

# Psychometric Evaluation of the Meaningful Life Measure

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**Abstract** The 23-item Meaningful Life Measure (Morgan and Farsides 2008) comprises five subscales, each designed to assess a distinct component of personal meaning: purposeful life; valued life; accomplished life; principled life; and exciting life. In addition to providing a comprehensive composite meaning measure, this instrument presents the possibility of measuring these components separately in future research applications. To demonstrate the utility of their separate measurement, the present study therefore aimed to show differential patterns of correlation between these five subscales and meaning correlates identified in the literature. The MLM's factor structure and internal reliability were replicated on the present sample. Evidence was then provided for the MLM's convergent validity, and it was demonstrated that its five subscales were indeed differently predicted by the meaning correlates from the literature. Findings attest to the practical utility of a five-factor conceptualisation of meaning in life. In addition to identifying people who score low and high on different factors of meaning in life, the MLM facilitates the further investigation of *specific* antecedents and consequences of different meaning components.

**Keywords** Meaning in life · Eudaimonia · Psychological well-being · Positive psychology · Meaningful Life Measure

## 1 Introduction

The recent resurgence of positive psychology (Linley and Joseph 2004; Snyder and Lopez 2005) has seen a renewed interest in the health benefits of personal meaning (Ryan and Deci 2001; Seligman and Csikszentmihalyi 2000), and has led to calls for a better understanding and assessment of this construct (Lent 2004). The Meaningful Life Measure (MLM; Morgan and Farsides 2008) was developed in response to concerns that existing

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meaning scales variously measure content that is peripheral to the meaning in life concept; contain items with multiple content domains and potentially confounding sub-clauses; and are biased towards certain value-outlooks (Battista and Almond 1973; Debats 1996; Garfield 1973; Steger et al. 2006). The MLM was developed by administering existing scales to participants (Crumbaugh and Maholick's Purpose in Life test 1969; Battista and Almond's Life Regard Index 1973; Ryff's Purpose in Life 1989) in order to identify their underlying factors, and then eliminating problematic items. Five factors were identified (Morgan and Farsides 2008)—accomplished life, exciting life, principled life, purposeful life, and valued life—which appear to elucidate the meaning in life concept as understood by Frankl (1963) and subsequent theoretical definitions (e.g. Battista and Almond 1973; Reker 2000; Wong 1998a). The MLM assesses these five dimensions of personal meaning. It consists of eight items from previous meaning scales and 15 new items written to replace the problematic items from existing scales (see Appendix).

In addition to providing a comprehensive, economical and psychometrically adequate composite meaning measure (Morgan and Farsides 2008), the MLM presents the possibility of measuring these five dimensions separately in future research applications. This would not only allow researchers to identify people who score low and high (or all high or all low) on different factors of meaning, but would also allow the investigation of specific meaning correlates that may be unique to different factors of meaning in life. One way to justify the practical utility of this avenue for future research would be to show that MLM subscales are differently associated with meaning correlates identified in the literature.

The present study therefore examined each MLM subscale's correlations with established meaning correlates from the literature. MLM subscales were expected to be positively correlated with all of the meaning correlates, and in addition, the following differential patterns of correlation were predicted.

### 1.1 Psychological Well-Being (PWB)

Ryff (1989) has attempted to synthesise the multiple indicators of *eudaimonic* or *meaningful* well-being (for definitions see Ryan and Deci 2001; Waterman 1993) suggested by theories of positive psychological health, motivation, lifespan development, and maturity. Her six PWB scales are variously viewed as antecedents to (Ryan and Deci 2001), or component parts of (Ryff 1989) meaning in life. Five of these scales operationalize established meaning predictors from the literature such as *autonomy*, *competence*, *relatedness* (Ryan and Deci 2000), and *positive relationships with others* (Crumbaugh and Maholick 1969; Pearson and Sheffield 1974; Showalter and Wagener 2000; Yarnell 1971). The remaining scale measures Purpose in Life which is a component part of the meaning in life concept (Battista and Almond 1973; Frankl 1963; Reker 2000; Wong 1998a). While substantial correlations between all MLM and PWB scales are expected, the magnitudes of these correlations are predicted to differ. For example, since PWB-self-acceptance encompasses, among other things, feelings of satisfaction with one's past and present achievements (e.g. "In many ways, I feel disappointed about my achievements in life"), one would expect self-acceptance to be a relatively strong predictor of MLM—accomplished life. Similarly, since PWB-environmental mastery encompasses feelings of general competence and ability in a variety of domains (e.g. "I am quite good at managing the many responsibilities of my daily life"), one would also expect it to be a relatively strong predictor of MLM-accomplished life.

