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‘This is the peer reviewed version of the following article:  
Miller-Lewis, L., Tieman, J., Rawlings, D., Sanderson, C., &  
Parker, D. (2019). Correlates of perceived death  
competence: What role does meaning-in-life and quality-of-  
life play? *Palliative and Supportive Care*, 1–11. [https://  
doi.org/10.1017/s1478951518000937](https://doi.org/10.1017/s1478951518000937)

which has been published in final form at

<https://doi.org/10.1017/S1478951518000937>

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**For Submission to Palliative and Supportive Care**

**Title: Correlates of perceived death competence: What role does meaning-in-life and quality-of-life play?**

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**Short Title: Correlates of perceived death competence**

**Number of Manuscript Pages = 30 (including title page, references and tables)**

**Number of Tables = 3**

**Number of Figures = 0**

***Title: Correlates of perceived death competence: What role does meaning-in-life and quality-of-life play?***

**Abstract**

*Objectives:* Understanding factors that are associated with more adaptive death attitudes and competencies can inspire future health-promoting palliative care strategies and inform approaches to training and development for health professionals. The potential importance of meaning, purpose, quality and values in life for promoting adaptive death attitudes has been highlighted, but there is limited research in this area, particularly in relation to death-competence. The purpose of this cross-sectional study was to develop an understanding of demographic and life-related factors associated with perceived death-competence, such as meaning-in-life and quality-of-life.

*Methods:* During the course enrolment period of a Massive-Online-Open-Course about death and dying, 277 participants completed questionnaires on death-competence, meaning-in-life, quality-of-life and socio-demographic background.

*Results:* Findings indicated that greater presence of meaning-in-life, quality-of-life, age, death experience, and carer experience were each statistically significant unique predictors of death-competence scores. Life-related variables were more strongly associated with death-competence than demographic variables. Bereavement experience and experience caring for the dying was associated with greater death-competence, but there were no differences on death-competence between health professionals and the general community. Above all other factors, the presence of meaning-in-life was the strongest predictor of higher perceived competence in coping with death.

*Significance of Results:* The findings demonstrate important interconnections between our attitudes about life and death. Knowledge of factors associated with poorer death-competence may help identify those at-risk of greater distress when facing death, and might prove useful additions to bereavement risk-

assessments. Understanding factors associated with greater death-competence in health professionals and volunteers may help predict or prevent burnout and compassion fatigue, and help identify who would benefit from additional training and support. Future longitudinal studies including both health professionals and the general community are needed to determine the impact adaptive attitudes towards meaning-in-life can potentially have on bolstering subsequent adaptive coping and competence regarding death and dying.

**Keywords**

Attitude to death; Quality of life; Value of life; Palliative care; Bereavement;

## Introduction

Faced with an ageing population and the predicted rise in death rates, which will increasingly impact on families and communities, the need to understand how the community copes with death is an important priority (Doka, 2015; Kellehear, 2015). Understanding factors that are associated with more adaptive death attitudes and death competencies can inform the development of future health promoting palliative care strategies that aim to encourage death conversations, death preparedness and planning, and acceptance of death as a normal part of life in the general community (Cox et al., 2013). It can also assist with service planning for end-of-life care, and inform approaches to training and development for health professionals regarding improving competence to cope with death (Claxton-Oldfield, Crain, & Claxton-Oldfield, 2007; Chan, Tin, & Wong, 2015; Sansó et al., 2015).

There is limited empirical knowledge about 21<sup>st</sup> century community attitudes towards death and dying (Cox et al., 2013; Collins, McLachlan, & Philip, 2017). In Australia, studies have generally been small and focused on death attitudes of health professionals or patients (Halliday & Boughton, 2008; Hack et al., 2010; Peters et al., 2013; Tranter, Josland, & Turner, 2016; Collins et al., 2017), although two studies have examined death fear/anxiety in samples of Australian university students (Bath, 2010; Davis, Deane, & Lyons, 2016). Similarly, previous research worldwide has focused predominantly on death attitudes in relation to anxiety and fear, with calls for a broader focus including strengths-based death competencies and coping skills (Robbins, 1994; Neimeyer, Moser, & Wittkowski, 2003; Wass, 2004). Death-competence can be defined as a construct representing a range of perceived knowledge and skills for coping with death, along with attitudes and beliefs about these abilities (Robbins, 1994). International studies have found greater death-competence to be associated with older age (Robbins, 1991a, 1991b, 1992, 1994; Seo, Kim, Kim, & Lee, 2013; Haig, 2014), but not gender (Robbins, 1991a, 1992; Reimer, 2007; Siracusa et al., 2011; Schmidt-RioValle et al., 2012; Haig, 2014; Camarneiro & Gomes, 2015), and the limited findings

regarding the role of religiosity and spirituality (Seo et al., 2013; Haig, 2014) and educational level (Siracusa et al., 2011; Seo et al., 2013) have been inconsistent. The role of socio-economic status and occupation remains unknown (McNeely, 1998; Kim & Hwang, 2014). Research with nurses, hospital volunteers and family caregivers suggest that greater experience in providing care for terminally-ill people is associated with greater death-competence (McNeely, 1998; Robbins, 1992; Reimer, 2007; Seo et al., 2013). Similarly, personal experience with death/bereavement has been found related to greater death-competence in volunteers, and greater health-professional self-competence in death work (Robbins, 1994; Chan et al., 2015). Overall, research on correlates of death-competence in the general community is scarce worldwide, and no studies on factors associated with death-competence in Australian-based samples exist (Robbins, 1991a; Reimer, 2007; Siracusa et al., 2011).

