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Article *in* The Journal of Positive Psychology · July 2016

DOI: 10.1080/17439760.2016.1209546

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The Journal of Positive Psychology
Dedicated to furthering research and promoting good practice

ISSN: 1743-9760 (Print) 1743-9779 (Online) Journal homepage: http://www.tandfonline.com/loi/rpos20

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THE JOURNAL OF POSITIVE PSYCHOLOGY, 2016
http://dx.doi.org/10.1080/17439760.2016.1209546

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ABSTRACT

To address conceptual difficulties and advance research on meaning in life (MIL), it may be useful to adopt a tripartite view of meaning as consisting of comprehension, purpose, and mattering. This paper discusses the development of the Multidimensional Existential Meaning Scale (MEMS), which explicitly assesses these three subconstructs. Results from three samples of undergraduates showed the MEMS to have favorable psychometric properties (e.g. good factor structure and reliability) and demonstrated that it can effectively differentiate the three subconstructs of meaning. Regression and relative importance analyses showed that each MEMS subscale carried predictive power for relevant variables and other meaning measures. Additionally, the MEMS subscales demonstrated theoretically consistent, differential associations with other variables (e.g. dogmatism, behavioral activation, and spirituality). Overall, results suggest that the MEMS may offer more conceptual precision than existing measures, and it may open new avenues of research and facilitate a more nuanced understanding of MIL.

ARTICLE HISTORY
Received 22 February 2016
Accepted 14 June 2016

KEYWORDS
Meaning; purpose; measurement; scale development; existentialism

Burgeoning research on meaning in life (MIL) suggests that it is an important construct, a better understanding of which may inform many topics within and outside of positive psychology (Hicks & Routledge, 2013). For example, MIL is often seen as a 'central human motive' (Heintzelman & King, 2014), and it is implicated in research on topics such as eudaimonic well-being (Ryan & Deci, 2001), values (Baumeister, 1991), beliefs (Koltko-Rivera, 2004), goals and goal pursuit (McKnight & Kashdan, 2009), mental health (Steger, 2012), physical health (Park, 2012), and coping (Park, 2010). Unfortunately, the current MIL literature is hampered by conceptual problems and corresponding measurement problems (George & Park, 2016; Leontiev, 2013). The present paper discusses the development of a new measure of MIL designed to address such problems in the literature and foster advancements in MIL research.

Conceptualizing MIL

Due to the abstract nature of MIL, its conceptualization has always been problematic, posing significant challenges for research (Hicks & King, 2009; Leontiev, 2013; Martela & Steger, 2016). MIL has been defined in myriad ways, with specific definitional features depending on the theoretical context in question. For example, definitions have highlighted aspects such as the intuitive feeling that things make sense (Heintzelman & King, 2014), having goals (Ryff, 1989), engagement in activities that are personally valued (Scheier et al., 2006), having an 'integrated and consistent understanding of self, others, and life in general' (Reker, 2000, p. 48), having a life aim (McKnight & Kashdan, 2009), feeling fulfillment (Reker & Wong, 1988), and experiencing a sense of significance (Crumbaugh & Maholick, 1964). These varying conceptualizations hinder research by impeding the ability to generate accurate predictions regarding MIL and to compare results across studies.

Vague and varying conceptualizations also prevent integration of MIL research with the broader meaning literature. MIL research can be seen as a subset of a broader literature that includes additional research topics such as meaning frameworks (Proulx & Inzlicht, 2012), meaning making and coping (Park, 2010), goals and goal pursuit (Carver & Scheier, 1998), identity (McAdams, 2008), and terror management theory (Greenberg, Pyszczynski, & Solomon, 1986). These literatures are closely tied to MIL and integrating them would greatly further the understanding of MIL (see George & Park, 2016, for a review).

Recently, a tripartite view of MIL has been gaining momentum (George & Park, 2016; Heintzelman & King, 2014, p. 154; Martela & Steger, 2016). The tripartite view highlights three key dimensions of MIL – comprehension, purpose, and mattering – which capture much of

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the variance in past MIL definitions. Further, the tripartite view highlights the potential differences between the dimensions, noting that although these dimensions have been used interchangeably in the past, they may be distinct (George & Park, 2016; Martela & Steger, 2016). Such a multidimensional view of MIL seems promising as it does not combine three potentially distinct dimensions into a singular, more diffuse concept. Having more specific dimensions may instead provide the flexibility and precision needed to generate a more nuanced understanding regarding MIL. The tripartite view may thus provide better conceptual clarity and easier integration of MIL with the broader meaning literature.

A tripartite view of MIL

MIL may be conceptualized as comprising three distinct but related subconstructs, comprehension, purpose, and mattering (George & Park, 2016; King, Hicks, Krull, & Del Gaiso, 2006; Martela & Steger, 2016; Reker & Wong, 1988; Steger, 2012). MIL may be defined as the extent to which one's life is experienced as making sense, as being directed and motivated by valued goals, and as mattering in the world. The comprehension subconstruct can be defined as the extent to which individuals perceive a sense of coherence and understanding regarding their lives (Baumeister, 1991; Reker & Wong, 1988). Individuals with high comprehension feel that their life makes sense and things in their life are clear and fit together well. In contrast, individuals with low comprehension may experience life and life experiences as incoherent, fragmented, and unclear. The comprehension subconstruct is closely tied to a wealth of literature that discusses beliefs and sense-making and the violation of beliefs due to the occurrence of the traumatic and the unexpected (e.g. Park, 2010; Proulx & Inzlicht, 2012). These literatures highlight that individuals hold certain beliefs (or worldviews or expectations or assumptions) regarding how things are, and such beliefs help them make sense of their lives. When such beliefs adequately provide an explanation of what is going on, and are not disrupted by contradictory beliefs or life events, individuals experience a sense of understanding (i.e. comprehension).

The purpose subconstruct refers to the degree to which individuals experience their lives as being directed and motivated by valued life goals (Battista & Almond, 1973; Klinger, 1998; McKnight & Kashdan, 2009). Individuals high on purpose have a clear sense of the ends they are striving toward and they value such ends. Further, they feel pulled and directed toward their goals. Those low on purpose, on the other hand, experience a sense of aimlessness and disengagement. The bodies of literature most relevant to this particular subconstruct are those on goals and individuals' goal pursuits (e.g. Carver & Scheier, 1998; Emmons, 1986; Little, 1999). These literatures have highlighted the existence of individual differences in the extent to which individuals pursue valued goals, and that the pursuit of valued goals may contribute to well-being.

Finally, the mattering subconstruct can be defined as the extent to which individuals feel that their existence is of significance, importance, and value in the world (Becker, 1973/1997; George & Park, 2014; King et al., 2006). Individuals with high levels of mattering feel that their existence is consequential and has profound and lasting value, while those low in mattering feel their nonexistence would make little difference in the world. This subconstruct is closely tied to the existential literature (Becker, 1973/1997; Yalom, 1980) that highlights the human desire for significance – despite the mortal and transitory nature of human life – and it is centrally implicated in terror management theory (Greenberg et al., 1986). Terror management theory suggests that the desire to gain and maintain a sense of significance in one's life is an implicit part of much of human behavior. Mattering is similarly implicated in the literature on religion/spirituality, which highlights that a central function of religion/spirituality is to provide a sense of significance by allowing people to transcend the material and ephemeral aspects of existence (Park, 2013).