## 1.2 Spirituality

van Dierendonck (2005) extended Ryff's PWB scales to include a spiritual well-being dimension. Meaning in life has been theoretically linked to spiritual belief, which pertains to individuals' inner resources, central philosophies, and personal growth (Wong 1998b; Kelley 1972; Schweiker 1969; Wuthnow 1976). Research has also found a link between religiosity and meaning in life (Crandall and Rasmussen 1975; Dufton and Perlman 1986; Gerwood et al. 1998). Spirituality and religion may foster meaning through a number of mediators, by focusing individuals' attentions on meaning-inducing activities such as positive relationships, personal growth, and service to others, or by providing a framework of beliefs with which to make sense of one's life. All MLM subscales were therefore expected to correlate positively with the importance of spiritual beliefs. Since spirituality pertains amongst other things to one's central philosophies, it was expected to be a relatively strong predictor of MLM-principled life.

## 1.3 Self-esteem

Rogers' (1951, 1964) theory of *unconditional positive regard* proposed that if one's sense of self-esteem is nurtured, one will increasingly value and care about the needs of others, leading to self-actualisation and meaning in life. Maslow (1970) similarly viewed self-esteem as a necessary prerequisite for achieving meaning in life, and Baumeister (1992) described self-esteem as one of four fundamental *needs for meaning* (in addition to a sense of purpose, efficacy, and moral values). Self-esteem was therefore expected to correlate substantially with all MLM subscales. Rosenberg's (1965) self-esteem measures a broad construct that encompasses feelings of accomplishment and of having a life of value. Therefore, self-esteem was expected to be a relatively strong predictor of MLM-accomplished life and MLM-valued life.

## 1.4 Pro-social Behaviour

Humanistic psychological theory proposes that a caring, prosocial or altruistic orientation is the primary motivating force intrinsic to all human beings, and therefore the means by which to express and achieve personal meaning (e.g. Adler 1964; Maslow 1970; Rogers 1951, 1964). Qualitative research similarly suggests that people find meaning through service to others and transcending self interest (DeVogler and Ebersole 1980, 1981, 1983; Showalter and Wagener 2000; Wong 1998a), and other research has found meaning in life to be correlated with involvement in voluntary work (Magen and Aharoni 1991) and the relative importance of altruistic aspirations (Kasser and Ryan 1993, 1996). Pro-social behaviour was therefore expected to correlate highly with MLM subscale scores, although no predictions were made concerning the relative magnitude of these correlations.

In addition to establishing differential patterns of correlation between MLM subscales and meaning correlates from the literature, a subsidiary aim of the present study was to confirm the MLM's factor structure and internal reliability on another independent sample.

## 2 Method

### 2.1 Participants

Two hundred and forty nine people completed measures online. The survey was linked to four psychology websites, and participants were offered remuneration for taking part in the form of a cash prize draw. Despite certain limitations, online research is increasingly regarded as an efficient means of acquiring large and sufficiently diverse samples at relatively little cost (Birnbaum 2004). Participants' mean age was 27 years ( $SD = 9.94$ ). Most of them (77%) were female. Half of them were students, 41% were in full- or part-time employment, 6% were unemployed or retired, and 3% did not specify their occupation. Participants who specified their nationality (78%) were predominantly American (47%) or British (26%).

### 2.2 Procedure and Measures

Items from the scales below were presented to participants in two completely randomised questionnaire formats. Participants completed the MLM along with measures suggested by past theory and research to be correlated with a meaningful life.

#### 2.2.1 MLM

The 23-item MLM (see Appendix A) comprises five subscales which encompass cognitive, affective, and behavioural components of the meaning in life concept. Its five dimensions tap into the theorised phenomenology of meaning in life: MLM—Purposeful Life measures a sense of having clear goals, aims, and intentions (Kierkegaard 1988; Frankl 1963; Ryff 1989; Yalom 1980); MLM—Accomplished Life measures a sense that personal goals are being achieved or fulfilled (Bandura and Cervone 1983; Battista and Almond 1973; Ryan and Deci 2000; Ryff 1989; Seligman 1991); MLM—Principled Life measures a sense of having a personal philosophy or framework through which to understand life (Battista and Almond 1973; Frankl 1963; Sharp and Viney 1973; Solomon et al. 2004); MLM—Exciting Life measures an enthusiastic orientation that views life as exciting, interesting, or engaging (Aristotle 1985; Frankl 1963; Rogers 1951; Malsow 1970; Mathes et al. 1982; Nix et al. 1999; Waterman 1993); and MLM—Valued Life measures a sense of life's inherent value (Adler 1964; Aristotle 1985; Battista and Almond 1973; Frankl 1963; Maslow 1962). Throughout the history of human inquiry into the nature of the good life, these factors resonate across multiple philosophical, humanistic, socio-cognitive, and positive psychological perspectives.

