Grief in the Digital Age
Review, Synthesis, and Directions for Future Research

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Abstract. Death and grief are going digital. Start-up companies are working on avatars that people feed with personal information while alive so that relatives can communicate with this artificial self after death. This is supposed to make it easier to say goodbye. Considering these digital innovations, the IS community should be the leading discipline for handling grief. However, IS scholars attribute grief to other disciplines, such as psychology. Like any crisis, also grief cannot be merited to one single discipline. We conduct a literature review and synthesis alongside the 'BAO framework' [1]. Findings suggest that IS research has so far not grasped the consequences of grief on either individual or organizational and societal levels. To spark future research, we propose 9 clear-cut IS research questions. The provided comprehensive understanding of IS intersecting grief is crucial for different (also practical) stakeholders to leverage the potential of IS in coping with grief.

Keywords: grief, bereavement, mourning, literature review, research agenda

1   Introduction

Grief is widely acknowledged as a unique feeling, unprecedented in unpreventable and irreversible harm, usually without blamable objects [2, 3]. Grief affects mental and physical health and the global economy [4, 5]. People cope and react to death in very different ways [6]. However, in Western society, the relationship with death remains similar among different groups of people [7, 8]. As Western society moves towards an online-focused world, more and more people utilize digital means such as social media for mourning and grieving [8].

Admittedly and obviously, grief is not an original IS topic. So why not leave it to the psychologists or sociologists to solve it? In line with others before us, we see leverage for crisis response in involving different perspectives and gathering insights between and across disciplines [9–11]. Particularly, we argue that in crises, be it personal crises such as grief or societal crises such as pandemics or climate change, the distinction of the discipline becomes less important [9–11]. Instead, we advocate embracing the

variety of knowledge that can be utilized to study crises and create quick and substantiated collaborative responses [11]. IS arguable holds much potential and many solution approaches to be involved in this crisis:

First, our community has the self-image to be interdisciplinary at its core [11]. We have a broad canon of methodologies and theories, as well as interfaces with other disciplines allowing us to take two stances in crises: (1) Understanding the crises (e.g., tracing and collecting data) and (2) developing ways to handle them and mitigating the consequences [11]. Second, in the growing awareness of our interdisciplinarity as a strength, senior scholars shaping the field call for exploiting this potential via turning to research questions spanning the entire social-technical continuum [e.g., 12]. Third, at least in the light of global crises, such as the pandemic or dwindling environmental resources, new schools of thought within IS emerge, such as the novel strand "IS for resilience," describing the phenomenon that individuals are increasingly dependent on IS to adjust to major disruptions or indeed overcome them [e.g., 13, 14].

In summary, the academic community has started to respond to some extent to global crises, as evidenced by the articles and special issues published in our top-tier journals [e.g., 15] and conference themes [e.g., 16]. Within the field of personal crises and particular grief crises, however, the response has been scarce. The need to explore how the handling of grief may be facilitated by IS has been articulated by numerous non-IS scholars [e.g., 2, 7, 8, 17, 18]. What is more, digital social innovations increasingly foster the context of death: Examples span from avatars or personal virtual twins surviving one's death [19], over AI algorithms used to facilitate digital reincarnations [20], to the digitalization of cemeteries [21].

Overall, these calls and innovations suggest that a holistic, calculated, and orchestrated approach to the design, implementation, and use of IS for grief is required. The aims of this work are threefold. First, we aim to provide thought leadership to the IS community on tackling the varied and complex emotions and circumstances in personal grief crises. Second, we want to spur relevant, rigorous, and critical research in this domain that underscores the role of IS as a source of solutions and applicable knowledge for coping with grief. These aims translate into the research question:

What is the role of IS in grief?

We conduct a structured literature review and use Melville's [24] Belief-Action-Outcome (BAO) framework as a structural foundation to answer our research question. The framework links beliefs, actions, and outcomes of individual, organizational, and societal actors and is therefore well-suited to analyze the impact of IS on grief on the three levels of the framework: micro-, macro-, and multilevel. The micro-level is action-oriented and focuses on the individual [1]. The outcome orientated macro-level in contrast focuses on societal and organizational structures. The multi-level can be further categorized in two categories: the macro-micro level (belief-oriented with a focus on the influence of societies and organizations on individuals) and the micro-macro-level (outcome-oriented with a focus on the influences of individuals on social and/or organizational systems) [1, 22]. Based on the relationships and levels outlined in the framework, we develop concept matrices that allow us to systematically synthesize and discuss prior research and identify blind spots [22]. Findings suggest that research on IS intersecting grief focuses on multi-levels but neglects a sharp focus

on either micro- or macro-levels. We argue that we need to understand the impact on the individual, organizational, and societal levels thoroughly to examine the influence of IS on grief more thoroughly. We offer 9 research questions for future research. Regarding the practical implications of our work, we believe that a comprehensive understanding of the interplay of grief and IS is crucial for different stakeholders to leverage the potential of IS in coping with grief.

2 Theoretical Background

2.1 Grief

Grief is most easily understood as the response to death [17] and distinguished from bereavement or mourning: While bereavement simply describes the condition of having lost a loved one, mourning refers to expressing grief [23]. Though, grief and mourning are used interchangeably in prior literature and so in our study as there are blurring boundaries between one's inner and outer reaction to a death.

