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THE PSYCHOMETRIC PROPERTIES OF THE MEANING IN LIFE QUESTIONNAIRE IN SLOVAKIA

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ABSTRACT

Objectives. The study focuses on the psychometric examination of the Meaning in Life Questionnaire (MLQ) in a Slovak translation.
Sample and settings. The sample consisted of 1368 Slovak participants (mean age 41.58 years). To assess the questionnaire's stability over time and predictive power, a subset of participants (421 adults) was invited to retest after approximately six months.
Statistical analyses. Confirmatory factor analysis (CFA) was performed to assess internal structure of the MLQ and its measurement invariance across gender and age groups. Item response theory (IRT) using single-factor generalized partial credit model was applied for item analysis. Hierarchical linear regression analysis was performed to examine the predictive power of the MLQ.
Results. The MLQ showed good internal consistency for both subscales, but the CFA showed perfect fit only for the Presence of Meaning subscale; fit for the Search for Meaning subscale was borderline acceptable. Both subscales were found to be invariant across gender and age groups. Correlation analysis revealed positive associations between Presence of meaning and subjective well-being, whereas Search for meaning was only weakly correlated or not correlated at all. Longitudinal analysis revealed that Presence of meaning (but not the Search for meaning) significantly predicted life satisfaction after controlling for personality and emotion-based measures of well-being.
Limitations. The limitation of the study is specific sample recruited through research panel agency based on self-selection of participant.

key words:
Meaning in Life Questionnaire,
validation,
measurement invariance,
time stability,
life satisfaction

INTRODUCTION

For decades, the study of meaning in life has been one of the most important areas of well-being research. The emergence of meaning in life in psychology is closely related to the work of Viktor Frankl in logotherapy and existential analysis. Frankl (1996) considered the will to meaning as a central human motivation and the search for meaning as an essential component of mental health. The meaning of life has been studied in depth, especially in existential psychology. Yalom (1980), for example, considered the meaning in life as the human response to existential realities, including the experience of meaninglessness. Currently, meaning in life is the focus of research in positive psychology, which considers it one of the key factors for a good life and well-being (Seligman, 2018).

Existing research has consistently demonstrated the significant role of meaning in life in mental health and psychological adaptation, as supported by meta-analytical studies. A meta-analysis conducted by Li et al. (2021) revealed a robust association between greater meaning in life and higher subjective well-being. Moreover, a greater presence of meaning is associated with lower stress, with the strength of this effect moderated by stress indicators (strongest for depression and weakest for negative af-

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fect; He et al., 2023). Another meta-analytic study found a significant and moderately negative relationship between meaning in life and posttraumatic stress symptoms, leading the authors to conclude that meaning in life plays a crucial role in adaptation to traumatic events (Fischer et al., 2020). The influence of meaning in life extends not only to mental health, but also to physical health. A meta-analysis with over 130,000 participants showed that a strong sense of purpose in life is associated with a lower risk of all-cause mortality and cardiovascular events (Cohen et al., 2016). In summary, there is substantial evidence to support the importance of addressing meaning in life when examining mental (and even physical) health and optimal functioning.

Despite the solid evidence of the effect of meaning in life on psychological functioning, these relationships might be complex in emerging adulthood. The crucial developmental task of emerging adulthood is identity development which is linked to meaning in life (Hill, 2016). Consequently, mainly the relations with the search for meaning might differ from those in established adulthood. In emerging adulthood, even the higher levels of search for meaning might be adaptive and normative (Steger et al., 2009). Moreover, the presence of meaning might be more considerably related to life satisfaction in the case of simultaneous search for the meaning (Steger et al., 2011).

Measuring meaning in life

The need to explore meaning in life has led to the development of various instruments designed to measure a personal level of meaning. These instruments reflect different theoretical definitions and are influenced by the theoretical orientations of the authors (Reker, 2005). One of the earliest and most widely used instruments to measure meaning in life is the Purpose in Life Test (PIL; Crumbaugh, 1968). It was originally developed as a logotherapeutic instrument to assess existential vacuum. The PIL is a unidimensional measure consisting of 20 items with a 7-point response scale based on semantic differences. It has been widely used, especially in clinical settings (Halama, 2009).

Another measure, the Logo Test (Lukas, 1997, originally 1972), was developed specifically for logotherapy research. It is a clinically oriented instrument consisting of three parts: sources of meaning, items on existential frustration symptoms, and responses to projectively based stories presented to the test taker. Although it has been used in Czech and Slovak contexts (Balcar, 1995; Klčovanská & Masničáková, 1998), its application outside logotherapy has been limited due to its strong association with logotherapeutic assumptions. The Logo test has also been criticized for its low homogeneity (low correlations between test parts) and is recommended for clinical assessment with the possibility of additional questioning rather than for psychometric research (Halama, 2009).

The Life Regard Index (LRI), developed by Battista and Almond (1973), was designed to avoid confusion caused by different concepts of life framework or life goals. The LRI is a two-dimensional measure of positive life attitude consisting of the dimensions Framework and Fulfillment. Framework refers to a person's ability to perceive his or her life within a perspective or context by establishing a set of life goals, a life purpose, or a life view. Fulfillment measures the extent to which a person believes that he or she has fulfilled or is in the process of fulfilling his or her framework or life goals. The LRI was used both in its original version and in a revised version by Debats (1998).

