# Validation of a German-Translated Version of the Three Dimensional Meaning in Life Scale

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**Abstract**

The purpose of this study was to assess the validity and the psychometric properties of a German translation of the three dimensional meaning in life scale (3DM) and its three underlying dimensions: coherence, purpose, and significance. For that, data from 91 university students was collected. The 3DM was found to be a psychometrically valid tool to measure coherence, purpose, and significance among German university students. A confirmatory factor analysis supported the three factor model of meaning in life with the dimensions of coherence, purpose and significance in this sample. Further, strong positive correlations between coherence and significance and a generic meaning in life measure were found, while purpose and a generic meaning in life measure had a moderate correlation. Moderate correlations between coherence and significance and mental wellbeing were found, while purpose had low to moderate correlations. Moderate negative correlations between coherence and significance and perceived stress were found, while purpose and perceived stress had a low correlation. Thus, the 3DM is a valid tool to measure meaning in life and the three underlying dimensions while allowing the possibility of further distinguishing the relationship between meaning in life and other constructs.

*Keywords:* meaning in life, coherence, purpose, significance, scale validation, psychometric properties

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**Validation of a German-translated version of the three dimensional meaning in life scale**

The question of what makes life meaningful has long been asked by historical figures (Metz, 2013). It wasn't until Frankl's work, *Man's Search for Meaning* (1963), where he states that the need for meaning is an innate human drive, that empirical and theoretical research into meaning in life (MiL) caught on (Steger et al., 2006). Meaning in life as defined by Steger et al. (2006) is "the sense made of, and significance felt regarding, the nature of one's being and existence" (p.81). It can be studied on two distinct factors, the search for meaning which is "the drive and orientation toward finding meaning in one's life" and the presence of meaning, which is "the subjective sense that one's life is meaningful" (Steger et al., 2006, p.85). Search for meaning can be understood from two perspectives: as fundamental part of understanding one's existence and as a sign of striving for personal development, but also as an absence of meaning in life and a lack of personal growth (Travezaño-Cabrera et al., 2022). The presence of meaning has been established as an important factor in positive functioning and mental well-being (Damásio, & Koller, 2015).

Mental well-being can be distinguished between hedonic well-being and eudaimonic well-being. Hedonic well-being is focused on positive feelings and life satisfaction as well as the absence of pain or negative feelings (Gallagher, Lopez, & Preacher, 2009). Eudaimonic well-being focuses more on self-actualization and is the outcome of positive goal pursuits (Gallagher, Lopez, & Preacher, 2009). Ryff (1989) proposed a model of psychological (eudaimonic) well-being which states that positive psychological functioning consists of six key dimensions, autonomy, environmental mastery, personal growth, positive relations with others, self-acceptance, and purpose in life. As such, meaning in life can be considered to have closer associations with eudaimonic well-being and be considered as one of the main components to psychological well-being (García-Alandete, 2015; Sumi, 2019). Accordingly, meaning in life has been found to have positive relationships with concepts such as life satisfaction and self-esteem, while a lack of meaning is related to concepts such as perceived stress, depression and anxiety, as well as drug abuse, hopelessness and suicidality (Bauer-Wu & Farran, 2005; García-Alandete, 2015; Glaw, Kable, Hazelton, & Inder, 2017; Ho, Cheung, & Cheung, 2010; Lavigne, Hofman, Ring, Ryder, & Woodward, 2013; Morgan, & Farsides, 2009).

Various scales measuring meaning in life are available, such as the Purpose in Life Test

(Crumbaugh& Maholick, 1964), the Life Regard Index (Battista & Almond, 1973), and the Sense of Coherence—Meaning Scale (Antonovsky, 1993; Steger et al., 2006). However, the measures display a wide range of underlying dimensions regarding meaning in life, a concern raised by various scholars (Morgan, & Farsides, 2009; etc.). The Purpose in Life Test, for example, is mostly assumed to be unidimensional and reported as such, but other studies have found multiple underlying structures, which vary from study to study (Davies, Klaassen, & Längle, 2014). Furthermore, meaning in life measures have been criticized on poor discriminant validity and non-replicable factor structures (Steger et al., 2009). A proposed solution to these ambiguous underlying factors has been to define meaning in life based on a tripartite conceptualization consisting of coherence, purpose, and significance (Martela and Steger (2016).

Martela and Steger (2016) based their tripartite view of meaning in life on a previous suggestion by Reker and Wong (1988, 2012) that there are three components to personal meaning, a cognitive component, a motivational component, and an affective component.The cognitive component, or coherence, is about the way people make sense of their personal experiences in the world. Martela and Steger (2022) described it as a "sense of comprehensibility and one's life making sense" (Martela, & Steger, 2016, p.534 as cited in Martela & Steger, 2022). It is about perceiving patterns in life that are understandable and expandable into predictable models that help make sense of one's life. The motivational component, or purpose, refers to having future-oriented goals that give your life direction and which can vary in size and extent. Martela and Steger (2022) defined it as a "sense of core goals, aims, and direction in life" (Martela, & Steger, 2016, p.534 as cited in Martela & Steger, 2022). Significance is described as a "sense of life's inherent value and having a life worth living" (Martela, & Steger, 2016, p.534 as cited in Martela & Steger, 2022).

