



Developing a Quadripartite Existential Meaning Scale and Exploring the Internal Structure of Meaning in Life

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Published online: 20 June 2020
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Abstract

Previous research has shown that meaning in life (MIL) includes feelings of coherence, purpose, and external value (i.e., significance or mattering). Our studies aim to contribute to this framework by testing whether internal value should also be considered a basic component of MIL. To meet this aim, we developed a quadripartite existential meaning scale (QEMS) that incorporates items assessing one's perceived internal value of life, and examined its relationship with other relevant measures. Results from three samples of undergraduates showed that QEMS had sound psychometric properties (e.g., good factor structure and reliability) and could effectively differentiate four sub-constructs of MIL. Regression and relative importance analysis demonstrated that each QEMS subscale carried unique predictive utility for unidimensional meaning measures, relevant well-being variables, and exhibited differential associations with other theoretically related variables (e.g., self-reflection, commitment making, self-esteem, and self or other interest orientation). Finally, exploratory structural equation modelling analysis showed that the four MIL sub-constructs formed an association pattern where comprehension fosters purpose, and purpose, in turn, contributes to both external and internal value. Implications for considering internal value as a core component of meaning in life are discussed.

Keywords Meaning in life · Comprehension · Purpose · External value · Internal value

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1 Introduction

Meaning in life (MIL) is considered a cornerstone of well-being (e.g., Frankl 1963; Steger 2012). Empirical research has supported this claim by demonstrating that subjective judgments of global meaning in life are associated with many important life outcomes (e.g., Krause 2003; Reker and Wong 1988; Ryff and Keyes 1995; Steger et al. 2006, 2008; Zika and Chamberlain 1992). Recently, however, scholars have argued that a richer understanding of MIL would benefit by clarifying and assessing the components of meaning (George and Park 2016; Heintzelman and King 2014; Leontiev 2013; Martela and Steger 2016; Schlegel and Hicks 2017). Many scholars agree that MIL includes three interrelated facets: Comprehension, purpose, and mattering or significance (George and Park 2017; Martela and Steger 2016). Comprehension refers to the perception that one's life is coherent and "makes sense, purpose represents the belief that one has core goals, aims, and a direction in life, and mattering is the perception that one's life is valuable to the outside world, or "matters" in the grand scheme of things (Costin and Vignoles 2019; George and Park 2017). In present paper, we aim to advance this important framework by demonstrating that MIL may be best conceptualized by considering the nuances of the mattering dimension of meaning. Specifically, we argue that significance is composed of both external value *and* internal value, and each of these dimensions uniquely contributes to the experience of existential meaning. As outlined below, we believe this quadripartite view of meaning more accurately characterizes the grand experience of MIL.

1.1 Internal Value and Meaning

Existential significance, or "mattering," "*refers to the extent to which individuals feel that their existence is of significance, importance, and value in the world.....Individuals with high levels of mattering feel that their existence is consequential and has profound and lasting value* (George and Park 2017, p. 6). While this construct may lie at the heart of how many people think of a meaningful existence (e.g., Costin and Vignoles 2019; Frankl 1963), we believe existential mattering represents more than how one perceives their existence matters to others. Specifically, we believe that the feeling of significance also encompasses the extent to which the individual *derives intrinsic value from life itself*. Extant measurement and conceptualization of mattering primarily focus on the former aspect of significance, ignoring how much the individual intrinsically values their life per se. For example, recent empirical work on the tripartite model of meaning concluded that mattering is the strongest predictor of global MIL judgments, but only assessed the extent to which individuals perceived their significance in relation to "the grand scheme of the universe" (e.g., Costin and Vignoles 2019). We believe existential significance represents both the value of one's life to the outside world, similar to the mattering construct proposed by George and Park (2017), *and that of one's life to oneself well as the extent that to which one derives intrinsic value from life experiences themselves*. We label these components of meaning as external value (EV) and internal value (IV) respectively. We believe accounting for both of these aspects of significance is more in line with Martela and Steger's (2016) argument that significance represents "*a sense of life's inherent value and having a life worth living*" (p. 532), and best captures lay beliefs about what it means to have a significant existence.

The idea that personal significance is more than mattering in the grand scheme is implied by many theorists who, for example, argue that people derive value from both the outside world such as serving others, engaging in social or political causes, and religious practices (e.g., attending church), *as well as* from intrinsically valuable experiences such as the state of flow, appreciating one's experiences, creativity, self-actualization, basic need satisfaction, etc. (e.g., Audi 2005; Csikszentmihalyi 1997; Frankl 1963; Reker and Woo 2011; Schnell 2011; Yalom 1980; Zhang et al. 2016). Empirical research also provides empirical evidence for such an idea. For example, research has shown that meaningfulness is derived from not only experiences that matter to others such as volunteering in servicing community and the public, dedicating to societal or political causes (e.g., Klein 2017), but also experiences such as the expression of positive emotions (e.g., Hicks et al. 2012; King et al. 2006; Rivera et al. 2019), meditation and mindfulness (e.g., Pandya 2019), and authentic expression and true self-knowledge (Schlegel et al. 2009; see also Reker and Woo 2011; Schnell 2011; Zhang et al. 2016).

1.2 Overview of Present Studies

While the importance of internal significance is implied in some theoretical arguments (Audi 1998; Csikszentmihalyi 1994; Frankl 1963; Martela and Steger, 2016) no studies have attempted to directly examine whether this dimension is supported empirically. The primary aim of the current study is to examine this issue by developing and validating a quadripartite existential meaning scale (QEMS) that captures the essence of experiencing IV in life. Specifically, we will test our hypothesis that IV is an essential component of MIL in terms of four different criteria (see George and Park 2017). First, we will conduct a factor analyses to show four separate factors—respectively representing comprehension, purpose, EV and IV—can be derived from our items. Second, we will examine if each of these subscales shows strong relationships with existing unidimensional MIL measures, and more importantly, if each of them account for variance in existing MIL measures. Third, we will demonstrate each of these subscales show theoretically consistent, differential relationships with various criterion variables. Fourth, we will explore whether these four subscales show predictive utility in accounting for variance in various well-being variables (e.g., life satisfaction, positive affect, stress). A secondary, exploratory aim is to test the internal structure of MIL. For example, is IV related more strongly with EV compared to comprehension? Is there evidence that comprehension is the cornerstone of other components (Reker and Wong 1988)? Although this aim is exploratory in nature, these analyses may help researchers better understand the relationship between these four aspects of MIL.