The inter-connection between how we feel about death and how we live has been long-stated, with the assertion that confronting mortality existentially enables us to live more meaningfully (Yalom, 1980; Robbins, 1991a, 1991b; Frankl, 2011; Taubman-Ben-Ari, 2011; Cozzolino & Blackie, 2013). The potential importance of meaning, purpose, quality and values in life for promoting adaptive attitudes towards death has been highlighted, but there is a lack of research in this area (Taubman-Ben-Ari, 2011; Davis, Deane, & Lyons, 2015). Evidence of the interplay between meaning-in-life and death awareness has been shown in experimental studies manipulating mortality salience (Taubman-Ben-Ari, 2011; Cozzolino & Blackie, 2013), and while studies have found greater meaning-in-life related to lower death anxiety/fear (Durlak, 1972; Meyersburg & McNally, 2011; Kim, 2015; To & Chan, 2016), very little is known about the strength or direction of its relationship with death-competence. Two studies found a greater sense of purpose in life related to higher death-competence in university students (Robbins, 1991a) and palliative care professionals (Galiana, Oliver, Sansó, Pades, & Benito, 2017). In Hong Kong health professionals, greater presence of meaning-in-life was associated with greater self-competence in death work (Chan et

al., 2015). There is also some support for the association between death-competence and health-professional quality-of-life (Sansó et al., 2015). Nonetheless, much remains to be discovered regarding the relationship between these life-related factors and perceived death-competence, and its impact on individual and community behaviour and capabilities.

Online technologies provide growing opportunities for opening-up dialogue about death. With this in mind, we developed Dying2Learn (Rawlings et al., 2017), a Massive-Open-Online-Course (MOOC) which aimed to provide a community platform for social discussion and connection regarding death, dying, and palliative care for the Australian public. The MOOC provided a rich environment to understand contemporary views and perspectives about death and dying and for identifying factors associated with various attitudes towards death such as death-competence.

The purpose of this cross-sectional study was to develop an understanding of factors associated with perceived death-competence. Specifically, in people who enrolled in a MOOC on death and dying, we aimed to determine whether meaning-in-life, quality-of-life, and socio-demographic characteristics (gender, age, occupation, education, death and caring experience, religiousness, spirituality and location) were significantly associated with perceived death-competence, and which factors had the strongest predictive ability. Given the limited existing research on predictors of death-competence, no directional hypotheses were made for this exploratory study.

## **Method**

The study methodology is described in accordance with the STROBE statement (Vandenbroucke et al., 2007).

### *Participants and Procedure*

Participants for this cross-sectional study were recruited from the Dying2Learn MOOC during course enrolment in June-2016. Details about the six-week interactive online course created by CareSearch ([www.caresearch.com.au](http://www.caresearch.com.au)) are provided elsewhere (Rawlings et al., 2017; Miller-Lewis, Tieman, Rawlings, Parker, & Sanderson, 2018; Tieman, Miller-Lewis, Rawlings, Parker, & Sanderson, 2018). The MOOC was freely available through the OpenLearning platform. Students completed questions regarding their socio-demographic background and death attitudes at enrolment. Overall, 1069 of the 1156 MOOC enrollees were invited to participate in this optional research study (late enrollees were excluded due to having immediate access to course content). MOOC enrollees were emailed study information and an invitation including a unique web-link to an online survey. This study was approved by Flinders University Social and Behavioral Research Ethics Committee (Project No.7247). Data was de-identified following data-matching from the data-sources, and prior to data analyses.

Overall, 312 (29.2%) MOOC enrollees agreed to participate in the research study, and 277 provided complete responses on the measure of death-competence (25.9% response rate). Based on enrolment records, the socio-demographic profile of the participants recruited for the research study was very similar to non-participating MOOC enrollees, with the exception of research study participants being significantly older ( $t[df=1146] = -5.42, p < .0005$ ) than those not participating ( $m=53$  vs.  $m=48$  years). Research study participants also subsequently completed a greater percentage of the MOOC ( $m=45.92$  [ $SD=31.86$ ] vs.  $m=23.61$  [ $SD=29.33$ ],  $t[df=433.4] = -10.35, p < .0005$ ). Table 1 provides demographic information about the 277 research study participants. At enrolment, their mean age was 52.9 years ( $SD=12.4$ , range=19-84 years), and the vast majority were female (95.6%). The education level was high, with 70.4% having university education, and 64.3% identified themselves as a health professional.