The tripartite view thus pries apart MIL into three constituent subconstructs, suggesting that such a multidimensional view may facilitate a more nuanced understanding regarding MIL. Note that the tripartite view does not necessarily imply that there are *only* three dimensions to MIL. Rather, it focuses on comprehension, purpose, and mattering as they capture the three key definitional features that are most often discussed and studied within MIL and the broader meaning literature (George & Park, 2016; Heintzelman & King, 2014; Martela & Steger, 2016). It is possible that future research and discussions may prompt the inclusion of other key dimensions into MIL conceptualization.

Measuring MIL

Despite the promise of a multidimensional conceptual approach, the dominant measurement approach to MIL tends to be unidimensional. The most widely used measures of MIL such as the Presence subscale of the Meaning in Life Questionnaire (MLQ; Steger, Frazier, Oishi, & Kaler, 2006),[1] the Purpose subscale of the Psychological Well-Being Scales (Ryff, 1989), and the Purpose in Life Test (Crumbaugh & Maholick, 1964) all measure MIL unidimensionally, deriving a single omnibus score. The unidimensional nature of such measures poses certain limitations. Most notably, such measures aggregate the different dimensions of MIL and thus preclude examination of specific and distinct relationships between each subconstruct and relevant variables. This limitation may result in simplistic and distorted conclusions regarding MIL.

Another limitation of many existing measures is their reliance on the *meaning in life judgments approach* (Hicks & King, 2009). We use these terms to convey the practice of using items that leave it to participants to determine what *MIL* means. For example, many measures and studies use items such as, 'I understand my life's meaning' (Steger et al., 2006), 'At present, I find my life very meaningful' (Wong, 1998), and 'I feel like I have found a really significant meaning in my life' (Krause, 2004). Such items rely on participants' 'intuitive sense' of what MIL is (Hicks & King, 2009). With this approach, it is not clear whether participants' intuitive sense of MIL match contemporary theoretical definitions of MIL (e.g. Do participants' understanding of MIL correspond with comprehension, purpose, and/or mattering? Or something else altogether?). Further, the MIL judgments approach is not amenable to studying targeted aspects of MIL; instead, it throws a wide net over the variance relevant to MIL and aggregates this variance into a single score.

Over the years, several measures that assess MIL multidimensionally have been created (e.g. Battista & Almond, 1973; Reker, 1992). However, none are well-suited to assess MIL as outlined in the tripartite view. In some cases, the subscales of such measures do not correspond well with the dimensions of comprehension, purpose, and mattering. For example, the Life Regard Index-Revised (Debats, 1998) breaks MIL into two subscales – a framework for living and a sense of fulfillment – neither of which align closely with the tripartite view. In other cases, even if the subscales of measures roughly correspond with the tripartite subconstructs, their subscales do not specifically target a single subconstruct and instead cover more than one. Two examples are the Life Attitude Profile-Revised (LAP-R; Reker, 1992) and the Meaningful Life Measure (Morgan & Farsides, 2009). The LAP-R has several subscales, two of which are very similar to comprehension and purpose. However, these two subscales do not specifically target a single subconstruct. For instance, the subscale that roughly corresponds with comprehension has items such as, 'I have been aware of an all powerful and consuming purpose towards which my life has been directed', 'I have a philosophy of life that gives my existence significance', and 'In thinking of my life, I see a reason for my being here'. The Meaningful Life Measure similarly has subscales that roughly correspond with the subconstructs of the tripartite view. However, as with the LAP-R, the subscales do not specifically assess a single subconstruct. The Principled Life subscale of this measure seems similar to comprehension, yet includes items such as 'I have a philosophy of life that really gives my living significance' and 'I hold certain values which I feel greatly enrich my life with significance'. Thus, existing multidimensional MIL measures are limited in their ability to specifically and adequately assess comprehension, purpose, and mattering, without conflating them.

Present study

The present study has two overarching goals. One, to develop a multidimensional scale of MIL with promising reliability and validity that assesses comprehension, purpose, and mattering separately. Two, to see if such a multidimensional measurement strategy is useful and brings advantages over the dominant unidimensional approach. To achieve these two goals, we complete a content validation procedure to create an initial set of scale items, and collect data from three samples of undergraduate students in order to refine the scale and examine its reliability and validity. One of these samples is assessed twice, with two weeks in between assessments, to gauge test–retest reliability. From this point on, we refer to the scale in question as the Multidimensional Existential Meaning Scale (MEMS).

To achieve these two overarching goals, we ask four specific research questions. One, will factor analyses support the idea that there are three separate factors – representing comprehension, purpose, and mattering – underlying the MEMS items? Two, will *each* of the three MEMS subscales show strong relationships with existing unidimensional MIL measures, and more importantly, will each of the subscales show predictive utility in explaining variance in existing MIL measures even when examined together? An affirmative answer would indicate that each of the subscales measures something different, and further, that they are all important to the MIL construct. Three, will the MEMS subscales show theoretically consistent, differential relationships with various relevant variables (e.g. dogmatic beliefs, behavioral approach, spirituality). The existence of theoretically consistent and differential relationships for each subscale would be indicative of the validity of the MEMS as well as the advantages of a multidimensional approach. Lastly, will *each* of the MEMS subscales show predictive utility in explaining variance in well-being variables (e.g. life satisfaction, positive affect, stress) even when examined together? This research question is important, as well-being is an outcome that is often of particular interest in the MIL literature (Steger, 2012). An affirmative answer to this question would highlight that each subscale is not simply redundant with the others and that each is important in predicting well-being. Together, these four research questions could thus support or refute the idea that the MEMS can validly assess the subconstructs of MIL and that there are advantages to a multidimensional approach.

In regards to the third research question, we had specific expectations regarding differential relationship between the MEMS subscales and various relevant variables. Of the three subscales, we expected the comprehension subscale to show the strongest relationships with variables such as dogmatism and self-concept clarity. Dogmatism refers to an unjustified sense of certainty regarding one's beliefs; individuals high on dogmatism strongly believe that their views are correct and they are intolerant of views that are dissimilar to their own (Altemeyer, 1996, 2002). We expected dogmatism to be most strongly related to comprehension, as holding steadfastly to one's beliefs and dismissing conflicting evidence may provide and maintain a sense of understanding that may otherwise be undermined by doubting one's own beliefs (Proulx & Inzlicht, 2012). Self-concept clarity refers to the degree to which one's self-beliefs are 'clearly and confidently defined, internally consistent, and stable' (Campbell et al., 1996, p. 141). As individuals' self-beliefs are so fundamental to how they experience and perceive the world, self-beliefs have been suggested to help individuals make sense of their lives and provide them with a sense of coherence (Swann, 2012). We expected self-concept clarity to be most closely associated with comprehension, as having more clear and coherent self-views may provide a greater sense of understanding in one's life (Swann, 2012).