Alpha coefficients for the five subscales range from .85 to .88, and re-test coefficients over a 6-month period range from .64 to .70. MLM items load onto five factors representing their respective subscales at the first-order level, and a single personal meaning factor at the second-order level (Morgan and Farsides 2008).

#### 2.2.2 PWB

Five of Ryff's (1989) six PWB scales (Autonomy, Environmental Mastery, Positive Relationships with Others, Personal Growth and Self-Acceptance) were administered to participants in their nine-item format with response scales ranging from one (strongly

disagree) to six (strongly agree). These five scales were used because they operationalize established meaning correlates from the literature (e.g. Crumbaugh and Maholick 1969; Pearson and Sheffield 1974; Ryan and Deci 2000; Showalter and Wagener 2000; Yarnell 1971). Ryff's Purpose in Life scale was not used as it is viewed as a *component* rather than a correlate of meaning in life (Battista and Almond 1973; Frankl 1963; Reker 2000; Wong 1998a). The MLM comprises a subscale which measures a sense of purpose in life, and this includes one item from Ryff's Purpose in Life scale.

Ryff reported alpha coefficients ranging from .86 to .93, and re-test coefficients over a 6-week period ranging from .81 to .88 for the 20-item parent scales. Ryff (1989) has defined these five subscales as follows. *Personal growth* measures a feeling of continued development and the realisation of one's potential (e.g. "For me, life has been a continuous process of learning, changing and growth"). *Self-acceptance* measures the acceptance of one's present and past good and bad qualities (e.g. "The past had its ups and downs, but in general, I wouldn't want to change it"). *Autonomy* measures self-determination, internal regulation of behaviour, and personal standards of self-evaluation (e.g. "I judge myself by what I think is important, not by the values of what others think is important"). *Environmental mastery* measures the ability to manage a complex array of activities, opportunities and contexts (e.g. "I have a difficulty arranging my life in a way that is satisfying to me"). *Positive relationships with others* measures trust, empathy, and an understanding of the give and take of human relationships (e.g. "I have not experienced many warm and trusting relationships with others").

### 2.2.3 Self-esteem

Rosenberg's (1965) self-esteem (RSE) assesses a basic feeling of self-worth or self-acceptance (e.g. "I take a positive attitude toward myself"; "I am able to do things as well as most other people"). Its ten items are rated from one (strongly disagree) to four (strongly agree). Rosenberg reported a reproducibility coefficient of .92 and an alpha coefficient of .72 for this scale.

### 2.2.4 Altruism

The Community Feeling subscale of the Aspiration Index (Kasser and Ryan 1993) consists of seven items describing altruistic or pro-social behaviours (e.g. "Donating time or money to charity"; "Working for the betterment of society"; "Helping people in need"). Kasser and Ryan reported moderate to high alphas for the community feeling scale when its items were rated for importance and attainability. In the present study, these items were used as a measure of self-reported altruism. Participants rated how often they engaged in these seven pro-social behaviours using a scale that ranged from one (never) to five (very often).

### 2.2.5 Spirituality

Participants' spirituality was assessed with a single item ("How important is religion or spirituality to your life?") which was rated from one (not at all important) to seven (extremely important).

### 3 Results

#### 3.1 Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis was undertaken in order to replicate the MLM's previously established five-factor structure (Morgan and Farsides 2008). EQS methodology was used to verify a five-factor model of MLM items (Model 1), and to compare its fit to that of a four-factor model (Model 2), and a one-factor model (Model 3). EQS (Bentler 1995) is a specialised structural equation modelling analysis programme which can be used to estimate measurement model parameters, by comparing the estimated covariance matrix representing the relationship between variables in the model to the actual covariance matrix. Formal statistic tests and fit indices have been developed to determine model fit.

