Boelen (2007)	N	Y	N	Y	Y	Y	4
Boelen (2009)	N	Y	N	Y	Y	Y	4
Boelen (2010a)	N	Y	N	Y	Y	N	3
Boelen (2010b)	N	Y	N	Y	Y	Y	4
Boelen (2012)	N	Y	N	Y	Y	N	3
Boelen, de Keijser, and Smid (2015)	N	Y	N	Y	Y	N	3
Boelen et al. (2007)	N	Y	Y	Y	Y	Y	5
Boelen, de Keijser, van den Hout, and van den Bout (2011)	N	Y	Y	Y	Y	N	4
Boelen and Eisma (2015)	N	Y	Y	Y	Y	Y	5
Boelen and Klugkist (2011)	N	Y	N	Y	Y	N	3
Boelen and Reijntjes (2008)	N	Y	N	Y	Y	Y	4
Boelen, Reijntjes, and Smid (2016)	N	Y	Y	Y	Y	Y	5
Boelen, Keijsers, and van den Hout (2012)	N	Y	Y	Y	Y	N	4
Boelen and van den Bout (2002)	N	Y	N	Y	Y	Y	4
Boelen and van den Bout (2010)	N	Y	N	Y	Y	Y	4
Boelen, van den Bout, and van den Hout (2006)	N	Y	Y	Y	Y	Y	5
Boelen, van den Bout, and van den Hout (2010)	N	Y	Y	Y	Y	Y	5
Boelen and van den Hout (2008)	N	Y	N	Y	Y	N	3
Bonanno, Keltner, Holen, and Horowitz (1995)	N	Y	Y	N	N	N	2
Bryant et al. (2017) [follow-up to Bryant et al., 2014; so earlier article not reported here]	Y	Y	Y	Y	Y	Y	6
Burton et al. (2011)	Y	Y	N	Y	Y	N	4
Chukwuorji, Ifeagwazi, and Eze (2018)	N	Y	N	Y	Y	Y	4
Coelho, Delalibera, and Barbosa (2016)	N	Y	Y	N	Y	N	3
Davis, Deane, and Lyons (2016)	N	Y	N	Y	Y	Y	4
Delespaux, Ryckebosch-Dayez, Heeren, and Zech (2013)	N	Y	N	N	Y	Y	3
Delespaux and Zech (2015)	N	Y	N	Y	Y	Y	4
Doering, Barke, Friehs, and Eisma (2018)	N	Y	N	Y	Y	Y	4
Dyregrov, Nordanger, and Dyregrov (2003)	N	Y	N	N	Y	Y	3
Eisma, Boelen, Schut, and Stroebe (2017)	N	Y	Y	Y	Y	Y	5
Eisma et al. (2013)	N	Y	Y	Y	Y	Y	5
Eisma, Schut, et al. (2014)	N	Y	Y	Y	Y	N	4
Eisma, Stroebe, et al. (2014)	N	Y	N	Y	Y	Y	4
Eisma, Boelen, et al. (2015)	Y	Y	Y	Y	Y	Y	6
Eisma, Rinck, et al. (2015)	N	Y	Y	Y	Y	N	4
Eisma, Schut, et al. (2015)	N	Y	Y	Y	Y	Y	5
Gander, Schiestl, Dahlbender, Ronel, and Buchheim (2018)	Y	Y	Y	Y	Y	Y	6

Table 1 (*continued*)