In addition to the original scales focusing specifically on meaning in life, researchers have often used subscales from more general measures. Commonly used subscales

include the Meaningfulness subscale from the Antonovsky Sense of Coherence Scale (Antonovsky, 1993), the Purpose in Life subscale from the Ryff Psychological Well-Being Scale (Ryff & Keyes, 1995), and the Personal Meaning Index, which was developed as a composite score of the Purpose and Coherence subscales from the Life Attitude Profile-Revised (LAP -R; Reker, 2005).

Meaning in life Questionnaire

Two decades ago, Steger et al. (2006) introduced a new measure of the meaning in life the Meaning in Life Questionnaire (MLQ). The authors developed this measure in response to the argument that previous questionnaires, such as the PIL or the LRI, incorporated specific values into their items. This led to a potential content bias, as individuals with high meaning but different values might score lower on these measures. Consistent with a relativistic approach to meaning (Battista & Almond, 1973), the authors wanted to develop a measure that clearly assessed meaning without specific content bias. In addition, they emphasized the importance of assessing the search for meaning, which they considered a central idea in logotherapy.

The MLQ consists of 10 items and two independent dimensions, with 5 items each: Presence of Meaning (MLQ-P) and Search for Meaning (MLQ-S). The MLQ-P refers to the extent to which individuals perceive significance in their lives and believe they have a purpose and aims in life (Steger et al., 2009). The MLQ-S focuses on individuals' efforts to establish and enhance their understanding of the meaning, significance, and purpose of their lives (Steger et al., 2009). Steger et al. (2009) emphasised that the search for meaning is not equivalent to the absence of meaning and that the presence of and the search for meaning comprise independent dimensions. While meaning presence deals with the perceiving him or herself to have a purpose, mission, or over-arching aim in life, and it is related to relative occurrence or absence of meaning in life, the search for meaning is concerned with the degree to which people are trying to establish and/or augment their comprehension of the meaning. Meaning presence is rather personal belief based on perception of own life, on the other hand, search for meaning is motivation to develop such a belief.

The Meaning in Life Questionnaire has undergone extensive psychometric examination. In the original study and in subsequent analyses, both subscales showed very good internal consistency with alpha coefficients above 0.8 and satisfactory test-retest stability over periods ranging from one month to one year (Steger & Kashdan, 2007; Steger et al., 2006). The factor structure of the MLQ was supported by confirmatory factor analysis (CFA) in two independent studies, and this factor structure was found to be invariant across different life stages (Steger et al., 2006, 2009). Correlation analyses showed that the MLQ-P and MLQ-S subscales had different correlation patterns with other variables and could be considered independent. The MLQ-P showed positive correlations with measures of positive functioning (well-being, mental health), whereas the MLQ-S showed no or negative correlations with these measures (Steger et al., 2006, 2008). Analyses of discriminant validity found that the MLQ-P had better discriminant validity compared to other measures of meaning, such as the Purpose in Life Scale and the Life Regard Index, and that the MLQ-S differed from other meaning scales (Steger et al., 2006).

The MLQ has been used and psychometrically analyzed in many countries and languages worldwide, including Greece (Pezirkianidis et al., 2016), Italy (Negri et al., 2020), Australia and New Zealand (Schutte et al., 2016), and many others. A recent large-scale study of 3867 participants from 17 countries (Schutte et al., 2023) found that the MLQ-P subscale had good invariance across countries, although item 9, the

only item with reversed wording included in the questionnaire, was needed to be removed. The MLQ-S subscale, however, showed greater variation across samples, suggesting that the concept of meaning seeking is less universal across cultures.

Current study

Several studies in Slovakia have used the Slovak translation of the MLQ to measure meaning in life (e.g., Halama et al., 2010; Kohútová et al., 2021), but no thorough psychometric analysis of the questionnaire has been conducted. The current study aims to address this deficiency and focuses on the psychometric examination of the Meaning in Life Questionnaire on a large general Slovak sample, including internal consistency, confirmatory factor analysis, gender invariance and measurement invariance in emerging and established adulthood, and item response theory analysis. In addition, we analyzed the six-month time stability and predictive validity of the MLQ by correlating the MLQ with subjective and psychological well-being and examining the predictive effect of the MLQ on life satisfaction longitudinally.

METHOD

Sample

In this study we use pooled sample, that was created by merging unique participants from two data collections. The data were collected online in 2017 (Halama, et al., 2020) and 2018 (Kohút et al., 2020). Participants were recruited by research agency and were compensated for their participation. The uniqueness of participants was controlled by anonymous ID. For participants who were in both samples, we used the record from 2018. All participants agreed upon informed consent and answered every item. Participants with missing values were excluded. Every participant passed multiple attention-check items. The sample consists of 1368 Slovak participants, 667 (48.8%) men and 701 (51.2%) women. Mean age for the whole sample was 41.58 (SD = 14.66), ranging from 18 to 86 years. Mean age of men was 42.35 (SD = 14.57) and 40.85 (SD = 14.72) for women. Regarding education, 6% of participants attained elementary education, 22% high school education without leaving exam, 44% high school education with leaving diploma, 6% bachelor's degree and 22% attained master's degree or PhD. The mean of self-reported subjective social status was 5.27 (SD = 1.54), ranging from 1 to 10.

To assess the temporal stability and predictive power of the Meaning in Life Questionnaire, we invited participants in the 2018 sample to retest after approximately six months. The retest sample included 421 adults, 241 (57%) men and 180 (43%) women. Participants' ages ranged from 18 to 75 years, with a mean age of 44.65 years (SD = 14.67).