However, next to the tripartite conceptualization of MiL by Martela and Steger (2016), another trichotomy of meaning in life was proposed, with the dimensions of comprehension, purpose and mattering (George & Park, 2016). In this trichotomy, comprehension and purpose are similarly defined as coherence and purpose in the paper of Martela and Steger (2020), while the third dimension, mattering, refers to how a person evaluates their worth in the world. George and Park (2016) define it as: "Mattering refers to the degree to which individuals feel that their existence is of significance, importance, and value in the world." (p. 212). Thus, both mattering and significance focus on the value of a persons' life with the distinction being that mattering

focuses on a life's value to the world and significance focuses on the personal view on a life's value (Martela & Steger, 2022).

Due to the differences in definition, Martela and Steger (2022) aimed to create a scale that allows the measurement of coherence, purpose and significance, thus allowing the investigation of the separateness of the three dimensions as well as the inclusion of significance as a dimension in meaning in life. They operationalized these three dimensions in a scale that they named the three dimensional meaning in life scale (3DM). The 3DM consists of eleven items which are rated on a 7-point Likert scale. The items are divided into three dimensions: four items measure coherence; four items measure purpose, and three items measure significance.

This scale was developed and tested across five studies conducted by Martela and Steger (2022). One of the studies was conducted within the general population of the US and assessed the validity of the 3DM and its relation to other meaning in life measures and relevant constructs. Results demonstrated that the scale has good internal consistency with a Cronbach's alpha ranging from .89 - .92 for the three factors (Martela, & Steger, 2022). Regarding convergent validity, high correlations between the three subscales and other meaning in life measures were found, such as with the presence subscale from the Meaning in Life Questionnaire (MLQ; Steger et al., 2006), ranging from purpose $r = .85$, coherence $r = .83$, to significance $r = .81$. Furthermore, discriminant validity showed that the three dimensions show correlations to other related concepts but remain distinct (Martela, & Steger, 2022). The psychometric properties demonstrate that the three dimensional meaning in life scale is a suitable measure for meaning in life with the three dimensions of coherence, purpose, and significance.

**Purpose of the study**

Thus, the purpose of this study is to expand the literature on the 3DM in several ways, apart from being the first to employ the 3DM in a German-speaking student sample. It aims to further test the psychometric properties and validity to confirm the 3DM as a valid tool to measure the three dimensions underlying meaning in life. It is expected that the 3DM and its three subscales coherence, purpose, and significance all have high internal reliability in this study, similarly to the original studies by Martela and Steger (2022). Second, the 3-factor structure of coherence, purpose, and significance found in the original studies is expected to be confirmed in this study. Third, to confirm convergent validity, positive correlations between the three dimensions of the 3DM and another general meaning in life scale are hypothesized. Fourth,

to confirm divergent validity, between the three dimensions positive correlations with mental well-being and negative correlations with perceived stress are hypothesized.

## Methods

### Design

In this cross-sectional validation study, a survey was employed in a sample of Psychology students at the University of Twente. It was approved on the 4th of October 2022 by the Ethics Committee of the Faculty of Behavioral, Management, and Social Sciences (BMS) at the University of Twente (Nr. 221165).

### Participants and Procedure

For this study, a sample of 93 young adults aged 18 years or older and with proficiency in German was recruited. Recruitment was done via convenience sampling through the University Twente's research subject pool SONA systems as well as through convenience snowball sampling of people recruited directly by the researchers via social media and in-person. Participants who filled out the survey via the SONA systems website received 0.25 SONA system points.

Participants were excluded when they were under the age of 18, did not understand German or were a non-university student. Two participants did not agree to the informed consent form and were removed from the dataset, resulting in a final sample of 91 participants. The participants (69 female, 21 male, 1 preferred not to disclose) had an age range of 18 to 33 years (M=21.45, SD=2.36). Of the participants, 28 (30.8%) were first year Bachelor students, 31 (34.1%) were second year Bachelor students, 29 (34.1%) were third year Bachelor students, and one participant (1.1%) was a Master student. After the participants clicked on a link to the survey, they were informed about the study and asked for their informed consent. Data collection was set up through the survey software Qualtrics. All questionnaires were administered in German. After completing the survey, participants were redirected to the Sona-Systems website (if they joined the survey over their website) or they could close the page.

### Measures

**Meaning in Life.** To assess the three dimensions of meaning in life, The 11-item three dimensional meaning in life scale (3DM) was used. Coherence consists of four items, for example: "I can comprehend what my life is all about.". Purpose, which too consists of four

items, such as: "I pursue one or more big purposes in my life.". And significance, with three items like "My personal existence is significant.". They are rated on a 7-point scale ranging from 1 (*not at all true*) to 7 (*very true*). A higher mean score indicates a greater sense of meaning in a person's life. For the current study, the English questionnaire was translated into German and subsequently back translated into German by two bilingual speakers. The translational process and psychometric properties of the scale are described in the results section.

In addition, The Meaning in Life Questionnaire (MLQ) (Steger, Frazier, Oishi and Kaler, 2006) was used to assess both the presence of, and the search for meaning in life. The scale consists of 10 items that are separated into two subscales about search (MLQ-S) and presence (MLQ-P) for meaning in life. The presence subscale consists of five items such as "I have discovered a satisfying life purpose.". The search subscale also consists of five items, for example "I am seeking a purpose or mission for my life." The scale is rated on a 7-point scale ranging from 1 (*Absolutely untrue*) to a 7 (*Absolutely true*). Higher total scores for the presence subscale indicate a higher presence of meaning in life and higher total scores for the search subscale indicate a heightened search for meaning in life. The Cronbach's alphas of all measurements used can be found in the results section.