2 Method

All data of present study were collected via online survey platform Wenjuanxing (<https://www.wjx.cn>). A total of four composite surveys were created, and for ease of data processing, they were all set to not allow missing value. Three samples of undergraduates were recruited. In return, they received course credit or a remuneration of five RMB Yuan for each survey. Sample 1 (n=201; mean age=19.9; women=72) came from a university in northern China and was mainly used for conducting exploratory factor analysis (EFA), Sample 2 (n=336; mean age=20.3; women=202) was from a university in central China

and mainly used for confirmatory factor analysis (CFA), and Sample 3 was from a small college in northern China and mainly used for assessing test–retest reliability. This sample participated on two occasions with 4 weeks in between. At time 1, total 121 participants took the survey (women = 72; mean age = 19.4), and at time 2, remained 100 completed the scales (women = 61, mean age = 19.4).

2.1 Item Generation

An item-generation panel, composed of four academic psychologists with expertise in the MIL literature initially adapted and created 86 items based on George and Park's measure of coherence, purpose, and mattering, and our above definition of the constructs (e.g., IV). The panel discussed and removed unsuitable items in terms of following criteria: whether an item accords with its dimension definition, whether its description is clear and unambiguous, whether the items under the same dimension were too similar, and whether all items under a dimension sufficiently describe the entire construct. After three rounds of discussion, 46 items were eliminated, 16 items were modified, and four new items generated. Forty-four initial items were retained as candidate items of the proposed QEMS. The items and their affiliated dimensions are displayed in Table 1.

2.2 Procedure and Method

2.2.1 Sample 1

In order to reduce the number of items, Sample 1 first completed a survey consisting of the 44 items respectively corresponding to the four dimensions of meaning (see below), as well as two MIL unidimensional measures and one satisfaction with life measure. An exploratory factor analysis (EFA) was performed on the items (see below for details for all measures and analyses) resulting in a 26-item scale. For the *unidimensional* measures of MIL, participants completed the Chinese version of the Presence subscale of Meaning in Life Questionnaire (MLQ-P; Steger et al. 2006). The Chinese version of MLQ-P (Sisi and Yiqun 2013) includes five items assessing general MIL including, "I have a good sense of what makes my life meaningful" and "I have discovered a satisfying life purpose." Items were averaged to create a MIL presence score. Higher score represents stronger levels of MIL. ($M=4.85$, $SD=1.04$, McDonald's $\omega=0.86$, Cronbach's $\alpha=.85$). Participants also completed the SoMe-CM¹ subscale (Schnell 2009) as a second measure of MIL. This scale assesses the extent to which one feels their life is meaningless. It also consists of five items, including "My life seems meaningless" and "I don't see any sense in life." The items were again averaged to create a total perception of meaninglessness score ($M=2.68$, $SD=1.14$, McDonald's $\omega=0.89$, Cronbach's $\alpha=.88$). Finally, participants completed the satisfaction with life scale (SWLS; Diener et al. 1985), as a measure of life satisfaction. This scale consists of five items, such as, "I am satisfied with my life," and "The conditions of my life are excellent." A mean score was computed ($M=2.68$, $SD=1.14$, McDonald's $\omega=.80$, Cronbach's $\alpha=.77$) to create a life-satisfaction score.

¹ Note: All scales that didn't have Chinese versions were translated into Chinese by two experts following a strict translation procedure.

Table 1 Factor loadings and communalities from EFA

	Pattern coefficients				h ²
	I	II	III	IV	
309 Being alive is very happy			0.89	-0.13	0.66
307 I have gained a lot from life			0.87		0.74
302 Being alive is of personal value to me			0.83		0.61
301 I have been feeling the beauty of life			0.78		0.63
305 I have gained the value of life		0.13	0.73		0.65
303 Whether to live is very valuable to me personally***			0.68		0.37
306 Life gave me a lot**			0.67		0.56
209 I have the power of life*	-0.14	0.47	0.62	-0.18	0.63
304 I gained a lot from life**	0.20		0.55		0.45
406 I believe that I am valuable to others*		-0.15	0.48	0.46	0.63
310 I do not lack life to enjoy**	0.17		0.47		0.36
308 I have fully experienced the value of life to me*		0.42	0.45		0.61
411 I can feel the importance of myself in my friends*			0.45	0.33	0.54
112 I think most of the things that happen in my life are reasonable*	0.36	-0.15	0.44		0.47
203 In regards to life, I know where I'm going		0.83			0.59
202 I have a life direction		0.82			0.79
206 I have a strong sense of life direction		0.74		0.15	0.70
210 I know the direction of my life	0.13	0.73			0.66
205 I have an important goal in life		0.70	0.14		0.61
204 I have lofty ambitions***		0.60		0.25	0.55
207 In life, I have a sense of purpose or mission*		0.55	-0.21	0.43	0.59
208 In life, I have the power to motivate myself to move forward*		0.49	0.33		0.57
201 I have a living goal that's worth the effort**	0.12	0.47	0.21		0.54
106 I feel I have a clear life*	0.31	0.35	0.19		0.50
110 In general, I understand all the important events I have experienced	0.93		-0.21	-0.11	0.65
104 I can understand what I have been going through	0.71				0.62
107 In general, I can understand everything that happened in my life**	0.69				0.56
108 Generally speaking, I understand everything that I have experienced	0.68			-0.14	0.53
109 What happened in life is largely clear***	0.57		0.19		0.56
105 I can understand what happened in my life	0.56	0.12	0.10		0.52
103 I understand the life road I walked through	0.53	0.24	0.14		0.56
111 In general, I can predict the consequences of everything in life*	0.46	-0.23	-0.14	0.45	0.32
101 Recalling the past, everything I experienced was clear**	0.46			0.20	0.28
102 Recalling the past, I feel what I have done is harmonized*	0.31		0.10	0.13	0.26
403 The world will be better because of me		-0.13		0.93	0.75
402 The world will be different because of my existence	-0.13	0.11		0.81	0.76
405 I believe that history will leave traces of my existence		0.23	-0.17	0.74	0.61
401 Even for the whole world, my existence is of great importance***		0.31	-0.15	0.73	0.67