Measures

Participants provided information on their gender (male/female), age, education level, religiosity (answering "yes" or "no" to the question "Do you consider yourself a religious person?"). In addition to these measures, participants also completed a number of other measures, but only those relevant to the present study are described below.

The Meaning in Life Questionnaire (Steger et al., 2006) is a 10-item questionnaire that measures the presence (MLQ-P) and search for meaning in life (MLQ-S). Each domain is measured with five items on a 7-point Likert scale ranging from 1 (Absolutely untrue) to 7 (Absolutely true). Note that item 9 of the MLQ-P is reverse coded. The Slovak translation of the questionnaire is available on the original author's web-

site[1] but the translation process and translators are not indicated. To evaluate accuracy of translation, we did back translation by bilingual native speaker. The back translation analysis proved that the translation was accurate.

The Satisfaction with Life Scale (Diener et al., 1985) was used to measure participants' overall satisfaction with life. It consists of 5 positively worded items, and participants responded on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). It was translated into Slovak language by Halama and Dědová (2007). This scale was included in the second data collection of the retest sample and showed high internal consistency ($\alpha = .89$) in this sample.

The full Slovak 60-item version of the Big Five Inventory 2 (original version Soto & John, 2017, translation and adaptation by Halama et al., 2020) was used to assess the five major personality domains: Extraversion, Agreeableness, Conscientiousness, Negative Emotionality, and Openness. Data from the first retest sample were used, and internal consistency for all domains in this sample was good, with Cronbach's alphas ranging from .79 to .87.

The ten-item short form of the International Positive and Negative Affect Schedule (Thompson, 2007, Slovak translation Ficková, 2002) was used to measure positive and negative affect. Participants indicated their general tendency to experience positive or negative affective states (e.g., active, nervous) using a 5-point scale ranging from "Not at all" to "Extremely" Cronbach's alpha was .75 for the positive affect scale and .84 for the negative affect scale.

The Subjective Happiness Scale (Lyubomirsky & Lepper, 1999) was used to assess participants' overall subjective happiness. It consists of 4 items, with one item reverse coded. Participants provided their responses on a 7-point Likert scale. Translation into Slovak was done by Babinčák (2018). In the present sample, the Cronbach's alpha for this scale was 0.83.

Psychological well-being was measured using Ryff's 42-item Psychological Well-being Scale (Ryff & Keyes, 1995). Participants rated their level of agreement with statements on a 5-point Likert scale. This scale focuses on six domains of psychological well-being: autonomy, environmental mastery, personal growth, positive relationships with others, purpose in life, and self-acceptance. This study used the translation from the study of Kohút et al. (2020). The internal consistency of the subscales in our sample was adequate, with Cronbach's alphas ranging from .63 to .81.

Social status was measured by MacArthur Scale of Subjective Social Status (Adler et al., 1994), which is a single-item measure that assesses a person's perceived rank relative to others in their group. Respondents are presented a drawing of a ladder with 10 rungs together with instruction and he or she is asked to marked the rung that best represents his or her social status.

Both datasets and all measures used are available in the Open Science Framework[2].

Analyses

Confirmatory factor analysis (CFA) was performed using the lavaan package (Rosseel, 2012) in RStudio. The robust maximum likelihood estimator was used to assess model fit of the Meaning in Life Questionnaire for each domain. Measurement invariance was examined separately for gender and age groups. Age groups were formed by dividing the sample into two groups based on an age cutoff of 29 years (29 years or younger, older than 29), as age 29 is considered the end of emerging adulthood (e.g.,

[1] https://www.michaelfsteger.com/wp-content/uploads/2013/03/MLQ-Slovak.pdf

[2] https://osf.io/45ucx/?view_only=d9dba41b5eac42c78b60a4425ec8b1d0

Arnett, 2015). The CFA was performed separately for each subscale, as the subscales are considered as independent and the MLQ was formed as two mutually unrelated scales.

First, configural invariance was tested by imposing the same factor structure on both groups. Next, weak invariance (sometimes referred to as metric invariance) was tested by constraining factor loadings in the groups to be equal. Strong invariance (sometimes referred to as scalar invariance) was tested by considering the axis intercepts in the previous model to be equal. Model fit was compared by the change in comparative fit index (CFI) and root mean square error of approximation (RMSEA), as the chi-square non-significance criterion is often difficult to achieve in large samples. Following Chen (2007), cutoff criteria of $\leq$ -0.010 for CFI and $\geq$ 0.015 for RMSEA change were used to determine each level of measurement invariance.

In analyzing item response theory (IRT), we focused primarily on visual inspection of item characteristic curves, item information curves, and test information curves. The parameters for each item are given. A single-factor generalized partial credit model (Muraki, 1992) was used for each domain of the MLQ using the mirt package (Chalmers, 2012).

Differences between gender and age groups were examined using Student's t-test for two independent samples. The time stability of the MLQ and correlations with other variables were calculated using Pearson's correlation coefficient (*r*). Hierarchical linear regression analysis was performed to examine the predictive power of the MLQ.

RESULTS

Item response frequencies and inter-item correlations

The frequencies of responses on 7-point scale of each item are presented in Table 1. The results showed that participants mostly chose responses of 4 and above, except of item 9 which was reverse coded.