**Mental Well-being.** The Mental Health Continuum-Short Form (MHC-SF) measures positive mental well-being (Keyes et al., 2008). The scale consists of 14 items that belong to three sub facets that represent mental well-being. Emotional (hedonic) well-being consists of three items such as "During the past month, how often did you feel happy". Social (eudaimonic) well-being consists of five items, for example "During the past month, how often did you feel that the way our society works made sense to you". And psychological (eudaimonic) well-being with six items such as "During the past month, how often did you feel that your life has a sense of direction or meaning to it". They are rated on a 6-point scale ranging from 1 (*never*) to 6 (*every day*), and higher total scores mean a greater level of positive well-being.

**Perceived Stress.** To measure perceived stress, the Perceived Stress scale (PSS) was used (Cohen, Kamarck and Mermelstein, 1983). It consists of 10 items such as "In the last month, how often have you been upset because of something that happened unexpectedly?" and "In the last month, how often have you felt nervous and stressed?" rated on a 5-point Likert scale ranging from 0 (*never*) to 4 (*very often*). Higher total scores indicate higher perceived stress, with scores above 27 (to 40) being considered as high perceived stress.

**Data Analysis**

The program Statistical Package for the Social Sciences (SPSS) version 28 was used to analyze the data, with a significance level of .05. Reverse items in the PSS-10 were recoded. To check the psychometric properties of the 3DM, the means, the SD and the skewness and kurtosis values of each item were tested. For skewness and kurtosis, values between -1 and 1 were deemed as excellent and values between -2 and 2 were deemed as acceptable (Hair et al., 2022). Cronbach's alpha was calculated to test the reliability of the scale. Values can range between 0 to 1 and any values ≥.70 were deemed as acceptable and values ≥.80 as good (George & Mallery, 2003 as cited in Gliem, & Gliem, 2003). Furthermore, for the 3DM each items' histogram and boxplot were inspected. Pearson correlations between the three subscales were calculated to assess their relatedness.

Then, a confirmatory factor analysis (CFA) was performed with maximum likelihood (ML) using the lavaan package in RStudio version 576 to confirm the underlying factor structure of the 3DM found in Martela and Steger's (2022) study in the German-translated version. With the ML-method, indicators of a good model fit are a Tucker Lewis Index (TLI) and a Comparative Fit Index (CFI) close to .95, a score of < .08 or < .05 for the root mean square error of approximation (RMSEA) and a value of < .08 for the Standardized Root Mean Square Residual (SRMR) (Hu & Bentler, 1999). Further, a CFA with one factor was performed to see whether the fit would be better compared to a three factor CFA.

To assess convergent validity, correlations between the three subscales of the 3DM and another well-established meaning in life scale, the MLQ, were examined with Pearson correlation coefficients. To assess the divergent validity, Pearson correlations with mental well-being (MHC-SF) and perceived stress (PSS) were calculated due to the close relation between meaning in life and mental health.

Finally, descriptive statistics such as means and standard deviations for each item and for the three subscales in total were calculated for an overview of coherence, purpose and significance among university students' lives.

## Results

For the translation of the 3DM scale, a variety of references and sources such as the

Duden, Brockhaus, Wortbedeutung.info and Pons were used in order to translate the adequate word meanings, everyday expressions and scientific definitions of individual words/word formations/phrases as best as possible. In addition, three other native speakers were consulted. The next step was to back-translate to English via a professional fluent in both English and German. This was done to ensure the quality of content equivalence and to avoid measurement errors of a linguistic nature and thus to achieve a higher validity of the instrument. The final German items can be found in the appendix (Appendix A).

**Psychometric Properties of the individual items**

The means of the individual items ranged between 4.41 (item 11) to 5.46 (item 5) with standard deviations ranging between 1.13 (item 2) and 1.59 (item 10) (Table 1). For both skewness and kurtosis, most values were within the excellent range. However, the kurtosis values for item 2 and 5 were above 1.0 (1.19 and 1.83 respectively) and regarding skewness, the value for item 2 was below -1.0 (-1.13), thus deemed acceptable. Additionally, considering the sample size, the histograms of each item showed mostly normal distributions. The Cronbach's alpha for the full scale showed good internal consistency with $\alpha = .88$. Examining the three factors separately, coherence and purpose both showed good internal consistency ($\alpha = .83$ and .84 respectively), while significance showed acceptable internal consistency ($\alpha = .75$). The Cronbach's alpha values would not increase by deleting any of the items.

The correlations between the three subscales ranged between $r = .40$ and $r = .70$, with low correlations between the dimensions coherence and purpose, and purpose and significance, and moderate correlations between significance and coherence (Table 2) (Mukaka, 2012).

