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# Death-is-life-enhancing: Adaptation and validation of the Norwegian Death Mindsets Measure (NDMM)

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**ABSTRACT**

While existing psychological frameworks and their accompanying measures focus on death as anxiety-inducing and debilitating, we highlight an overlooked perspective of death—that death can be a basis for living with more meaning and presence. The present research adapts and validates the Death Mindsets Measure (DMM), which assesses the mindset that "death-is-life-enhancing," for a Norwegian context. Firstly, we translated the DMM and consulted with Norwegian bereavement experts and bereaved Norwegians on items' clarity and relevance to cultural perspectives of death. Secondly, we validated the Norwegian DMM (NDMM) on a predominantly bereaved community sample of Norwegians ($N = 241$). Using structural equation modeling, we confirmed the hierarchical two-factor structure of our measure. The NDMM also demonstrated high internal consistency and discriminant validity with existing death anxiety and death attitudinal measures. Finally, our measure explained additional variance in psychological well-being beyond existing death anxiety and attitudinal measures.

How we view death is central to how we live life. Our cognitions (e.g., attitudes, beliefs) about the reality that we and those around us will all die someday permeates our lived experiences in domains as diverse as cultural and spiritual traditions, medical care, community building, and economic planning. Psychological theories predominantly capture a limited cognition about death—that death is anxiety-producing and debilitating. The popularized terror management theory, for example, posits that awareness of death produces existential anxiety and fear that people fend off by clinging to their worldviews and self-esteem (Greenberg et al., 1986). Such debilitating views of death increase vulnerability to multiple mental disorders (Arndt et al., 2005; Iverach et al., 2014), prejudice and aggression (Greenberg et al., 1994; Jost et al., 2003), and even lack of creativity (Sligte et al., 2013).

Psychological evidence also suggests another view of death as a basis for a meaningful life. Acknowledgment of death's inevitability may produce an emotional appraisal to integrate this realization into life (Neimeyer et al., 2004). Under meaning management theory (MMT), death may serve as a motivation to pursue one's only and short life "meaningfully and abundantly," emphasizing a proactive orientation to seeking meaning even amid death (Wong, 2008). Thoughts about death can increase health-promoting behaviors such as exercise and smoking reduction (Arndt et al., 2003, 2013) and prioritization of close relationships (Mikulincer et al., 2003). After the death of a loved one or a near-death experience, posttraumatic growth in a deeper appreciation for life, personal strength, community, or spirituality is highly prevalent (Büchi et al., 2007; Groth-Marnat & Summers, 1998; Wu et al., 2019).

Critically, people's cognitions about death seem to moderate vastly different outcomes in mental health, interpersonal relationships, and financial spending. Yet the most popular psychological instruments for measuring cognitions on death narrowly reflect theories of death. These decades-old measures include the Death Anxiety Scale (Templer, 1970) and Fear of Dying Scale (Lester, 1990), both of which largely assess how people feel about and respond to death—namely, that they do not like death, and that they try to defend against it or avoid it. The attitudes drawn from these measures are also not necessarily generalizable to a variety of contexts, and the conceptualization of "death" in these measures is muddied by items referring to both the permanent and biological

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"cessation of vital functions" (Wong, 2008) and knowledge of mortality. Knowing someone's attitude about seeing a dead body, as measured in the Death Anxiety Scale for example, may not reveal how someone thinks their mortality affects their life and the meanings ascribed to death. In light of COVID-19, studies have published extensively on the present relevance of death anxiety (Guner et al., 2023; Özgüç et al., 2021), but perspectives on death as the basis for a meaningful life remain understudied and lack corresponding assessments.