### *Measures*

Table 1 also outlines the survey measures utilised in the current study and their descriptive statistics (including internal consistency where applicable). Socio-demographic information was measured with questions adapted from the Australian Bureau of Statistics (ABS) (Australian Bureau of Statistics, 2013, 2015a, 2015b, 2015c) where possible. Questions regarding religiousness and spirituality (John E. Fetzer Institute and National Institute on Aging Working Group, 2003), and death and caring experiences were also asked. Death-competence was measured with Bugen's Coping with Death Scale (CDS) (Bugen, 1981; Robbins, 1991a, 1994; Neimeyer et al., 2003; Camarneiro & Gomes, 2015). Health-Related Quality of Life was measured with the Assessment of Quality of Life 4D instrument (AQoL-4D) (Hawthorne, Richardson, & Osborne, 1999; Hawthorne, Richardson, Day, & McNeil, 2000; Hawthorne, Richardson, & Day, 2001; Osborne, Hawthorne, Lew, & Gray, 2003; Hawthorne, Korn, & Richardson, 2013; AQoL, 2014, 2015), and Meaning-in-life was measured with the Meaning In Life Questionnaire (MLQ) (Steger, Frazier, Oishi, & Kaler, 2006; Steger, Kawabata, Shimai, & Otake, 2008; Steger, Oishi, & Kashdan, 2009; Steger, 2010).

### *Statistical Approach*

Given the exploratory nature of this cross-sectional study, and the adequate sample size, missing data was not imputed to increase statistical power. A statistical significance level of  $p < .05$  was used, and effect sizes were interpreted based on standard recommendations (Cohen, 1988; Fergusson, 2009). Descriptive statistics were produced for each variable. Tests for normality revealed scores on the death-competence scale were slightly negatively skewed but did not deviate greatly from normality (Pallant, 2010) ( $K-S\ test = .077$ ). The study variables generally did not show substantial deviation from normality based on skewness, kurtosis, or histogram examination. The direction and strength of bivariate associations between study variables were examined using Pearson's correlation coefficients, with focus placed on associations with death-competence scores as the outcome of interest. Following this,

multiple linear regressions predicting scores on death-competence from the group of predictor variables were conducted, enabling the identification of the variable with the strongest unique association with death-competence scores, as well as total variance in death-competence explained by the combined group of predictor variables. Data analyses were conducted in IBM-SPSS-23.

## **Results**

### *Descriptive Statistics*

Descriptive statistics describing the 277 study participants are provided in the final two columns of Table 1. The majority (93.1%) of participants resided in Australia, and on average lived in areas slightly above the socio-economic national average. Participants were more likely to identify themselves as being spiritual rather than religious, and on average considered themselves to be in good-to-very-good health. Overall 64 percent had experienced the death of a loved-one in the past 5-years. Seventy percent had cared for someone terminally-ill, likely indicative of the considerable number of health professionals in the sample. Scores on the presence and search for meaning-in-life were similar to those found in people aged 65+ (Steger et al., 2009), and suggested our participants feel satisfied that they've grasped what makes life meaningful, why they're here, and what they want to do with life (Steger, 2010). Scores on quality-of-life were indicative of being in very good health and similar to those found in the general Australian population (Hawthorne et al., 2013). The mean score on death-competence was 155.0, higher than previously found in school parents ( $m=125$ ) (Siracusa et al., 2011), non-patient-care volunteer groups ( $m=151.5$ ) and palliative care volunteers pre-training ( $m=143.5$ ) (Robbins, 1994), and closer to means found in hospice volunteers in-training ( $m=154.8$ ) (Claxton-Oldfield et al., 2007).

### *Bivariate Analyses*

A correlation matrix of bivariate associations between variables is shown in Table 2. Presence of meaning-in-life held the strongest bivariate association with death-competence, with higher levels of presence of meaning-in-life significantly positively associated with greater death-competence scores and indicating a moderate effect size of practical significance. Conversely, higher levels of searching for meaning-in-life held a small significant negative association with lower death-competence scores. Greater age, religiousness, spirituality, total quality-of-life (and especially its Relationships subscale) held significant positive associations with greater death-competence scores, indicative of small effect sizes. Better self-assessed health was also associated with greater death-competence scores. Having experience of death was significantly associated with higher death-competence scores, as was carer experience. There was no significant relationship with death-competence scores for gender, residing in Australia, birthplace, socio-economic-disadvantage, education level, or health professional status. Significant inter-correlations between the study predictor variables were not unexpected. Particularly of note was the significant moderate positive association between the presence of meaning-in-life and the AQoL relationships subscale and total score, and negative associations between the AQoL scores and self-assessed health.

### *Multivariable Analyses*

A multiple linear regression was used to assess the ability of the group of socio-demographic and meaning-in-life and quality-of-life variables to predict scores on death-competence (see Table 3). In the final model, a total of 34.4% of the variance in death-competence scores was accounted for by the group of variables ( $F[14,261]=9.76, p<.0005$ ). After adjusting for all other variables in the model, greater presence of meaning-in-life, total quality-of-life, age, death experience, and carer experience were each statistically significant unique predictors of death-competence scores, with generally small effect sizes. The presence of meaning-in-life obtained the highest beta value ( $\beta=.350, p<.0005$ ), indicating a moderate effect size. The remaining variables did not hold unique associations with death-competence after

controlling for the effects of all other variables in the model. The bivariate associations of religiousness and spirituality with death-competence were no longer significant in the multivariable model.