**Table 1** *Descriptive Statistics of the individual items on the 3DM scale*

| 3DM subscale | Item | Mean Statistic | Std. Deviation Statistic | Skewness Statistic | Skewness Std. Error | Kurtosis Statistic | Kurtosis Std. Error |
|---|---|---|---|---|---|---|---|
| Coherence | 1. Most things happening in my life do make sense. | 5.10 | 1.14 | -.65 | .25 | -.27 | .50 |
| | 2. By and large, I am able to understand the world around me. | 5.36 | 1.13 | -.99 | .25 | **1.18** | .50 |
| | 3. I can comprehend what my life is all about. | 5.02 | 1.25 | -.69 | .25 | -.02 | .50 |
| | 4. I can easily make sense of my life. | 4.79 | 1.43 | -.52 | .25 | -.43 | .50 |
| Purpose | 5. I pursue one or more big purposes in my life. | 5.46 | 1.23 | **-1.13** | .25 | **1.83** | .50 |
| | 6. I am highly committed to certain core goals in my life. | 5.08 | 1.28 | -.59 | .25 | -.12 | .50 |
| | 7. I have a set of core goals that give my life a sense of direction. | 5.22 | 1.17 | -.73 | .25 | .24 | .50 |
| | 8. My daily activities are consistent with a broader life purpose. | 4.67 | 1.35 | -.59 | .25 | .12 | .50 |
| Significance | 9. My life is full of value. | 5.12 | 1.43 | -.93 | .25 | .74 | .50 |
| | 10. My personal existence is significant. | 4.89 | 1.58 | -.83 | .25 | .23 | .50 |
| | 11. Every day I experience the sense that life is worth living. | 4.41 | 1.47 | -.20 | .25 | -.33 | .50 |
| Coherence | Items 1 - 4 | 20.27 (5.06) | 4.06 | -.45 | .25 | .14 | .50 |
| Purpose | Items 5 - 8 | 20.43 (5.10) | 4.15 | -.59 | .25 | .44 | .50 |
| Significance | Items 9 - 11 | 14.42 (4.80) | 3.69 | -.60 | .25 | .51 | .50 |

*Numbers marked bold show values outside of the acceptable range.*

**Internal factor structure**

When testing a three factor model, the fit measures of the CFA showed a CFI of .95 and a TLI of .93, indicating a good fit. The RMSEA has an acceptable value of .08, which does not fulfill a close-fit but also not a poor-fit. By contrast, the SRMR has a good fit of .06 ($\chi^2$ ($df = 41$) = 63.4, CFI = .95, TLI = .93, RMSEA = .08, SRMR = .06).

To check whether the covariance among items could be better explained by a single factor, a one factor model with all 11 items was tested as well, which fit less well than the three factor model ($\chi^2$ ($df = 44$) = 155.73, CFI = .75, TLI = .69, RMSEA = .17, SRMR = .11).

**Convergent validity**

The correlation between the 3DM and the presence of meaning subscale (MLQ-P) of the MLQ was high $r = .87$ (Table 2). When examining the correlations between the presence of meaning subscale and the three factors of the 3DM, the correlations did not vary a lot, ranging from .60 (purpose) to .77 (significance). In contrast, the MLQ-S and the 3DM did not show any significant correlations.

**Divergent Validity**

The 3DM was positively correlated with mental well-being ($r = .69$) and negatively correlated with perceived stress ($r = -.50$). Bivariate correlations of purpose, coherence, and significance with mental well-being varied between .45 (purpose) and .68 (significance). Regarding the subscales of the MHC-SF, psychological well-being was most strongly, yet moderately correlated with the 3DM ($r=.68$) and emotional well-being the weakest, yet moderately ($r=.50$), with significance consistently having higher correlations with the subscales and purpose the lowest (Table 2). Perceived stress varied between -.49 (coherence) and -.26 (purpose). These results indicate that the constructs measured are related but still distinct from each other.

**Table 2** Correlation matrix between the 3DM and other measures

| | 3DM | Coh | Pur | Sig | MLQ-P | MLQ-S | MHC-SF | EWB | SWB | PWB | PSS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Meaning in Life | | | | | | | | | | | |
| Three dimensional meaning (3DM) | (.88) | | | | | | | | | | |
| - Coherence (Coh) | **.88**\*\* | (.83) | | | | | | | | | |
| - Purpose (Pur) | **.77**\*\* | .48\*\* | (.84) | | | | | | | | |
| - Significance (Sig) | **.83**\*\* | **.70**\*\* | .40\*\* | (.75) | | | | | | | |
| Presence of meaning (MLQ-P) | **.87**\*\* | **.77**\*\* | **.60**\*\* | **.77**\*\* | (.89) | | | | | | |
| Search for meaning (MLQ-S) | .02 | -.07 | .13 | -.03 | -.13 | (.89) | | | | | |
| 2. Mental well-being (MHC-SF) | **.70**\*\* | **.60**\*\* | .45\*\* | **.69**\*\* | **.77**\*\* | -.06 | (.89) | | | | |
| - Emotional wellbeing (EWB) | **.51**\*\* | **.51**\*\* | .26\* | **.50**\*\* | **.66**\*\* | -.28\*\* | **.80**\*\* | (.89) | | | |
| - Social wellbeing (SWB) | **.60**\*\* | .47\*\* | .41\*\* | **.63**\*\* | **.63**\*\* | -.03 | **.89**\*\* | **.60**\*\* | (.65) | | |
| - Psychological wellbeing (PWB) | **.69**\*\* | **.58**\*\* | .48\*\* | **.65**\*\* | **.73**\*\* | .07 | **.92**\*\* | **.61**\*\* | **.73**\*\* | (.83) | |
| 3. Perceived Stress (PSS) | -.50\*\* | -.50\*\* | -.27\* | -.47\*\* | -.44\*\* | .10 | -.49\*\* | **-.51**\*\* | -.39\*\* | -.41\*\* | (.76) |