People cope with death in very different ways. The society they are embedded in most affects these mechanisms and processes [8]. Particularly, the cultural belief system and societal norms affect our mourning so that each culture approaches a different death system [6]. In Western society, people grief in similar ways [7, 8]. Therein, grief has long been kept in private, as it is not a popular topic of conversation [3]. Specifically, before the advent of social media, the social support one could receive in the aftermath of a loved one's death was limited to offline networks, which tended to be smaller in number and restricted to one's immediate communities, such as family or friends [24]. In the 21st century, an emerging coping mechanism is grieving via digital means, such as social media or virtual support groups [3, 8]. Particularly, social media platforms have become popular spaces for public expressions of grief and other health issues, where at any time, social support is easier to access than a person in one's physical vicinity [3, 17, 25]. In this regard, there is increasing awareness that (social media) group membership affects individuals' health and well-being [26, 27]. All these developments make respective digital spheres a primary social space, rather than merely a secondary or supplementary one [8, 18, 28].

Overall, grief is a multi-level phenomenon, i.a., shaped by societal norms and processed on social media platforms triggering business model innovations [28].

2.2 The Belief-Action-Outcome Framework

We build upon Melville's [29] BAO framework to analyze the literature on IS intersecting grief. The BAO framework is well-suited to structure a review of interdisciplinary literature on the multi-level phenomenon of grief: First, it roots in sociology [29] and thus, is well suited to structure research questions spanning the social-technical continuum [12]. Second, it was developed for debuting another novel topic to the field of IS – environmental sustainability [1, 22]. Hence, it may be well suited to open the door for further, interdisciplinary topics into the field of IS.

The BAO (Figure 1) describes how beliefs are formed, actions are executed, and outcomes are assessed on societal or organizational levels. It links these macro-level constructs (society, organizations) with micro-level constructs (individuals). Micro-level studies take an action-oriented perspective and focus on how psychic states (e.g., norms, attitudes, or beliefs about death or grief) translate into actions at the individual level [1]. Macro-level studies focus on societal and organizational structures and take an outcome-oriented perspective as they focus on effects on societal and organizational behavior. Macro-micro relationships refer to a belief-oriented perspective and focus on the influence of societal and organizational structures on an individual's beliefs. Further, micro-macro-relationships refer to an outcome-oriented perspective and focus on the effects of individual, collective actions on social or organizational systems [1, 22]. The following links, nail down micro- and macro-level relationships:

- Societal structures shape individual psychic states (link 1, macro-micro)
- Organizational structures shape individual psychic states (link 1', macro-micro)
- Individual psychic states shape individual actions (link 2, micro)
- Individual actions shape the social system (link 3, micro-macro)
- Individual actions shape organizations (link 3', micro-macro)
- Societal structures shape social systems (link 4, macro)
- Organizational structures shape organizations (link 4', macro)
- Societal structures shape organizations (link 5, macro)
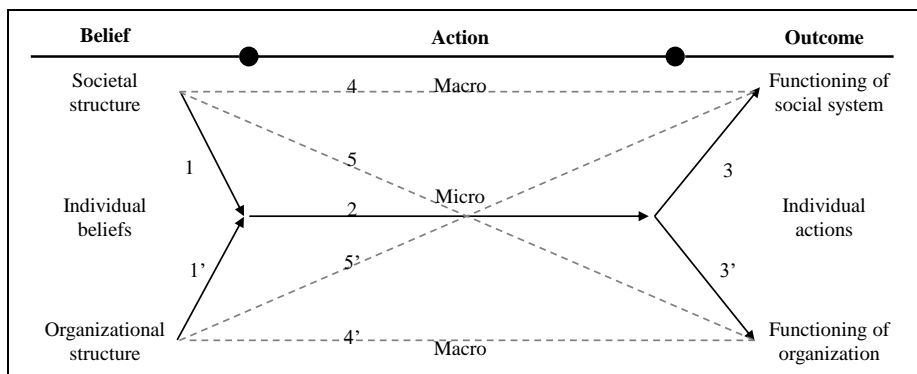- Organizational structures shape societies (link 5', macro)

Figure 1. Belief-Action-Outcome framework as developed by Melville [1] and also used in the work of Henkel and Kranz [22]

3   Method

With the BAO framework in mind, we conducted a structured literature review. A structured literature review is particularly appropriate for our endeavor, as similar research questions at the intersection of IS and grief have been analyzed in different domains (e.g., psychology [17], sociology [7, 18], IS [25]). In line with the suggestion

of vom Brocke et al. [30], Webster and Watson [31], and Wolfswinkel et al. [32], our structured literature review process included five steps (Figure 2).
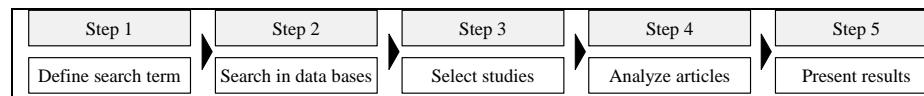
Step 1	Step 2	Step 3	Step 4	Step 5
Define search term	Search in data bases	Select studies	Analyze articles	Present results

Figure 2. Research Approach

(1) Concerning our search string, we considered two components. First, we included the different terms reflecting emotions after death, including *grief*, *mourning,* or *bereavement*, as defined in the theoretical background. We yielded for respective studies in the digital or online context to find literature on IS intersecting grief. Second, we also focused on digital or online places where these emotions may unfold and searched for literature dedicated to *digital* or *online memorials* or *cybermemorials*. We searched in titles, abstracts, and keywords in June and July 2021.