Table 1 (continued)

	Pattern coefficients				h ²
	I	II	III	IV	
404 I believe I can bring value to society*			0.33	0.53	0.63
407 My existence is of great value to the people around me			0.29	0.50	0.61
412 I believe in my particular importance to the community (or the collective)			0.22	0.42	0.55

Factor I named Comprehension, factor II named Purpose, factor III named internal value, factor IV named external value, h²=communality coefficient, only loadings greater than .10 are listed. *items eliminated based on EFA results, **items eliminated after EFA due to redundancy, ***items eliminated after subsequent CFA. Based on Sample 2 data

2.2.2 Sample 2

Sample 2 completed the retained 26 items of the QEMS. The data was subjected to a confirmatory factor analysis (CFA) and after that a total 20 items remained as the final version items of quadripartite existential meaning scale (QEMS).

Sample 2 also complete 2 theoretically relevant measures to examine convergent validity of the QEMS. First, the Chinese version of Rosenberg self-esteem scale (RSE; Zili and Taisheng 2008) was used to assess global self-esteem. This version of RSE includes 10 items including, “On the whole, I am satisfied with myself,” and “At times I think I am no good at all.” A self-esteem score ($M=4.98$, $SD=.92$, McDonald’s $\omega=.82$, Cronbach’s $\alpha=.81$) was created by averaging its item scores. Second, The Self- and Other-Interest Inventor was administered. This scale includes two subscales—self-interest subscale (SOII-S) and other-interest subscale (SOII-O)—with nine items respectively (Gerbası and Prentice 2013). The SOII-S scale assesses the propensity of seeking self-satisfaction and self-interest. Sample items include “I look for opportunities to achieve higher social status” and “I am constantly looking for ways to get ahead.” The SOII-O assesses the tendency to help others and satisfy others’ needs. Sample items include “I look out for ways for my friends to have more money” and “It is important to me that others are happy.” The ratings were averaged to derive general self-interest ($M=5.19$, $SD=0.77$, McDonald’s $\omega=.0.77$, Cronbach’s $\alpha=0.76.$) and other-interest scores($M=4.76$, $SD=0.91$, McDonald’s $\omega=0.84$, Cronbach’s $\alpha=0.83$).

2.2.3 Sample 3

For Sample, we administered a final 20 item QEMS survey at two waves of data collection. At Time 1, Sample 3 completed the QEMS and various other theoretically relevant measures (see below). Four weeks later we again administered the survey using QEMS in order to assess test–retest reliability of the scale.²

² In all steps, participants rated QEMS items on a 7-point scale from 1 (very strongly disagree) to 7 (very strongly agree). Subscale scores were created by averaging the retained items in each subscale of formal QEMS. Besides QEMS items, numerous other pertaining measures were synchronously administered to examine QEMS’s convergent and discriminant validity. To keep brevity of the survey packets, these measures were roughly balanced assigned to every step. Further, to maintain rating congruency, items of some measures were randomly mixed with QEMS items. Thus, unless specifically stated, they were rated in the same way as QEMS items.

The assessment of theoretically relevant variables included the Chinese version of positive and negative affect schedule (PANAS; Lin et al. 2008; Watson et al. 1988) to assess levels of general positive and negative affect. Participants rated the extent to which they generally felt each of the 18 different moods (e.g., interested, guilty, hostile, proud, active) during the past week. Ratings were made on a five-point scale ranging from 1 (very slightly or not at all) to 5 (extremely). Nine positive moods were averaged to create a positive-affect score ($M=3.01$, $SD=0.77$, McDonald's $\omega=.91$, Cronbach's $\alpha=.90$) and nine items were averaged to create a negative-affect score ($M=1.67$, $SD=0.57$, McDonald's $\omega=.83$, Cronbach's $\alpha=.82$).

Participants also completed the anxiety and depression subscales of the symptom check list (SCL-90). The anxiety subscale of SCL-90 consists of 10 items that assess the extent to which participants have experienced various symptoms related to anxiety such as "feeling fearful," and "heart pounding or racing." The depression subscale contains 13 items, including "feeling no interest in things," and "feeling hopeless about the future." Participants rated each item in terms of how much they experienced the symptom in the past week on a five-point scale that ranged from 1 (not at all) to 5 (extremely), in terms of their feeling within the preceding 1 week. Anxiety ($M=1.90$, $SD=0.70$, McDonald's $\omega=.89$, Cronbach's $\alpha=.88$) and depression ($M=1.96$, $SD=0.67$, McDonald's $\omega=.90$, Cronbach's $\alpha=.89$) scores were created by averaging the respective items.

In addition to well-being measures, Sample 3 also completed a variety of scales that were theoretically linked to specific facets of the QEMS (e.g., it is likely that comprehension is highly related to comprehension, commitment is most highly related to purpose, self-interest and self-esteem is highly related to IV, and other interest is highly related to EV). Although these analyses were exploratory in nature, the results were intended to better delineate and differentiate each of the subscales of the QEMS.