Beyond death anxiety, another body of measures suggests that people may instead exhibit death acceptance. Observing that elderly populations were willing to talk about death and experienced low death anxiety, Wong et al. (1994) developed the Death Attitudes Profile Revised to capture various dimensions of acceptance: "Neutral Acceptance," or ambivalence and indifference to the unchangeable fact of death; "Approach Acceptance," or belief in a happy afterlife; and "Escape Acceptance," or welcoming death to escape life's suffering. Such forms of acceptance are marked by passivity and resignation, providing limited insight into the agency behind self-authoring life in response to death. The German Multidimensional Orientation Toward Dying and Death Inventory also offers a conception of death and dying in the form of acceptance and readiness (Wittkowski, 2001). Items refer to "positive" views and attitudes toward death and even dying as "rounding off life" and most resemble the approaches to death observed in posttraumatic growth and meaning management literature. Their measurement may be bolstered by greater specificity to the "positive" aspect of death attitudes—such as death conferring growth, meaning, gratitude, or beauty.

In response to these concerns, the Death Mindsets Measure (DMM; Chang, Leibowitz, & Crum, *in prep*) was a measure created based on 115 items generated from qualitative discussions of death and narrowed to 11 items from consensus from mindset experts. The DMM was validated in a diverse U.S. sample of 700 participants before and during the COVID-19 pandemic to conceptualize a broader range of how people think about death. "Death" as referred to in this measure is most synonymous with mortality; it is conceptual, referring to the fact that everyone's lives will eventually end. This measure emphasizes the meaning systems attached to death (Wong, 2008), rather than focusing on death as a biological process, in order to assess the proactive ways that death informs life. The 11-item DMM captures two mindsets, or core associations about the nature and workings of death: 1) "death-is-life-enhancing," or a basis for living more fully, gratefully, meaningfully, and presently (8 items), and 2) "death-is-life-negating," or a basis for living with less meaning and more pain (3 items). This measure has high internal consistency; is distinct from existing death attitudinal, death anxiety, personality, optimism, and affect measures; and relates to measures of psychological well-being (Chang et al., in prep).

To extend the DMM's work, the role of culture as a site in which death mindsets emerge merits attention (Rosenblatt, 2008; Silverman et al., 2021) in combatting universalist assumptions of theories of death (Granek & Peleg-Sagy, 2017). Indeed, diverse cultural traditions have viewed death as inherently connected to life long before the development of the DMM (Ding, 2016; Markides, 1981; Paz, 1961; Sharp et al., 2015), such that life-enhancing views of death must be situated within culture. Research on views of death remains understudied in Scandinavian contexts such as Norway, despite Norwegians' rich engagement with death. Fifty-nine percent of Norwegians, including young children, light candles to grieve together yearly, and thousands of candles are lit for public deaths (Aagedal, 2013). Norwegian schools make space for grieving; examples include weeklong programming honoring deceased students, lighting daily candles for deceased students for the entire year, and inviting students to share stories of grief (Høeg, 2013). Following the 2011 Utøya mass shooting, for example, the Norwegian government established an information and support center and national memorial service (Dyregrov et al., 2016). Moreover, Norway is known for its palliative care, with the highest percentage of nursing home and hospital utilization in Europe, and with patients' families expressing satisfaction with end of life care (Gysels et al., 2012). However, little data even on death anxiety in Norway exists (Lester et al., 2007), and existing research in Norway has been conducted with measures in the original English (Oker et al., 2021).

For the present study, we provide the first assessment of death mindsets in a Norwegian sample. We first aimed to adapt a Norwegian version of the DMM (NDMM), consulting with Norwegian bereavement experts and bereaved Norwegians to understand the relevance of our items to the lived experiences of grief. Secondly, we assessed death mindsets among a predominantly bereaved community sample of Norwegians to evaluate the adapted Norwegian measure's internal consistency, structural validity, distinctness from existing attitudinal death measures, and relationship to psychological and physical well-being.

## Methods

### Item translation and adaptation

To better understand Norwegian cultural approaches to death and grief in aiding the scale's adaptation, we first conducted an expert evaluation by consulting with 10 Norwegian bereavement researchers at the University of Bergen's Center for Crisis Psychology, many of whom held several decades of experience studying grief in Norway. These experts provided insights on how young people in Norway interact with death, the role of community in grieving, spiritual understandings of death, and tone and metaphors discussing death. As the original DMM only included 3 items assessing the "death-is-life-negating" mindset, the researchers expressed concern that the existing items for this mindset were phrased extremely and would yield low variation in response among the Norwegian sample and that the scale was unbalanced. They generated two additional negatively valenced items to assess the "death-is-life-negating" mindset and created a 13-item measure: "Death means that life becomes less important" and "Death takes pleasure out of life."