Table 1 Frequency of responses on MLQ items

Item	Frequency						
	1	**2**	**3**	**4**	**5**	**6**	**7**
1. I understand my life's meaning.	2%	3%	8%	18%	23%	33%	13%
2. I am looking for something that makes my life feel meaningful.	3%	6%	7%	11%	29%	30%	14%
3. I am always looking to find my life's purpose.	2%	2%	5%	12%	26%	34%	19%
4. My life has a clear sense of purpose.	1%	4%	8%	16%	20%	32%	19%
5. I have a good sense of what makes my life meaningful.	1%	2%	5%	14%	22%	34%	22%
6. I have discovered a satisfying life purpose.	2%	4%	9%	18%	24%	28%	15%
7. I am always searching for something that makes my life feel significant.	2%	2%	5%	12%	31%	34%	14%
8. I am seeking a purpose or mission for my life.	3%	4%	6%	15%	28%	31%	13%
9. My life has no clear purpose. (R)	2%	5%	10%	13%	15%	22%	34%
10. I am searching for meaning in my life.	11%	8%	8%	16%	26%	20%	12%

Note. (R) - recoded item

Table 2 presents the inter-item correlations of Meaning in Life Questionnaire. The results showed that in general, mean same-domain correlations ($M = 0.58$) are stronger than other-domain correlations ($M = 0.24$). The MLQ-P showed overall stronger same-domain correlations (0.66) compared to MLQ-S (0.50). The largest difference between the mean same-domain and the other-domain correlation was found for item 4 (0.47), the smallest for item 7 (0.06).

Table 2 MLQ inter-item correlations

	Inter-item correlations									
Item	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1. I understand my life's meaning.										
2. I am looking for something that makes my life feel meaningful.	0.12									
3. I am always looking to find my life's purpose.	0.42	**0.52**								
4. My life has a clear sense of purpose.	**0.71**	0.06	0.41							
5. I have a good sense of what makes my life meaningful.	**0.63**	0.16	0.45	**0.75**						
6. I have discovered a satisfying life purpose.	**0.66**	0.04	0.36	**0.73**	**0.72**					
7. I am always searching for something that makes my life feel significant.	0.38	**0.40**	**0.56**	0.41	0.50	0.45				
8. I am seeking a purpose or mission for my life.	0.24	**0.53**	**0.57**	0.25	0.31	0.25	**0.63**			
9. My life has no clear purpose. (R)	**0.57**	0.05	0.32	**0.64**	**0.59**	**0.60**	0.35	0.19		
10. I am searching for meaning in my life.	-0.05	**0.54**	**0.39**	-0.05	0.03	-0.05	**0.31**	**0.54**	-0.11	
Mean same domain correlation	0.64	0.50	0.50	0.71	0.67	0.68	0.48	0.57	0.60	0.45
Mean other domain correlation	0.24	0.09	0.39	0.24	0.29	0.23	0.42	0.25	0.20	0.06

Note. Values represent Spearman's correlation. Correlations of items from the same domain are bolded. Correlations stronger than 0.05 are significant at $p < 0.05$. (R) - recoded item

Descriptives and correlations with demographic information

The results of the descriptive statistics, correlations, and t-tests calculated for the pooled sample are shown in Table 3. Student's t-test results showed no significant differences between men ($M = 26.04$, $SD = 6.11$, $N = 667$) and women ($M = 26.24$, $SD = 6.04$, $N = 701$) on the MLQ-P ($t_{(1366)} = -0.60$, $p = 0.551$), or religious ($M = 26.40$, $SD = 6.02$, $N = 817$) and non-religious ($M = 25.76$, $SD = 6.14$, $N = 551$) participants

($t_{(1366)}$ = 1.90, p = 0.057). On the MLQ-S, men scored significantly lower (M = 24.60, SD = 5.67) than women (M = 25.68, SD = 5.53), although this difference was small ($t_{(1366)}$ = -3.58, p < 0.001). No significant difference was found between religious (M = = 25.27, SD = 5.71) and non-religious (M = 24.98, SD = 5.48) participants in this area ($t_{(1366)}$ = 0.92, p = 0.359). Pearson correlations showed significant positive correlations between the MLQ-P and age, and subjective social status; however, these correlations were weak. No significant correlations were found for the MLQ-S. The results of One-Way ANOVA comparing groups based on the highest attained education showed significant effect only for Presence of meaning. Tukey's post-hoc tests showed significantly lower values of Presence of meaning only for participants with elementary education compared to all other levels of education ($F_{(4, 1363)}$ = 5.74, p < 0.001). These differences ranged from small (d = 0.38) to medium (d = 0.58), increasing for each level of attained education. The correlation between the domains was statistically significant, positive, and weak. Considering both Cronbach's alpha and McDonald's omega, the internal consistency of the two domains was good.

Table 3 MLQ descriptives and correlations with demographic variables

	Presence of meaning (MLQ-P)	**Search for meaning (MLQ-S)**
Descriptives		
Mean	26.14	25.15
Standard deviation	6.08	5.62
Median	27.00	25.00
1st quartile	22.00	22.00
3rd quartile	31.00	29.00
Skewness	-0.64	-0.68
Kurtosis	-0.03	0.78
Cronbach's alpha	0.90	0.81
McDonald's omega	0.90	0.82
Demographics		
Gender	-0.03	-0.19***
Religiousness	0.10	0.05
Age	0.14***	0.03
Subjective social status	0.24***	0.05
Correlation between subscales	0.18***	

Note. N = 1368. Gender and religiousness values are Cohen's d. Negative values for gender indicate higher score for women. Positive values for religiousness indicate higher score for people considering themselves religious. Age, and subjective social status values are Pearson's r.
*** p < 0.001