These measures included The self reflection subscale of private self-consciousness scale (PSCS-SR) to assess one's self-reflection tendency (Trapnell and Campbell 1999). It consists of 12 items such as "I love exploring my 'inner' self," and "I often love to look at my life in philosophical ways." Ratings were averaged to create a self-reflection score ($M=4.87$, $SD=1.07$, McDonald's $\omega=.91$, Cronbach's $\alpha=.91$).

The commitment-making subscale of the Dimensions of identity development scale (DIDS-CM) was also administered to assess the extent to which one has perceived making a major choice in the direction of their life (Luyckx et al. 2008). This scale comprises five items including, "I have decided on the direction I am going to follow in my life," and "I have plans for what I am going to do in the future." Rating responses were averaged to create a commitment-making score ($M=4.54$, $SD=1.36$, McDonald's $\omega=.93$, Cronbach's $\alpha=.93$).

2.3 Planned Analyses

EFA and CFA were conducted to identify the composition of MIL and form QEMS, correlation, regression, and relative importance analysis (Johnson and LeBreton 2004; Tonidandel and LeBreton 2011, 2015) were performed to examine (1) the correlations between each subscale and unidimensional MIL measures, and (2) the predictive utility (regression coefficient and variance contribution rate R^2) of each subscale to the unidimensional measures. Additionally, the same method was applied to compute (1) the correlations between each subscale and well-being variables, and (2) the predictive utility (regression coefficient and variance contribution rate R^2) of each subscale to the well-being variables when used

together. We also examined the unique predictive power of the subscales to theoretically related variables. Finally, SEM analysis was adopted to explore the relationships between the four components of MIL.

3 Results

3.1 Preliminary Item Screening

Forty-four candidate QEMS items yielded in item-generation were administered to Sample 1. In light of correlations between items and their total score, three items with correlation coefficients less than 0.30 were eliminated (408, 409, 410), rendering the total 41 eligible items.

3.2 Exploratory Factor Analysis

EFA was then conducted on these items using SPSS v.21. Bartlett's sphere test showed that, $KMO=0.948$ and $\chi^2=6198.72$, reaching a statistically significant level ($p < 0.001$), indicating that the data from Sample 1 were suitable for EFA. We adopted principal axis factoring as extraction strategy and oblique rotation with Kaiser standardization to rotate factors. In determining how many factors to extract, three methods were taken into account: eigenvalues over one rule, scree test, and parallel analysis. Preliminary analysis indicated that, according to eigenvalues over one rule, six factors should be extracted. As this method tends to over-estimate the factor number to be extracted (Zwick and Velicer 1986), we decided to mainly depend on the other two approaches to execute extraction. Both scree test and parallel analysis suggested that four factors ought to be extracted, thus, a mandatory extraction was performed to draw out four factors. The results are displayed in Table 1. Four extracted factors roughly corresponded to the intended four MIL components, and thus were named as comprehension, purpose, IV and EV, respectively. Eleven items (102, 106, 111, 112, 207, 208, 209, 308, 404, 406, 411) were eliminated, for their secondary loadings were greater than 0.30 (George and Park 2017) or primary loadings were less than 0.40,³ and six items (101, 107, 201, 304, 306, 310) were abandoned for redundancy. Finally, a total 24 items were retained with six items in each dimension.

3.3 Confirmatory Factor Analysis

To examine the factor structure found in EFA and further eliminate poorly performing items, CFA was conducted on data from Sample 2. We used MPLUS7.4 to perform the estimate. In the interest of prudence, *Maximum likelihood estimation with modified standard error and mean Chi square test* (MLM) was used to conduct model estimation since this method allows for data that is discrete and non-normally distributed (Mengcheng 2014). Originally, when all 24 items resulted from EFA were subsumed into the model, the result showed adequate fit to the data: $\chi^2=498.129$, $df=246$, $p < 0.001$, $RMSEA=0.055$,

³ A strict primary loading constraint is due to (1) having many high quality items, (2) excluding items with secondary loading greater than 0.3. If we had not set this criteria, there still would be items retained without simple structure, for example an item with its primary loading as 0.3 and its secondary loading as 0.29.

Table 2 CFA factor loadings and item descriptions

	Standardized loadings				M	SD
	I	II	III	IV		
103 I understand the life road I have walked through	0.73				5.27	1.25
104 I can understand what I have been going through	0.74				5.46	1.22
105 I can understand what happened in my life	0.80				5.24	1.22
108 Generally speaking, I understand everything that I have experienced	0.82				5.18	1.34
110 In general, I understand all the important events I have experienced	0.65				5.18	1.37
202 I have a life direction		0.68			5.68	1.20
203 In regards to life, I know where I'm going		0.83			5.10	1.35
205 I have an important goal in life		0.83			5.45	1.23
206 I have a strong sense of life direction		0.73			5.10	1.29
210 I know the direction of my life		0.81			5.34	1.23
301 I have been feeling the beauty of life			0.74		5.78	1.23
302 Being alive is of personal value to me			0.63		5.96	1.25
305 I have gained the value of life			0.77		5.46	1.20
307 I have gained a lot from life			0.78		5.79	1.06
309 Being alive is very happy			0.76		5.88	1.27
402 The world will be different because of my existence				0.74	4.73	1.41
403 The world will be better because of me				0.85	5.10	1.38
405 I believe that history will leave traces of my existence				0.65	4.96	1.40
407 My existence is of great value to the people around me				0.77	4.94	1.27
412 I believe in my particular importance to the community (or the collective)				0.73	4.69	1.38

I=Comprehension factor, II=Purpose factor, III=Internal value factor, IV=External value factor, M=Item mean, SD=Item standard deviation (based on Sample 2 data)

90% C.I.=0.048–0.062, CFI=0.921, TLI=0.911, SRMR=0.057. After four items (109, 204, 303, 401) with relatively smaller loadings or larger residual variances were excluded, the new model showed significant improvement: $\chi^2=288.958$, $df=164$, $p<0.001$, RMSEA=0.048, 90% C.I.=0.038–0.057, CFI=0.952, TLI=0.944, SRMR=0.049.