In Model 1, five first-order factors measuring purposeful life, accomplished life, principled life, valued life, and exciting life loaded on a single second-order factor. In Model 2, four first-order factors measuring *accomplished and exciting life*, principled life, purposeful life, and valued life loaded on a single second-order factor. The specification of model 2 was chosen over several other possibilities due to the high correlation between the accomplished and exciting life subscales (see Table 3). In models 1 and 2, the variance of the second-order factor was fixed at 1.0, and all first-order parameters were estimated freely. Each meaning item constituted a manifest indicator of its respective factor that was allowed to relate only to this specific latent variable. To accurately test convergent validity of first-order factors, the number of first-order factors should be four or greater (Byrne 1994). Therefore, two- and three-factor models were not tested. In Model 3, all meaning items loaded on a single factor.

Non-normal estimation methods were employed to assess the fit of each model: the scaled chi-square ( $S-BX^2$ ; Satorra and Bentler 1994), the robust incremental fit index, and the robust comparative fit index (IFI and CFI; Bentler and Yuan 1999). A non-significant chi-square and values greater than .90 for the IFI and CFI reflect good model fit, and values between .85 and .90 reflect moderate model fit (Jöreskog and Sörbom 1993). The robust root-mean-square error of approximation (RMSEA; Bentler and Yuan 1999) with 90% confidence intervals was also reported, for which a value less than .05 reflects a good fit, and values up to .08 reflect moderate fit (Browne and Cudeck 1993).

Table 1 shows that the chi-square value was lower in Model 1 than in Model 2, and lower in Model 2 than in Model 3, although all remained statistically significant. IFI and CFI showed that models 1 and 2 had good fit, and model 3 did not fit the data. The RMSEA also indicated a moderate fit for models 1 and 2, and a lack of fit for model 3. Model 1 provided the closest fit to the data across all three fit indices.

**Table 1** Fit indices for CFA models of MLM items

Model	S-BX <sup>2</sup>	df	p	IFI	CFI	RMSEA	90% CI
1.	382.46	225	.00	.95	.94	.06	.05–.07
2.	461.49	226	.00	.92	.92	.07	.06–.08
3.	877.04	230	.00	.77	.77	.11	.10–.12

*Note:* MLM, Meaningful Life Measure. Model 1, five-factor model with sixth second-order factor; Model 2, four-factor model with fifth second-order factor; Model 3, one-factor model. S-BX<sup>2</sup>, Satorra-Bentler scaled chi-square; IFI, robust incremental fit index; CFI, robust comparative fit index; RMSEA, robust root-mean-square error of approximation; CI, confidence interval

**Table 2** Standardised factor loadings for model 1

Subscale	MLM item <sup>a</sup>	First-order factors					Second-order factor
		1	2	3	4	5	
Exciting life	1.	.85					.81
	2.	.83					
	3.	.74					
	4.	.78					
	5.	.54					
Accomplished life	6.		.84				.90
	7.		.85				
	8.		.74				
	9.		.72				
	10.		.86				
Principled life	11.			.76			.76
	12.			.92			
	13.			.89			
	14.			.66			
	15.			.69			
Purposeful life	16.				.77		.86
	17.				.75		
	18.				.72		
	19.				.75		
Valued life	20.					.81	.83
	21.					.81	
	22.					.93	
	23.					.84	

*Note:* All loadings were significant ( $p < .05$ ). MLM, Meaningful Life Measure. Factors 1–6, exciting, accomplished, principled, purposeful, and valued life respectively. Factor 7, meaningful life

<sup>a</sup> See appendix for items in full

The adequacy of Model 1 was also assessed in terms of the parameter estimates. All confirmatory standardised parameter estimates were substantial ( $>.50$ ) and significant ( $p < .05$ ), indicating that all MLM items were good indicators of their respective factors (see Table 2). MLM subscales were moderately to highly correlated (see Table 3)<sup>1</sup>.

### 3.2 Multiple Regression Analyses

Significant positive correlations were found between each MLM subscale and the meaning predictors described above (see Table 4). Positive correlations of a similar magnitude were generally found when scores for males and females were analysed separately (see Table 5). Across all the MLM subscales, Environmental Mastery appeared a stronger predictor of males' personal meaning compared to females, whereas Self-Acceptance appeared a stronger predictor of females' personal meaning compared to males. Other noteworthy gender differences were that males' spirituality was relatively highly associated with their

<sup>1</sup> The correlation matrix of MLM items is presented in Appendix B to allow for secondary analysis.