Confirmatory factor analysis and measurement invariance

CFA results for the MLQ-P domain showed very good model fit (CFI = 0.996, TLI = = 0.992, RMSEA = 0.035 90%CI [0.016, 0.054]). Standardized factor loadings varied from 0.698 to 0.878 (M = 0.805). Model fit for the MLQ-S showed mixed results, indicating that the model had high residuals and the overall fit was not satisfactory

(CFI = 0.889, TLI = 0.778, RMSEA = 0.143 90%CI [0.127, 0.160]). Considering the highest values of the modification index, it was proposed to correlate the residuals between item 10 "I am searching for meaning in my life." and two others, item 2 "I am looking for something that makes my life feel meaningful." and item 7 "I am always searching for something that makes my life feel significant." The modified model showed improved fit. Nevertheless, the TLI and RMSEA were not optimal (CFI = = 0.965, TLI = 0.884, RMSEA = 0.103 90%CI [0.083, 0.125]). Standardized factor loadings for this model ranged from 0.603 to 0.848 (M = 0.691).

The results of the test for measurement invariance showed that both domains achieved strong invariance for gender. With respect to age groups, strong invariance was achieved for MLQ-P but only partial invariance for MLQ-S. Restricting the intercepts of the items in this domain resulted in a significant reduction of CFI. Based on the modification indices, we removed the restriction of item 3 "I am always looking to find my life's purpose." For this item, the intercept is smaller for emerging adults (5.21) than for older adults (5.45). The model fit indices (CFI, RMSEA) for each step of the test for measurement invariance are shown in Table 4.

Table 4 Gender and age measurement invariance of the Meaning in Life Questionnaire

	Presence of meaning (MLQ-P)				**Search for meaning (MLQ-S)**			
	CFI	**RMSEA**	**Δ CFI**	**Δ RMSEA**	**CFI**	**RMSEA**	**Δ CFI**	**Δ RMSEA**
Gender: men (N = 667) / women (N = 701)								
Configural invariance	0.997	0.030			0.965	0.103		
Weak invariance	0.997	0.025	0.000	-0.005	0.967	0.078	0.002	-0.025
Strong invariance	0.996	0.027	-0.001	0.002	0.959	0.073	-0.008	-0.005
Age: emerging adults (N = 339) / older adults (N = 1029)								
Configural invariance	0.995	0.039			0.965	0.106		
Weak invariance	0.996	0.029	0.001	-0.010	0.956	0.092	-0.009	-0.014
Strong invariance	0.991	0.039	-0.005	0.010	0.946	0.086	-0.010	-0.006
Partial strong invariance *					0.954	0.083	-0.002	-0.009

Note. * - intercept of item 3 is not constrained between groups.

Item response theory analysis

The model was fitted separately for the items in the MLQ-P and MLQ-S domains. This model showed a good fit for the MLQ-P (CFI = 0.997, TLI = 0.995, RMSEA = = 0.047 90%CI [0.026, 0.069]). On the other hand, as expected from the CFA results, the MLQ-S did not show good model fit (CFI = 0.937, TLI = 0.875, RMSEA = 0.172 90%CI [0.152, 0.192]), which must be considered a limitation for further analyzes. The fit of individual items was good for both models, with RMSEA ranging from 0.014 to 0.041. Factor loadings, slopes, and location parameters are shown in Table 5.

Table 5 Factor loadings, slopes, and location parameters of MLQ domains

	Item	Factor loading	a	b1	b2	b3	b4	b5	b6
	Presence of meaning (MLQ-P)								
1	I understand my life's meaning.	0.682	1.587	-2.020	-1.772	-1.377	-0.574	-0.096	1.493
4	My life has a clear sense of purpose.	0.865	2.936	-2.080	-1.603	-1.210	-0.633	-0.171	0.952
5	I have a good sense of what makes my life meaningful.	0.793	2.219	-2.175	-2.017	-1.617	-0.878	-0.335	0.846
6	I have discovered a satisfying life purpose.	0.785	2.155	-1.910	-1.682	-1.148	-0.562	0.077	1.213
9	My life has no clear purpose. (R)	0.466	0.896	-2.314	-1.890	-1.112	-0.579	-0.480	-0.026
	Search for meaning (MLQ-S)								
2	I am looking for something that makes my life feel meaningful.	0.458	0.878	-1.992	-1.255	-1.089	-1.471	0.099	1.611
3	I am always looking to find my life's purpose.	0.544	1.104	-1.856	-1.900	-1.692	-1.152	-0.282	1.163
7	I am always searching for something that makes my life feel significant.	0.520	1.035	-1.724	-1.995	-1.613	-1.367	-0.038	1.551
8	I am seeking a purpose or mission for my life.	0.788	2.176	-1.645	-1.429	-1.297	-0.736	0.054	1.349
10	I am searching for meaning in my life.	0.337	0.608	-0.368	-0.758	-1.516	-0.842	0.719	1.579

Note. (R) - recoded item

For the MLQ-P subscale, all but item 9 had fairly strong factor loadings and discrimination parameters. Looking at the location parameters and item information curves, it can be seen that these items mainly covered the lower to middle range of the latent trait, which can also be seen on the test information curve (Figure 1). Item 4 – "My life has a clear sense of purpose", contributes the most information and the reverse coded item 9 – "My life has no clear purpose" - the least.