In order to test whether a single-factor model fits the data better than a four-factor model, we subjected the 20 items into a single-factor model. In this model, however, almost all fit indices became worse ($\chi^2=786.264$, $df=170$, $p<0.001$, RMSEA=0.104, 90% C.I.=0.097–0.111, CFI=0.762, TLI=0.733, SRMR=0.085), compared with the four-factor model, $\Delta\chi^2(6)=497.306$ ($p<0.001$).

When the 10 items affiliated with IV and EV were incorporated into one single-value factor, namely using a three-factor model to replace the four-factor model, the fit indices also became worse ($\chi^2=518.262$, $df=167$, $p<0.001$, RMSEA=0.079, 90% C.I.=0.071–0.087, CFI=0.864, TLI=0.845, SRMR=0.070, compared to the four-factor model, $\Delta\chi^2(3)=268.002$, $p<0.001$), suggesting a four-factor model more accurately represented the constructs than a three-factor model. Overall, CFA demonstrated that QEMS was composed of four dimensions—comprehension, purpose, IV and EV—with

Table 3 Inter-correlations between QEMS subscales

Comprehension	1			
Purpose	0.755**	1		
IV	0.637**	0.757**	1	
EV	0.546**	0.632**	0.593**	1

** $p=0.01$

Table 4 Relationships with existing unidimensional MIL measures

	r	β	p	RW	CI upper bound	CI lower bound	R-RW (%)
<i>MLQ-P</i>							
Comprehension	.631**	.174	.001	0.1401	0.0964	0.1851	18.33
Purpose	.843**	.603	.000	0.3490	0.2866	0.4459	45.66
IV	.661**	.194	.000	0.1527	0.0725	0.2108	19.98
EV	.624**	.028	.571	0.1225	0.0748	0.1650	16.03
Model R ²	–	.764	.000	–	–	–	–
<i>SoMe-CM</i>							
Comprehension	–.577**	–.187	.008	0.1178	0.0764	0.1614	19.02
Purpose	–.617**	–.174	.012	0.1266	0.0797	0.1727	20.44
IV	–.745**	–.589	.000	0.2739	0.1998	0.3495	44.20
EV	–.567**	–.098	.155	0.1012	0.0602	0.1422	16.34
Model R ²	–	.620	.000	–	–	–	–

r =correlation coefficient (asterisks indicate significance, **= $p < .01$), β =regression beta coefficient, p =significance value for beta coefficient, RW=relative weight, CI=associated confidence interval, R-RW=relative weight rescaled as a percentage of the total model variance

five items in each dimension (see Table 2). The inter-correlations of the latent factors were very high (see Table 3).

Using data from Samples 1, 2, and 3 at Time 1, we calculated the internal consistency coefficients of four QEMS subscales. In Samples 1, 2, and 3, the McDonald’s ω s were 0.88, 0.87, 0.87, the α s were 0.87, 0.87, and 0.86 to comprehension; the McDonald’s ω s were 0.91, 0.88, 0.91, the α s were 0.91, 0.88, and 0.90 to purpose; the McDonald’s ω s were 0.91, 0.85, 0.89, the α s were 0.91, 0.86, and 0.89 to IV; and the McDonald’s ω s were 0.889, 0.87, 0.87, the α s were 0.88, 0.86, and 0.86 to EV, respectively. The test–retest reliabilities were estimated comparing the two measurements Sample 3 completed. After 4 weeks, the correlations between two measurements on comprehension, purpose, and internal and EV were 0.65, 0.74, 0.72, and 0.74, respectively. These results suggest the QEMS has good internal consistency and test–retest reliability.

3.4 The Relationship Between the QEMS and Unidimensional MIL Measures

The relationship between QEMS and unidimensional MIL measures was explored using the Chinese version of the Presence subscale of Meaning in Life Questionnaire (MLQ-P; Steger et al. 2006) and the SoMe-CM subscale (Schnell 2009). Table 4 displays the relationships between the four QEMS subscales and each of the unidimensional MIL measures, including the results of correlation, regression, and relative weight analyses.

Table 5 Relationships with wellbeing variables

	r	β	p	RW	CI upper bound	CI lower bound	R-RW (%)
<i>SWLS</i>							
Comprehension	.502**	.073	.278	0.0778	0.0377	0.1300	14.66
Purpose	.620**	.207	.002	0.1391	0.0810	0.2051	26.19
IV	.649**	.347	.000	0.1813	0.1167	0.2706	34.14
EV	.599**	.199	.003	0.1328	0.0820	0.1857	25.01
Model R ²	–	.531	.000	–	–	–	–
<i>NA</i>							
Comprehension	–.197*	–.051	.545	0.0137	–0.0160	0.0965	9.33
Purpose	–.269**	.024	.743	0.0238	–0.0058	0.0847	16.23
IV	–.375**	–.243	.005	0.0884	0.0169	0.1962	60.35
EV	–.237**	–.034	.597	0.0206	–0.0092	0.1020	14.09
Model R ²	–	.147	.000	–	–	–	–
<i>PA</i>							
Comprehension	.197*	–.047	.597	0.0099	–0.0541	0.0311	3.88
Purpose	.396**	.050	.520	0.0580	–0.0072	0.1171	22.69
IV	.478**	.276	.003	0.1245	0.0112	0.2392	48.75
EV	.376**	.115	.091	0.0630	–0.0039	0.1536	24.68
Model R ²	–	.255	.000	–	–	–	–
<i>Anxiety</i>							
Comprehension	–.221*	–.051	.566	0.0188	–0.0316	0.0844	15.80
Purpose	–.254**	–.007	.941	0.0240	–0.0291	0.0710	20.18
IV	–.337**	–.237	.020	0.0676	0.0070	0.1495	56.78
EV	–.164	.045	.530	0.0086	–0.0628	0.0246	7.24
Model R ²	–	.119	.000	–	–	–	–
<i>Depression</i>							
Comprehension	–.266**	.044	.565	0.0222	–0.1018	0.0406	6.58
Purpose	–.401**	.011	.883	0.0619	–0.0501	0.1232	18.36
IV	–.578**	–.431	.000	0.2130	0.0779	0.3212	63.16
EV	–.333**	.002	.972	0.0401	–0.0585	0.0792	11.89
Model R ²	–	.337	.000	–	–	–	–

r = correlation coefficient (asterisks indicate significance, * $p < .05$, ** $p < .01$), β = regression beta coefficient, *p* = significance value for beta coefficient, RW = relative weight, CI = associated confidence interval, R-RW = relative weight rescaled as a percentage of the total model variance