**Table 3** MLM subscale intercorrelations

MLM subscale	1	2	3	4	5
Purposeful life (1)	1.00	.59	.70	.55	.57
Exciting life (2)		1.00	.71	.55	.59
Accomplished life (3)			1.00	.53	.64
Principled life (4)				1.00	.67
Valued life (5)					1.00

Note: All values are Spearman correlation coefficients. All correlations are significant at the .01 level (1-tailed)

**Table 4** Convergent validity for the MLM

	MLM subscales				
	1	2	3	4	5
PWB—Autonomy	.40	.45	.47	.45	.44
PWB—Mastery	.58	.65	.72	.47	.57
PWB—Relationships	.50	.53	.51	.42	.52
PWB—Acceptance	.57	.62	.75	.54	.68
PWB—Personal growth	.48	.54	.53	.46	.55
Spirituality	.19	.16	.18*	.38	.30
Self-esteem	.56	.62	.72	.58	.71
Altruism	.49	.53	.51	.42	.43

Note: 1, purposeful life; 2, exciting life; 3, accomplished life; 4, principled life; 5, valued life. All values are Spearman's correlation coefficients. All correlations are significant at the .01 level unless otherwise stated  
\*  $p \geq .05$

**Table 5** Correlation coefficients for males and females

	MLM subscales									
	1		2		3		4		5	
	<i>m</i>	<i>f</i>	<i>m</i>	<i>f</i>	<i>m</i>	<i>f</i>	<i>m</i>	<i>f</i>	<i>m</i>	<i>f</i>
PWB—Autonomy	.49	.39	.56	.41	.46	.49	.39	.44	.37	.45
PWB—Mastery	.69	.55	.71	.64	.75	.71	.59	.44	.56	.56
PWB—Relationships	.52	.48	.45	.54	.44	.52	.55	.39	.61	.48
PWB—Acceptance	.53	.59	.54	.64	.72	.76	.47	.55	.60	.68
PWB—Growth	.49	.47	.55	.54	.41	.56	.46	.47	.53	.57
Spirituality	.25*	.16*	.31*	.11 <sup>n.s.</sup>	.20 <sup>n.s.</sup>	.15*	.37	.39	.39	.27
Self-esteem	.57	.57	.65	.61	.71	.73	.60	.56	.64	.73
Altruism	.30*	.54	.56	.51	.45	.53	.26*	.46	.37	.45

Note: 1, purposeful life, 2, exciting life, 3, accomplished life, 4, principled life, 5, valued life. All values are spearman's correlation coefficients. All correlations are significant at the .01 level unless otherwise stated  
\*  $p \leq .05$

n.s., non-significant

*m*, males ( $N = 52$ )

*f*, females ( $N = 191$ )



exciting life scores, and females' self-reported altruism was relatively highly associated with their purposeful and principled life scores.

Each MLM subscale was then regressed on the eight predictors. Males and females were analysed together due to the small size of the male subset (Cohen et al. 2003).

### 3.2.1 Purposeful Life

Five predictors accounted for over half of the variance in scores ( $R^2 = .51$ ), which was highly significant ( $F_{(8,237)} = 30.37, p = .00$ ). Environmental mastery ( $\beta = .26, p = .00$ ), altruism ( $\beta = .16, p = .00$ ), personal growth ( $\beta = .15, p = .01$ ) positive relationships with others ( $\beta = .13, p = .03$ ) and spirituality ( $\beta = .10, p = .05$ ) demonstrated significant effects on purposeful life scores.

### 3.2.2 Exciting Life

Four predictors accounted for over half of the variance in scores ( $R^2 = .60$ ), which was highly significant ( $F_{(8,237)} = 43.65, p = .00$ ). Environmental mastery ( $\beta = .30, p = .00$ ), altruism ( $\beta = .22, p = .00$ ), personal growth ( $\beta = .15, p = .00$ ) and autonomy ( $\beta = .12, p = .03$ ) demonstrated significant effects on exciting life scores.

### 3.2.3 Accomplished Life

Six predictors accounted for over 70% of the variance in scores ( $R^2 = .72$ ), which was highly significant ( $F_{(8,237)} = 15.34, p = .00$ ). Self-acceptance ( $\beta = .35, p = .00$ ), environmental mastery ( $\beta = .24, p = .00$ ), altruism ( $\beta = .14, p = .00$ ), self-esteem ( $\beta = .18, p = .02$ ), personal growth ( $\beta = .10, p = .02$ ) and spirituality ( $\beta = .07, p = .04$ ) demonstrated significant effects on accomplished life scores.

### 3.2.4 Principled Life

Three predictors accounted for almost half of the variance in scores ( $R^2 = .48$ ), which was highly significant ( $F_{(8,237)} = 27.78, p = .00$ ). Self-esteem ( $\beta = .37, p = .00$ ), spirituality ( $\beta = .27, p = .00$ ) and altruism ( $\beta = .12, p = .03$ ) demonstrated significant effects on principled life scores.