Regarding the purpose subscale, we expected purpose to exhibit the strongest relationships with individual differences in sensitivity to reward and punishment. This individual difference concept refers to the variation between people regarding their sensitivity to cues of reward and punishment (Carver & White, 1994). Such variation may result in systematic differences in goal engagement and goal pursuit in individuals' lives. Because the purpose subconstruct captures the extent to which individuals are pursuing valued goals and has, of the three subconstructs, the most to do with goals and goal pursuit, we expected the purpose subscale to show the strongest relationship with sensitivity to reward and punishment. Finally, regarding the mattering subscale, we expected mattering to show the strongest relationships with a sense of spirituality, sanctification of one's own body, and willingness to die for one's country (George & Park, 2014). Spirituality can be thought of as a connection with the divine or the transcendent (Underwood & Teresi, 2002). A sense of spirituality may provide the sense that there is more to one's existence than the purely physical and the mundane, and that there is a larger significance to one's life (Park, 2013). Thus, spirituality may confer a powerful sense of mattering. A concept related to spirituality, but distinct, is the concept of sanctification. Sanctification refers to the attribution of divine-like qualities and significance to various aspects – even secular aspects – of life (Pargament & Mahoney, 2005). Such perceptions do not have to be tied to a divine entity such as God, but can simply take on qualities that are divine-like (e.g. 'the love I have for my child is holy and miraculous'). We expected the perception of one's body as having such divine-like qualities and significance to be most strongly associated with mattering. Lastly, we expected mattering to be most closely associated with willingness to die for one's own country. This expectation was informed by terror management theory, which suggests that individuals derive a sense of value regarding their lives by committing to various worldviews or ideologies, and such worldviews provide to individuals the sense that they are part of something larger than themselves (Greenberg et al., 1986). Nationalism is a good example of one such worldview. We expected willingness to self-sacrifice for one's country to be most closely associated with mattering given that the diehard commitment to something larger than oneself may confer individuals with a sense of value (Routledge & Arndt, 2008).

Method

Data were collected from three samples of undergraduates from a large university in the northeastern United States. Participants were recruited through the Psychology Department participant pool and all data were collected via online surveys. Demographics information was as follows: Sample 1: n = 188, median age = 19, 68.6% women, 77.7% White; Sample 2: n = 262, median age = 19, 64.9% women, 69.5% White; Sample 3: n = 160.[2] Sample 3 completed the scales on two occasions with two weeks in between each time point.

Materials

Item generation and content validation

Item generation and content validation of the items followed the recommendations outlined by McCoach, Gable, and Madura (2013). Conceptual definitions were created for each subconstruct followed by generation of 43 items that corresponded with those definitions. We identified individuals with expertise in the MIL literature – individuals who have published in the MIL literature and/or have developed their own scales of MIL – who could serve as content experts. Quantitative and qualitative feedback was solicited from the content experts via a content validation form. Quantitative feedback consisted of rating each item on various dimensions such as the item's correspondence to the conceptual definition and the item's relevance to the subconstruct. Based on the feedback of eight content experts, 17 items were eliminated, several items altered, and three new items generated. Such changes were made to improve clarity, specificity, and conceptual coverage of the items. The experts also noted redundancy among many items; however, we retained such items and waited to address this issue after the exploratory factor analysis (EFA).

Samples 1–3 measures

The 29 MEMS items that resulted from the content validation procedure were administered to Sample 1. Sample 2 only received a subset of 20 items that were retained after the EFA, and Sample 3 was only administered those 15 items retained after the confirmatory factor analysis (CFA). Sample 3 took the MEMS both at Time 1 and Time 2. Participants in all samples rated the MEMS items on a 7-point scale from 1 (*very strongly disagree*) to 7 (*very strongly agree*). Subscale scores for the MEMS were created by averaging items on each subscale of the 15-item final version. In addition to the MEMS items, we administered numerous additional measures that pertained to each of our research questions. These measures are discussed below, where we also specify the sample and time point during which each measure was administered. The measures were not all administered to the same sample or at the same time point in order to maintain the brevity of the survey packets.

MIL measures

Three MIL measures were administered in this study. The presence subscale of the MLQ (Steger et al., 2006) was administered to Sample 2. This commonly used subscale assesses the extent to which one finds one's life meaningful using five items. Sample items include 'I have a good sense of what makes my life meaningful' and 'I have discovered a satisfying life purpose'. Participants rated items on a 7-point scale from 1 (*absolutely untrue*) to 7 (*absolutely true*) and the five items were averaged to derive a MIL score. In the present study, Cronbach's alpha for this measure was 0.89.

The Perceived Personal Meaning Scale (PPMS; Wong, 1998) was administered to Sample 3 at Time 1. The PPMS assesses an overall sense of MIL and consists of items such as 'At present, I find my life very meaningful' and 'I look forward to a meaningful life in the future'. The eight items are rated on a 7-point scale ranging from 1 (*Very strongly disagree*) to 7 (*Very strongly agree*); an average score was calculated based on all items. A Cronbach's alpha of 0.90 was found in the present study.

A MIL composite scale was administered to Sample 3 at Time 1. As discussed, the MIL judgments approach is a common measurement approach in the literature and has been argued to be a valid method (Hicks & King, 2009). Considering this, the administration of a composite MIL scale that consisted of MIL judgment items from popular MIL measures seemed useful. In fact, previous research has employed such an approach successfully (Heintzelman, Trent, & King, 2013). Here, we used most of the same items used by Heintzelman and colleagues (2013) and selected three additional items from existing measures. The items were: 'I understand my life's meaning', 'My life has a clear sense of purpose' (both items from MLQ; Steger et al., 2006), 'I have discovered a satisfying life purpose', and 'My existence is very purposeful and meaningful' (both slightly modified from Purpose in Life Test; Crumbaugh & Maholick, 1964) 'My life is meaningful' (from Spiritual Meaning Scale; Mascaro, Rosen, & Morey, 2004), 'I have found a really significant meaning in my life' and 'I have a sense of direction and purpose in life' (both from Krause, 2004). We generated one item, 'My life is purposeful', and added that in to the composite measure as well. The resulting eight items were rated on a 7-point scale that ranged from 1 (*Very strongly disagree*) to 7 (*Very strongly agree*) and were averaged to get a total score. The items showed very good internal consistency in the present study (Cronbach's $\alpha = 0.94$).

Measures of theoretically related variables

The following measures of theoretically related variables were administered among Samples 2 and 3. Spirituality was assessed in Sample 2 using the Daily Spiritual Experiences subscale from the Brief Multidimensional Measure of Religiousness/Spirituality (Fetzer Institute/National Institute on Aging Working Group [Fetzer/NIA], 1999). This subscale assesses an individual's 'perception of the transcendent (God, the divine) in daily life and his or her perception of his or her interaction with or involvement of the transcendent in life' (Underwood & Teresi, 2002, p. 23). The six items on the scale (e.g. 'I feel God's presence' and 'I am spiritually touched by the beauty of creation') were rated on a 6-point scale from 1 (*never or almost never*) to 6 (*many times a day*), and response were averaged to create a spirituality score. Cronbach's alpha was 0.94 in the present study.