*3DM* three dimensional meaning in life scale, *MLQ-P* subscale of the Meaning in Life Questionnaire measuring presence, *MLQ-S* subscale of the Meaning in Life Questionnaire measuring search, *MHC-SF* Mental Health Continuum – Short Form, *EWB* Emotional Well-Being subscale of the MHC-SF, *SWB* Social Well-Being subscale of the MHC-SF, *PWB* Psychological Well-Being subscale of the MHC-SF, *PSS* Perceived Stress Scale

Cronbach's Alphas' are in parentheses, Coefficients ≥ (-).50 are in bold

\*\*. Correlation is significant at the 0.01 level (2-tailed).

\*. Correlation is significant at the 0.05 level (2-tailed).

**Discussion**

The aim of this study was to translate the 3DM into German and to validate the scale by examining the psychometric properties, conducting a confirmatory factor analysis to test whether a three factor model is supported and testing convergent and divergent validity with mental health measures. Finally, the relationship between the 3DM and (mental health in) university students was tested.

Results demonstrated that the German translated 3DM can assess the three dimensions of meaning in life reliably. To answer the first hypothesis, the reliability ranged from acceptable to good for the 3DM as a whole and for the dimensions separately. Good reliability was found for the 3DM and the dimensions of coherence and purpose, and acceptable reliability for significance. Thus, the first hypothesis could not be rejected. However, the reliability was found to be slightly lower in this study compared to the reliability in study two and three of the original studies, but comparable to the reliability in their fourth study. In their fourth study, their aim was to further distinguish coherence, purpose and significance by presenting vignettes to participants that exaggerated one of the three dimensions (Martela & Steger, 2022). A possible explanation for the lower reliability, apart from the quality of translation, are the intercorrelations between the three dimensions found in this study. The correlations between the three dimensions are lower in this study than the ones found in the original study and when inter-item correlations increase, Cronbach's alpha also increases (What does Cronbach's alpha mean? | SPSS FAQ., n.d.). Further, high reliability >.90 might indicate redundancies in the item pool (Tavakol & Dennick, 2011).

Regarding the second hypothesis, results of the CFA demonstrated that a three factor model has good fit and is superior when compared to a one-factor model, thus suggesting that the 3DM measures meaning in life with three underlying factors. Only the RMSEA had a value of .08, which does not fulfill the requirements for a close fit. Since the other fit measures all showed a good fit, the higher value could be explained by the small sample size and low *df* which can lead to the RMSEA showing a false poor fitting model (Kenny, Kaniskan, & McCoach, 2015). Thus, the second hypothesis could not be rejected and provides support for a stable factor structure underlying the 3DM, a noted problem in previous studies using meaning in life measures (Steger et al., 2009).

Regarding the third hypothesis, this study tested the convergent validity with the 3DM

and its underlying dimensions by calculating correlations with the MLQ. Significant high correlations between the subscales and the MLQ-P support the assumption that the 3DM measures the concept meaning in life, with coherence and significance showing the high correlations to the MLQ-P and purpose displaying a moderate correlation. Thus, the third hypothesis could not be rejected. Comparing the 3DM and the MLQ, however, highlights the differences in measuring meaning in life across measures. One common critique regarding meaning in life measures has been their unidimensionality, as is the case for the MLQ-P, which prevents the possibility of drawing inferences about the underlying factors of meaning in life and their relationships to other constructs (George & Park, 2016).

Nonetheless, this does not negate the usefulness of other meaning in life measures. The MLQ, for example, measures the search for meaning, a concept that is not measured by the 3DM as demonstrated by the lack of significant correlations between the 3DM and its underlying dimensions with MLQ-S, which is an expected result in line with previous literature that details the distinctiveness between search for meaning and presence of meaning (Steger et al. 2006). Furthermore, Martela and Steger (2022) themselves state that the 3DM does not exclude the possibility of other underlying meaning in life dimensions. In fact, when comparing CFA results with mattering as either a subdimension along with significance or as a fourth dimension demonstrated superior results compared to only coherence, purpose and significance (Martela, & Steger, 2022). However, it has also been cautioned to not confuse sources of meaning with being a part of meaning in life, as has been the case with previous measures of meaning in life where sources of meaning have been misattributed as dimensions of meaning (Martela, & Steger, 2016; Morgan, & Farsides, 2009).

As for the fourth hypothesis, to test divergent validity, correlations between the 3DM, its underlying dimensions and the MHC-SF as well as the PSS were calculated. In previous studies, poor discriminant validity has been a point of critique for meaning in life measures due to high correlations between meaning in life and related constructs (Steger et al., 2009). In this study, the calculated correlations did not go above .70, at which point they are considered high (Mukaka, 2012). Instead, the correlations ranged from moderate to neglible while still being significant. Thus, the fourth hypothesis could not be rejected and the 3DM and the dimensions coherence, purpose and significance showed discriminant validity when examining it with the MHC-SF and the PSS. In this study, the highest positive relationships were found between significance and

underlying mental well-being factors, while purpose had the lowest correlations. These results demonstrate that the three dimensions each have differing relationships with mental well-being constructs, thus making it important to further research these differences for which the 3DM is a valid tool to help uncover these distinctions.