Study (authors, date)	Criterion 1: Control group	Criterion 2: Sample characteristics	Criterion 3: Study design	Criterion 4: ER measure	Criterion 5: CG measure	Criterion 6: ER-CG results, effect size given	Total score (6=highest quality assessment)
Glickman, Shear, and Wall (2017)	Y	N	Y	Y	Y	N	4
Gupta and Bonanno (2011)	Y	Y	Y	N	N	N	3
Harper, O'Connor, and O'Carroll (2014)	N	Y	N	N	Y	Y	3
Hershenberg, Paulson, Gros, & Acierno (2015)	N	N	Y	Y	Y	Y	4
Johnsen, Dyregrov, Matthiesen, and Laberg (2018)	N	Y	Y	Y	Y	Y	5
Kaplow et al. (2013)	N	Y	N	Y	Y	Y	4
Knowles and O'Connor (2015)	N	Y	N	Y	Y	N	3
Lenferink, Wessel, and Boelen (2018)	N	Y	N	Y	Y	Y	4
Lichtenthal and Cruess (2010)	Y	N	Y	Y	Y	Y	5
Maccallum and Bryant (2010a)	Y	Y	Y	Y	Y	N	5
Maccallum and Bryant (2010b)	Y	Y	Y	Y	Y	Y	6
Maccallum, Sawday, Rinck, and Bryant (2015)	Y	Y	Y	Y	Y	N	5
Mancini and Bonanno (2012)	Y	N	Y	Y	N	N	3
Meert et al. (2010)	N	Y	N	Y	Y	Y	4
Meert et al. (2011)	N	Y	Y	Y	Y	Y	5
Follow-up of 2010 study							
Monk, Houck, and Shear (2006)	Y	Y	Y	Y	Y	N	5
Morina (2011)	N	Y	N	Y	Y	Y	4
Nam (2016)	N	Y	N	Y	Y	Y	4
O'Connor and Arizmendi (2013)	Y	N	Y	Y	Y	N	4
Pohlkamp, Kreicbergs, Prigerson, and Sveen (2018)	N	Y	N	Y	Y	Y	4
Schneck et al. (2018)	N	Y	Y	Y	Y	N	4
Shear et al. (2007)	N	Y	N	Y	Y	Y	4
Stahl and Schulz (2018)	N	Y	N	Y	Y	Y	4
Tang, Eisma, Li, & Chow (2019)	N	Y	N	Y	Y	Y	4
Terhorst and Mitchell (2012)	N	Y	N	Y	Y	Y	4
van der Houwen, Stroebe, Schut, Stroebe, and van den Bout (2010)	N	Y	Y	N	Y	N	3
Yu et al. (2017)	N	Y	Y	Y	Y	N	4

Note. Assessment of quality is based on study design characteristics, derived from 6 columns in Appendix B (I-r, from 2nd column), range=0-6. Y=yes; N=no. Details of the rated criteria: 1. Inclusion of control group: includes bereaved control groups. 2. Detailed sample characteristics: Y=all details included or only one "not given"; N=two or more "not given". 3. Study design: Y=longitudinal correlational (longitudinal surveys, open trials, secondary analyses of RCTs), quasi-experimental evidence (laboratory studies with a control group) and causal evidence (RCTs), N=cross-sectional surveys. 4. ER measure: Y=established / often used / validated measure or lab tasks / treatment; N=not established etc. measure. 5. CG measure: as for ER measure. 6. ER-CG results, Y=effect size given

Loss-Related Experiential Avoidance

Surveys demonstrated moderate to large positive relationships between loss-related cognitive avoidance (e.g., memory avoidance; thought suppression) and CG symptoms concurrently (Boelen et al., 2015; Boelen & Eisma, 2015; Boelen & van den Bout, 2010; Eisma et al., 2013), and longitudinally (Eisma et al., 2013), also while controlling for baseline symptoms (Boelen & Eisma, 2015). Other investigations, assessing multiple types of loss-related avoidance (mostly experiential) with one generic measure and CG symptoms, demonstrated large positive associations between these constructs concurrently and longitudinally (Boelen, 2009; Boelen, 2010a; Boelen & Klugkist, 2011; Boelen, van den Bout, & van den Hout, 2006).