For translation, the second author (JCT) and a native Norwegian speaker independently translated all items of the DMM from English into Norwegian. They also independently translated all items of the Death Anxiety Scale (Templer, 1970) and Death Attitudes Profile-Revised (Wong et al., 1994), which had not been previously administered in Norwegian. Four native Norwegian speakers who were also grief researchers reviewed the two translations and provided feedback, and any discrepancies in the translations were resolved. An independent translation agency reviewed the measures' Norwegian translations and provided translations back into English, following a standard back-translation procedure. The first author (MC) compared the original English and back-translated English versions of the measures to identify any deviations in meaning. All members incorporated modifications to finalize Norwegian translations. Norwegian translated measures are available in Supplementary Information (S1).

To preemptively address concerns that items of a "death-is-life-enhancing" mindset may be insensitive to or particularly distressing for recently bereaved individuals, we conducted a focus group with four Norwegians who had experienced the death of a loved one in the past 5 years to further receive feedback on the Norwegian translation of the DMM from their perspectives. Specifically, we asked attendees to rate and discuss their agreement with each item, the relevance of each item to their lived experiences with death, and the clarity of each item, which are listed in Supplementary Information (S2). These participants were compensated with a 500 NOK ($58.25 USD) gift card in exchange for their time and insights.

### Participants

Participants were recruited through advertisements in Norwegian on the Center for Crisis Psychology's Facebook page and website to participate in a study on views about death. Participants who were 18 years or older, lived in Norway, and fluent in Norwegian were eligible. In exchange for their time, participants would be entered into a raffle for one of three 500 NOK gift cards.

Of the participants who provided their informed consent (N = 316), 75 participants did not complete the entire survey, at most completing 9.7% of items. We thus excluded these 75 participants. In total, 241 participants completed the full survey, with participants in the age groups of 18–25 years old (7%), 26–35 years old (15%), 36–45 years old (21%), 46–55 years old (29%), 56–65 years old (18%), 66–75 years old (8%), and 76 years or older (2%). Gender was unbalanced, with significantly more women (91%) than men (8%) and gender non-binary (1%) participants combined. Regarding religious affiliations, participants included Protestant Christians (33%), Atheists (29%), Agnostics (16%), Catholics (1%), and other unspecified religions (21%). Race, ethnicity, and region of residence were unable to be collected to comply with ethical review requirements for maintaining anonymity of survey responses.

Though this study did not have a research-motivated rationale to specify bereavement as an inclusion criterion, almost all participants (93%) in this accessible sample had experienced the loss of a loved one at some point in their lives. Among those who lost a loved one, the recency of their losses varied in the past 6 months (11%), the past year (12%), the past 5 years (48%), the past 10 years (40%), and the past 10+ years (50%). Finally, participants reported low rates of completing a will (7%) and an advance directive (5%).

### Measures

All measures were administered in Norwegian. Our primary measure of interest was the 13-item Norwegian Death Mindsets Measure, for which participants rated their agreement with statements related to mindsets about death (1 = *strongly disagree*, 6 = *strongly agree*).

### Death measures

To understand whether death mindsets were distinct from existing measures of death attitudes, we administered the Death Anxiety Scale (Templer, 1970), which asks participants to agree with statements such as "I dread to think about having an operation" (1 = *strongly disagree*, 5 = *strongly agree*). The Death Attitudes Profile-Revised (DAP-R; Wong et al., 1994) was also included. DAP-R measures five subscales of 1) "fear of death," or negative thoughts about death and dying, 2) "death avoidance," or avoidance of talking or thinking about death to reduce death anxiety, 3) "neutral acceptance," or a view of death as natural and neither good nor bad, 4) "approach acceptance," or a view of death as a gateway to the afterlife, and 5) "escape acceptance," or a view of death as an escape from the sufferings of life (1 = *strongly disagree* to 7 = *strongly agree*).