Dogmatism was measured using the DOG scale (Altemeyer, 2002) in Sample 3 at Time 1. Sample items on the DOG scale include, 'My opinions are right and will stand the test of time' and 'The things I believe in are so completely true, I could never doubt them'. The 20 items were rated on a 7-point scale ranging from 1 (*very strongly disagree*) to 7 (*very strongly agree*). Negative items were reverse scored and an average score was calculated (Cronbach's $\alpha = 0.91$).

Self-concept clarity was assessed in Sample 3 at Time 1 using the Self-Concept Clarity Scale (Campbell et al., 1996). This scale consists of 12 items and participants rated their agreement/disagreement regarding each item on a 5-point scale that ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Sample items include 'My beliefs about myself often conflict with another' (reverse scored) and

'In general, I have a clear sense of who I am and what I am'. After reverse coding negatively worded items, a mean score was calculated (Cronbach's $\alpha = 0.90$).

The BIS/BAS scales (Carver & White, 1994) were administered to Sample 3 at Time 1. The BIS/BAS scales assess dispositional sensitivities to signals of reward and punishment. They consist of 24 items (including four filler items) rated on a 4-point scale from 1 (*very false for me*) to 4 (*very true for me*). The BIS/BAS comprises four subscales: BIS (e.g. 'Criticism or scolding hurts me quite a bit'), BAS-drive ('I go out of my way to get things I want'), BAS-fun seeking ('I often act on the spur of the moment'), and BAS-reward responsiveness (e.g. 'It would excite me to win a contest'). BIS subscale items were averaged to create a behavioral inhibition score, representing punishment sensitivity. As done in much previous research (e.g. Harmon-Jones, Schmeichel, Inzlicht, & Harmon-Jones, 2011), items on the other three subscales were averaged to create a single behavioral activation score which represented reward sensitivity. Cronbach's alpha for both the behavioral activation and inhibition scores were 0.79.

Willingness to sacrifice oneself for one's country was assessed in Sample 3 at Time 2. This concept, and the items used to assess it, were adopted from a terror management theory study (Routledge & Arndt, 2008). As that study was conducted in England, we modified the items for use with American participants (e.g. 'I would die for England' became 'I would die for the United States of America;' the two other items read 'It is worth making personal sacrifices for the American way of life' and 'My personal safety is not as important as the continuation of the American way of life'). The three items, rated on a 7-point scale ranging from 1 (*totally disagree*) to 7 (*totally agree*) were averaged to get a final score (Cronbach's $\alpha = 0.86$).

The Sacred Qualities of the Body Scale (Mahoney et al., 2005) was administered to Sample 3 participants at Time 2. The measure lists 10 adjectives that refer to divine-like qualities (e.g. 'blessed' 'holy' 'sacred' 'spiritual' 'divine' 'hallowed' 'spirit-filled' 'heavenly' 'religious' 'miraculous'). Participants were instructed to rate the extent to which each adjective was descriptive of the qualities of their physical body. Ratings were made on a 7-point scale ranging from 1 (*does not describe at all*) to 7 (*very closely describes*). An overall mean was calculated for the scale such that higher scores represented a higher perception of one's body as having divine-like qualities (Cronbach's $\alpha = 0.95$).

Well-being measures

Data were collected on the following well-being measures in Sample 2. Life satisfaction was assessed using the widely used Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985). The scale consists of five items (e.g. 'I am satisfied with my life', 'The conditions of my life are excellent'); participants rated each item on a 7-point scale ranging from 1 (*very strongly disagree*) to 7 (*very strongly agree*). A mean score was computed (Cronbach's $\alpha = 0.88$) to create a life satisfaction score. The Positive and Negative Affective Schedule (Watson, Clark, & Tellegen, 1988), which measures positive and negative affect, was also administered. Participants rated the extent to which they generally felt each of 20 different moods (e.g. interested, guilty, hostile, proud, active). Ratings were made on a 5-point scale that ranged from 1 (*very slightly or not at all*) to 5 (*extremely*). The 10 positive moods were averaged to create a positive affect score (Cronbach's $\alpha = 0.92$) and the same was done to the 10 negative moods to arrive at a negative affect score (Cronbach's $\alpha = 0.86$). Lastly, the 21-item Depression, Anxiety and Stress Scales (DASS; Lovibond & Lovibond, 1995) was administered. The DASS consists of items that describe various features of depression (e.g. 'I felt downhearted and blue'), stress (e.g. 'I found it difficult to relax'), and anxiety (e.g. 'I felt scared without any good reason'). Participants rated the extent to which each item applied to them over the past week on a 4-point scale from 1 (*never*) to 4 (*always*). We administered 20 items; we removed one depression item from the scale ('I felt that life was meaningless') to avoid overlap between the MEMS and the DASS. Three separate mean scores were computed using the depression, stress, and anxiety items (Cronbach's $\alpha = 0.82$, 0.80, and 0.75, respectively).

Data analytic strategy

To examine the factor structure of the MEMS items, we conducted an EFA in Sample 1 and subjected the resulting model to a CFA in Sample 2.[3] To examine reliability, we relied on Cronbach's alpha and correlations between Time 1 and Time 2 MEMS subscale scores in Sample 3 (i.e. test–retest reliability).

In the present paper, it is crucial to examine the patterns of relationships that each subscale shows with different variables and the relative importance of each subscale in the prediction of different variables. To do so, we conducted both bivariate correlations and regression analyses. Regression analyses were particularly useful as they allowed us to ask how each MEMS subscale related to different variables *after accounting for the other MEMS subscales* – that is, they show whether each MEMS subscale has predictive power relative to one another and how they compare with one another. Therefore, in the present paper, we computed numerous regression models in which each criterion variable was regressed on the comprehension, purpose, and mattering subscales. However, we supplemented regression results with relative importance analyses (Johnson & Lebreton, 2004). Experts have pointed out that when predictors in a model are correlated, the betas that emerge in regression analyses could paint a distorted picture of the relative importance of the predictors (Tonidandel & LeBreton, 2011). Relative importance analysis addresses this limitation and can partition the overall regression model variance into constituent parts and attribute each part to the different model predictors (Johnson & Lebreton, 2004). For the purposes of the present paper, this analysis is helpful as it demonstrates what portion of the overall regression model variance is accounted for by each of the MEMS subscales. For example, it can specify that out of the 30% of variance accounted for in the criterion variable, 20% is attributable to the comprehension subscale whereas only 5% is attributable to the purpose and mattering subscales each.

Of the two types of relative importance analysis that can computed, here we used the relative weight analysis option (estimates based on bootstrapping with 10,000 replications). All relative important analyses were conducted in *R* using syntax generated through a web application (Tonidandel & LeBreton, 2015). In reporting the results below, we provide the raw weights – which represent the percent of the variance in the criterion accounted for by the predictor – and the 95% confidence intervals around the raw weights. For ease of interpretation, we also report what percent of the overall regression model was accounted for by each predictor.