However, some surveys yielded contrasting results. One cross-sectional survey demonstrated a negative concurrent association between loss-related thought suppression and CG symptoms (Boelen & van den Hout, 2008), and one study did not find an incremental predictive value of loss-related avoidance longitudinally, over and above baseline CG levels (Boelen, van den Bout, & van den Hout, 2006). Similarly, a small-scale laboratory study with a longitudinal follow-up suggested long-term adaptiveness of early emotional avoidance (Bonanno et al., 1995). In this study, negative dissociation (i.e., low reported emotionality during an interview about the deceased and high heart rate responsivity) scores at 6 months post-loss were linked with lower (< median) CG symptoms both at 6 and 14 months post-loss.

A secondary analysis of an RCT demonstrated that pre-post reductions in cognitive-loss-related avoidance related positively to pre-post CG symptom reduction in CBT (Boelen et al., 2011). Three RCTs provided causal evidence for a role of loss-related experiential avoidance in CG. Exposure treatments, including exercises to confront oneself with thoughts about permanence of separation from the deceased, reduced CG symptoms relative to waitlist and active control groups, yielding large effects (Boelen et al., 2007; Eisma, Boelen, et al., 2015), and more effectively reduced CG symptoms when added to cognitive behavioral treatment (CBT) than CBT alone (Bryant et al., 2014; Bryant et al., 2017).

Behavioral Avoidance

Behavioral avoidance [avoiding external stimuli (e.g., situations, people, places) that evoke unwanted emotions] has been investigated in two ways, namely, by investigating overt behavioral avoidance of loss-related stimuli, which we will term loss-related behavioral avoidance, and by studying behavioral avoidance of social, occupational, and recreational activities, also termed depressive avoidance (Boelen & van den Bout, 2010).

Loss-Related Behavioral Avoidance

Three surveys studied behavioral avoidance of loss-related objects or situations. Shear et al. (2007) showed that the avoidance of objects, situations, and activities that may remind one of the loss had small to moderate positive associations with CG symptoms. Meert et al. (2010, 2011) also showed small concurrent and longitudinal associations between such avoidance behavior and CG symptoms. However, Meert et al. (2011) also supported a *negative* association between reductions on generic measure of loss-avoidance and reductions in CG symptoms between 6 and 18 months post-loss. In another survey, avoidance of loss-related situations were unrelated to CG symptoms (Boelen & van den Hout, 2008).

There is also a growing literature reporting quasi-experimental laboratory studies of behavioral avoidance of loss-related cues, but despite the promise of insight from this type of study, results are thus far inconclusive (and effect sizes often small or not reported). A series of Stroop tasks demonstrated longer reaction times when color naming loss-related words (vs. non-loss words) and the deceased name (vs. name other attachment figures) for people with CG versus people without CG (Maccallum & Bryant, 2010a; O'Connor & Arizmendi, 2013; Schneck et al., 2018: for a different result with a more complex task, see Mancini & Bonanno, 2012). Two studies to date used an Approach Avoidance Task to assess the relation between implicit behavioral approach and avoidance of loss-related cues (e.g., picture funeral; Maccallum et al., 2015) and loss-reality cues (i.e., picture deceased + loss word; Eisma, Rinck, et al., 2015) and CG symptoms. Maccallum et al. (2015) found that people with CG pushed grief stimuli more slowly than non-CG participants, and that people with CG were faster at pulling grief stimuli towards them than pushing them away. However, this study did not show that the CG group had significantly larger differences between push-pull difference scores than the non-CG group. Eisma, Rinck, et al. (2015) similarly reported null-results regarding the relation between this push-pull difference score and CG symptoms, in a regression analysis also controlling for age and rumination levels. Yu et al. (2017) further showed that a group with high CG symptoms (vs. low CG symptom group) was slower to respond to death-related (vs. living-related) words in subliminal and supraliminal tasks, indicating that people with CG showed relative avoidance of death-related words.