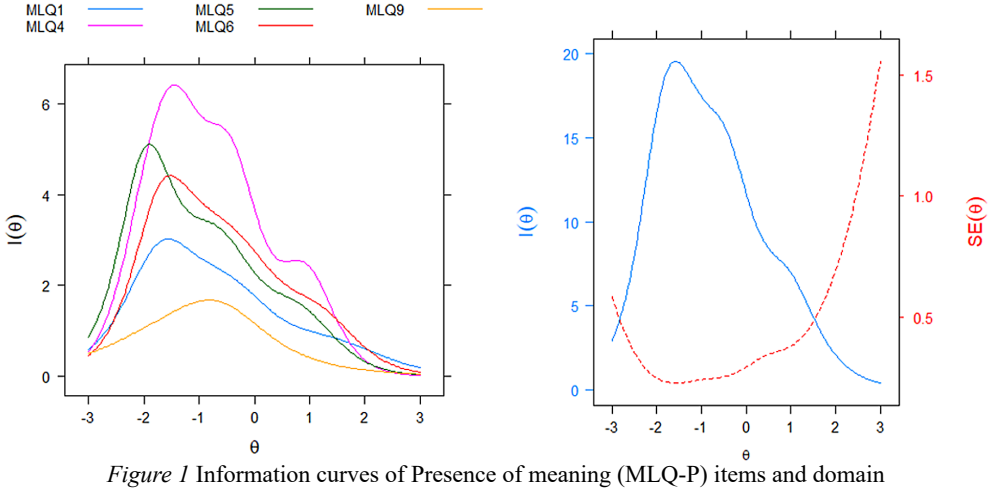

Figure 1 Information curves of Presence of meaning (MLQ-P) items and domain

Note. This figure illustrates item information curves on the left side and test information (blue line) and standard error curve (red dotted line) on the right side.

In the MLQ-S, the discrimination parameters were generally lower, and the location parameters were not in order from lowest to highest, with the exception of Item 8, suggesting that these items were not functioning correctly. Item 8 "I seek a purpose or mission for my life" provided the most information, and Item 10 "I am searching for meaning in my life" provided the least. Again, the items mainly covered the lower to middle range of the latent trait. The item and test information curves are shown in Figure 2.

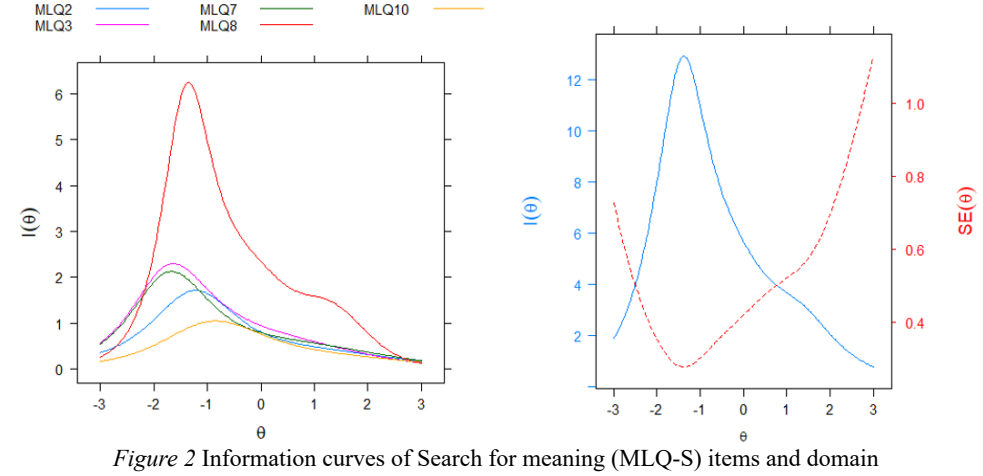

Figure 2 Information curves of Search for meaning (MLQ-S) items and domain

Note. This figure illustrates item information curves on the left side and test information (blue line) and standard error curve (red dotted line) on the right side.

Correlations between the MLQ and subjective and psychological well-being

To examine correlations between the MLQ and measures of well-being, we used variables from both rounds of data collection from the retest sample. In the first round, MLQ, subjective happiness, and positive and negative affect were measured. In the second round, MLQ, life satisfaction, and psychological well-being were measured. The results showed significant positive correlations between the MLQ-P and all measures of well-being except negative affect, for which the correlation was negative. All of these correlations were moderate to strong. On the other hand, the MLQ-S did not correlate significantly with any of the measures of well-being except for positive affect, where a weak positive correlation was found. These results are presented in Table 6.

Table 6 Correlations of MLQ with subjective and psychological wellbeing

	Presence of meaning (T1)	**Search for meaning (T1)**
Subjective happiness (T1)	0.68***	0.03
Positive affect (T1)	0.50***	0.22***
Negative affect (T1)	-0.43***	0.06
	Presence of meaning (T2)	**Search for meaning (T2)**
Satisfaction with life (T2)	0.58***	0.00
Psychological wellbeing (T2)		
Autonomy	0.36***	-0.06
Environmental mastery	0.59***	-0.02
Personal growth	0.52***	0.08
Positive relations with others	0.59***	0.01
Purpose in life	0.62***	0.07
Self-acceptance	0.66***	-0.04

Note. $N = 421$. T1 - first round of data collection, T2 - second round of data collection. Values represent Pearson's correlation coefficient. *** $p < 0.001$.

Temporal stability and longitudinal predictive power of MLQ

Temporal stability was assessed by the correlation between the results of the first and the second round (time span of about six months). The correlation was high for both the MLQ-P ($r = 0.76$, $p < 0.001$) and the MLQ-S ($r = 0.69$, $p < 0.001$), suggesting good test-retest reliability.