Results

Examining factor structure: exploratory factor analysis

The 29 items created through the content validation procedure were subjected to an EFA in Sample 1. To determine the number of factors to extract, the eigenvalues over one rule, scree test, and parallel analysis were employed. The latter two criteria suggested extracting three factors but the eigenvalues over one rule suggested extracting four factors. As the eigenvalues over one rule tends to overextract (Zwick & Velicer, 1986), more emphasis was placed on the latter two criteria. Thus, three factors were extracted in the EFA using principal axis factoring as the extraction criterion and oblique rotation as the rotation method.

Results of the EFA (see Table 1) showed that the loadings were consistent with expectations and the three factors that emerged corresponded to the intended comprehension, purpose, and mattering subconstructs. Three items (items 10, 19, and 17) appeared to lack simple structure and had a secondary loading greater than 0.30, and were, therefore, eliminated. Most remaining items showed desirable properties such as high primary loadings, low secondary loadings, and high communality values. We also evaluated items for redundancy and eliminated six items that were redundant with other items (see Table 1). Thus, after the EFA, 20 items remained (seven items on Factor 1, seven items on Factor 2, and six items on Factor 3).

Examining factor structure: confirmatory factor analysis

We subjected the factor structure that emerged in the EFA to a CFA in Sample 2. The goals of this CFA were to (1) replicate and examine the factor structure that emerged in the EFA and (2) examine the relative performance of items and eliminate items that perform relatively poorly. The CFA was conducted using AMOS 21. Maximum likelihood estimation was used and the factors were allowed to correlate with one another. No cross-loadings were specified.

The initial model revealed inadequate fit, $\chi^2(167) = 520.17$, $p < 0.001$, CFI = 0.906, RMSEA = 0.090, SRMR = 0.054, and showed that two items were performing poorly: a reverse coded item had a very low R-squared value (0.07) and another item showed greater correlations with items from the other factors (as indicated by the residual matrices). Running the CFA model again after deleting these two items (items 11 and 28 from Table 1) yielded improved model fit, $\chi^2(132) = 397.56$, $p < 0.001$, CFI = 0.923, RMSEA = 0.088, SRMR = 0.050. We examined the loadings, residual matrix and modification indices to see which items performed poorly. The performance of the items was considered in conjunction with their performance in the EFA (e.g. secondary loadings in EFA results). We eliminated three items (items 4, 7, and 18 from Table 1) that did not perform particularly well in both analyses. The resulting final model showed adequate-to-good fit to the data (Hu & Bentler, 1999), $\chi^2(87) = 216.64$, $p < 0.001$, CFI = 0.952, RMSEA = 0.075, SRMR = 0.040, and all items showed desirable properties such as strong loadings (see Table 2). The latent factors showed high intercorrelations (0.70, 0.71, and 0.72).

The high correlations among the comprehension, purpose, and mattering factors warranted asking if the scale items are better considered as representing a single factor as opposed to three factors – that is, is the three-part conceptualization of MIL discussed in this paper warranted? We conducted a nested-model comparison of the above three-factor model to a model in which all items loaded on a single factor. The chi-square difference test showed that the three-factor model fit better than the single-factor model, $\Delta\chi^2\ (3) = 508.75$, $p < 0.001$.

Thus, after the EFA and CFA, the final scale that was retained consisted of 15 items with five items on each subscale. This final scale, listed in the Appendix 1, is used in all subsequent analyses in this paper.

Table 1. Factor loadings and communalities from EFA.

	Pattern coefficients			
	I	II	III	h^2
26. My life is of value even in the grand scheme of the universe[b]	0.89		−0.14	0.75
29. Even considering how big the universe is, I can say that my life matters	0.87	0.13	−0.11	0.74
20. Even in the big picture of the universe, my life is of value[b]	0.86			0.79
24. Whether my life ever existed matters even in the grand scheme of the universe	0.84		−0.15	0.62
27. I am certain that my life is of importance	0.79		0.15	0.50
28. My life matters[c]	0.78		0.16	0.66
15. My life is of significance[b]	0.72		0.21	0.63
5. There is nothing special about my existence	−0.62	0.12		0.52
2. My life is of value[b]	0.61		0.18	0.74
7. Even when I consider that billions of people are alive today, I know my life is of importance[c]	0.58		0.21	0.73
8. Even a thousand years from now, it would still matter whether I existed or not	0.53			0.42
21. I understand my life events[b]		0.84		0.58
22. I understand my life	0.11	0.76		0.69
14. I can make sense of the things that happen in my life		0.75		0.68
1. My life makes sense		0.73		0.84
3. Looking at my life as a whole, things seem clear to me	0.13	0.73		0.70
13. I know what my life is about		0.63	0.23	0.77
4. Looking back at my life, the different parts of my life fit together well[c]		0.59		0.81
11. My life events are hard to comprehend[c]		−0.56	0.11	0.74
10. I have a good understanding of what my life is about[a]	0.13	0.51	0.33	0.85
9. I have certain life goals that compel me to keep going	0.14		0.75	0.74
18. I have a clear sense of what my life goals are[c]		0.21	0.74	0.79
12. I have overarching goals that guide me in my life			0.73	0.77
16. I have goals in life that are very important to me	0.19		0.73	0.80
19. I have a sense of direction in my life that I feel committed to[a]	−0.13	0.34	0.68	0.77
23. My sense of where I am headed in life is a strong motivational force for me[b]		0.22	0.66	0.87
25. My direction in life is motivating to me	0.14	0.18	0.66	0.87
6. I have aims in my life that are worth striving for	0.28	−0.11	0.63	0.84
17. I know where I am headed in my life[a]		0.42	0.49	0.85

Notes: Factor I named Comprehension; factor II named Purpose; factor III named Mattering; h^2 = communality coefficient; only loadings greater than 0.10 are listed.
[a]Items eliminated based on EFA results.
[b]Items eliminated after EFA due to redundancy.
[c]Items eliminated after subsequent CFA.

Table 2. CFA factor loadings and item descriptives.

	Standardized loadings			
	I	II	III	M(SD)
I understand my life	0.88	–	–	4.82 (1.48)
I know what my life is about	0.85	–	–	4.82(1.46)
Looking at my life as a whole, things seem clear to me	0.79	–	–	4.81(1.37)
My life makes sense	0.78	–	–	5.30(1.31)
I can make sense of the things that happen in my life	0.77	–	–	4.95(1.26)
My direction in life is motivating to me	–	0.83	–	5.56(1.03)
I have goals in life that are very important to me	–	0.83	–	5.90(.96)
I have aims in my life that are worth striving for	–	0.81	–	6.01(.97)
I have certain life goals that compel me to keep going	–	0.80	–	5.87(.96)
I have overarching goals that guide me in my life	–	0.70	–	5.37(1.07)
Even considering how big the universe is, I can say that my life matters	–	–	0.91	5.12(1.42)
I am certain that my life is of importance	–	–	0.88	5.37(1.27)
Whether my life ever existed matters even in the grand scheme of the universe	–	–	0.82	4.68(1.63)
Even a thousand years from now, it would still matter whether I existed or not	–	–	0.59	4.45(1.68)
There is nothing special about my existence	–	–	−0.59	2.66(1.55)

Notes: I = Comprehension factor; II = Purpose factor; III = Mattering factor; M(SD) = item mean and standard deviation (based on Sample 2 data).