(2) We selected the databases AIS eLibrary and Scopus due to their inclusion of multiple journals from different disciplines. As AIS eLibrary specializes in information systems and covers conference proceedings [33], which are typically more recent, it was chosen as one of the databases. AIS eLibrary was extended by Scopus, which provides a comprehensive database in diverse disciplines. Therefore, combining these two databases aims to reflect the current level of research concerning digital grief.

(3) In Scopus, the initial search yielded 1.338 works. To ensure a high-quality sample, we included studies from journals with an impact factor larger than 2.5. In line with Henkel and Kranz [23], we chose the impact factors as a criterion, a popular numerical measurement method in scientific work [34]. While Garfield [34], creator of the Social Science Citation Index (SSCI), acknowledges that the journal impact factor is not a flawless measure, he argues that it is well established and that a superior metric remains to be found. Typically, an impact factor larger than 3.0 is conceived as a good threshold [35]. After filtering for the impact factor, 156 studies remained. In the AISeL database, we filtered for only peer-reviewed works as a quality criterion. We decided not to apply the impact factor as a quality criterion in AISeL because AISeL includes many research papers presented at conferences that do not have an impact factor assigned. Like this, the search yielded only 84 works, making 1.422 works stay in the reviewing process. With the BAO framework in mind, we looked in the title, abstract and full-text screenings for enabling and systemic effects of IS on grief. Thus, the main inclusion criterion for our review was that studies focused on the intersection of grief and IS on the individual, organizational, or societal level. Thereby, we scrutinize IS literature in the context of individual, organizational, and societal behavior after the event of death. Concrete exclusion criteria were twofold: First, we excluded studies dedicated to public/mass grief, such as after terroristic attacks, and thus only included private, individual grief contexts. Second, we excluded studies that did not comprise digital components or intersections with IS. The process (Figure 3) resulted in a final set of 14 studies.

(4) To analyze the selected papers, we followed the suggested coding techniques of Wolfswinkel et al. [32]. By applying open, axial, and selective coding, we first examined the selected papers to elicit digital grief cases and the levels (i.e., micro- and/or macro-level) and the contexts they address (i.e., individual, organizational, or societal).

(5) Lastly, we presented the articles we identified in the previous steps [30, 32]. We follow Henke and Kranz [22], who also used the BAO framework to structure a literature review. We develop concept matrices that systematically arrange, discuss, and synthesize prior research and identify gaps [22, 31].
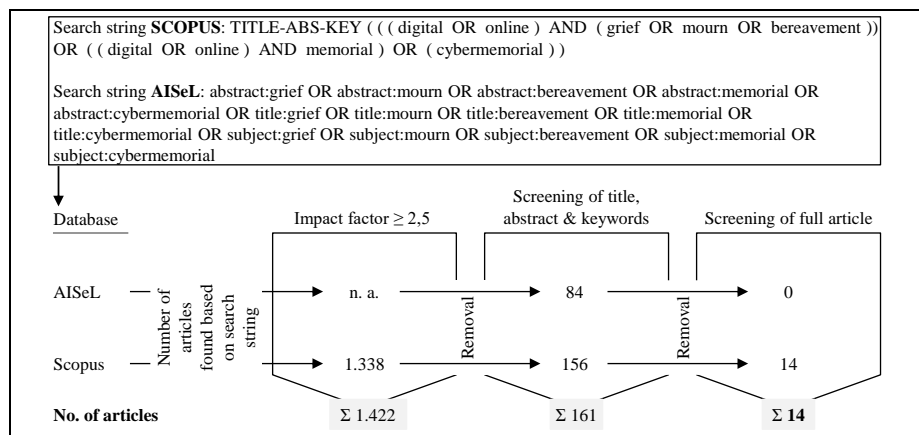
Search string **SCOPUS**: TITLE-ABS-KEY (((digital OR online) AND (grief OR mourn OR bereavement)) OR ((digital OR online) AND memorial) OR (cybermemorial))

Search string **AISeL**: abstract:grief OR abstract:mourn OR abstract:bereavement OR abstract:memorial OR abstract:cybermemorial OR title:grief OR title:mourn OR title:bereavement OR title:memorial OR title:cybermemorial OR subject:grief OR subject:mourn OR subject:bereavement OR subject:memorial OR subject:cybermemorial

Database	Number of articles found based on search string	Impact factor ≥ 2,5	Removal	Screening of title, abstract & keywords	Removal	Screening of full article
AISeL		n. a.		84		0
Scopus		1.338		156		14
No. of articles		Σ 1.422		Σ 161		Σ **14**

Figure 3. Structured Literature Review (Steps 1 through 3)

4   Results

Most of the studies we identified focused on belief formation (12), while very few addressed action formations (1) or outcome assessment (1).