Gander et al. (2018) also showed that looking away from a cemetery picture during an interview was associated with CG. However, Eisma, Schut, et al. (2014) found no convincing evidence for a role of CG symptoms in attentional avoidance of loss-reality stimuli over and above grief rumination levels in an eye-tracking task.

Contrasting these mixed findings, secondary analyses of RCTs have consistently demonstrated a potential role of behavioral loss-related avoidance in CG. Pre-post treatment changes in situational loss-related avoidance were associated with pre-post treatment changes of CG in CBT (Boelen et al., 2011). Similarly, pre-to-post treatment changes in loss-related behavioral avoidance was an independent mediator (while controlling for mediators guilt, self-blame, and negative cognitions) of the pre-post treatment changes in CG in CBT (vs. interpersonal psychotherapy; Glickman et al., 2017).

Depressive Avoidance

Depressive avoidance was investigated in 10 studies. Surveys demonstrated moderate to large positive associations between depressive avoidance and CG symptoms concurrently (Boelen, 2012; Boelen et al., 2015; Boelen & Eisma, 2015; Boelen & van den Bout, 2010; Eisma et al., 2013) and longitudinally (Eisma et al., 2013). However, in a longitudinal analysis controlling for baseline symptoms and loss-related avoidance, depressive avoidance did not predict CG symptoms (Boelen & Eisma, 2015).

Relatedly, one cross-sectional survey with multiple samples demonstrated moderate to large positive association between seeking social isolation and CG symptoms (Dyregrov et al., 2003). Engaging in pleasurable social activities (e.g., sports, visiting friends) was negatively related to CG symptoms (Stahl & Schulz, 2018). In a 2-week diary investigation of activity patterns, it was demonstrated that bereaved people with CG on average had less days they had contact with others, had breakfast, lunch, or dinner, started work, went outside, napped or had an evening snack (Monk et al., 2006).

Last, two trials shed some light on the relationship between depressive avoidance and CG symptoms. An open trial of behavioral activation among 20 people with elevated CG symptoms, temporal reductions were observed in CG symptoms, but these changes were unrelated to changes in activity patterns (Hershenberg, Paulson, Gros, & Acierno, 2015). Causal evidence for a role of depressive avoidance in CG was provided in an RCT of Eisma, Boelen, et al. (2015), which demonstrated in an intention-to-treat analysis that a module of behavioral activation led to large reductions of CG symptoms relative to a waitlist group.

Rumination

The association between different types of rumination (repetitively thinking about the experience, causes, and consequences of negative emotion in a passive manner) and CG symptoms has also been frequently investigated. The trait tendency to engage in ruminative self-focus is concurrently and longitudinally moderately positively associated with CG symptoms (Eisma, Stroebe, et al., 2014; Eisma et al., 2013; Morina, 2011; Tang, Eisma, Li, & Chow, 2019), but did not predict CG symptoms over a year when controlling for baseline symptoms (Eisma et al., 2013).

Depressive rumination (thinking repetitively about causes and consequences of depressive symptoms) is higher in bereaved people with probable CG compared to those without (Delespaux & Zech, 2015). The depressive rumination subtype brooding generally shows moderate to large positive concurrent and longitudinal associations with CG symptoms, whereas such associations are small or nonsignificant for reflection (Boelen et al., 2012; Boelen et al., 2016; Doering et al., 2018; Eisma, Stroebe, et al., 2014; Eisma, Schut, et al., 2015; Lenferink et al., 2018). In one longitudinal study, brooding was no longer associated with CG symptoms longitudinally, after controlling for baseline CG symptoms and various cognitive and personality variables (Boelen et al., 2016). Another study demonstrated that both reflection and brooding were both *negatively* associated with CG symptoms 6 to 12 months later when controlling for background characteristics, neuroticism, and baseline symptoms (Eisma, Schut, et al., 2015).