Finally, high correlations between coherence and purpose are a common occurrence in scales measuring both coherence and purpose, such as the Multidimensional Existential Meaning Scale by George and Park (2017), which had high correlations above .70, similarly to the study by Martela and Steger (2022) with correlations above .73. In this study however, the correlation between coherence and purpose was .48, which indicate a moderate and thus lower correlation. Similarly, purpose and significance have a correlation of .40, and only coherence and significance have a similar correlation ($r$=.70) to that of the original study ($r$=.75). Whether this is caused by small sample size, the translation or the target group is unknown, though previously done studies with undergraduate students have shown high correlations between coherence and purpose before (George, & Park, 2017).

**Strengths and Limitations**

This study is the first that translated the 3DM into German and also the first that examined its psychometric properties, factor structure and validity apart from the original studies. Moreover, the participants in this study are university students, a population that has not been exclusively examined with the 3DM.

However, the study has several limitations as well. First, the sample size of this study was too small for the data analyses conducted. the sample size did not reach the requirements of 2 to 20 participants per item (22-220 participants) with a minimum of 100, nor for the CFA which requires n>200, (Anthoine et al., 2014). Second, while this study examined a new population, it consists of German students studying at a Dutch university. Thus, these results might not be generalizable to German students studying at German universities. Further, a majority of the participants were female and while evenly distributed among the three years of the Bachelor, Master students were barely represented. Third, this was a cross-sectional study examining meaning in life at one point in time, thus not allowing the drawing of inferences of how meaning in life as measured by the 3DM evolves over time. As meaning in life has been found to be stable over time, testing retest-reliability would further contribute to the examination of the 3DM. Further, the results of this study are correlational and causal relationships were not tested in this

study, thus they only clarify associations. Despite these limitations, this study shows that the 3DM by Martela and Steger (2022) can be an effective tool to measure meaning in life and provides a German translation of their questionnaire.

**Future Directions**

For future directions, a larger sample size as well as a more representative sample of German university students could give more insight into the validity and generalizability of the (translated) 3DM. Furthermore, it might be beneficial to take into consideration cultural differences, as these could be a possible explanation for the variances in correlations as well. And finally, the inclusion of other scales would enable to further investigate the relationships between the three dimensions and mental well-being.

**Conclusion**

The 3DM was developed by Martela and Steger (2022) to assess meaning in life and the three underlying dimensions of coherence, purpose and significance. Initial testing of this scale showed promising results regarding the psychometric properties and validity. The current paper aimed to contribute to this research by providing a German translation of the 3DM and testing its psychometric properties, factor structure as well as internal and external validity. This study found similarly good results, an indicator that the (German-translated) 3DM is a scale that is able to capture the three dimensions of meaning in life. Using a scale that measures meaning in life three-dimensionally such as the 3DM opens up the possibility of more detailed research into the relationship between meaning in life and mental well-being, creating new avenues of research about meaning in life.

# References

Anthoine, E., Moret, L., Regnault, A., Sébille, V., & Hardouin, J. B. (2014). Sample size used to validate a scale: a review of publications on newly-developed patient reported outcomes measures. *Health and quality of life outcomes*, *12*(1), 1-10.

Antonovsky, A. (1993). The structure and properties of the sense of coherence scale. *Social science & medicine*, *36*(6), 725-733.

Battista, J., & Almond, R. (1973). The development of meaning in life. *Psychiatry*, *36*(4), 409-427.

Bauer-Wu, S., & Farran, C. J. (2005). Meaning in life and psycho-spiritual functioning: A comparison of breast cancer survivors and healthy women. *Journal of Holistic Nursing*, *23*(2), 172-190.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of health and social behavior*, 385-396.

Costanza, A., Amerio, A., Aguglia, A., Serafini, G., & Amore, M. (2020). Meaning in life and demoralization constructs in light of the interpersonal theory of suicide: A trans-theoretical hypothesis for a cross-sectional study. *Psychology research and behavior management*, *13*, 855.

Crumbaugh, J. C., & Maholick, L. T. (1964). An experimental study in existentialism: The psychometric approach to Frankl's concept of noogenic neurosis. *Journal of clinical psychology*, *20*(2), 200-207.

Damásio, B. F., & Koller, S. H. (2015). Meaning in Life Questionnaire: Adaptation process and psychometric properties of the Brazilian version. *Revista Latinoamericana de Psicología*, *47*(3), 185-195.

Davies, G., Klaassen, D., & Längle, A. (2014). Purpose in life test. *Encyclopedia of Quality of Life and Well-Being Research. http://link. springer. com/referencework/10.1007% 2F978-94-007-0753-5 Accessed*, *3*(05), 2016.

Frankl, V. E. (1963). *Man's search for meaning: An introduction to logetheraphy*. Boston, MA: Beacon press.

Gallagher, M. W., Lopez, S. J., & Preacher, K. J. (2009). The hierarchical structure of well-being. *Journal of personality*, *77*(4), 1025-1050.

García-Alandete, J. (2015). Does meaning in life predict psychological well-being?. *The European Journal of Counselling Psychology*, *3*(2), 89-98.

George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update (4th ed.).* Boston: Allyn & Bacon.