4.1   Micro-level studies

Only one study [36] in our sample takes a micro-level perspective on IS intersecting grief: Sas et al. [36] highlight that people increasingly have digital identities and possessions. On this background, the scholars investigate whether the deletion of dead persons' digital artifacts offers the same cathartic sense of release for the bereaved as the disposal of material artifacts does. They developed a conceptual framework for rituals of letting go. As the disposal of digital artifacts significantly differs from material objects in grief processing, the framework captures respective differentiation. Further, the study suggests a set of design principles for technologies to support the symbolic disposal of digital artifacts. For example, digital repositories (e.g., clouds) may be re-focused to release content. When opened, they could display digital possessions such as text or images one at a time for the last time before drifting away.

Table 1. Concept Matrix for Micro-Level Studies

Study	Context	Contribution	BAO link
36	Online support & therapy	Development of a conceptual framework for letting go of digital artifacts; formulation of design implications for technologies supporting disposal in the digital realm.	2

4.2   Macro-level studies

Also, only one study in our sample takes a macro-level perspective on IS intersecting grief. Motivated by digitalization, Beaunoyer and Guitton [28] introduced the theoretical concept termed 'cyberthanathology' to spark a novel research stream in psychology. Cyberthanathology is defined as articulating death with and within the digital realm. This definition encompasses the impacts of future digital developments that prospectively shape the grieving process. Research in this stream is meant to develop new theories and models to understand the role of emerging technologies in the grieving process and their shape of cultural norms around death and grief.

Table 2. Concept Matrix for Macro-Level Studies

Study	Context	Contribution	BAO link
28	Theoretical	Introduction of concept 'cyberthanathology' sparking a new research stream	5'

4.3   Multi-level studies

Most studies (12) in our sample take a multi-level perspective on IS intersecting grief. Doing so, the studies focus on how societal and/or organizational structures shape individual beliefs about death, grief, and beyond. Categorizing their aims, 9 studies investigate how digital technologies support the bereaved to handle grief and re-interpret the digital realm as a space where clinical grief interventions can (and should) take place [3, 37–43]. Further, two studies focus on bereaved behavior on social media focusing on their social networking sites and their user-generated content [44, 45]. Another study investigates how grief research influences participants and how possible negative effects can be prevented. More specifically, the authors sent participants a check-in email one day after they participated in the online survey and analyzed the responses to this email. In this email, participants were offered support if the survey caused distress, appreciation of the participation, and condolences. Results showed that the bereaved participants found it acceptable to be asked about their grief and that the check-in mail was evaluated positively [46]. Finally, a further study highlighted the salient role of digital technologies in supporting the bereaved [47]. Specifically, the scholars analyzed how particular characteristics of information systems support terminally ill people to create a digital legacy, which is a feasible project for people living with motor neurone disease and provides them a sense of purpose [47]. For the

bereaved, such a digital legacy provides information, insight, comfort, and a way to re-connect with the deceased [47]. With these results, the authors developed the 'Model of Reciprocal Bonds Formation.' Hence, this study pointed out an additional use case of digital technologies in grief incorporating 'deceased' people's possibilities to support their beloved ones in their grief. In the following, we categorize the 12 studies depending on content and describe insights of each category in detail.

4.3.1 The grief process in the digital realm

Most studies (10) in the multi-level category investigated how digital technologies and associated services may support bereaved in their grieving process. Thereby, studies focus on slightly different forms of support: (1) Providing information on death, grief, and beyond, (2) facilitating interaction between users, e.g., in digital support groups or between peers on social media, or (3) offering digital forms of clinical grief therapies.

In the first category (1), studies investigate the effects of information provided on the well-being of the bereaved. In our sample, we could only place the study of Krysinska and Andriessen [40] in this category. The study investigates the quality of online information and support on suicide provided to the bereaved. The key takeaway is that a plethora of information on suicide is available online. However, these pieces of information often do not meet basic quality standards. It is up to future research to investigate the degree to which varying information around death events helps people effectively cope with their grief.

In the second category (2), studies investigate online groups for peer support. Dedicated online groups provide peer support in a safe haven, where the bereaved can connect with those experiencing similar struggles and receive or give the much-needed acceptance and validation of one's grief. Such groups have become a popular, low-cost, and efficient way to address social support needs in times of grief [3, 25]. Considerable research has been done on the function of online peer support groups as a renewable help resource [e.g., 3, 38]. Studies have found that participants in online support groups hope to share their suffering, thoughts, and feelings with others who listen, relate, and understand without passing judgment and thus facilitate normalization, validation, and healing. Therefore, support groups are deemed beneficial in offering a way to work through grief with social support via easy online 24/7 access. Though, scholars do not know yet, whether such groups provide real therapeutic benefits for the bereaved. Specifically, Robinson and Pond [3] conclude on a structured literature review that empirical evidence and high-quality quantitative research on the relieving effects provided by online support groups for the bereaved in terms of grief is scarce, if not completely missing. Though, a plethora of interviews with bereaved highlights their appreciation of these groups [2]. Knowles et al. [37] even go a step beyond conventional online support groups: They investigate the effectiveness and feasibility of an online, real-time, interactive virtual reality support group for the bereaved. Compared to the findings of conventional online support groups, their findings point to significant improvements of widows and widowers over time [37] and are rated as groundbreaking, highlighting the effectiveness of IS-based algorithms in reducing grief-related illness.