Reliability

To assess internal consistency, Cronbach's alpha of the MEMS subscales were computed in all three samples. In samples 1, 2, and 3 (computed at Time 1), alphas for comprehension were 0.90, 0.90, and 0.90, respectively; for purpose, alphas were 0.89, 0.89, and 0.88, respectively; and for mattering, alphas were 0.84, 0.85, and 0.90, respectively. To assess test–retest reliability, correlations were computed between Time 1 subscale scores and Time 2 subscale scores in Sample 3. Over the two week period, the comprehension subscale correlated with itself at 0.75, purpose with itself at 0.75, and mattering with itself at 0.85. Thus, Cronbach's alphas and correlations showed that the MEMS subscales have good internal consistency and test–retest reliability.

Table 3. Relationships with existing unidimensional MIL measures.

	r	β	p	RW[CI]	R-RW[%]
Presence – MLQ					
Comprehension	0.79**	0.56	<0.001	0.3312 [0.2760, 0.3986]	49.23
Purpose	0.64**	0.11	0.030	0.1552 [0.1128, 0.2022]	23.07
Mattering	0.66**	0.24	<0.001	0.1863 [0.1394, 0.2377]	27.70
Model R^2	–	0.67	<0.001	–	–
PPMS					
Comprehension	0.65**	0.23	0.001	0.1837 [0.1192, 0.2483]	30.56
Purpose	0.58**	0.18	0.005	0.1405 [0.0781, 0.2045]	23.37
Mattering	0.73**	0.47	<0.001	0.2770 [0.2141, 0.3497]	46.07
Model R^2	–	0.60	<0.001	–	–
Composite scale					
Comprehension	0.77**	0.42	<0.001	0.2858 [0.2178, 0.3489]	40.20
Purpose	0.66**	0.23	<0.001	0.1860 [0.1274, 0.2521]	26.16
Mattering	0.73**	0.32	<0.001	0.2391 [0.1795, 0.3065]	33.64
Model R^2	–	0.71	<0.001	–	–

Notes: r = correlation coefficient; β = regression beta coefficient; p = significance value for beta coefficient; RW[CI] = relative weight and associated confidence interval; R-RW = relative weight rescaled as a percentage of the total model variance.;
**$p < 0.01$.

Validity

Relationships with other MIL measures

The relationships between the MEMS subscales and other MIL measures can be found in Table 3, which consists of the results from the correlation, regression, and relative weight analyses. Overall, the result showed that the MEMS subscales had very strong relationships with other MIL measures. Correlations were mostly between 0.60 and 0.80, and the MEMS subscales together accounted for between 60 and 71% of the variance in other MIL measures. These very high model R squared values are supportive of the idea that the MEMS subscales are in fact measuring MIL. More interestingly, results also indicated the importance of each subconstruct to the overall MIL construct. The significant regression betas showed that each MEMS subscale had incremental utility in predicting other MIL measures. Additionally, the relative weight analyses showed that each MEMS subscale predicted a substantial amount of variance in other MIL measures. For example, each MEMS subscale predicted between 15 and 33% of variance in the Presence subscale of the MLQ.

Theoretically related variables

Table 4 displays the relationships between MEMS subscales and theoretically related variables (the table lists results of correlation, regression, and relative weight analyses). The results suggested the following about each criterion variable.

- Dogmatism: The MEMS subscales together accounted for 8.5% of the variance in dogmatism. However, the subscales showed differential relationships, with comprehension showing a relative predictive advantage over the other subscales (comprehension had the only significant beta coefficient and its relative weight was the highest). Notably, purpose was a non-significant predictor.
- Self-concept clarity: Over 21% of the variance in self-concept clarity was predicted by the regression model consisting of comprehension, purpose, and mattering. Relative weights indicated, however, that the vast majority of this variance (67%) was driven by the comprehension subconstruct, with purpose predicting a statistically non-significant amount of variance.
- Behavioral activation and inhibition: The MEMS subscales together predicted a statistically significant amount of variance in the behavioral activation and inhibition scores. More importantly, beta weights indicated that purpose was the only significant predictor in both models, and purpose had the largest relative weight in both models.
- Spirituality: The MEMS subscales together accounted for over 7% of the variance in spirituality. However, the beta coefficients and the relative weights indicated that mattering was the only statistically significant predictor of spirituality.
- Body sanctification: Although the MEMS subscales together predicted over 11% of variance in body sanctification, over 60% of this was attributable to mattering. The betas and relative weights showed only mattering to be a significant predictor.
- Self-sacrifice: The regression model predicted over 8% of the variance in willingness to self-sacrifice. Further, the betas and relative weights showed mattering to be the strongest predictor and the only statistically significant predictor.

Overall, analyses examining relationships with theoretically related variables indicated that MEMS subscales have differential relationships with other variables in expected

Table 4. Relationships with theoretically related variables.

	r	*β*	*p*	RW[CI]	R-RW[%]
Dogmatism					
Comprehension	0.267**	0.221	0.031	0.0455 [0.0044, 0.1252]	53.26
Purpose	0.120	−0.092	0.327	0.0060 [−0.0233, 0.0309]	7.07
Mattering	0.244**	0.152	0.132	0.0339 [0.0020, 0.1015]	39.67
Model R^2	–	0.085	0.002	–	–
Self-concept clarity					
Comprehension	0.457**	0.447	0.000	0.1446 [0.0629, 0.2408]	67.38
Purpose	0.225**	−0.083	0.347	0.0189 [−0.0051, 0.0627]	8.79
Mattering	0.332**	0.088	0.354	0.0512 [0.0093, 0.1222]	23.83
Model R^2	–	0.215	0.000	–	–
Behavioral activation					
Comprehension	0.168*	−0.071	0.485	0.0096 [−0.0313, 0.0326]	10.18
Purpose	0.284**	0.234	0.013	0.0522 [0.0045, 0.1279]	55.20
Mattering	0.247*	0.162	0.107	0.0327 [−0.0100, 0.0890]	34.61
Model R^2	–	0.095	0.001	–	–
Behavioral inhibition					
Comprehension	−0.073	−0.113	0.283	0.0097 [−0.0763, 0.0260]	19.65
Purpose	0.100	0.262	0.008	0.0255 [−0.0511, 0.0798]	51.45
Mattering	−0.090	−0.168	0.114	0.0143 [−0.0631, 0.0435]	28.90
Model R^2	–	0.050	0.036	–	–
Spirituality					
Comprehension	0.153*	−0.036	0.683	0.0089 [−0.0161, 0.0291]	11.91
Purpose	0.168**	0.018	0.834	0.0115 [−0.0096, 0.0394]	15.28
Mattering	0.273**	0.284	0.001	0.0546 [0.0156, 0.1041]	72.81
Model R^2	–	0.075	0.000	–	–
Body sanctification					
Comprehension	0.239**	0.135	0.215	0.0348 [−0.0093, 0.0942]	31.38
Purpose	0.132	−0.135	0.192	0.0090 [−0.0414, 0.0204]	8.10
Mattering	0.314**	0.304	0.006	0.0671 [0.0065, 0.1342]	60.53
Model R^2	–	0.111	0.001	–	–
Willingness to self-sacrifice					
Comprehension	0.163*	0.135	0.239	0.0230 [−0.0093, 0.0942]	27.25
Purpose	0.012	−0.244	0.024	0.0150 [−0.0414, 0.0204]	17.70
Mattering	0.230**	0.284	0.013	0.0465 [0.0065, 0.1342]	55.04
Model R^2	–	0.084	0.005	–	–