A multiple linear regression with Australian residents only allowed the assessment of the unique association of socio-economic-disadvantage to death-competence, and an opportunity to investigate potential differences between people in and outside of Australia on predictors of death-competence. This model accounted for 33.8% of the variance in death-competence ( $F[14,241]=8.80, p<.0005$ ). The significant unique predictors for people residing in Australia were the same as those found for all participants, and there was no significant association between socio-economic-disadvantage and death-competence.

## **Discussion**

### *Main Findings*

The findings of this exploratory study have highlighted an important association between peoples' feelings about life and about death. A sense of a presence of meaning-in-life was most strongly related to higher levels of competence in coping with death, even more than having experience with the death of a loved-one or caregiver experience. The presence of meaning-in-life was more important than searching for meaning-in-life in explaining death-competence scores; with greater searching for meaning-in-life related to lower death-competence scores in bivariate analyses but not maintained in multivariable analyses. When people feel their life holds meaning, do they feel more comfortable with the idea of their mortality, and more competent to deal with death? Or is mortality awareness a necessary precursor for facilitating the pursuit of meaning-in-life? Can helping people build the presence of meaning in one's life lead to greater death-competence? Indeed, the meaning of life and death may be interrelated concepts which

shape each other (Robbins, 1991a; Taubman-Ben-Ari, 2011; Cozzolino & Blackie, 2013; Davis et al., 2015). The potential transactional interplay between mortality awareness, meaning-in-life and death-competence requires longitudinal research to untangle. One possibility is that awareness of our mortality is required for a true sense of meaning-in-life to develop (Cozzolino & Blackie, 2013), which can in turn lead to the development of competence coping with death.

Our correlational findings within the Australian setting were generally consistent with the limited amount of preexisting research on death-competence (Robbins, 1991a, 1991b, 1992, 1994; McNeely, 1998; Reimer, 2007; Siracusa et al., 2011; Schmidt-RioValle et al., 2012; Seo et al., 2013; Haig, 2014; Camarneiro & Gomes, 2015; Galiana et al., 2017), indicating similarities between people residing in Australia and other countries. We found life-related variables more strongly associated with death-competence than socio-demographic variables. Older age (and perhaps the experience that comes with it) was the only demographic variable independently related to greater death-competence. The bivariate associations with religiousness and spirituality disappeared once other factors were adjusted for, which may indicate the presence of a mediated effect that could explain some of the mixed findings in previous studies (Seo et al., 2013; Haig, 2014). In addition, we have demonstrated an association between greater health-related quality-of-life and greater perceived death-competence. Results were particularly indicative of a role of quality-of-relationships within quality-of-life, which needs further investigation with psychometrically-strong social-support measures. The interplay between these variables as a person ages and their health deteriorates would be an interesting focus for future longitudinal research.

In our sample, we found that bereavement experience and experience caring for the dying was associated with greater death-competence, but there were no differences on death-competence between health professionals and the general public. The self-selected nature of the sample already interested in the topic of death (as demonstrated by enrolment in a death course) may have concealed differences in

death-competence normally expected between health professionals and the general public. Some health professionals may have sought out the course due to limited exposure to caring for the dying or for palliative care learning opportunities, and some participants who didn't identify as health professionals may have had considerable experience in caring for the dying, either within their personal life or through working as death doulas or funeral celebrants, and therefore potentially not truly representative of the general community. Understanding death-competence and its explanatory factors in different types of health professionals and community groups with varying levels and types of caring experience (both clinical and personal) is an important avenue for future research (Chan et al., 2015). Investigating the interplay between meaning-in-life, types of caring experiences, and death-competence in these different occupational and community groups is also required. It may be that certain life tasks, such as altruistic service (Sinclair, Raffin, Pereira, & Guebert, 2006; Cozzolino & Blackie, 2013) or caring for a dying person you know personally (i.e., personal caring rather than professional caring), can induce the development of meaning-in-life, which in turn can lead to greater death-competence.

### *Clinical Implications*

As the population ages, knowledge of factors associated with poorer death coping can be useful for identifying who might be a greater risk of distress when they or a loved-one is facing death, and might prove useful additions to bereavement risk assessments. Being able to identify people who may struggle more in preparing for death or its aftermath, can help health professionals to target early intervention efforts towards those likely to be in greatest need. Understanding factors associated with greater death-competence in health professionals is also important given that some have regular death exposure, and for whom struggles in death-competence may lead to burnout and compassion fatigue (Chan et al., 2015; Sansó et al., 2015). Indeed, one study of end-of-life care nurses found greater meaning-in-life was associated with less emotional exhaustion and a greater sense of accomplishment (Gama, Barbosa, &

Vieira, 2014). Screening health professionals or volunteers on meaning-in-life and death-competence might help identify those who may be better suited to palliative-related roles or for whom additional training and support would be beneficial (Claxton-Oldfield & Banzen, 2010; Gama et al., 2014).