In the third category (3), studies investigate different types of online grief therapy. Overall, results showed that several internet-based therapeutical interventions are

efficient way support bereaved improving posttraumatic growth [41], general psychopathology [43], and posttraumatic stress, complicated grief, and grief rumination [39]. Therapeutical approaches that resulted to be applicable and have positive effects even in a digital format are cognitive-behavioral therapy (CBT) [41], internet-delivered exposure as a special form of CBT [39], and a writing-based standardized online treatment [43]. Only one form of CBT, behavioral activation, was evaluated as effective but not feasible online [39]. Though, these results appear to exclusively apply to guided online therapeutical interventions: van der Houwen et al. [42] evaluated the effectiveness of internet-based self-help intervention for the bereaved. Their study yielded partly negative results. Although their self-help intervention decreased feelings of emotional loneliness and increased positive mood, it did not affect grief or depressive symptoms [42]. Thus, interaction or feedback within online grief therapy appears crucial in terms of efficiency. This is supported by the results of Lange et al. [43] who used an individual writing-based approach as a form of online therapy. Participants got feedback on their texts and showed improved general psychopathology. This highlights the need for interactive and guided elements in online therapies as a design principle.

4.3.2   *Grief on social media*

Further studies (2) in the multi-level category investigated how individuals express grief on social media. Social media is notably different from online support groups. The most fundamental differences lie in a) the group of strangers instead of 'fellow sufferers' and b) the banal content such as fashion or the ebb and flow of everyday life surrounding the bereaved and their expressions of grief [44].

Kern et al. [45] point to Facebook memorial pages as evidence of contemporary digital mourning. These pages provide a place to digitally 'visit' dead loved ones and widen traditional forms of mourning. Bereaved individuals can 'stay in contact' with their deceased as they are still part of their social media network and show their grief to a public audience. The purposes of memorial pages are described threefold: (1) Support in processing death, (2) remembering the deceased, and (3) continuing the connection. With time the importance of the three different purposes change: Shortly after the loss, processing death and remembrance of the deceased are in focus, while as time proceeds, actions to sustain connection with the deceased increase [44].

Table 3. Concept Matrix for Multi-Level Studies

Study	Context	Contribution	BAO link
37	Online support & therapy	Demonstration of the effectiveness of an online, virtual reality support format for widow(er)s	1+1'
3	Online support & therapy	Discussion of the effectiveness of online support groups to reduced grief-related symptoms	1
38	Online support & therapy	Testing the effects (positive and possible negative side effects) of online mutual support for bereaved individuals	1

44	Social media	Analysis of ties and change in interactions over time with Facebook profiles of deceased	1 + 1'
39	Online support & therapy	Discussion of the effectiveness and feasibility of guided Internet-delivered exposure and behavioral activation on grief and grief rumination	1'
46	Self-help	Analysis of the effects of online surveys and check-in emails on the well-being of bereaved	1'
47	Self-help	Discussion of views, perceptions, and experiences with digital legacies with people affected by motor neurone disease and bereaved	1'
40	Self-help	Discussion of the quality of online information and support in suicidal contexts	1'
45	Social media	Analysis of content and subjects of Facebook memorial sites	1'
41	Online support & therapy	Testing the effects of internet-based cognitive-behavioral therapy for complicated grief on posttraumatic growth and optimism	1'
42	Self-help	Testing the effects of an internet-based writing intervention on the well-being of bereaved	1'
43	Online support & therapy	Discussion of the effectiveness of an internet-based standardized treatment of posttraumatic stress and grief	1'

5 Discussion and Directions for Future Research

Intending to characterize the role of IS in grief, we conducted a structured literature review. Based on Leidner's [48] "polylithic framework of research and theory development papers," we classify our literature review as an "assessing review" with the research objective to synthesize literature and the review focus to identify gaps. In the following, we postulate a research agenda nurtured by the blind spots we identified in our literature review. Like the review, the agenda is structured alongside the micro-, macro-, and multi-levels defined by the BAO framework [1]. The agenda comprises 9 concrete research questions (RQs), which are meant to spark future research on IS intersecting grief. While these questions are primarily inspired by the hints, calls for future research, and limitations found in the above provided literature, they also capture the spirit of the original BAO research agenda [1] and its application in environmental sustainability reviews [22]. We advocate for embracing the variety of disciplines that can be utilized to study crises and create quick, substantiated responses [11].

Micro-level. At the micro-level, we found only one study investigating individual beliefs defining individual actions [36]. Future research may investigate motivational factors, circumstances, contexts, and further variables triggering IS use when grieving. The theory of planned behavior describes how beliefs such as personal norms and values influence behavioral intentions, determining individuals' actual behavior [49].

Moreover, in IS, theories such as the technology acceptance model (TAM; 50) or the unified theory of acceptance and use of technology (UTAUT; 51) describe how beliefs about a technology influence its' usage. Hence, these theories deliver connection points for further research which addresses the micro-level. RQ addressing link 2 reads:

RQ1. What factors determine individuals' use of IS when grieving (e.g., posting a semi-public social media message informing about someone's death instead of calling relatives and friends personally)?