Notes: *r* = correlation coefficient; *β* = regression beta coefficient; *p* = significance value for beta coefficient; RW[CI] = relative weight and associated confidence interval; R-RW = relative weight rescaled as a percentage of the total model variance.
*$p < 0.05$; **$p < 0.01$.

ways. These results support the validity of the MEMS subscales as well as the utility of a multidimensional measurement strategy to assessing MIL.

Well-being variables

Results of analyses examining relationships between comprehension, purpose, and mattering, and various well-being variables are displayed in Table 5. Regression models showed that the MEMS subscales together predicted a significant amount of variance in all of the well-being variables. Further, the relative weights showed that in most cases, each of the three MEMS subscales predicted a statistically significant amount of variance in the criterion. Interestingly, the relative weights also indicated possible relative differences in the relationships between each MEMS subscale and well-being variables. For most of the well-being variables, comprehension appeared to have more predictive utility than purpose and mattering. For example, in predicting life satisfaction, comprehension predicted 55.1% of the model variance, whereas purpose and mattering predicted only 27 and 17.8%, respectively. The only exception to this pattern was in the prediction of positive affect wherein purpose showed the strongest associations, accounting for 51.5% of the model variance, while comprehension and mattering accounted for only 28.2 and 20.34% of the variance, respectively.

Discussion

The present paper had two overarching goals: (1) to develop a multidimensional measure with adequate reliability and validity that corresponds to the tripartite view of MIL and (2) to examine if a multidimensional measurement strategy has advantages over a unidimensional measurement strategy. Our results support the reliability and validity of the MEMS and demonstrate that a multidimensional measurement approach can facilitate the disaggregating of the MIL construct and the generation

Table 5. Relationships with well-being variables.

	r	$β$	p	RW[CI]	R-RW[%]
Life satisfaction					
Comprehension	0.595**	0.475	0.000	0.2032 [0.1397, 0.2729]	55.14
Purpose	0.486**	0.143	0.045	0.0997 [0.0559, 0.1518]	27.04
Mattering	0.422**	0.038	0.568	0.0657 [0.0319, 0.1147]	17.82
Model R^2	–	0.369	0.000	–	–
Positive affect					
Comprehension	0.432**	0.136	0.078	0.0782 [0.0371, 0.1226]	28.17
Purpose	0.510**	0.375	0.000	0.1430 [0.0826, 0.1978]	51.49
Mattering	0.385**	0.071	0.322	0.0565 [0.0153, 0.1019]	20.34
Model R^2	–	0.278	0.000	–	–
Negative affect					
Comprehension	−0.386**	−0.378	0.000	0.0980 [0.0352, 0.1630]	65.58
Purpose	−0.253**	0.025	0.766	0.0244 [−0.0111, 0.0473]	16.30
Mattering	−0.259**	−0.038	0.627	0.0271 [−0.0091, 0.0605]	18.12
Model R^2	–	0.149	0.000	–	–
Depression					
Comprehension	−0.514**	−0.392	0.000	0.1465 [0.0752, 0.2240]	52.12
Purpose	−0.400**	−0.048	0.525	0.0602 [0.0236, 0.1001]	21.40
Mattering	−0.418**	−0.144	0.046	0.0744 [0.0285, 0.1219]	26.48
Model R^2	–	0.281	0.000	–	–
Anxiety					
Comprehension	−0.380**	−0.310	0.000	0.0836 [0.0367, 0.1527]	55.67
Purpose	−0.287**	−0.028	0.735	0.0311 [0.0087, 0.0674]	20.72
Mattering	−0.293**	−0.083	0.290	0.0355 [0.0104, 0.0769]	23.61
Model R^2	–	0.150	0.000	–	–
Stress					
Comprehension	−0.415**	−0.401	0.000	0.1123 [0.0574, 0.1808]	62.14
Purpose	−0.254**	0.086	0.289	0.0235 [0.0072, 0.0505]	13.02
Mattering	−0.313**	−0.116	0.133	0.0449 [0.0132, 0.0936]	24.83
Model R^2	–	0.181	0.000	–	–

Notes: r = correlation coefficient; $β$ = regression beta coefficient; p = significance value for beta coefficient; RW[CI] = relative weight and associated confidence interval; R-RW = relative weight rescaled as a percentage of the total model variance.
$^{*}p < 0.05$; $^{**}p < 0.01$.

of a more nuanced understanding regarding each of its subconstructs.

Results were supportive of the idea that the MEMS can separately and reliably assess the three subconstructs of MIL. The factor analytic results in the present study showed that there were three underlying factors to the MEMS items and the factors corresponded with the subconstructs of comprehension, purpose, and mattering. Further, CFA results also showed the superiority of conceptualizing the MEMS items as constituting three-factors (as opposed to a single factor) as the three-factor model had superior fit to a single-factor model. Each subscale also showed good internal consistency and reliability over time.

The MEMS subscales showed strikingly strong relationships with existing unidimensional MIL measures. The MEMS subscales together accounted for a very large amount of variance in existing MIL measures, indicating that the MEMS subscales likely tap the same conceptual space as do existing MIL measures. Further, the beta coefficients and relative weights showed that each MEMS subscale captured variance that was not entirely redundant with the other subscales. In other words, each subscale had unique relationships with existing MIL measures. Such results are consistent with a tripartite view of MIL as consisting of comprehension, purpose, and mattering (George & Park, 2016; Martela & Steger, 2016), and with the idea that the MEMS subscales can validly assess these three aspects of MIL separately.

While highlighting the utility of a multidimensional measurement approach to MIL, the present results also support the validity of existing measurement approaches. As discussed, one common approach is the use of MIL judgments (Hicks & King, 2009) whereby participants are asked questions that leave it entirely up to them to define MIL. One limitation of this approach is that the extent to which participant judgments match theoretical definitions of MIL remains unknown. The present results are informative regarding this issue. Results showed that the MEMS subscales overlapped very strongly with MIL judgment items. The MEMS subscales predicted 71% of the variance in the MIL judgments composite measure (see Table 3). This finding suggests that using items that rely entirely on participants' 'intuitive sense' of what MIL is (Hicks & King, 2009) is very effective in capturing variance that mirrors current theoretical definitions. That is, when participants rate items such as 'my life is meaningful', their responses tell us the degree to which their lives make sense, they have valued goals, and they feel a sense of significance.