### Psychological and physical well-being

We assessed general subjective well-being and evaluation of life as a whole through the Satisfaction with Life Scale (SWLS) (1 = *strongly disagree* to 7 = *strongly agree*) (Diener et al., 1985) as previously validated in Norwegian (Clench-Aas et al., 2011). For measuring mental wellness, we used the Depression Anxiety Stress Scale 21 (DASS-21) (Henry & Crawford, 2005), a 21-item measure of participant symptoms of depression, anxiety, and stress over the past week (0 = *did not apply to me at all*, 4 = *applied to me most of the time*) that was translated and validated in a Norwegian sample (Hjemdal et al., 2011). To assess self-perceptions of general health, we used the Norwegian translation (Loge et al., 1998) of the general health subscale of the SF-36 (Ware, 2000). Given the context of COVID-19 during the survey's administration in April 2021, we assessed the extent to which participants felt anxious about their health in general and felt anxious about COVID-19 (1 = *not at all stressed/anxious*, 5 = *extremely stressed/anxious*).

### Other measures

We included questions measuring participants' subjective experiences with death to gauge how mindsets about death might vary by life experiences. Participants indicated their agreement to several statements, including "Someone I care about has had a good death" and "My life has included a lot of grief" (1 = *very untrue for me*, 7 = *very true for* me) (Supplementary Information S3).

### Statistical analyses

Consistent with the original English DMM and recommendations to report total scores when subscales are intercorrelated (Reise et al., 2013), the Norwegian DMM was scored as a composite measure. "Death-is-life-negating" items were reverse-coded and added to "death-is-life-enhancing" items to calculate a total mean score. The 241 participants who completed all questions in the survey were included in the analyses. Descriptive statistics of all study measures were calculated. The internal consistency of the scales was examined using Cronbach's alpha and McDonald's omega. Item-level psychometric properties of the NDMM were calculated including item-total correlations, difficulty, and internal consistency omitting each item. All statistical analyses were conducted in R 4.2.2.

### Structural validity

We ran a hierarchical confirmatory factor analysis using the *lavaan* 0.6-14 package with a maximum likelihood estimator with robust standard errors correcting for non-normality to confirm the proposed hierarchical latent structure of the NDMM as bifactorial nested within a general factor: the first-order "death-is-life-negating" and "death-is-life-enhancing" mindsets that fall under the second-order death mindset representing the composite measure. Items were treated as ordinal. The indices for model fit included the chi-square test ($\chi^2$), root mean square error of approximation (RMSEA), comparative fit index (CFI), and standardized root mean squared residual (SRMR). Hu and Bentler (1999) suggested that RMSEA < .06, CFI > .95, and SRMR < .08 indicate a good model fit.

If the goodness of fit in the CFA was not ideal, we also planned to run an exploratory factor analysis to more flexibly explore the underlying factor structure of the NDMM in the case that another factor structure would better fit as done by previous researchers (Gomez et al., 2020). We would first run a parallel analysis using the *psych* 2.2.9 package, which corrects for sampling error and selects the number of factors to retain as the factors for which the eigenvalues produced by factor analysis are greater than the eigenvalues produced by random permutations of the raw dataset (Moriarity et al., 2021). The EFA would be conducted subsequently using an oblique rotation with a maximum likelihood estimator with robust standard errors in the *lavaan* 0.6-14 package.

### Discriminant validity

We used Pearson correlations to assess whether our measure was distinct from death anxiety and death attitudes. Small to moderate correlation coefficients ($r$) in expected directions (.10–.50) indicate that items expected to relate to each other do (Cohen, 1988), but not to such a magnitude that they are redundant.