Interventions focused on increasing meaning-in-life have shown multiple psychosocial benefits for patients with advanced disease (Vos, Craig, & Cooper, 2015; Guerrero-Torrelles, Monforte-Royo, Rodriguez-Prat, Porta-Sales, & Balaguer, 2017), community-dwelling older adults (Chippendale & Boltz, 2015) as well as promise with palliative care staff and volunteers (Wasner, Longaker, Fegg, & Borasio, 2005; Sinclair et al., 2006; Guerrero-Torrelles et al., 2017). There is also suggestion that these interventions may be especially useful for professionals working in palliative care who exhibit lower meaning-in-life (Fillion et al., 2009).

#### *Limitations and Future Directions*

This exploratory study has provided a beginning basis for understanding correlates of death-competence, but must be interpreted with the following limitations in mind. First and foremost, the cross-sectional nature of this correlational study means that we cannot determine possible causal sequences or directions of effects on death-competence. Without longitudinal data, we are unable to demonstrate temporal precedence of our predictor variables, or examine potential transactional relationships among variables. Future longitudinal research following people over a period of time is important to elucidate whether high presence of meaning-in-life, quality-of-life, and death and caregiving experiences temporally precede subsequent death-competence. Second, the study sample were self-selected individuals who chose to enroll in a course about death, many of whom were health professionals and/or had experience caring for the dying or bereaved. This pre-existing interest in the topic of death possibly skewed death-competence scores towards more adaptive levels than what might be seen in a representative sample of the general public. Third, a deeper investigation of death-competence levels held by people with different health professional and carer roles is warranted. To fully articulate the community versus health

professional perspectives, clarification on various occupational roles and experience caring within a clinical or personal context is required. Future research could determine if health professionals working in palliative care have higher levels of death-competence than other health professionals or people involved in death-related work (e.g., death doulas, funeral industry, volunteers). Finally, using the Coping with Death Scale (Bugen, 1981; Robbins, 1994) allowed for a larger sample size, but relied on self-reported subjective perceptions of 'likely' behaviours rather than objective behavioural observation, which may have provided a different picture.

### *Conclusions*

In conclusion, the findings of this study suggest that our attitudes towards life and death are inextricably linked. What role adaptive attitudes towards meaning-in-life can potentially have on bolstering subsequent adaptive coping and competence regarding death needs further exploration in longitudinal studies including both health professionals and the general community. Future research is also needed to extrapolate the influence of certain life tasks or experiences, such as caring for a dying person, on the development of both meaning-in-life and competence coping with death.

## **Acknowledgements**

The Dying2Learn MOOC is part of CareSearch, which is funded by the Australian Government Department of Health. The funding body had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, and in the decision to publish the results. The authors would like to thank the study participants, and the many people who contributed their time and expertise to the CareSearch project, including members of the National Advisory Group. The authors would also like to thank OpenLearning for their contributions, including providing the MOOC platform and assisting with data extraction.

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## Correlates Paper

Table 1.  
Description of Measures Used in Study and their Descriptive Statistics

Measure	Measure Source	Measure Description	Variable Derived	% or Mean (SD)	Alpha
Death Competence	Bugen's Coping with Death Scale (CDS) (Bugen, 1981; Robbins, 1991a, 1994)	CDS measures a range of human skills and coping-based capabilities in dealing with death (Robbins, 1994). The self-report questionnaire contains 30 statements, including items related to one's self (e.g., "I can talk about my death with family and friends"), and to others (e.g., "I can communicate with the dying"). Respondents report their extent of agreement with each statement using a 7-point Likert scale from "do not agree at all" to "agree completely".	The total death competence score is derived by summing items, with a potential range of 30-210. Higher scores indicate greater death competence skills. The CDS has evidence of construct validity in distinguishing hospice volunteers from others, the expected negative associations with death anxiety scales, and the ability to predict death preparation behaviours. Strong internal consistency has been demonstrated (in this and other studies), but the factor structure of the scale in English is untested (Bugen, 1981; Neimeyer et al., 2003; Robbins, 1991a, 1994; Camarneiro & Gomes, 2015).	155.03 (27.39)	.94
Presence of Meaning in Life	Meaning in Life Questionnaire (MLQ) (Steger et al., 2006; Steger, 2010) Presence Subscale	MLQ uses 5 items to assess the 'Presence of Meaning', how full respondents feel their lives are of meaning (e.g., "I have a good sense of what makes my life meaningful"). Each item is rated on a 7-point Likert scale from "absolutely untrue" to "absolutely true".	The 5 items are summed to create a total subscale score (possible range 5-35). Higher scores indicate greater presence of meaning in life. The MLQ-subscales have established internal consistency and stable factor structure, and construct validity has been demonstrated by expected associations with related wellbeing variables (Steger et al., 2006; Steger et al., 2008; Steger et al., 2009; Steger, 2010).	27.37 (5.10)	.88
Search for Meaning in Life	Meaning in Life Questionnaire (MLQ) (Steger et al., 2006; Steger, 2010) Search Subscale	MLQ uses 5 items to assess the 'Search for Meaning', how motivated respondents are to find or deepen meaning in their life (e.g., "I am searching for meaning in my life"). Each item is rated on a 7-point Likert scale from "absolutely untrue" to "absolutely true".	The 5 items are summed to create a total subscale score (possible range 5-35). Higher scores indicate greater search for life meaning. The MLQ-subscales have established internal consistency, stable factor structure, and demonstrated construct validity (Steger et al., 2006; Steger et al., 2008; Steger et al., 2009; Steger, 2010).	20.27 (7.75)	.91
Health-Related Quality of Life (Global)	Assessment of Quality of Life 4D instrument (AQoL-4D) (Hawthorne et al., 2013; AQoL, 2014)	The AQoL-4D is a multi-attribute survey of health-related quality of life. It contains 12 questions about quality of life in relation to the areas of independent living, mental health, relationships, and senses. Questions are answered on 4-point ordinal scales.	A combined global index of health-related quality of life represents the AQoL Total Utility Score, based on all 12 survey items. Using weighted algorithms based on Australian general population norms (Hawthorne et al., 2013), utilities can be assigned to scores, and can range from -0.04 "worse than death" to 1.00 "optimal health" (2015 utility algorithm syntax used here) (AQoL, 2015). Extensive evidence exists regarding the reliability and validity of the AQoL-4D instrument (Hawthorne et al., 1999; Hawthorne et al., 2000; Hawthorne et al., 2001; Osborne et al., 2003; Hawthorne et al., 2013). The total utility score had adequate internal consistency in our study.	0.79 (0.17)	.66
Health-Related Quality of Life: Independent Living	Assessment of Quality of Life 4D instrument (AQoL-4D)	Three questions of the AQoL-4D assess the health-related quality of life dimension of independent living, which are answered on 4-point ordinal scales.	A total score on AQoL Independent Living dimension was derived by combining responses to the three questions using the 2015 weighted utility algorithm (Hawthorne et al., 2013; AQoL, 2015), with higher scores representing greater capacity for independent living. Questionable internal consistency was found for this subscale in our study. <sup>a</sup>	0.98 (0.08)	.53