George, L. S., & Park, C. L. (2016). Meaning in life as comprehension, Purpose, and Mattering: Toward integration and new research questions. *Review of General Psychology*, 20(3), 205–220. https://doi.org/10.1037/gpr0000077

Glaw, X., Kable, A., Hazelton, M., & Inder, K. (2017). Meaning in life and meaning of life in mental health care: An integrative literature review. *Issues in mental health nursing*, *38*(3), 243-252.

Gliem, J. A., & Gliem, R. R. (2003). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. Midwest research-to-Practice Conference in Adult, Continuing, and community education.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) (3 ed.).* Thousand Oaks, CA: Sage.

Hicks, J. A., & King, L. A. (2009). Meaning in life as a subjective judgment and a lived experience. *Social and Personality Psychology Compass*, *3*(4), 638-653.

Ho, M. Y., Cheung, F. M., & Cheung, S. F. (2010). The role of meaning in life and optimism in promoting well-being. *Personality and individual differences*, *48*(5), 658-663.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal*, *6*(1), 1-55.

Keyes, C. L. M., Wissing, M., Potgieter, J. P., Temane, M., Kruger, A., & van Rooy, S. (2008). Evaluation of the mental health continuum-short form (MHC-SF) in setswana-speaking south africans. *Clinical Psychology and Psychotherapy, 15(3)*, 181-192.

Lamers, S. M. A., Westerhof, G. J., Bohlmeijer, E. T., ten Klooster, P. M., & Keyes, C. L. M. (2011).

Lampert, T., Schmidtke, C., Borgmann, L. S., Poethko-Müller, C., & Kuntz, B. (2018). Subjektive Gesundheit bei Erwachsenen in Deutschland.

Lavigne, K. M., Hofman, S., Ring, A. J., Ryder, A. G., & Woodward, T. S. (2013). The personality of meaning in life: Associations between dimensions of life meaning and the Big Five. *The Journal of Positive Psychology*, *8*(1), 34-43.

Martela, F., & Steger, M. F. (2016). The three meanings of meaning in life: Distinguishing coherence, purpose, and significance. *The Journal of Positive Psychology*, *11*(5), 531-545. DOI: 10.1080/17439760.2015.1137623

Martela, F., & Steger, M. F. (2022). The role of significance relative to the other dimensions of meaning in life–an examination utilizing the three dimensional meaning in life scale (3DM). *The Journal of Positive Psychology*, 1-21.

Metz, T. (2013). *Meaning in life*. OUP Oxford.

Morgan, J., & Farsides, T. (2009). Measuring meaning in life. *Journal of happiness Studies*, *10*(2), 197-214.

Morgan, J., & Farsides, T. (2009). Measuring meaning in life. *Journal of happiness Studies*, *10*(2), 197-214.

Mukaka, M. M. (2012). A guide to appropriate use of correlation coefficient in medical research. *Malawi medical journal*, *24*(3), 69-71.

Reker, G. T. (2000). Theoretical perspective, dimensions, and measurement of existential meaning. *Exploring existential meaning: Optimizing human development across the life span*, 39-55.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of personality and social psychology*, *57*(6), 1069.

Steger, M. F. (2007). Structural validity of the life regard index. *Measurement and Evaluation in Counseling and Development*, *40*(2), 97-109.

Steger, M. F. (2012). Making meaning in life. *Psychological Inquiry*, *23*(4), 381-385.

Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The meaning in life questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology, 53*, 80–93.

Steger, M. F., Oishi, S., & Kashdan, T. B. (2009). Meaning in life across the life span: Levels and correlates of meaning in life from emerging adulthood to older adulthood. *The journal of positive psychology*, *4*(1), 43-52. DOI: 10.1080/17439760802303127

Sumi, K. (2019). The Japanese translation of the meaning in life questionnaire-short form:

Reliability and construct validity. *Psychology*, *10*(16), 2266.

Travezaño-Cabrera, A., Vilca, L. W., Quiroz-Becerra, J., Huerta, S. L., Delgado-Vallejos, R., &
    Caycho-Rodríguez, T. (2022). Meaning of life questionnaire (MLQ) in peruvian
    undergraduate students: study of its psychometric properties from the perspective of
    classical test theory (CTT). *BMC psychology*, *10*(1), 206.

## Appendices

**Appendix A -** German translation of the 3DM

| Original | Final version |
|---|---|
| ***Coherence*** | ***Kohärenz*** |
| Most things happening in my life do make sense. | Die meisten Dinge, die in meinem Leben passieren, ergeben einen Sinn. |
| By and large, I am able to understand the world around me. | Im Großen und Ganzen bin ich in der Lage, die Welt um mich herum zu verstehen. |
| I can comprehend what my life is all about. | Ich kann nachvollziehen, worum es in meinem Leben geht. |
| I can easily make sense of my life. | Es fällt mir leicht, meinem Leben einen Sinn zu geben. |
| ***Purpose*** | ***Zielsetzung*** |
| I pursue one or more big purposes in my life. | Ich verfolge ein oder mehrere große Ziele in meinem Leben. |
| I am highly committed to certain core goals in my life. | Ich engagiere mich stark für gewisse wichtige Ziele in meinem Leben. |
| I have a set of core goals that give my life a sense of direction. | Ich habe eine Reihe von wichtigen Zielen, die meinem Leben eine bestimmte Richtung geben. |
| My daily activities are consistent with a broader life purpose. | Meine täglichen Aktivitäten stehen im Einklang mit einem höheren Lebensziel. |
| ***Significance*** | ***Bedeutsamkeit*** |
| My life is full of value. | Mein Leben ist reich an Wert. |
| My personal existence is significant. | Meine persönliche Existenz ist bedeutsam. |
| Every day I experience the sense that life is worth living. | Jeder Tag fühlt sich lebenswert an. |