Grief rumination (repetitive thinking about the causes and consequences of the loss) was also higher in people with higher (vs. lower) CG symptom levels with a large effect size (Doering et al., 2018) and vice versa, high grief ruminators demonstrate higher CG symptom levels than low grief ruminators (Eisma, Schut, et al., 2014). Grief rumination and its subtypes generally show moderate to large positive associations with CG symptoms concurrently and longitudinally (Boelen, 2012; Boelen & van den Hout, 2008; Doering et al., 2018; Eisma et al., 2013; Eisma, Schut, et al., 2015; Johnsen et al., 2018; Pohlkamp et al., 2018; Tang et al., 2019; van der Houwen et al., 2010). In one study, grief rumination was related to CG symptoms, even when controlling for baseline symptoms (but this effect was marginally significant; Eisma et al., 2013). Similarly, grief rumination about injustice and social relationships predicted higher CG symptoms, whereas rumination about emotional reactions predicted lower CG symptoms in a multivariate longitudinal

analysis, controlling for baseline symptoms, background characteristics, and neuroticism (Eisma, Schut, et al., 2015).

RCTs on CBT further demonstrated the importance of rumination by showing that CBT treatments yield moderate to large effects on grief rumination and depressive rumination (Boelen et al., 2011; Eisma, Boelen, et al., 2015). A secondary analysis of the effects CBT further demonstrated that pre-post changes in grief rumination were associated with pre-post CG symptom change (Boelen et al., 2011).

Worry

The relationship between worry (repetitive, negative thoughts and images about the future) and CG symptoms was examined in three surveys that showed moderate positive associations between worry and CG symptoms concurrently and longitudinally (Boelen, 2010b; Boelen et al., 2016; Eisma et al., 2017). One longitudinal study demonstrated that worry predicted CG symptoms over and above baseline symptoms and background variables (Eisma et al., 2017). Boelen et al. (2016) showed that worry was associated with CG symptoms concurrently and longitudinally, but no longer when controlling for background variables, intolerance of uncertainty, neuroticism and depressive rumination (and baseline symptoms in longitudinal analyses).

Positive Repetitive Thought

Positive repetitive thought styles (including positive rumination, repetitive thought about positive emotion, and trait tendencies to enhance or dampen positive affect) and CG symptoms were assessed in three studies. Moderate negative associations were found between general positive thought, positive thought on daily functioning, self-evaluation, others' evaluation of self, future expectations, and social functioning, and CG symptoms (Boelen, 2007). Another study showed moderate negative associations between general positive thought and CG symptoms (Boelen & van den Bout, 2002). Lenferink et al. (2018) showed that enhancing positive emotions had a small negative association with CG symptoms, while dampening of positive emotions had a small positive association with CG symptoms. Enhancing but not dampening was significantly associated with CG symptoms over and above sociodemographic variables and brooding.

Cognitive Reappraisal

Two surveys investigated strategies akin to cognitive reappraisal (changing one's perspective or interpretation to recognize positive aspects of a situation). Chukwuorji et al. (2018) demonstrated a small positive association between deliberate rumination (a process measure of meaning making) and CG symptoms in an African bereaved sample. Terhorst and Mitchell (2012) found nonsignificant relationships between positive reinterpretation and CG symptoms in a small-scale survey. Causal evidence was found in an RCT by Lichtenthal and Cruess (2010), who showed that increasing finding benefits in the loss decreased CG symptoms more strongly than a waitlist.

Problem Solving

Two studies shed light on the relation between problem solving (attempts to actively modify an undesirable situation or its consequences) and CG symptoms. One small-scale cross-sectional survey did not find a positive association between a tendency to engage in planful problem solving and CG symptoms (Terhorst & Mitchell, 2012). However, a quasi-experiment demonstrated that bereaved people with CG (vs. without) performed poorer on social problem-solving ability assessed with the Means-End Problem Solving Task (Maccallum & Bryant, 2010b).