<i>Measure</i>	<i>Measure Source</i>	<i>Measure Description</i>	<i>Variable Derived</i>	<i>% or Mean (SD)</i>	<i>Alpha</i>
Health-Related Quality of Life: Relationships	(Hawthorne et al., 2013; AQoL, 2014) Assessment of Quality of Life 4D instrument (AQoL-4D) (Hawthorne et al., 2013; AQoL, 2014)	Three questions of the AQoL-4D assess the health-related quality of life dimension of mental health, which are answered on 4-point ordinal scales.	A total score on AQoL Relationships dimension was derived by combining responses to the three questions using the 2015 weighted utility algorithm (Hawthorne et al., 2013; AQoL, 2015), with higher scores representing more optimal relationships. Questionable internal consistency was found for this subscale in our study. <sup>a</sup>	0.91 (0.12)	.51
Health-Related Quality of Life: Senses	Assessment of Quality of Life 4D instrument (AQoL-4D) (Hawthorne et al., 2013; AQoL, 2014)	Three questions of the AQoL-4D assess the health-related quality of life dimension of relationships, which are answered on 4-point ordinal scales.	A total score on AQoL Senses dimension was derived by combining responses to the three questions using the 2015 weighted utility algorithm (Hawthorne et al., 2013; AQoL, 2015), with higher scores representing more optimal senses. Low internal consistency was found for this subscale in our study. <sup>a</sup>	0.95 (0.06)	.36
Health-Related Quality of Life: Mental Health	Assessment of Quality of Life 4D instrument (AQoL-4D) (Hawthorne et al., 2013; AQoL, 2014)	Three questions of the AQoL-4D assess the health-related quality of life dimension of senses, which are answered on 4-point ordinal scales.	A total score on AQoL Mental Health dimension was derived by combining responses to the three questions using the 2015 weighted utility algorithm (Hawthorne et al., 2013; AQoL, 2015), with higher scores representing more optimal mental health. Questionable internal consistency was found for this subscale in our study. <sup>a</sup>	0.91 (0.08)	.48
Self-Assessed Health	ABS National Health Survey question (ABS, 2015c)	Self-assessed health status was measured with the widely-used ABS National Health Survey question: "In general, would you say your health is: excellent/very-good/good/fair/poor" (ABS, 2015c).	On self-assessed health status, scores range from 1 to 5, with higher scores indicating poorer health.	2.23 (0.81)	n/a
Religiousness	Fetzer Brief Multi-dimensional Measure of Religiousness and Spirituality (John E. Fetzer Institute and National Institute on Aging Working Group, 2003)	Participants reported the extent to which they consider themselves to be 'a religious person' on a 4-point Likert scale from 'not religious at all' through to 'very religious'.	Scores on this item ranged from 1 to 4 with higher scores indicating greater religiousness.	1.84 (0.90)	n/a
Spirituality	Fetzer Brief Multi-dimensional Measure of Religiousness and Spirituality (John E. Fetzer Institute and National Institute on	Participants reported the extent to which they consider themselves to be 'a spiritual person' on a 4-point Likert scale from 'not spiritual at all' through to 'very spiritual'.	Scores on this item ranged from 1 to 4 with higher scores indicating greater spirituality.	2.90 (0.89)	n/a