### 3.2.5 Valued Life

Three predictors accounted for over half of the variance in scores ( $R^2 = .62$ ), which was highly significant ( $F_{(8,237)} = 48.62, p = .00$ ). Self-esteem ( $\beta = .46, p = .00$ ), spirituality ( $\beta = .15, p = .00$ ) and personal growth ( $\beta = .17, p = .00$ ) demonstrated significant effects on valued life scores.

## 4 Discussion

The first objective of this study was to confirm the MLM's factor structure (Morgan and Farsides 2008) on another independent sample. Four and five-factor CFA models of MLM items fit the data well, whereas a one-factor model did not fit the data. The hypothesised

five-factor model provided the closest fit to the data across all three fit indices. Substantial and significant parameter estimates for this model suggested that all MLM items were good indicators of their respective factors. All subscales achieved acceptable internal reliability, and subscale intercorrelations were moderate to high, providing further support for the MLM's psychometric adequacy. Significant correlations in the expected direction (Baumeister 1992; Maslow 1970; Rogers 1951; Ryan and Deci 2001; Ryff 1989) between each MLM subscale and the eight theoretically related measures (see Table 4) also provided evidence for the MLM's convergent validity.

Positive correlations of a similar magnitude were generally found when scores for males and females were analysed separately, although there were some notable gender differences. Spirituality was more strongly associated with an exciting life in males, and altruism was more strongly associated with a purposeful and principled life in females. The consequences of altruistic acts for personal meaning may be expected to differ across gender, particularly in light of findings that women engage more in costly altruism whereas males are more altruistic when the stakes are lower (Andreoni and Vesterlund 2001). Further research into the personal meanings that males and females derive through different types of pro-social behaviour would therefore prove interesting and illuminating. The most consistent gender differences across all the MLM subscales related to the relative power of environmental mastery and self-acceptance to predict males' and females' personal meaning. Environmental mastery was a stronger predictor of males' personal meaning compared to females', whereas self-acceptance was a stronger predictor of females' personal meaning compared to males'. Ryff's (1989) environmental mastery scale measures the ability to manage a complex array of activities, opportunities and contexts, and her self-acceptance scale measures feelings of self-worth and confidence in one's personal qualities and past achievements. More research is needed to investigate the relative importance of these constructs for males' and females' sense of personal meaning. Self-acceptance may impact on meaning in life by raising self-esteem, which could be a relatively important route to meaning in life for females considering that they consistently report lower levels of self-esteem compared to males (Kling et al. 1999).

The second objective of this study was to establish differential patterns of prediction across different MLM subscales. None of the meaning correlates predicted all aspects of a meaningful life as measured by the MLM. Altruism, personal growth and spirituality were the most consistent predictors of meaning, although altruism failed to predict a valued life, personal growth failed to predict a principled life, and spirituality failed to predict an exciting life. Self-esteem failed to predict a purposeful and an exciting life, and environmental mastery failed to predict a principled and a valued life. The remaining predictors (autonomy, positive relationships and self-acceptance) only predicted one out of five MLM subscales (exciting life, purposeful life and accomplished life respectively).

As expected, spirituality, which concerns an individual's inner central philosophies, was a relatively strong predictor of a principled life. Self-esteem, which encompasses a view of the self as successful and worthwhile, was a relatively strong predictor of an accomplished and a valued life. Self-acceptance, which encompasses feelings of satisfaction with present and future achievements, was the strongest predictor of an accomplished life. These differential patterns of association attest to the practical utility of measuring MLM subscales separately in future research applications, in order to investigate specific meaning correlates that may be unique to different factors of meaning in life. Future experimental tests of these constructs combined with the use of phenomenological methods will not only allow researchers to identify people who score low and high (or all high or all low) on different

factors of meaning, but will also facilitate and investigation of the environmental antecedents and psychological consequences of specific facets of personal meaning.

Significant meaning predictors in this study generally accounted for a substantial proportion of variance in MLM subscale scores ( $R^2$ 's ranged from .48 to .72). However, of particular interest is the fact that MLM-principled life was only significantly predicted by three out of the eight established meaning correlates used in this study, and that these three predictors accounted for a relatively low proportion of the variance in principled life scores. The relative failure of traditional meaning correlates to predict a principled life may be due to the fact that items measuring a principled life are under-represented in traditionally popular meaning measures (Morgan and Farsides 2008). The present findings suggest that MLM-principled life measures an especially distinct facet of meaning in life. This scale may show relatively distinct patterns of prediction in the future, perhaps because it does not refer so explicitly to positive affect as some of the other MLM subscales. Further research is hoped to reveal specific personal or environmental factors that exclusively cultivate this aspect of meaning in life.