### Criterion validity

To understand whether the NDMM could relate to important outcomes in psychological well-being and general health, we utilized several approaches. After calculating Pearson correlations, we conducted hierarchical regressions to assess the incremental validity, or additional value added, of the NDMM in explaining the variance ($R^2$) of the SWLS, DASS-21, and SF-36 scales. We entered the measures of death anxiety, death attitudes (fear of dying, death avoidance), and death acceptance (neutral, approach, and escape) in Step 1, and the NDMM in Step 2.

### Ethical considerations

We administered an anonymous survey on the secure platform SurveyXact that would not collect participants' IP addresses or web browser information. To ensure that participants' responses could not be linked to identifying information, we collected categorical age data (e.g., "18–25," "26–35," etc.) and only provided answer choices for the most common religious affiliations in Norway or "Other." The Norwegian Center for Research Data confirmed the anonymity of the collection process, and thus ethical approval from the Regional Committee of Medical and Health Research Ethics was not required (Protocol 203905).

## Results

### Descriptive scale statistics

The descriptive statistics of the composite NDMM and each death mindset are listed in Supplementary Table S4. The mean agreement with the composite NDMM was 4.26 out of 6 ($SD = 0.75$), which leaned toward the mindset that "death-is-life-enhancing." The distribution of responses to the NDMM only slightly deviated from a normal distribution ($W = .99$, $p = .017$). The internal validity of the composite measure (Cronbach's $\alpha = .85$; McDonald's $\omega_t = .90$), death-as-life-enhancing mindset (Cronbach's $\alpha = .83$; McDonald's $\omega_t = .89$), and death-as-life-negating mindset (Cronbach's $\alpha = .82$; McDonald's $\omega_t = .85$) were also appropriate. Item-level psychometric properties of the NDMM are listed in Table S6. Descriptive statistics of all measures administered in the study are shown in Table S5.

To explore potential differences in the NDMM based on participants' various experiences with death, we ran Pearson correlations. The item "Someone I felt deeply close to has had a good death" was particularly associated with the NDMM ($r = .28$, $p < .0001$), negative death attitude scales of the DAP-R ($rs = -.22$ to $-.25$, $p < .001$), and approach acceptance of the DAP-R ($r = .20$, $p < .0001$). The item "My life has included a lot of grief" was also significantly negatively correlated with the NDMM ($r = -.17$, $p < .0001$). All other experiences of death had nonsignificant correlations with the NDMM ($rs = -.07$–$.09$, $ps = .158$–$.264$).

### Structural validity

The fit of the hierarchical 2-factor model was reasonably good, $\chi^2_{(61)} = 201.66$, $p < .001$, CFI = .88, RMSEA = .10, 90% RMSEA CI [.09, 0.12], SRMR = .07. The standardized loadings of the 2-factor model from the hierarchical confirmatory factor analysis are displayed in Table 1.

As our CFA model fit indices did not fully meet our ideal indices, we ran exploratory factor analyses to more flexibly estimate models and assess whether alternative factor solutions would show better model fit for the NDMM. The parallel analysis eigenvalues, standardized loadings, and model fit of the alternative factor solutions are listed in Supplementary Information (Tables S7–S9). The parallel analysis suggested retaining up to 3 factors, though the third

**Table 1.** Standardized loadings of the 2-factor model from confirmatory factor analysis.

| Item | First-order | Second-order |
|---|---|---|
| Death-is-life-negating | | .73 |
| Death only brings misery. | .53 | |
| Death takes away purpose in life. | .69 | |
| Death makes life meaningless. | .54 | |
| Death takes pleasure out of life. | .75 | |
| Death means that life becomes less important. | .62 | |
| Death-is-life-enhancing | | .61 |
| Death gives life meaning. | .80 | |
| The fact of death is life-affirming. | .71 | |
| Death is an invitation to live fully. | .70 | |
| Death gives life purpose. | .75 | |
| Death heightens gratitude for life. | .74 | |
| Death is an invitation to live in the present. | .70 | |
| Death is a beautiful part of life. | .54 | |
| Death is a sacred part of life. | .46 | |