To examine the longitudinal predictive power of the MLQ for subjective well-being, we conducted a hierarchical linear regression analysis. We used life satisfaction at Time 2 as the dependent variable, which was predicted in the first step by variables from Time 1: Big Five personality domains, positive and negative affect, and subjective happiness. In the next step, we added the MLQ-P and the MLQ-S from time point 1 to the model. The first model explained 27.4% of the variance ($F_{(8,412)} = 19.43$, $p < 0.001$). Only negative emotionality ($\beta = -0.20$, $p < 0.001$) and subjective happiness ($\beta = -0.36$, $p < 0.001$) were significant predictors. The full model explained 30.8% of the variance ($F_{(8,412)} = 18.28$, $p < 0.001$), which means that MLQ significantly increased the explained variance by additional 3.4% ($F_{(2,410)} = 10.23$, $p < 0.001$). However, only the effect of MLQ-P together with negative emotionality and subjective happiness was significant. The results are presented in Table 7.

Table 7 Results of hierarchical linear regression analyses predicting satisfaction with life (T2)

		95% Confidence Interval			
Predictor	***β***	**Lower**	**Upper**	***t***	***p***
Step 1 (R^2 = 0.274)					
Extraversion	-0.08	-0.19	0.04	-1.35	0.178
Agreeableness	-0.08	-0.18	0.02	-1.49	0.138
Conscientiousness	0.02	-0.09	0.12	0.31	0.760
Negative emotionality	-0.20	-0.32	-0.07	-3.00	0.003
Openness	-0.08	-0.18	0.03	-1.38	0.169
Positive affect	0.03	-0.08	0.15	0.59	0.557
Negative affect	-0.03	-0.15	0.09	-0.53	0.596
Subjective happiness	0.23	0.11	0.35	3.75	< .001
Step 2 (ΔR^2 = 0.034)					
Presence of meaning	0.27	0.15	0.39	4.39	< .001
Search for meaning	0.02	-0.07	0.11	0.52	0.601

DISCUSSION

This study focused on the psychometric examination of the Slovak version of the Meaning in Life Questionnaire administered to a large general sample of Slovak participants. We examined internal consistency, factor structure, and measurement invariance across gender and age groups. Item response theory was used to analyze the properties of individual items. In addition, the six-month time stability and predictive validity of the MLQ were analyzed. This was done through correlations of the MLQ with subjective and psychological well-being and regression analysis of how the MLQ predicts life satisfaction longitudinally.

Descriptive data showed that both subscales of the MLQ had approximately normal distribution with rather low skewness and kurtosis coefficients. Internal consistency reached satisfactory levels for both subscales, but is slightly higher for MLQ-P (α = 0.90) than for MLQ-S (α = 0.81). These results support the findings of previous psychometric studies from other countries, where the MLQ was found to have a high level of consistency across different language versions, e.g., Italian (Negri et al., 2020), Greek (Pezirkianidis et al., 2016), or Brazil (Damásio & Koller, 2015). This suggests that the MLQ has items that form a proper block of related parts that measure the underlying latent variable (meaning presence and meaning search), and that these items maintain their mutual relatedness across the different language versions of the MLQ. The stability of the internal consistency of the subscales of the MLQ across language versions is solid despite the small number of items (5 for each subscale). The satisfactory reliability of the MLQ was also supported by the test-retest correlation, which was high for both subscales (0.76 for MLQ-P and 0.69 for Search). This is consistent with the original findings of Steger et al. (2006), who found one-month test–retest stability coefficients of 0.70 for Presence and 0.73 for Search.

Relationships with demographic variables showed that the subscales of the MLQ-P and the MLQ-S had no relationship with religiosity, but Slovak participants with higher meaning presence were older, more educated, and had higher social status.

In the original study by Steger et al. (2006), a low correlation with age was found, which is consistent with other findings (e.g., Reker & Fry, 2003) that emphasized that the personal meaning system becomes more integrated and consolidated with age. In our study, the MLQ-P correlated positively with education and social status. Because these two demographic variables are related to financial well-being, this is consistent with previous research that found that income and other measures of financial status were positively associated with meaning-making, which was partially explained by autonomy, competence, and perception of control (Ward & King, 2019). Both correlational and comparative analyses showed that women scored higher on the MLQ-S. Although this difference is small and was not found in the original study (Steger et al., 2006), we can speculate that this may be a specific cultural issue, however, we are not aware of any reasonable explanation at this time. One of the unexpected findings was the weak positive correlation between MLQ-P and MLQ-S ($r = .18$). Correlations between these scales are usually negative and low (e.g., Park et al., 2010; Steger et al., 2006), but weak positive correlations have been found before in certain samples (Schulenberg et al., 2011) or in certain cultures (Balgiu, 2020). We can only speculate that this might be an effect of the different understanding of Search for meaning in different cultures (Schutte et al., 2023).

Structural and item analysis of the MLQ was performed using the one-dimensional generalized partial credit mode of IRT. In terms of presence, the overall model fit was very good and factor loadings were high. The items had good discrimination coefficients, with the exception of item 9, which had a discrimination coefficient of less than 1. The location parameters and information curves showed that the MLQ-P was most informative in the middle and lower to middle parts of the scale range. The MLQ-P has a satisfactory overall fit, with Item 9, which is recoded, having a slightly lower quality. This is consistent with the findings of Schutte et al. (2023), who found that item 9 of the MLQ is most noninvariant item across countries and attributed this to its reversed nature. Although the reverse items can bring some benefits to the scale, in this case, item 9 is the only reversed item and it is a simple negation of item 4, and there have been several suggestions to remove it from the scale (Schutte et al., 2016; Schutte et al., 2023). Although we do not take such a radical stance, we recommend being cautious about this item, especially if there is a possibility of careless responses.