<i>Measure</i>	<i>Measure Source</i>	<i>Measure Description</i>	<i>Variable Derived</i>	<i>% or Mean (SD)</i>	<i>Alpha</i>
	Aging Working Group, 2003)				
Age	Enrolment records	Age in years	Age in years as reported by participants, which ranged from 19 to 84 in this sample. <sup>b</sup>	52.93 (12.44)	n/a
SEIFA postal area disadvantage	ABS (2013) derived	Residential postal code was recorded if they lived in Australia, or the name of their country if located outside Australia. Australian postcodes were assigned scores on Socio-Economic Index for Areas (SEIFA) Index of Relative Socio-Economic Disadvantage (ABS, 2013), which ranks postal areas according to economic and social conditions of households within each area.	Participants reporting an Australian postcode were assigned a SEIFA Index of Relative Socio-Economic Disadvantage (ABS, 2013) score corresponding to their postcode. Low scores indicate greater area disadvantage. <sup>c</sup>	1010.6 (58.3)	n/a
Education level	ABS Census question (ABS, 2015a, 2015b)	Participants reported their highest level of completed education according to four ordinal categories (some high school, completed high school, trade school/equivalent, and university studies) adapted from the ABS 2016 census.	Scores could range from 0 to 3 with higher scores indicating a greater level of completed education.	2.55 (0.80)	n/a
Health Professional (Yes)	Enrolment records	Participants were asked to identify their occupation as either 'a health professional' or 'not a health professional'.	The dichotomised responses enabled comparison of participants who self-identified as a health professional to participants who self-identified as not being a health professional.	64.3%	n/a
Death Experience (Yes)	Study derived	Participants were asked "has someone close to you died in the last five years?", responding with yes, no, or not-sure.	Responses were dichotomised to compare participants who had experienced the death of someone close to them in the past 5 years to other participants.	68.2%	n/a
Carer Experience (Yes)	Study derived	Participants were asked "have you cared for, or are you caring for someone who has a terminal illness?", responding with yes, no, or not-sure.	Responses were dichotomised to compare participants who had experience caring for someone with a terminal illness to other participants.	69.6%	n/a
Gender (Female)	Enrolment records	Participants were asked to report the gender they identify with.	Responses were dichotomised to compare females with other participants.	95.6%	n/a
Resides in Australia (Yes)	Enrolment records	Participants' country location was recorded automatically during the enrolment process on the MOOC platform.	Country locations were dichotomised to compare participants residing in Australia with participants residing in other countries.	93.1%	n/a
Australian Born (Yes)	ABS Census question (ABS, 2015a, 2015b)	Using the ABS Census question, participants selected the name of the country they were born in.	Responses were dichotomised to compare participants born in Australia with participants born in other countries.	67.9%	n/a

**Notes.**

<sup>a</sup>. In our study, the AQoL-4D the 4 subscale dimension scores showed low internal consistency, perhaps indicative of these subscales only being derived from 3-items each. The AQoL subscales distributions also deviated from normality by showing negative skew and kurtosis, and therefore should be interpreted with some caution. Strong positive correlations between AQoL subscales and the total utility score were indicative of potential multicollinearity (see Table 2). Regression analyses confirmed the presence multicollinearity between the total score and subscale scores on the AQoL, so the subscales were eliminated from further analysis.

<sup>b</sup>. One participant was missing data on age, therefore analyses with this variable include n=276.

<sup>c</sup>. SEIFA scores are only generated for participants residing in Australia with an Australian postcode, n=257 of the 277 complete cases.

Table 2.

*Bivariate Correlations Between Variables (n = 277)*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
1) Death Competence	1																			
2) Presence of Meaning in Life	.457***	1																		
3) Search for Meaning in Life	-.146*	-.339***	1																	
4) AQoL Total Utility Score	.206***	.343***	-.223***	1																
5) AQoL Independent Living	.029	.131*	-.028	.537***	1															
6) AQoL Relationships	.382***	.421***	-.305***	.786***	.317***	1														
7) AQoL Senses	.011	-.023	.043	.537***	.141*	.265***	1													
8) AQoL Mental Health	.010	.250***	-.179**	.697***	.186**	.318***	.183**	1												
9) Self-Assessed Health <sup>a</sup>	-.138*	-.285***	.121*	-.475***	-.328***	-.309***	-.159**	-.435***	1											
10) Religiosity	.120*	.174**	-.009	-.039	.014	-.022	-.045	-.035	.011	1										
11) Spirituality	.247***	.263***	.102	-.004	-.024	.005	-.027	-.010	-.058	.387***	1									
12) Age <sup>b</sup>	.285***	.195***	-.206***	-.094	-.177**	.055	-.149*	-.069	.061	.157**	.172**	1								
13) SEIFA area disadvantage <sup>c</sup>	-.023	-.046	.150*	.088	.068	.026	.032	.108	-.127*	.011	.077	.031	1							
14) Education level	.019	.095	.002	.095	-.014	.037	.041	.145*	-.135*	-.039	.104	.014	.096	1						
15) Health Professional (Yes)	-.037	.009	.010	.106	.167**	.050	.031	.084	-.150*	.019	-.017	-.330***	-.085	.050	1					
16) Death Experience (Yes)	.232***	.134*	-.043	-.079	.071	.031	-.137*	-.156**	.070	.095	.080	.049	-.016	-.026	.041	1				
17) Carer Experience (Yes)	.238***	.110	.022	-.074	.028	.002	-.058	-.117*	-.018	.114	.125*	.082	-.067	-.110	.226***	.173**	1			
18) Gender (Female)	-.039	.000	.049	.048	.008	.038	.053	.007	-.025	-.061	-.011	-.121*	.016	.054	.106	-.036	.066	1		
19) Resides in Australia (Yes)	-.075	-.039	.008	.034	.081	.004	.041	-.026	.007	-.064	-.047	.047	<sup>c</sup>	-.100	.066	-.062	-.122*	-.067	1	
20) Australian Born (Yes)	-.028	-.102	.003	-.049	.067	-.038	-.027	-.084	.101	-.027	-.061	-.137*	.042	-.089	.035	.078	-.082	.028	.364***	1