# Appendix B – Histogram of items 2 and 5
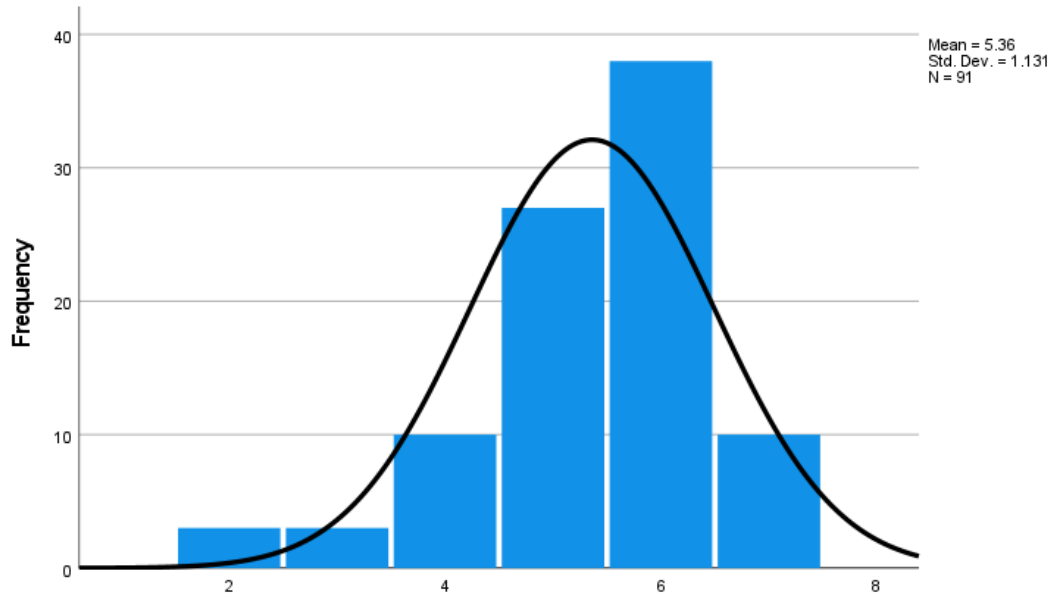


Mean = 5.36
Std. Dev. = 1.131
N = 91

**Bitte lesen Sie sich die folgenden Aussagen sorgfältig durch und überlegen Sie, wie die Aussagen sich auf Ihr eigenes Leben beziehen. - 2. Im Großen und Ganzen bin ich in der Lage, die Welt um mich herum zu verstehen.**
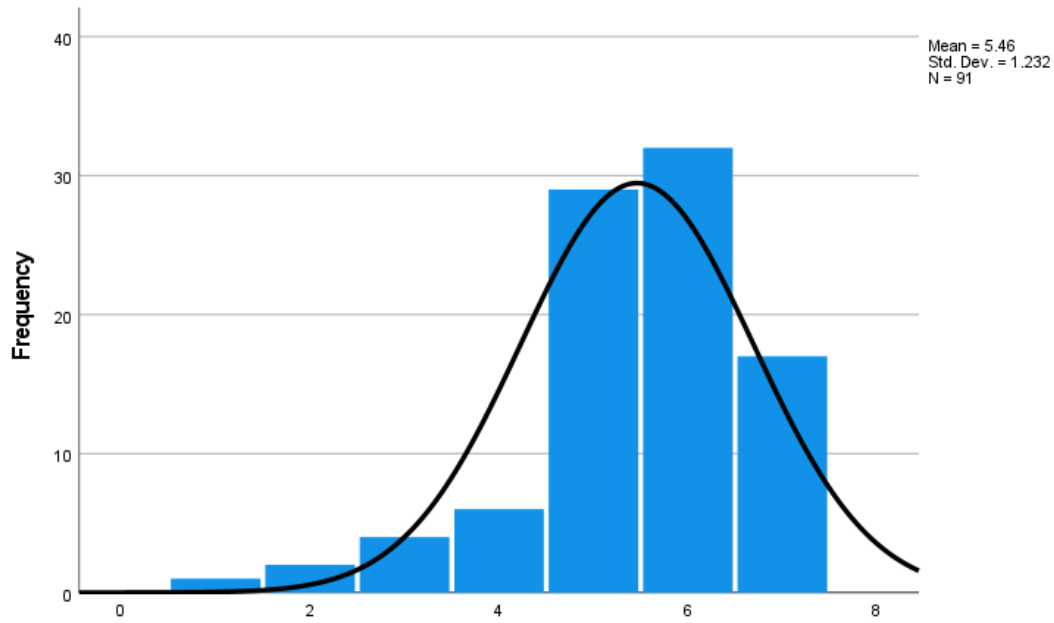


Mean = 5.46
Std. Dev. = 1.232
N = 91

**Bitte lesen Sie sich die folgenden Aussagen sorgfältig durch und überlegen Sie, wie die Aussagen sich auf Ihr eigenes Leben beziehen. - 5. Ich verfolge ein oder mehrere große Ziele in meinem Leben.**