Other ER Strategies

The relationships between other ER strategies and CG symptoms were studied too infrequently to warrant detailed consideration (but for a small-scale multivariate approach, see Terhorst & Mitchell, 2012). However, based on Naragon-Gainey et al.'s (2017) selection of ER strategies, the negative association between mindfulness (an open awareness of the present moment without evaluation) and CG symptoms found in one recent large-scale survey is notable (Tang et al., 2019). Moreover, expressive suppression (inhibiting the outward expression of an emotion) was concurrently positively associated with CG symptoms in a small cross-sectional survey (Kaplow et al., 2013).

Dynamic ER Constructs

While not the explicit focus of the present review, it warrants mention that four studies specifically aimed to investigate dynamic interrelations between ER strategies and CG symptoms. Multiple cross-sectional surveys assessed if coping flexibility (assessed as a balance between self-reported coping with loss-related stressors and coping with restoration-related stressors) was associated with CG symptoms. Loss-related stressors are those to do with the loss of the close person; restoration-related stressors refer to stressful changes in ongoing life, matters that also have to be dealt with besides the bereavement itself. A comparative study by Burton et al. (2011) showed that bereaved people with CG report coping less with restoration-

oriented stressors, and show less coping flexibility than bereaved people without CG and nonbereaved married participants. Similarly, Knowles and O'Connor (2015) found that less restoration-oriented coping and coping flexibility were related to higher CG symptoms, and Delespaux et al. (2013) reported that using more loss- versus restoration-oriented coping showed a large positive association with CG symptoms.

Relatedly, Gupta and Bonanno (2011) demonstrated that bereaved people with CG showed less emotional flexibility (enhancing or suppressing emotional expression) compared to bereaved people without CG and a nonbereaved married group. That is, people with CG appeared relatively less emotionally flexible while watching evocative pictures.

Discussion

In this review, we set out to establish the state of knowledge about the role of ER strategies in relation to CG. The clinical importance of this endeavor cannot be underestimated, because—unlike other variables that impact on post-loss adjustment (e.g., the circumstances of death)—such strategies are potentially changeable and amenable to intervention. A first main finding was that all frequently studied ER strategies identified by Naragon-Gainey et al. (2017) had been studied in relation to CG. Only the relationship between distraction and CG was not explicitly considered. A second main finding was that, with a few notable exceptions, associations between ER strategies and CG symptoms were in the expected direction. Putative maladaptive ER strategies (e.g., experiential avoidance, behavioral avoidance, expressive suppression, rumination, and worry) were generally positively associated with CG symptoms, whereas putative adaptive ER strategies (e.g., problem solving, cognitive reappraisal and mindfulness) were generally negatively associated with CG symptoms. Additionally, positive repetitive thought and emotional and coping flexibility were investigated in relation to CG. Positive thought, enhancing positive affect, and emotional and coping flexibility were negatively associated with CG, yet dampening positive affect was positively related to CG.

What does the review reveal about specific ER strategies and their link with CG? Avoidance strategies have received most empirical attention. Experiential avoidance, both as a general process (i.e., cognitive and emotional strategies to avoid unwanted internal stimuli) and as loss-related avoidance (i.e., avoidance of loss-related thoughts, emotions and memories), was strongly and generally consistently associated with CG in cross-

sectional surveys. The same picture emerged from longitudinal surveys. However, longitudinal associations between experiential avoidance and CG sometimes did (Boelen & Eisma, 2015), and sometimes did not (Boelen et al., 2010) hold when controlling for baseline symptoms. Particularly notable was the finding that multiple RCTs showed that exposure to cognitively avoided aspects of the loss strongly reduced CG symptoms relative to active or inactive control groups (Boelen et al., 2007; Bryant et al., 2014, 2017; Eisma, Boelen, et al., 2015). The evidence for a role of experiential avoidance in CG can therefore be regarded as strong.