The relationships found between the MEMS and well-being variables further supported the validity of the MEMS subscales and the utility of a multidimensional measurement approach. Relative weights demonstrated that when examined together, each subscale accounted for a significant amount of variance in almost all well-being variables. These findings suggest that each subscale – and the underlying subconstructs – offers predictive utility in regard to well-being, and that they are not simply redundant with one another. Additionally, the relative weights highlighted possible differences in relationships between the MEMS subscales and well-being variables. For most of the well-being variables, comprehension appeared to be the strongest predictor. However, for positive affect, purpose seemed to be the strongest predictor. We did not have a priori hypotheses regarding such differential relationships. However, finding such relationships suggests that such differential associations should be explored in future research, and it further highlights the utility of a multidimensional approach in uncovering more nuanced relationships.

The analyses exploring the relationships between MEMS subscales and theoretically related variables also demonstrated the existence of differential relationships. Overall, results were consistent with theoretical predictions stemming from the tripartite view. Feeling certainty regarding the truth and correctness of one's beliefs (i.e. dogmatism; Altemeyer, 1996) and having clear beliefs regarding oneself (i.e. self-concept clarity; Campbell et al., 1996) were most strongly related to the comprehension subscale. Scales assessing individuals' differences in reward sensitivity and punishment appeared to be most closely related to a sense of purpose. Lastly, a sense of spirituality, the perception of one's body as sacred, and the willingness to sacrifice oneself for one's country had the strongest relationships with mattering. These theoretically consistent differential patterns of relationships support the validity of the MEMS subscales as well the utility of the multidimensional measurement approach in uncovering such differential relationships.

Limitations and future directions

In interpreting the results of the present study, it is important to consider its limitations. Two obvious limitations are the small samples and the exclusive use of undergraduates, both of which may limit the validity and generalizability of the findings. Future research that examines the factor structure and validity of the scale in larger, non-undergraduate samples is necessary. In future research, it will also be important to consider how cultural factors may be important (Chao & Kesebir, 2013) and to examine the MEMS in those with different cultural backgrounds such as non-Western samples. Another noteworthy limitation of the present study is that in generating differential hypotheses between the subconstructs and relevant variables, we did not thoroughly consider all of the possibilities. For example, when discussing the relationship between mattering and spirituality, we did not discuss the possibility that spirituality could help make sense of one's life and thus confer comprehension, or the possibility that spirituality could provide life goals and thus confer purpose. Such a thorough consideration is beyond the scope of this paper. The goal of this paper was to examine the *possibility* of differential relationships and the utility of the MEMS in exploring such possibilities. The present results suggest that differential relationships exist and the MEMS is useful in exploring such relationships. Future research should use the MEMS to explore additional hypotheses not considered here.

Another important issue to be addressed in future research is the relationship between MIL judgments and the MEMS subscales (see George & Park, 2016). Here, we used the strong relationship found between the two to argue that subjective judgments regarding MIL reflect individuals' underlying sense of comprehension, purpose, and mattering. However, this association may be due to a third variable such as general well-being or affect. Future research should use more sophisticated methodologies – such as targeted experimental manipulations of the subconstructs and controlling of relevant confounds – to establish the extent to which subjective judgments of MIL reflect the subconstructs (and potentially other variables).

Future research should also explore how subtle differences in the tripartite view conceptualization, and item content of the MEMS subscales, may have meaningful consequences. The MEMS was created based on our own iteration of a tripartite view (George & Park, 2016). Since creation of the MEMS, Martela and Steger (2016) have also written about a tripartite view, and there may be subtle differences between our views, theirs, and those of others. Future research should explore the extent to which such subtle differences in conceptualization are consequential. For example, in our mattering subscale, three of the items provide an existential or cosmic context to evaluating the significance of one's existence (e.g. 'Even considering how big the universe is, I can say that my life matters'.). One important question is whether evaluations of significance in this more existential context ought to be distinguished from the experience of a more quotidian sense of significance (e.g. 'The things I do matter;' George & Park, 2014).

Summary and conclusions

To summarize, the MEMS subscales had a theoretically meaningful factor structure, showed good reliability, showed very good overlap with existing MIL measures, and showed theoretically consistent convergent and divergent relationships with multiple theoretically relevant variables. Results further showed that although existing unidimensional measures largely overlapped with the MEMS and appeared to measure the same variance as did the MEMS, different subscales of the MEMS had distinct relationships with other variables, including health and well-being. Thus, the unidimensional measures appeared to be aggregating comprehension, purpose, and mattering into a single score, which may lead to distorted and overly simplistic views of underlying relationships with other variables.

The present results suggest that the tripartite, multidimensional conceptualization and measurement employed by the MEMS may help address the conceptual imprecision and vagueness in the MIL literature (George & Park, 2016; Martela & Steger, 2016). By specifically assessing each subconstruct of MIL, the MEMS will facilitate testing more nuanced hypotheses regarding each subconstruct. The MEMS may thus open new avenues of research and contribute to advancement of MIL literature.

Notes

1. Note that while the Presence subscale of the MLQ is unidimensional, the full MLQ is multidimensional and contains two subscales measuring the presence and the search for MIL.
2. Due to a clerical error, demographic info was not collected for sample 3. Demographics in Sample 3 can be expected to mirror those of Samples 1 and 2 as these came from the same participant pool.
3. We do not examine if a higher order factor model – where there is a general meaning factor underlying the three subconstructs – fits the data better than a lower order model consisting of just the three subconstructs. When there are only three lower order factors, the higher order factor model would be statistically equivalent to the lower order factor model. Therefore, a comparison of the fit of the two models would not be possible.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Appendix 1

The Multidimensional Existential Meaning Scale

Please read the following items carefully. Using the response scale listed next to each item indicate the extent to which *you agree or disagree with that statement*.

(1) My life makes sense
(2) There is nothing special about my existence[a]
(3) I have aims in my life that are worth striving for
(4) Even a thousand years from now, it would still matter whether I existed or not
(5) I have certain life goals that compel me to keep going
(6) I have overarching goals that guide me in my life
(7) I know what my life is about
(8) I can make sense of the things that happen in my life
(9) I have goals in life that are very important to me
(10) I understand my life
(11) Whether my life ever existed matters even in the grand scheme of the universe
(12) My direction in life is motivating to me
(13) I am certain that my life is of importance
(14) Looking at my life as a whole, things seem clear to me
(15) Even considering how big the universe is, I can say that my life matters

[a]Reverse scored

Responses are rated on a 7-point scale (*very strongly disagree, strongly disagree, disagree, neither disagree nor agree, agree, strongly agree, very strongly agree*)

Scoring syntax:
Comprehension = 1, 7, 8, 10, 14
Purpose = 3, 5, 6, 9, 12
Mattering = 2, 4, 11, 13, 15