factor's eigenvalue was much lower (i.e., below 1). We thus tested 1-factor and 3-factor EFA models, in comparison to the established 2-factor CFA model. The 1-factor solution showed poorer fit compared to the 2-factor solution ($\chi^2_{(65)}$ = 575.24, CFI = .58, RMSEA = .18, 90% RMSEA CI [.17, 19], SRMR = .13). The 1-factor solution failed to capture variance in the different items, resulting in lower standardized loading values (all under an absolute value of .68). While the 3-factor solution showed improved fit indices ($\chi^2_{(42)}$ = 111.11, CFI = .94, RMSEA = .08, 90% RMSEA CI [.06, .10], SRMR = .04), this solution posed theoretical challenges. This model performed slightly better than the 2-factor CFA, though this may have been due to the relaxed assumptions in the 3-factor EFA. The 3-factor EFA model split the "death-is-life-enhancing" mindset into 2 distinct factors. Items grouped together in each factor under the 3-factor solution did not show greater theoretical coherence with each other compared to with items from other factors. This suggested potential overfitting in the 3-factor model to capture more variance in the items. Thus, we proceeded with the existing 2-factor solution.

### Discriminant validity

The correlations of the NDMM with the DAS and DAP-R scales are shown in Table 2. The NDMM composite was moderately negatively correlated with measures related to death anxiety, fear, and avoidance ($rs$ = −.39–43, $p$ < .0001). Critically, the NDMM was also distinct from existing measures of death acceptance, with a nonsignificant correlation with DAP-R escape acceptance ($r$ = −.10, $p$ = .118) and moderate correlations with DAP-R neutral and DAP-R approach acceptance ($rs$ = .26–.50, $p$ < .0001). These correlations were of a lower magnitude compared to the correlations between the DAS and other death attitudes ($rs$ = −.56–.78, $p$ < .0001), except for the nonsignificant correlation between DAS and DAP-R approach and DAP-R escape acceptances.

### Criterion validity

The NDMM related to all relevant measures of criterion validity with small to large significant Pearson correlations (Table 3). The correlations of the highest magnitude were between the NDMM composite and the general scale and subscales of the DASS ($rs$ = −.31–−.36, $ps$ < .0001), as well as the NDMM composite and SWLS ($r$ = .33, $p$ < .0001).

The results of the hierarchical regression analyses are shown in Table 4. The NDMM explained additional variance in all outcomes except for in general health. The NDMM explained an additional 2% of

**Table 2.** Pearson correlations of NDMM and death measures.

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Death mindsets | | | | | | | |
| 1. NDMM composite | – | | | | | | |
| Death anxiety | | | | | | | |
| 2. DAS | −.39** | – | | | | | |
| Death attitudes profile | | | | | | | |
| 3. Fear of death | −.43** | .78** | – | | | | |
| 4. Death avoidance | −.43** | .55** | .67** | – | | | |
| 5. Neutral accept | .50** | −.56** | −.55** | −.45** | – | | |
| 6. Approach accept | .26** | −.03 | −.16* | −.09 | .08 | – | |
| 7. Escape accept | −.10 | .04 | −.09 | −.05 | .06 | .35** | – |

*$p$ < .05, ** $p$ < .01. DAS = Death anxiety scale.

**Table 3.** Pearson correlations of the NDMM with psychological and health well-being.

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| Death mindsets | | | | | | | | | |
| 1. NDMM composite | – | | | | | | | | |
| Well-being | | | | | | | | | |
| 2. SWLS | .33** | – | | | | | | | |
| Mental health | | | | | | | | | |
| 3. DASS (general) | −.36** | −.60** | – | | | | | | |
| 4. DASS (depression) | −.33** | −.62** | .91** | – | | | | | |
| 5. DASS (anxiety) | −.31** | −.48** | .89** | .70** | – | | | | |
| 6. DASS (stress) | −.34** | −.50** | .91** | .72** | .77** | – | | | |
| General health | | | | | | | | | |
| 7. SF-36 | .22* | .42** | −.37** | −.32** | −.34** | −.34** | – | | |
| Health anxiety | | | | | | | | | |
| 8. General | −.20** | −.38** | .50** | .50** | .49** | .46** | −.59** | | |
| 9. COVID-19 | −.15** | −.15* | .22** | .23* | .27** | .26** | −.37** | −.49** | – |

*$p$ < .05, ** $p$ < .01. $Ns$ = 236–241. DASS = Depression Anxiety Stress Scale 21. SF-36 = Short Form Health Survey 36. SWLS = Satisfaction with Life Scale.

the variance ($p$ = .015) in the SWLS, an additional 2% of the variance ($p$ = .005) in the DASS, and no statistically significant additional variance ($p$ = .174) for general health. We did not include health anxiety in the analyses because these were single items.