Overall, correlations were between 0.57 and 0.84, indicating each subscale of the QEMS were strongly associated with each measure of global meaning in life. The QEMS subscales together accounted for 76% and 62% of variance in each of the global MIL measure, respectively, and each subscale uniquely predicted global MIL.

3.5 The Relationships with Well-Being Variables and the QEMS

The relationship between QEMS and a number of well-being measures was explored by assessing the satisfaction with life scale (SWLS), the Chinese version of positive and

negative affect schedule (PANAS), and the anxiety and depression subscales of the symptom check list (SCL-90). Table 5 displays the analytic results examining the relationships between these well-being measures and the four subscales. Again, each of subscale of the QEMS uniquely predicted some amount of variance in all well-being variables. Essentially, all facets of the QEMS positively predicted the SWLS and positive affect, and negatively predicted negative affect, anxiety, and depression. In most cases, IV had the highest effect size suggesting that this aspect of meaning is as important as perceptions of coherence, purpose, or EV to psychological well-being (see discussion for more speculation on this issue).

3.6 The relationships between QEMS and other theoretically related variables

Finally, the relationship between the QEMS and other theoretically relevant variables was explored by assessing the self reflection subscale of private self-consciousness scale (PSCS-SR), the commitment-making subscale of the dimensions of identity development scale (DIDS-CM), the Self- and other-interest inventory (self-interest subscale (SOII-S) and other-interest subscale (SOII-O), and the Chinese version of Rosenberg self-esteem scale (RSE). These variables were included due to their potential to facilitate perceptions of meaning. The relationships between QEMS subscales and these theoretically related variables can be found in Table 6. The four QEMS subscales together accounted for a statistically significant amount of variance in all theoretically related variables. That is coherence, purpose, EV, and IV demonstrated unique positive relations with self-reflection, commitment, interest, and self-esteem (see discussion for more on these findings), with the exception of the relationship between IV and self-reflection (though the effect size was in the predicted direction). Again, these results suggest that IV is uniquely tied to personality factors that may foster a sense of meaning, even after controlling for the influence of coherence, purpose, and EV.

3.7 Exploring the Internal Structure of the QEMS

In line with the estimation of QEMS latent factor structure, the hypothesized MIL internal structure was explored with a nested-model approach. A saturated model was first set and estimated, in which all theoretically possible paths were included and reasonably specified. The saturated model are displayed in Fig. 1.

All fit indices of the model were as follows: $\chi^2=288.958$, $df=164$, $p<0.001$, $RMSEA=0.048$, $90\% \text{ C.I.}=0.038\text{--}0.057$, $CFI=0.952$, $TLI=0.944$, $SRMR=0.049$. The path coefficients of comprehension to IV (0.15 , $p=0.124$) and EV (0.16 , $p=0.054$) were small and statistically non-significant. As such, we removed them and had the model re-estimated. As a result, a model largely consistent with the MIL internal structure hypothesis was obtained (as shown in Fig. 2). The new model exhibited no significant deterioration in any index: $\chi^2=293.005$, $df=166$, $p<0.001$, $RMSEA=0.048$, $90\% \text{ C.I.}=0.039\text{--}0.057$, $CFI=0.951$, $TLI=0.944$, $SRMR=0.051$, and in comparison with the saturated model, $\Delta\chi^2(2)=4.047$, $\Delta\chi^2(2)/2=2.024<3.84$, $p>0.05$, suggesting Chi square did not increase significantly. Furthermore, the new model did not contain any non-significant path and thus looked more concise. Based on above reasons, we decided to adopt it as our last accepted model.

Table 6 Relationships with theoretically related variables

	r	β	p	RW	CI upper bound	CI lower bound	R-RW (%)
<i>Self-reflection</i>							
Comprehension	.414**	.409	.001	0.1151	0.0065	0.2064	52.60
Purpose	.295**	.097	.359	0.0362	-0.0512	0.0988	16.54
IV	.136	-.197	.108	0.0102	-0.0861	0.0226	4.65
EV	.321**	.198	.033	0.0573	-0.0226	0.1250	26.20
Model R ²	-	.219	.000	-	-	-	-
<i>Commitment</i>							
Comprehension	.432**	-.077	.389	0.0686	0.0104	0.1184	9.33
Purpose	.855**	.928	.000	0.4579	0.3681	0.5398	62.33
IV	.591**	-.006	.951	0.1408	0.0734	0.2062	19.17
EV	.445**	-.047	.494	0.0673	0.0166	0.1299	9.17
Model R ²	-	.735	.000	-	-	-	-
<i>Self esteem</i>							
Comprehension	.403**	-.015	.786	0.0467	0.0216	0.0797	10.52
Purpose	.528**	.161	.013	0.1013	0.0652	0.1405	22.83
IV	.649**	.515	.000	0.2357	0.1791	0.2963	53.12
EV	.423**	.073	.162	0.0600	0.0305	0.1000	13.53
Model R ²	-	.444	.000	-	-	-	-
<i>Self interest</i>							
Comprehension	.267**	.097	0.102	0.0273	0.0035	0.0805	20.66
Purpose	.246**	-.053	0.424	0.0159	0.0012	0.0401	12.01
IV	.331**	.219	0.001	0.0559	0.0214	0.1090	42.34
EV	.278**	.104	0.041	0.0330	0.0048	0.0766	24.99
Model R ²	-	.132	.000	-	-	-	-
<i>Other interest</i>							
Comprehension	.425**	.230	.000	0.0772	0.0238	0.1338	23.56
Purpose	.369**	-.060	.399	0.0369	0.0013	0.0662	11.27
IV	.353**	.039	.527	0.0377	0.0038	0.0618	11.51
EV	.539**	.441	.000	0.1758	0.0997	0.2599	53.66
Model R ²	-	.328	.000	-	-	-	-