Certain meaning correlates (such as environmental mastery, self-acceptance, self-esteem and altruism) were very strong predictors of certain MLM subscales. High correlations between meaning in life and these predictors are theoretically expected (e.g. Baumeister 1992; Maslow 1970; Rogers 1951; Ryan and Deci 2001; Ryff 1989). The strong association between meaning in life and self-esteem in this predominantly American sample is also consistent with previous research showing a relatively strong association between self-esteem and well-being for Americans (Heine et al. 1999). It would therefore prove interesting to investigate the sample-dependency of these high correlations in the future. The strength of some of the significant predictors in this study may indicate they have a degree of confound or a causal relationship with meaning in life. Self-determination theory (Ryan and Deci 2000) predicts a causal relationship between personal meaning and competence, which closely corresponds to Ryff's (1989) environmental mastery in the present study, and humanistic accounts of self-actualisation propose reciprocal causality between meaning in life and self-esteem or pro-social behaviour (Maslow 1970; Rogers 1951, 1964). Although the present correlational findings are consistent with these interpretations, further research is needed to provide sufficient evidence for such relationships.

#### 4.1 Limitations and Future Directions

The superior fit of Model 1 to participants' MLM scores suggested that the MLM measured five empirically distinct dimensions of their meaning in life. However, a four-factor model, in which accomplished life and exciting life items loaded on a single factor, also provided an acceptable fit to the data. This suggests that the MLM's five underlying dimensions may be more or less distinct in different samples. The present sample was more diverse than the college student samples typical of social psychological research, but it was sufficiently homogeneous to prevent CFA of demographic subsets of the data. The female gender-bias in the present sample presents the need to investigate the gender invariance of the MLM's factor structure. MLM factors were initially derived on an independent sample with a 50:50 gender split (Morgan and Farsides 2008). However, further research using multiple and representative samples is necessary to fully investigate the invariance of the MLM's factor structure.

It is also important to consider how the sample's relatively young age could have affected the MLM subscales' association with the meaning correlates. Individuals' conceptualisation of personal meaning becomes increasingly integrated and consolidated across the lifespan, in the light of new experiences and changing life conditions (Dittmann-Kohli and Westerhof 2000). Research has suggested a shift towards more other-orientated sources of meaning in later life (Reker 1996), presenting the possibility that amongst older age cohorts the MLM may correlate more strongly with self-transcendent sources of meaning such as altruism and spirituality than amongst younger age cohorts.

The finding that spirituality was a relatively strong predictor of a principled life suggests that certain religious or spiritual beliefs and practices may foster this facet of meaning in life. However, a limitation of this finding is that spirituality was measured with a single item (*How important is religion or spirituality to your life?*). It is important to consider that this inconsistency in scale length undermines the reliability and validity of spirituality scores in this study. Further research is necessary to establish the MLM's association with established measures of spiritual well-being. It would also prove interesting to measure distinct aspects of spiritual well-being, such as *inner resources* and *relationship with a higher power* (van Dierendonck 2005), in order to compare their relative association with MLM subscales. Although z-scores are used in correlational analyses, the meaning correlates' different response formats (and therefore different discriminatory power) may also have affected convergent validity. Further tests of convergent validity using uniform item formats are therefore needed.

It is also important to bear in mind that self-acceptance shared a degree of conceptual similarity with self-esteem, as it encompassed (amongst other things) feelings of self-worth. High degrees of correlation between two or more predictor variables in multiple regression means that estimates of one variable's impact on the outcome while controlling for the other variables is less precise (Tabachnick and Fidell 1996). This can lead to redundancy in the measures, or an overfitting regression model that is not statistically robust (since correlations between predictors vary across samples). Therefore, although these results successfully demonstrate different patterns of association between meaning correlates and MLM subscales, further research is needed not only to replicate these findings but also to firmly establish the relative strength of different predictors of meaning in life.

The present study provided support for the MLM's factor structure, internal reliability and convergent validity, and demonstrated that its five subscales were differently associated with established meaning correlates. The strength of some of these associations were consistent with a causal relationship between meaning and certain related constructs, although it is currently only possible to speculate about such processes. Future experimental studies involving the manipulation of these constructs are planned to provide further insight into such inter-relationships. Diary methods etc.—exciting possibilities about having one bit of meaning and not the others.