## Discussion

The current research aimed to confirm the factor structure of the adapted Norwegian DMM and its validity in a community sample of Norwegians. We assessed several types of validity: structural, discriminant, and criterion validity. Assessing the psychometrics of this measure would importantly facilitate its dissemination to researchers in Norway, who currently lack validated measures of people's thoughts about death.

Our results confirmed our proposed hierarchical 2-factor solution comprising the "death-is-life-enhancing" and "death-is-life-negating" mindsets in the Norwegian DMM. The hierarchical 2-factor model showed the best fit indices and theoretical fit out of all three models evaluated. Moreover, future researchers who want to administer only one of the two mindset scales may also find this measure useful. Though the fit indices were reasonably good, they did not meet optimal cutoffs (Hu & Bentler, 1999). We suspect that the stricter assumptions in CFA compared to EFA may have contributed to this result, as some negative loadings of the "death-is-life-enhancing" items on the "death-is-life-negating" factor, and vice versa, are expected. Moreover, chi-square test statistics are often much larger for sample sizes over 200. The larger number of indicators (6–8) per factor could have also produced poorer fit (Kenny & McCoach, 2003). This study is situated within larger discussions in the field of psychometrics surrounding the utility and limitations of definitive cutoff criteria in SEM (Fan & Sivo, 2007; Niemand & Mai, 2018), as the theoretical utility of the death mindsets construct is still notably relevant. Items of the same mindset showed high inter-item correlation and were more correlated with one another than items from different mindsets.

Correlations between the NDMM and other death attitudes (i.e., DAS, DAP-R) were weaker than the correlations among the different death attitudes but still consistent in expected directions. These correlations suggest that the "death-is-life-enhancing" mindset is not simply the absence of death anxiety or an acceptance of death—but contributes an additional dimension to the literature. One limitation is that this study is the first to utilize Norwegian translations of the DAS and DAP-R, which have not undergone full psychometric validation. However, we demonstrate high internal consistency of these Norwegian measures, which will be available for use by future researchers.

Greater endorsement of the "death-is-life-enhancing" mindset related to greater life satisfaction, fewer symptoms of depression, anxiety, and stress over the past week, better general physical health, and lower health anxiety. The Norwegian DMM captured additional variance in outcomes across life satisfaction and symptoms of depression, anxiety, and stress—but not in general physical health. These effect sizes, though small, were similar to those of other robust mindset measures, such as the Stress Mindset Measure (Crum et al., 2013), for which incremental changes in stress mindset produced large improvements in work performance, physiology, and affect (Crum et al., 2013,