Among items from the Search subscale, the item 10 showed the worst characteristics. This is evident from the lowest factor loading as well as from low discrimination coefficient. Although this item did not show any problematic features in previous studies from other countries (e.g. Schutte et al., 2016; Steger et al., 2006), our study suggested, that in cultures different from country of origin, the item does not have to function correctly. However, there is no reason observable at the first sight, actually, the item seems to be similar to the other items from the search subscale. Further analyses could clarify, if this effect is consistent or it is caused by sampling error.

The present CFA and IRT analysis for the MLQ-S produced mixed results. The fit of the CFA model for MLQ-S was not good and the factor loadings were slightly lower than for MLQ-P. After adding several residual correlations, the model improved but still did not reach the optimal fit. IRT analysis also yielded poorer results for MLQ-S compared to MLQ-P. Both the slopes and the information curves provided by IRT are lower. Similar to MLQ-P, MLQ-S is most informative at the mean and lower to middle parts of the scale range, but overall test information is lower. However, this poorer fit of MLQ-S is also found in many other countries. Schutte et al. (2023) applied CFA to the MLQ datasets from 18 different countries, and the MLQ-S had a worse fit than the MLQ-P in most of them. This was especially true for countries close to Slovakia,

such as Hungary or Croatia. Again, we can speculate that this result may be caused by a different understanding of Search for meaning across cultures (Schutte et al., 2023) or at least some aspects of this subscale, which may affect the fit indices.

Regarding invariance, the analysis showed that both MLQ-P and MLQ-S appeared to be invariant across gender and age group. Although it was necessary to restrict item 3 in the MLQ-S subscale to achieve strong invariance across age groups, overall the fit indices showed that the MLQ performed similarly in men and women and in emerging adulthood and older adults. Our finding supports previous findings demonstrating that the MLQ exhibits a high degree of invariance across gender and age (Balgiu, 2020; Jiang et al., 2016; Steger et al., 2009).

Several studies found that MLQ correlates with well-being measures (Li et al., 2021; Steger et al., 2006, etc.). In our study, we provided two-fold results that support this validity assumption. Correlation analysis showed that the MLQ-P has a pattern of positive moderate to strong correlations with subjective happiness, positive affect, and psychological well-being. These correlations are stable across different measures, supporting that the experience of greater meaning in life is robustly associated with higher well-being (Li et al., 2021). The second finding supporting the important role of the MLQ-P in well-being is the longitudinal prediction of life satisfaction across two waves. The hierarchical regression results suggested that the MLQ-P not only predicts life satisfaction at six months, but that this predictive effect cannot be reduced to the effect of personality traits and emotion-based well-being measures. Our study suggests that the MLQ-P has incremental effect on life satisfaction beyond these variables, and it complements other studies that have found that the meaning effect on positive functioning is unique and cannot be reduced to personality traits and other measures of well-being (e.g., Mascaro & Rosen, 2005). Based on the results of our longitudinal analysis, the MLQ-P subscale with its unique effect on life satisfaction seems to be a good operationalization of meaning in life.

On the other hand, the MLQ-S subscale showed neither correlations with well-being measures nor longitudinal prediction of life satisfaction. The only significant correlation was with positive affect, but the correlation was low. This is consistent with previous studies showing that the correlation of the MLQ-S with well-being is negative or close to zero, although the results varied across studies (Li et al., 2021; Park et al., 2010; Steger et al., 2008). One possible explanation for the low or inconsistent results of the MLQ-S is its conditional nature. The effect of the MLQ-S on well-being may depend on the level of meaningfulness presence (Steger et al., 2008), age (Steger et al., 2009), or culture (Li et al., 2021; Schutte et al., 2023).

However, this result could also be interpreted through the validity issue. The MLQ-S subscale is based on the variation of the key, but quite straightforward claim as *I search for meaning.* The subscale is therefore quite limited in sense of content variability, which can negatively affect the content validity and this can be manifested also in construct validity. Overall, this finding contributes to the questionability of the MLQ-S, which has greater heterogeneity and variance in its cultural understanding (Schutte et al., 2023).

CONCLUSION

This study provided a comprehensive psychometric analysis of the Meaning in life Questionnaire in its Slovak version. Although both subscales, Presence of Meaning and Search for Meaning, showed satisfactory internal consistency and a good level of invariance across gender and age groups, some analyses yielded questionable results, especially for the Search for Meaning subscale. Search for Meaning showed weaker

fit of the CFA model, lower informativeness in terms of the IRT model, and lack of correlations with well-being measures. Although Search for meaning has been shown to be a negative correlate of well-being in previous studies (e.g., Steger et al., 2008), our results did not support this finding, as most correlations were close to zero. It seems that Search for meaning does not function in the same way in Slovakia as in the culture of origin, which is supported by the fact that its role and function may be heterogeneous in different cultures (Schutte et al., 2023). On the other hand, the Presence of meaning demonstrated its validity by showing stable patterns of positive correlations with well-being and longitudinal incremental prediction of life satisfaction above the personality traits and emotion-based well-being measures. Overall, the study showed that Presence of meaning is a very good instrument for measuring the level of meaning in life in Slovak participants, but the role of Search for meaning is somewhat more complicated and its usefulness should be further investigated.

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