## Appendix A

### The Meaningful Life Measure (MLM)

Please read each of the following statements carefully and then circle the appropriate number to indicate your opinion. Please answer according to the scale below, unless otherwise stated.

Strongly disagree	Disagree	Slightly disagree	Neither agree or disagree	Slightly agree	Agree	Strongly agree
1	2	3	4	5	6	7

1. Life to me seems: ...completely routine (1); ...always exciting (7).
2. Every day is: ...exactly the same (1); ...constantly new and different (7).
3. Facing my daily tasks is: ...a painful and boring experience (1); ...a source of pleasure and satisfaction (7).
4. My life interests and excites me.
5. My daily living is dull and routine.
6. I find it satisfying to think about what I have accomplished in life.
7. So far, I am pleased with what I have achieved in life.
8. I have been very successful in achieving certain things.
9. I have failed to accomplish much in life.
10. I feel good when I think of the things I have accomplished in life.
11. I have a system or framework that allows me to truly understand my being alive.
12. I have a philosophy of life that really gives my living significance.
13. I have a personal value system that makes my living worthwhile.
14. The beliefs I hold about the world enable me to make sense out of my existence.
15. I hold certain values which I feel greatly enrich my life with significance.
16. In my life I have: ...no goals or aims at all (1); ...very clear goals and aims (7).
17. I have discovered: ...no mission or purpose in life (1); ...clear-cut goals and a satisfying life purpose (7).
18. I have a clear idea of what my future goals and aims are.
19. I tend to wander aimlessly through life, without much sense of purpose or direction.
20. My life is worthwhile.
21. My life is significant.
22. I really value my life.
23. I hold my own life in high regard.

Syntax to create MLM subscales: reverse-scored = 5, 9, 19; exciting Life = 1–5; accomplished life = 6–10; principled life = 11–15; purposeful life = 16–19; valued life = 20–23.

*Note.* Items 1, 2, 3, 16, 17 are from the Purpose in Life Test (Crumbaugh and Maholick 1969); item 6 is from the Purpose in Life Scale (Ryff 1989); items 11 and 12 are from the Life Regard Index (Battista and Almond 1973).

## Appendix B

Correlation matrix of Meaningful Life Measure items

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	—	.748	.585	.595	.433	.470	.503	.423	.461	.485	.360	.400	.417	.310	.361	.334	.538	.343	.376	.460	.420	.398	.385
2		—	.580	.586	.442	.504	.494	.409	.497	.500	.292	.445	.437	.296	.357	.326	.470	.315	.429	.367	.406	.370	.387
3			—	.566	.475	.535	.542	.453	.532	.491	.411	.458	.452	.302	.353	.401	.535	.303	.515	.468	.416	.531	.422
4				—	.448	.589	.553	.541	.555	.570	.460	.531	.554	.437	.423	.384	.531	.349	.497	.528	.440	.554	.551
5					—	.424	.383	.366	.445	.396	.344	.314	.377	.249	.296	.290	.379	.233	.431	.357	.336	.373	.353
6						—	.677	.639	.605	.796	.370	.464	.475	.285	.384	.492	.527	.469	.619	.501	.480	.530	.494
7							—	.602	.616	.707	.449	.471	.497	.311	.323	.483	.564	.475	.578	.538	.485	.512	.480
8								—	.517	.600	.365	.440	.483	.267	.373	.370	.423	.335	.498	.490	.465	.505	.487
9									—	.558	.361	.409	.451	.260	.281	.467	.458	.390	.629	.532	.467	.543	.475
10										—	.362	.453	.488	.301	.436	.477	.498	.453	.541	.502	.492	.513	.504
11											—	.684	.699	.606	.532	.258	.437	.269	.367	.576	.449	.506	.432
12												—	.825	.637	.599	.349	.547	.334	.435	.584	.584	.587	.590
13													—	.585	.609	.364	.560	.348	.489	.587	.605	.610	.595
14														—	.563	.241	.470	.278	.336	.458	.365	.431	.392
15															—	.319	.466	.299	.343	.496	.405	.462	.474
16																—	.647	.717	.507	.420	.394	.388	.363
17																	—	.517	.521	.483	.461	.483	.444
18																		—	.529	.381	.356	.362	.321
19																			—	.486	.451	.477	.457
20																				—	.701	.741	.663
21																					—	.737	.656
22																						—	.756
23																							—

Note: All values are Spearman correlation coefficients. All correlations are significant at the .01 level (1-tailed). See Appendix A for MLM item descriptions

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