Macro-level. At the macro-level, we found only one study investigating societal or organizational structures defining related functioning in a digital grief context [28]. Future research may investigate societal and organizational actions more deeply. Particularly, the trend in Western society to increasingly express grief in digital symbols and symbolic actions disrupt the traditional grieving culture, traditions, and processes. To name one example, it is increasingly 'en vogue' to switch from traditional condolence cards to online condolences [52]. This transforms societal practices and offers room for business model innovations and novel service portfolios. Associated RQs addressing link 4 and 5 read:

RQ2. What are the implications of the trend in Western society grieving online for a society's symbolic actions and traditions (e.g., Obituary, grief process, online condolence, funerals)?

RQ3. What are the implications of the trend in Western society grieving online for organizations, their business models, and services (e.g., Therapists, morticians, cemeteries, churches)?

Additionally, organizations recognize that the digital realm has become a primary social space to share bereavements instead of a secondary one. Thus, there should be widespread interest in knowing more about contextual variables, such as regulatory implications, required changes in an organizational structure and processes, and effects on revenue. As organizations adapt to the trend of digital grieving, implications on societal systems, like public health, health systems, and economic costs, are expected to offer new space for research for IS scholars. RQs addressing link 4' and 5' read:

RQ4. What are regulatory, structural, monetary, or process-related implications for organizations when providing digital services in the context of grief (e.g., Who owns data or digital identities of the deceased)?

RQ5. How do organizations and their digital services change the grieving tradition of society and impact society in terms of public health (e.g., Does the provision of Facebook memorial pages correlate with a relief of the public health system in terms of grief-related illnesses)?

Multi-level. The very most studies addressed the multi-level. Though, some perspectives are still unexplored. Specifically, there is a void of studies investigating the effect of individual actions on either societal or organizational functioning. RQ addressing link 3 reads:

RQ6. When do individual actions of the bereaved trigger change in a society's handling of grief (e.g., Why did the Instagram post of the model Chrissy Teigen

sharing her stillbirth on Instagram unfold in a wave of condolences online and discussions on how such topics should be handled in society nowadays [53])?

Further, we noticed that prior multi-level studies primarily applied an 'as-is' perspective on the effects of using IS to facilitate the grieving process, e.g., individuals using memorial pages to cope with the loss of the deceased [44, 45]. Future research may take a 'to-be' perspective and address the area of design science and digital health to shed light on individual preferences, best practices, and habits in supporting the grieving process. An associated RQ addressing link 3' reads as follows.

RQ7. What are affordances and design principles for IS to facilitate individuals' grieving process (e.g., How may a social media feed of a bereaved may be designed to provide comfort?)

Finally, multi-level RQs addressing links 1 and 1' extending prior research and spanning the links from organizations and society forming individual beliefs, read:

RQ8. How does the digital realm change individuals' grieving process, associated symbols, and norms (e.g., How does social media as a primary instead of a secondary or supplementary place in Western society change individual beliefs on how best to provide comfort in a grieving process)?

RQ9. How do organizations and their digital services change the grieving process and associated symbols and norms of individuals (e.g., How do Facebook memorial pages impact individuals' understanding of a grieving process)?

Having postulated our research agenda, we wish to point to our study's limitations. First, our results are limited to the outlets of our literature review and the search string employed. Future research might investigate different search strings on further databases and consider outlets regardless of impact factor as novel research might not be published in high impact factor outlets at the very beginning. Second, our research agenda is guided by the BAO framework, and thus, our research questions are limited to the perspectives of the framework. Our research questions are not intended to be definite. Instead, they shall inspire IS scholars and illustrate how researchers of various disciplines may work together to solve the complex issues in the nexus of IS and grief.

6   Conclusion

Many grand challenges involve IS and require attention from scholars. Individual challenges – such as grief – should be one of them. Investigating how IS may facilitate the grieving process presents a grand opportunity for our discipline. IS scholarship can yield impactful sociotechnical solutions that comfort the bereaved, relieve the burden on the healthcare system, and save economic costs associated with grief. Our article is meant to mobilize more IS research on grief, the grieving process, and beyond. Hopefully, the research questions we presented provide some interesting avenues for future research to spark the conversation in our field. As the IS discipline cannot master grief on its own, perspective and knowledge sharing with other disciplines is paramount to address the grieving crisis and create collaboration response.