Complementing these results is the strong evidence for positive relations between grief rumination, a process which serves an avoidant function (e.g., Eisma et al., 2013), and CG. Grief rumination was also generally consistently associated with CG in cross-sectional surveys and longitudinal surveys (even when controlling for baseline symptoms; Eisma et al., 2013; Eisma, Schut, et al., 2015), and RCTs demonstrated that exposure for CG causes reductions in rumination (Boelen et al., 2007; Eisma, Boelen, et al., 2015). Moreover, reductions in grief rumination were related to treatment effects on CG symptoms in such trials (Boelen et al., 2011).

Results were less conclusive regarding links between trait rumination and depressive rumination and CG. Despite generally consistent cross-sectional and longitudinal associations for trait rumination and depressive rumination with CG, no studies yet demonstrated that longitudinal associations in expected directions exist when controlling for baseline symptoms. Moreover, only one RCT demonstrated that exposure (vs. waitlist) reduced depressive rumination (Eisma, Boelen, et al., 2015). Fewer studies were available on the related strategy of worry, yet we found some evidence for concurrent and longitudinal associations with CG. Worry predicted symptoms longitudinally over and above baseline symptoms in one study (Eisma et al., 2017), yet not in another (Boelen et al., 2016).

Loss-related behavioral avoidance (i.e., avoidance of loss-related cues) was concurrently and longitudinally positively related to CG symptoms in surveys (although no longitudinal analyses demonstrated that it predicted residual symptom change). Secondary pre-post change analyses of RCTs also supported the importance of behavioral loss avoidance in the treatment of CG (e.g., Glickman et al., 2017). However, laboratory studies have yielded equivocal findings on avoidance of loss-related cues and CG, sometimes yielding positive associations (Gander et al., 2018; Yu et al., 2017), sometimes

null-results (Eisma, Rinck, et al., 2015), and sometimes negative associations (Maccallum et al., 2015). One explanation for these mixed findings is methodological: cues that people with CG avoid are often highly idiosyncratic, as they are interlinked with one's personal experiences (e.g., avoiding looking at pictures of the deceased from the holiday before the death). Therefore, identifying the optimal cues to use in experiments on approach and avoidance tendencies in group-based experiments is difficult. Relatedly, loss-related approach behaviors (e.g., proximity seeking to the deceased) may paradoxically serve to avoid the reality of the loss (cf. Field, Gal-Oz, & Bonanno, 2003), which makes it difficult to develop laboratory tasks that uniquely assess avoidance behavior most typical to CG.

A qualitatively different avoidance strategy concerns the behavioral avoidance of social, recreational, and professional activities, which related concurrently with CG symptoms in most surveys, yet not always longitudinally when controlling for baseline symptoms. Activity patterns also appear to be different for people with CG. An open trial and an RCT further provided evidence that behavioral activation reduces CG symptoms.

Putative adaptive ER strategies have received considerably less attention, so strong conclusions cannot be drawn. Nevertheless, positive thought, cognitive reappraisal, problem solving, and mindfulness were mostly associated negatively with CG in cross-sectional surveys tentatively supporting their proposed adaptive effects.

Last, despite the long-standing prominence of coping flexibility theories within bereavement research (Burton et al., 2011; Stroebe & Schut, 1999), we only identified three studies specifically examining coping flexibility (and one examining the related construct of emotion flexibility) in relation to CG. Since these three studies were surveys, they could not provide a stringent empirical test of the idea that flexible use of specific ER strategies to different stressor types, occurring in certain contexts, may contribute to CG. Instead, they demonstrated that an imbalance in coping with a predominant focus on loss-related stressors as opposed to restoration stressors, related positively to CG.