r =correlation coefficient (asterisks indicate significance, **= $p < .01$), β =regression beta coefficient, p =significance value for beta coefficient, RW=relative weight, CI=associated confidence interval, R-RW=relative weight rescaled as a percentage of the total model variance

4 Discussion

The current study aimed to provide preliminary evidence that IV is a component of existential meaning. Two factor analyses (EFA and CFA) revealed that QEMS captures four independent and interrelated sub-constructs which respectively correspond to comprehension, purpose, EV and IV. Correlation, regression, and relative weight analyses demonstrated that these sub-constructs, combined together, predict most of the variance of multiple unidimensional measures of MIL, and exhibit significantly close relationships with a number of well-being variables, suggesting the four sub-constructs almost occupy the

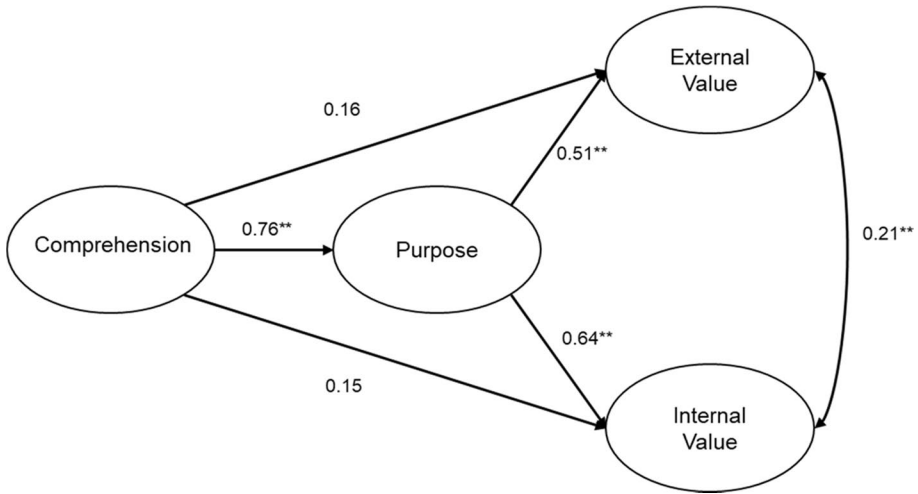


Fig. 1 The saturated model of MIL. Note ** $p < .01$

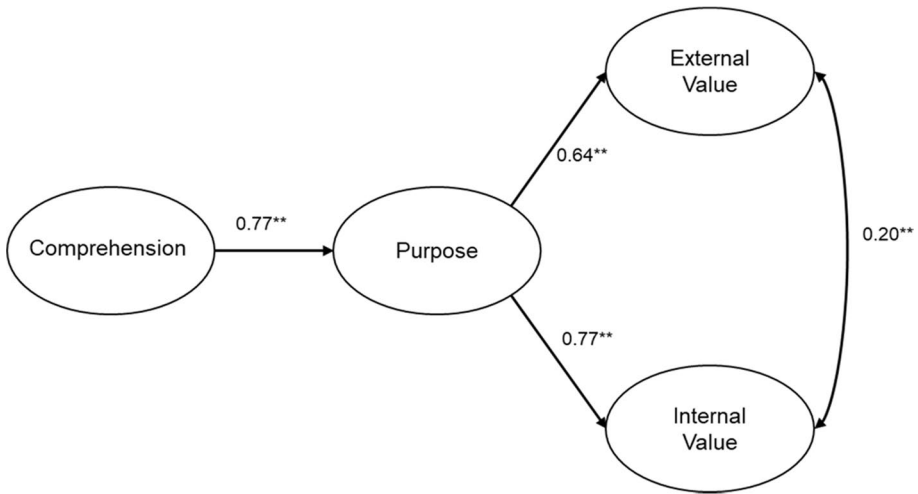


Fig. 2 The structure of MIL. Note ** $p < .01$

same conceptual space tapped by other unidimensional meaning instruments. Meanwhile, each sub-construct contributed a unique part of variance in MIL and exhibited distinctive relationships with theoretically related variables, supporting the hypothesis that each sub-component is essential to and uniquely associated with existential meaning. Overall, these results suggest that four sub-constructs, represented by QEMS’s four subscales, constitutes an important and essential component of MIL.

Notably, IV was the strongest predictor of many well-being variables, especially for the negative indicators, such as anxiety, depression, negative affect and crisis of meaning scale. It is possible that IV is more contingent upon the satisfaction of self-needs such as food,

security, and social relationships. Schnell (2009) has argued that meaning crisis emerges when one's basic needs are not met. Hence, our findings provide preliminary support for the idea that basic need satisfaction contributes to the sense of internal value in life, and in turn to overall meaning experience (see also Martela et al. 2018, for a similar perspective).