Notes. To allow comparison of magnitude across all variables, associations were analysed using Pearson's correlations. Two-Tailed significance \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ . Associations between death competence and the dichotomous demographic variables were also analysed using Independent samples t-test (not shown), and the conclusions were the same.

<sup>a</sup>. On self-assessed health status, higher scores indicate poorer health.

<sup>b</sup>. One participant was missing data on age, therefore analyses with this variable include  $n=276$ .

<sup>c</sup>. SEIFA scores are only generated for participants residing in Australia with an Australian postcode,  $n=257$  of the 277 complete cases.

Table 3.

*Simultaneous Multiple Linear Regressions Predicting Death Competence*

<i>Predictor Variables</i> <sup>a</sup>	<i>Death Competence</i>			
	<i>Unstandardised B</i>	<i>B 95%CI</i>	<i>Standardised <math>\beta</math></i>	<i>p</i>
<i>Final Model 1: (n=276 all cases)<sup>b</sup></i>				
Presence of Meaning in Life	1.87	1.22 to 2.57	.350	.0001
Search for Meaning in Life	0.203	-0.19 to 0.60	.058	.311
AQoL Total Utility Score	23.77	4.13 to 43.41	.145	.018
Self-Assessed Health Status <sup>c</sup>	-0.30	-4.17 to 3.58	-.009	.881
Religiosity	-1.13	-4.42 to 2.16	-.037	.501
Spirituality	2.77	-0.74 to 6.28	.090	.122
Age	0.46	0.21 to 0.72	.212	.0001
Highest Level of Education	-0.54	-4.03 to 2.95	-.016	.761
Health Professional (Yes)	-1.79	-8.13 to 4.54	-.032	.578
Death Experience (Yes)	9.23	3.22 to 15.24	.158	.003
Carer Experience (Yes)	8.74	2.39 to 15.08	.149	.007
Gender (Female)	-3.34	-15.05 to 8.37	-.029	.575
Australian Born (Yes)	3.54	-2.87 to 9.94	.061	.278
Resides in Australia (Yes)	-7.31	-19.14 to 4.51	-.068	.224
<i>Final Model 2: (n=256 Australians with SEIFA data)<sup>d</sup></i>				
Presence of Meaning in Life	1.79	1.11 to 2.46	.339	.0001
Search for Meaning in Life	0.26	-0.15 to 0.67	.074	.217
AQoL Total Utility Score	27.89	7.25 to 48.52	.169	.008
Self-Assessed Health Status <sup>c</sup>	-0.30	-4.36 to 3.75	-.009	.883
Religiosity	-1.01	-4.43 to 2.41	-.034	.561
Spirituality	2.03	-1.67 to 5.72	.066	.282
Age	0.49	0.22 to 0.75	.220	.0001
Highest Level of Education	-0.23	-3.79 to 3.33	-.007	.899
Health Professional (Yes)	-2.05	-8.61 to 4.50	-.036	.538
Death Experience (Yes)	9.46	3.22 to 15.70	.164	.003
Carer Experience (Yes)	8.80	2.38 to 15.22	.153	.007
Gender (Female)	-3.40	-15.15 to 8.34	-.031	.569
Australian Born (Yes)	3.72	-2.78 to 10.22	.061	.261
SEIFA Area Disadvantage	-0.02	-0.07 to 0.03	-.039	.476

*Notes.*

<sup>a</sup> Collinearity diagnostics indicated the presence of multicollinearity between AQoL subscales and AQoL Total Utility scores. Therefore the reported multivariable analysis excluded the AQoL subscales.

<sup>b</sup> Of the 277 cases with data on death competence, n=1 was missing data on age. Therefore the multiple regression had a total n=276.

<sup>c</sup> On self-assessed health status, higher scores indicate poorer health.

<sup>d</sup> Valid data on the SEIFA disadvantage index only exists for participants who reside in Australia (n=256). We tested a model including n=256 Australian residents only to assess the association of SEIFA disadvantage to death competence.