**Table 4.** Hierarchical regressions predicting SWLS, DASS-21, and SF-36 scores from the DMM.

| | SWLS | | | DASS-21 | | | SF-36 | | |
|---|---|---|---|---|---|---|---|---|---|
| | β | $R^2$ | $\Delta R^2$ | β | $R^2$ | $\Delta R^2$ | β | $R^2$ | $\Delta R^2$ |
| Step 1 | | .25** | .25** | | .24*** | .24*** | | .15*** | .15*** |
| Death anxiety | −0.01 | | | 0.01 | | | −0.67** | | |
| DAPR (fear of death) | −0.04 | | | 0.01 | | | −0.04 | | |
| DAPR (death avoidance) | 0.07 | | | 0.00 | | | 1.20 | | |
| DAPR (neutral) | 0.32** | | | −0.14** | | | 2.59 | | |
| DAPR (approach) | 0.16*** | | | −0.05* | | | 0.33 | | |
| DAPR (escape) | −0.41*** | | | 0.16*** | | | −3.98*** | | |
| Step 2 | | .27** | .02* | | .26*** | .02** | | .15*** | .003 |
| Death anxiety | −0.01 | | | 0.01 | | | −0.67 | | |
| DAPR (fear of death) | −0.03 | | | 0.01 | | | 0.11 | | |
| DAPR (death avoidance) | 0.10 | | | −0.01 | | | 1.50 | | |
| DAPR (neutral) | 0.22* | | | −0.09* | | | 1.63 | | |
| DAPR (approach) | 0.12* | | | −0.03 | | | −0.06 | | |
| DAPR (escape) | −0.37*** | | | 0.14*** | | | −3.62*** | | |
| Death mindset | | | | | | | | | |
| NDMM (composite) | 0.30* | | | −0.14** | | | 3.06 | | |

Note: SF-36 is scored on a scale from 0 to 100, hence why beta coefficients are larger for that measure. DASS-21 = Depression Anxiety Stress Scale 21. SF-36 = Short Form Health Survey 36. SWLS = Satisfaction with Life Scale.
*$p$ < .01, ** $p$ < .001, *** < .0001.

2017). Future research may explore whether death mindsets may be intervened on to improve outcomes in well-being.

It is noteworthy that almost all participants in the online survey had previously experienced the loss of a loved one, though this was not an inclusion criterion. The responses from this sample, as well as the qualitative focus group with recently bereaved participants, showed similar results. First, they support the face validity of the Norwegian DMM as a construct that is relevant to and sensitive of the lived experiences of bereaved populations and related to their psychological well-being. Secondly, these bereaved participants, on average, endorsed the mindset that "death-is-life-enhancing."

These results' generalizability is limited due to recruitment strategies creating a self-selection bias for bereaved participants already interested in the topics of grief and trauma. Further evaluation of the NDMM with non-bereaved participants is required. Unfortunately, sociodemographic information on race, ethnicity, immigration status, and region of residence was not assessed to comply with the Norwegian Center for Research Data's recommendation for data security in maintaining participant anonymity. Without such information, the present study cannot assess whether the NDMM more comprehensively represents culturally diverse views of death neglected in previous instruments developed in predominantly White contexts. Additionally, this sample showed a strong gender imbalance, with 91% of participants identifying as women. Though the DMM previously showed no differences in response by gender in a U.S. sample (Chang et al., in prep), it was not possible to evaluate gender differences in this sample. This challenge in obtaining gender-balanced participant samples is frequently encountered in death and grief research (Brennan, 2012; Currie et al., 2016; Macdonald et al., 2010; Snaman et al., 2021), highlighting the need for strategies to recruit gender-diverse populations in this field.

We also did not run analyses of cross-cultural measurement invariance comparing U.S. and Norwegian responses to the DMM because both samples were not comparable. However, results from the Norwegian validation resemble the original U.S. validation. Both studies demonstrated mean ratings that leaned toward the "death-is-life-enhancing" mindset, replicated the 2-factor structure, showed high internal consistency and discriminant validity from existing death attitudinal measures, and explained additional variance in life satisfaction and depression, anxiety, and stress symptoms to suggest both measures function similarly. While the original U.S. validation showed that death mindsets also explained greater variance in health anxiety around COVID-19 (Chang et al., in prep), the Norwegian validation did not find this effect.

Taken together, our study importantly contributes to extant literature on how people think about death—particularly in the understudied cultural context of Norway. The Norwegian Death Mindsets Measure adds a novel measure to a literature that has not had an updated, widely-used measure on death in over two decades. Our work supports the hierarchical two-factor structure of the NDMM and its utility in relating to psychological well-being. Future Norwegian researchers in death and grief will be able to continue utilizing our translations and further research in the field using culturally-relevant instruments, thus extending our understanding of mindsets of death as a critical moderator of relevant life outcomes.

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The authors state no conflicts of interest to report.

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## Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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