References

1. Melville: Information Systems Innovation for Environmental Sustainability. MIS Quarterly, vol. 34, 1 (2010). doi: 10.2307/20721412
2. Moore, J., Magee, S., Gamreklidze, E., Kowalewski, J.: Social media mourning: Using grounded theory to explore how people grieve on social networking sites. OMEGA—Journal of Death and Dying, vol. 79, 231–259 (2019). doi: 10.1177/0030222817709691
3. Robinson, C., Pond, R.: Do online support groups for grief benefit the bereaved? Systematic review of the quantitative and qualitative literature. Computers in Human Behavior, vol. 100, 48–59 (2019). doi: 10.1016/j.chb.2019.06.011
4. Praetorius, S.: The price of grief. Nature, vol. 561, 571 (2018). doi: 10.1038/d41586-018-06793-4
5. American Psychological Association: The effects of trauma do not have to last a lifetime (2004), https://www.apa.org/research/action/ptsd (Accessed: 04/04/2021)
6. Kastenbaum, R.: The psychology of death. Springer, New York, NY (2000)
7. Brubaker, J.R., Hayes, G.R., Dourish, P.: Beyond the grave: Facebook as a site for the expansion of death and mourning. The Information Society, vol. 29, 152–163 (2013). doi: 10.1080/01972243.2013.777300
8. Willis, E., Ferrucci, P.: Mourning and grief on Facebook: An examination of motivations for interacting with the deceased. Omega, vol. 76, 122–140 (2017). doi: 10.1177/0030222816688284
9. Stember, M.: Advancing the social sciences through the interdisciplinary enterprise. The Social Science Journal, vol. 28, 1–14 (1991). doi: 10.1016/0362-3319(91)90040-B
10. Shaw, J.D., Tangirala, S., Vissa, B., Rodell, J.B.: New Ways of Seeing: Theory Integration across Disciplines. Academy of Management Journal, vol. 61, 1–4 (2018). doi: 10.5465/amj.2018.4001
11. Thomas, O., Hagen, S., Frank, U., Recker, J., Wessel, L., Kammler, F., Zarvic, N., Timm, I.: Global Crises and the Role of BISE. Bus Inf Syst Eng, vol. 62, 385–396 (2020). doi: 10.1007/s12599-020-00657-w
12. Sarker, S., Chatterjee, S., Xiao, X., Elbanna, A.: The sociotechnical axis of cohesion for the IS discipline: Its historical legacy and its continued relevance. MIS Quarterly, vol. 43, 695–719 (2019). doi: 10.25300/MISQ/2019/13747
13. Association for Information Systems: Building sustainability and resilience with IS: A call for action (2021), https://icis2021.aisconferences.org/track-descriptions/#toggle-id-2 (Accessed: 04/05/2021)
14. Mirbabaie, M., Bunker, D., Stieglitz, S., Marx, J., Ehnis, C.: Social media in times of crisis: Learning from Hurricane Harvey for the coronavirus disease 2019 pandemic response. Journal of Information Technology, vol. 35, 195–213 (2020). doi: 10.1177/0268396220929258
15. Information Systems Journal: Information Systems and Sustainable Development (2021), https://onlinelibrary.wiley.com/pb-assets/assets/13652575/ISJ_Information%20Systems%20and%20Sustainability_Call%20for%20PapervEXTENDED-1625581247577.pdf

16. International Conference on Information Systems (ICIS): Building Sustainability and Resilience with IS: A Call for Action (2021), https://icis2021.aisconferences.org/submissions/call-for-papers/
17. Kakar, V., Oberoi, N.: Mourning with social media: Rewiring grief. Indian Journal of Positive Psychology, vol. 7, 371–375 (2016)
18. Gibson, M.: YouTube and bereavement vlogging: Emotional exchange between strangers. Journal of Sociology, vol. 52, 631–645 (2016). doi: 10.1177/1440783315573613
19. Gesellschaft für Informatik: GI-Radar 289: Chatten mit dem Jenseits (2021), https://gi-radar.de/289-chatten-mit-dem-jenseits/
20. Matei, A.: What should happen to our data when we die? (2021), https://www.nytimes.com/2021/07/24/style/what-should-happen-to-our-data-when-we-die.html
21. Sloane, D.C.: Is the Cemetery Dead? University of Chicago Press, Chicago (2018)
22. Henkel, C., Kranz, J.: Pro-Environmental Behavior and Green Information systems research – review, synthesis and directions for future research. In: Proceedings of the 39th International Conference on Information Systems (ICIS) (2018)
23. American Psychological Association: APA dictionary of psychology: Grief (2020), https://dictionary.apa.org/grief (Accessed: 04/05/2021)
24. Springer, S.: Effects of media use on bereavement. Tucson, AZ (2017)
25. Liao, R., Kishore, R., Bagul, D.: The effect of Grief on HIV patients need for informational and emotional support. In: Thirty Ninth International Conference on Information Systems (ICIS), San Francisco, USA (2018)
26. Jetten, J. (ed.): The social cure. Identity, health and well-being, vol. . Psychology Press, Hove, UK (2012)
27. Jetten, J., Haslam, S.A., Cruwys, T., Greenaway, K.H., Haslam, C., Steffens, N.K.: Advancing the social identity approach to health and well-being: Progressing the social cure research agenda. European Journal of Social Psychology, vol. 47, 789–802 (2017). doi: 10.1002/ejsp.2333
28. Beaunoyer, E., Guitton, M.J.: Cyberthanathology: Death and beyond in the digital age. Computers in Human Behavior, vol. 122, 106849 (2021). doi: 10.1016/j.chb.2021.106849
29. Coleman, J.S.: Social Theory, Social Research, and a Theory of Action. American Journal of Sociology, vol. 91, 1309–1335 (1986). doi: 10.1086/228423
30. vom Brocke, J., Simons, A., Riemer, K., Niehaves, B., Plattfaut, R., Cleven, A.: Standing on the Shoulders of Giants: Challenges and Recommendations of Literature Search in Information Systems Research. Communications of the Association for Information Systems, vol. 37 (2015). doi: 10.17705/1CAIS.03709
31. Webster, J., Watson, R.T.: Analyzing the past to prepare for the future: Writing a literature review. MIS Quarterly, vol. 26, xiii–xxiii (2002)
32. Wolfswinkel, J.F., Furtmueller, E., Wilderom, C.P.M.: Using grounded theory as a method for rigorously reviewing literature. European Journal of Information Systems, vol. 22, 45–55 (2013). doi: 10.1057/ejis.2011.51