The exploratory SEM analysis hints at a causal relationship, whereby comprehension contributes to purpose, which in turn fosters both IV and EV. Since the direct effects of comprehension on two values are largely negligible, a sense of purpose appears especially important to MIL experience. Not only are the effects of comprehension on values almost entirely mediated by purpose, but the correlation between two values may be attributed to purpose (e.g., from the initial correlation of .593 to that of only .20 in the structural model). In addition, purpose alone accounted for nearly half of the variance of MLQ-P, far surpassing other subscales.⁴ In summary, these findings suggest that purpose may be the primary component of MIL experience, which is consistent with Wong et al.'s account that "*purpose is the most important component in the meaning structure because it serves several functions as the engine, the fuel, and the steering wheel* (Wong and Wong 2012, p. 10)." In sum, our finding provided preliminary evidence that MIL is a holistic construct with comprehension as its base, purpose as its core, and IV and EV as the outcome of purpose. Of course, these findings are correlational in nature and experimental inquiry is needed to better substantiate this claim.

5 Implications for Future Research

Future research should examine how the MIL sub-constructs relate to other theorized antecedents of MIL, such as personality traits, emotions, pro-social or altruistic behavior, religion beliefs, family and human relationship, social exclusion, forgiveness and gratitude and so on. Previous studies suggested that these variables are strongly associated with MIL, but few have examined how they relate to the different facets of meaning. For example, with respect to the relationship between negative affect and MIL, previous findings often contradicted each other. Whereas some studies found that negative affect was negatively correlated with MIL (King et al. 2006; Steger et al. 2006), Van Tongeren et al. (2013) found that, in some situation, negative affect did enhance MIL. With multidimensional measures, it is possible to understand which components of MIL are influenced by negative affect, and how these components, in turn, influence the overall experience of meaning.

It is easy to speculate on the idea that different variables may contribute to different components of MIL. For example, because comprehension is the feeling that one's own life, as a whole, is comprehensible. To achieve such a sense, one may need to possess curiosity, willingness to think, desire to explore the nature of things, and in particular, the tendency and ability of self-reflection. Therefore, in line with our exploratory regression analyses, comprehension subscale may be tied to the tendency to self-reflect on one's own life. Purpose, on the other hand, is the feeling that one has a core life goal and one's life has a direction, or the experience that one has made a choice on major life issues and determined to live in accordance with it. Purpose functions on comprehension and influences the other two components, as such, variables that contribute to clear goal pursuit, such

⁴ It is worth noting that this could not be attributable of the goal-describing items in MLQ-P. For example, the regression analysis of item "I understand the meaning of my life" on the four subscales found that, purpose accounted for the largest part of its variance ($R^2=0.67$) (see Table 4).

as self-knowledge, may be especially important for having a sense of purpose in life (see Schlegel et al. 2009, 2011, for a similar idea; see also Costin and Vignoles (2019) for the unique relationship between different facets of meaning and other theoretically relevant variables).

Future research needs to further clarify the exact nature of the IV construct. We define IV as the extent to which individuals derive intrinsic value from their life experiences; however, it is possible that some unique aspect of the experiences or one's appraisal are most crucial to the experience of meaning. For example, Audi (2005) argues that intrinsically valuable experiences, such as a witnessing beauty in nature engender a sense of MIL. Similarly, Frankl (1963) and Wong and Wong (2012) argue that meaning is directly derived from savoring and appreciating one's experiences. While we believe the current findings support a facet of meaning associated with internal value, empirical and theoretical work needs to needs to illuminate the exact aspect of IV that influences judgments of MIL.

In a similar vein, our measure of IV needs to be validated in non-Chinese, student samples. Meaning in life represents an important motivation for many people (e.g., Frankl 1963), and many people perceive their lives and meaningful (Heintzelman and King 2014). However, research has not validated whether each facet of meaning reflected in the QEMS is similarly valued across cultures or whether the importance of each facet to one's overall experience of meaning changes across the lifespan (e.g., purpose may be more important for younger adults compared to older adults; e.g., Hicks et al. 2012). Moreover, it is unclear whether the factor structure of the QEMS holds steady across different samples. While our data driven approach suggest the items on the IV scale best reflect internal value, and not other aspects of meaning, it is possible that some of the items on this subscale (e.g., "I have a gained a lot from life") might more closely align with a different facet of meaning (e.g., EV) for older populations, for example. Overall, it is necessary to replicate these findings in other samples in order to draw robust conclusions about how each of these four facets contributes to existential MIL.

6 Conclusion

The present studies add to the literature examining the structure and components of existential meaning by suggesting that internal value may be an overlooked, yet important component to MIL. Our QEMS yielded a theoretically meaningful factor structure, good reliability, and significant overlap with other existing unidimensional MIL measures, and each subscale displayed unique relationships with theoretically related variables. In sum, our studies are the first to provide empirical evidence that MIL is more than comprehension, purpose, and mattering; possessing a high level of IV in one's life is also an essential component to the experience of MIL.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval All participants in current studies consented to participate, and the project was approved through the Department of Psychology Ethics Committee, Tsinghua University, China

Appendix: The Four-Dimensional Existential Meaning Scale (QEMS)

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) I have an important goal in life.
- (2) I have a life direction.
- (3) My existence is of great value to the people around me.
- (4) Generally speaking, I understand everything that I have experienced.
- (5) I have gained the value of life.
- (6) Being alive is of personal value to me.
- (7) I have been feeling the beauty of life.
- (8) I know the direction of my life.
- (9) I believe that history will leave traces of my existence.
- (10) I believe in my particular importance to the community (or the collective).
- (11) The world will be different because of my existence.
- (12) I can understand what happened in my life.
- (13) I have gained a lot from life.
- (14) In regards to life, I know where I'm going.
- (15) The world will be better because of me.
- (16) In general, I understand all the important events I have experienced.
- (17) Being alive is very happy.
- (18) I have a strong sense of life direction.
- (19) I understand the life road I walked through.
- (20) I can understand what I have been going through.

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

Scoring syntax:

Comprehension = 4, 12, 16, 19, 20.

Purpose = 1, 2, 8, 14, 18.

Internal Value = 5, 6, 7, 13, 17.

External Value = 3, 9, 10, 11, 15.

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