In summary, the available evidence strongly supported a role for experiential avoidance and (grief-related) rumination in perpetuation and treatment of CG. Behavioral avoidance of activities was causally related to CG symptoms in treatment trials, but longitudinal analyses did not consistently demonstrate temporal precedence in this ER-CG relationship. Similarly, one longitudinal survey supported that worry precedes CG symptoms, but causal studies of this relationship were not con-

ducted. Findings are in line with contemporary theories that posit that avoidance strategies perpetuate CG (e.g., Boelen, van den Hout, & van den Bout, 2006; Shear et al., 2007). Clinically, it supports the use of specific cognitive-behavioral techniques that target loss-related avoidance strategies, such as exposure, or those that aim to reduce behavioral avoidance of activities, such as behavioral activation. However, evidence for a role of behavioral loss avoidance in CG is mixed. Research on coping flexibility, and putative adaptive ER strategies such as positive thinking, cognitive reappraisal, problem solving, and mindfulness in CG have not gone beyond establishing cross-sectional associations.

Some limitations and conceptual issues should be considered. First, while associations between ER strategies and CG symptomatology were demonstrated, temporal precedence *and* causality in these relationships has not been established for the majority of ER strategies. These strategies may thus be consequences rather than causes of CG. Testing temporal precedence and causality in ER-CG relations is a major task for future research.

Second, since this is the first systematic review of the relationships between ER strategies in CG, we wished to be comprehensive. This led us to use a broad definition of emotion regulatory strategies (including automatic and controlled, and conscious and unconscious processes). For the same reason, we decided to include all study types and designs, as long as the studies shed light on an ER-CG relationship. However, this decision comes at a cost: the considerable variability in our study set restricts our opportunities to conduct a meta-analysis. Had we chosen a more narrow definition of ER strategies, or had we set out to be less comprehensive in our scope, then this may have led to the inclusion of different ER strategies in our review or to a different presentation of our results.

Third, despite our broad scope, inclusion criteria were strict. For example, research on some constructs, although frequently investigated, could not be considered, as they had not been assessed appropriately. To illustrate, while meaning making and benefit finding could be considered processes involving cognitive reappraisal, researchers commonly assess them as "meaning made" or "benefit found." Since these constructs are outcomes of applying an ER strategy, yet not the ER strategy itself, these studies could not be included.

Fourth, bereaved adult women from western countries recruited through convenience sampling from the general community were overrepresented in the included studies, potentially limiting the generalizability of findings. Relatedly, the majority

of studies used a version of the ICG (Prigerson et al., 1995) to assess CG, and this instrument does not assess all current criteria for ICD-11 PGD and DSM-5 PCBD. Future research should thus establish if the results from this review apply to people with these disorders.

Suggestions for future research directions emerge from the limitations. To clarify temporal relationships between ER strategies and CG we recommend intensive longitudinal studies, including diary-based approaches, applying cross-lagged analyses. To establish causality, treatment-component randomized controlled trials, and laboratory experiments, in which specific ER strategies are manipulated and (state) CG symptoms are used as dependent variables, are recommended. Furthermore, we advocate the use of validated ER measures, and new CG measures, that assess the most current criteria for ICD-11 and DSM-5 grief disorders. Other directions for future research include further examination of putative adaptive emotion regulation strategies and clarifying the temporal relations between ER strategies and interactions between different ER strategies on CG symptoms.

CONCLUSION

Given recent developments in diagnostic handbooks, we considered it timely to comprehensively review research on ER-CG relationships, providing an overview of current knowledge to guide future research and practice. Despite the limitations in the database, the take-home message is clear: On balance, our review has shown that experiential avoidance, (grief) rumination, and (to a lesser extent) behavioral avoidance play a crucial part in the persistence and treatment of CG. Preliminary evidence emerged for potential roles of worry, positive thought, cognitive reappraisal, problem solving, and mindfulness in CG. We consider it critical to build on current knowledge, using diverse, more advanced methodology, to enhance our understanding of the ER mechanisms underlying CG. In our view, this is one of the most urgent aims for scientific investigation in the bereavement field for the near future.

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Conflict of Interest Statement

The authors declare that there are no conflicts of interest.

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