33. AIS eLibrary: About the Association for Information Systems (2021), https://aisel.aisnet.org/about.html
34. Garfield, E.: The history and meaning of the journal impact factor. JAMA, vol. 295, 90–93 (2006). doi: 10.1001/jama.295.1.90
35. Sci Journal: What's a Good Impact Factor & Why It Matters (with 2018/2019 Impact Factor Ranking in 27 Categories) (2020), https://www.scijournal.org/articles/good-impact-factor
36. Sas, C., Whittaker, S., Zimmerman, J.: Design for Rituals of Letting Go. ACM Trans. Comput.-Hum. Interact., vol. 23, 1–37 (2016). doi: 10.1145/2926714
37. Knowles, L.M., Stelzer, E.-M., Jovel, K.S., O'Connor, M.-F.: A pilot study of virtual support for grief: Feasibility, acceptability, and preliminary outcomes. Computers in Human Behavior, vol. 73, 650–658 (2017). doi: 10.1016/j.chb.2017.04.005
38. van der Houwen, K., Stroebe, M., Schut, H., Stroebe, W., van den Bout, J.: Online mutual support in bereavement: An empirical examination. Computers in Human Behavior, vol. 26, 1519–1525 (2010). doi: 10.1016/j.chb.2010.05.019
39. Eisma, M.C., Boelen, P.A., van den Bout, J., Stroebe, W., Schut, H.A.W., Lancee, J., Stroebe, M.S.: Internet-Based Exposure and Behavioral Activation for Complicated Grief and Rumination: A Randomized Controlled Trial. Behavior Therapy, vol. 46, 729–748 (2015). doi: 10.1016/j.beth.2015.05.007
40. Krysinska, K., Andriessen, K.: On-Line Support and Resources for People Bereaved through Suicide: What Is Available? Suicide and Life-Threatening Behavior, vol. 40, 640–650 (2010)
41. Wagner, B., Knaevelsrud, C., Maercker, A.: Post-traumatic growth and optimism as outcomes of an internet-based intervention for complicated grief. Cognitive Behaviour Therapy, vol. 36, 156–161 (2007). doi: 10.1080/16506070701339713
42. van der Houwen, K., Schut, H., van den Bout, J., Stroebe, M., Stroebe, W.: The efficacy of a brief internet-based self-help intervention for the bereaved. Behaviour Research and Therapy, vol. 48, 359–367 (2010). doi: 10.1016/j.brat.2009.12.009
43. Lange, A., Rietdijk, D., Hudcovicova, M., van de Ven, J.-P., Schrieken, B., Emmelkamp, P.M.G.: Interapy: a controlled randomized trial of the standardized treatment of posttraumatic stress through the internet. Journal of Consulting and Clinical Psychology, vol. 71, 901–909 (2003). doi: 10.1037/0022-006X.71.5.901
44. Bouc, A., Han, S.-H., Pennington, N.: "Why are they commenting on his page?": Using Facebook profile pages to continue connections with the deceased. Computers in Human Behavior, vol. 62, 635–643 (2016). doi: 10.1016/j.chb.2016.04.027
45. Kern, R., Forman, A.E., Gil-Egui, G.: R.I.P.: Remain in perpetuity. Facebook memorial pages. Telematics and Informatics, vol. 30, 2–10 (2013). doi: 10.1016/j.tele.2012.03.002
46. Smith, K.V., Thew, G.R., Graham, B.: Conducting ethical internet-based research with vulnerable populations: a qualitative study of bereaved participants' experiences of online questionnaires. European Journal of Psychotraumatology, vol. 9, 1506231 (2018). doi: 10.1080/20008198.2018.1506231

47. Clabburn, O., Knighting, K., Jack, B.A., O'Brien, M.R.: The use of digital legacies with people affected by motor neurone disease for continuing bonds: An interpretative phenomenological analysis study. Palliative Medicine, vol. 33, 812–822 (2019). doi: 10.1177/0269216319845805

48. Leidner, D.: Review and Theory Symbiosis: An Introspective Retrospective. JAIS, vol. 19, 552–567 (2018). doi: 10.17705/1jais.00501

49. Ajzen, I.: The theory of planned behavior. Organizational Behavior and Human Decision Processes, vol. 50, 179–211 (1991). doi: 10.1016/0749-5978(91)90020-T

50. Davis, F.D.: Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. MIS Quarterly, vol. 13, 319 (1989). doi: 10.2307/249008

51. Venkatesh, Morris, Davis: User Acceptance of Information Technology: Toward a Unified View. MIS Quarterly, vol. 27, 425 (2003). doi: 10.2307/30036540

52. Zhou, N., Jurgens, D.: Condolence and Empathy in Online Communities. In: Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing, pp. 609–626 (2020)

53. Teigen, C.: Instagram Post (2020), https://www.instagram.com/p/CFyWQLWpJ3u/?hl=de