Revealing the Heterogeneity of Meaning in Life and Its Relationship with Creativity Among Youth: A Latent Profile Analysis Study

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Abstract

The sense of meaning in life is crucial for the exploration and affirmation of self-identity among young individuals. Creativity, as a positive attribute, may influence an individual's awareness and experience of meaning in life. However, previous studies have often utilized variable-centered approaches, potentially masking significant individual differences in the sense of meaning in life. This study employs a person-centered latent profile analysis to identify latent categories of meaning in life development, examine their demographic distribution characteristics, and explore the relationship between creativity and different types of meaning in life. The study surveyed 1,023 participants. Results indicate that the latent profile analysis identified four distinct types of meaning in life: General Meaning group, Early Closure of Meaning group, Meaning Seeking group, and High Meaning group. Significant differences were found in the distribution of academic grades among these groups (p=0.009). Higher levels of creativity were associated with a greater likelihood of being classified into the High Meaning group (OR=5.123). These findings reveal substantial heterogeneity in the sense of meaning in life across groups and provide targeted insights for enhancing the sense of meaning in life among youth.

Full Text

Preamble

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Abstract

The sense of meaning in life is crucial for the exploration and affirmation of self-identity among young individuals. Creativity, as a positive attribute, may influence an individual's awareness and experience of meaning in life. However, previous studies have often utilized variable-centered approaches, potentially masking significant individual differences in the sense of meaning in life. This study employs a person-centered latent profile analysis to identify latent categories of meaning in life development, examine their demographic distribution characteristics, and explore the relationship between creativity and different types of meaning in life. The study surveyed 1,023 participants. Results indicate that the latent profile analysis identified four distinct types of meaning in life: General Meaning group, Early Closure of Meaning group, Meaning Seeking group, and High Meaning group. Significant differences were found in the distribution of academic grades among these groups (p=0.009). Higher levels of creativity were associated with a greater likelihood of being classified into the High Meaning group (OR=5.123). These findings reveal substantial heterogeneity in the sense of meaning in life across groups and provide targeted insights for enhancing the sense of meaning in life among youth.

Keywords: Meaning in Life; Creativity; Latent profile analysis; Demography

Introduction

Meaning in life is defined as an individual's understanding and recognition of the essence and significance of their existence, characterized by a high-value subjective experience when life is perceived as being understood and guided by meaningful goals (George & Park, 2016; Steger et al., 2006). This concept encompasses two key components: (1) Meaning Presence—the perception of one's life as meaningful, reflecting the extent to which an individual feels that their life has inherent significance; and (2) Meaning Search—the pursuit of a sense of meaning in life, indicating the degree to which an individual desires to find meaning in their existence (Steger et al., 2006). Previous research has shown that perceptions of meaning presence and the search for meaning can predict

an individual's psychological well-being (Hooker et al., 2018). For young individuals, the awareness and pursuit of meaning in life are crucial stages in the development of self-identity, and a clear sense of meaning and goals is associated with higher levels of well-being and the formation of a robust self-identity (Kemph, 1969; Shek et al., 2019).

In the Chinese youth population, the deficiency of meaning in life is a significant issue. For instance, the release of the 2022 National Depression Blue Book, involving multiple authoritative institutions in China, has sparked intense discussions on national mental health issues. The report highlights that individuals aged 18-24 constitute 35.32% of those diagnosed with depression, with 50% of these patients being current students (Sun, 2022). Among those with depression, a common sentiment expressed is: "Life seems to lack meaning." Additionally, phenomena such as "slack culture" and "hollow illness" prevalent among Chinese youth have recently attracted media attention (Wang, 2023). This experience of meaninglessness is not isolated; even within some of China's top universities, there are instances of students struggling with a loss of meaning in life (Zemira, 2021). Therefore, investigating the characteristics and attributes of meaning in life among contemporary youth is of significant social importance and may provide valuable insights for addressing psychological crises among young individuals.

Previous research on the characteristics of meaning in life has predominantly relied on total scale scores or traditional numerical cut-off points. This approach assumes that individuals with identical scores exhibit similar or comparable behavioral patterns and are categorized based on sample average levels (Williams & Kibowski, 2015). However, it is crucial to recognize that this variable-centered methodology overlooks differences in responses to individual scale items, failing to systematically capture individual developmental variations. Additionally, existing studies have indicated the presence of diverse meaning in life patterns among high school students (Chi et al., 2013; Ma et al., 2023). To address these limitations, this study employs a person-centered latent profile analysis (LPA) method to capture the heterogeneity within the group and examine different patterns and individual differences in meaning in life among Chinese youth.

Creativity is defined as the ability or trait of generating new ideas, discovering, and creating novel things (Runco & Jaeger, 2012). As a positive attribute, creativity has often been studied as a desired outcome variable to explore ways to enhance it (Kaufman, 2018). However, recent research has begun to investigate creativity as an independent variable and its positive impact on other psychological qualities (Tang et al., 2021). For example, Frankl posits that the pursuit of creative values is a significant pathway for individuals to discover meaning in life, suggesting that engaging in creative work or experiences can enhance one's awareness of life's meaning (Frankl et al., 2015). The Temporal Model also suggests that reflecting on past creative experiences may help individuals integrate and understand their life experiences more coherently, thereby enhancing the overall sense of meaning (Kaufman, 2018). For instance, during the pandemic,

many creative challenges emerged online in China, with individuals participating in these challenges as a way to cope with the meaninglessness induced by isolation (Feng, 2020).

Although numerous studies indicate that creativity may benefit an individual's sense of meaning in life, the relationship between creativity and different patterns of meaning in life remains unclear. The differential impact of creativity on various meaning in life patterns has not been thoroughly investigated. Therefore, this study, based on latent profile analysis, examines the relationship between creativity and different categories of meaning in life.

Previous research has shown that during the university years in China, the reduction in supervision from both school and family leads to rapid development of independent social and psychological maturity among students (Geng et al., 2018). Consequently, students at different academic levels may exhibit psychological and behavioral differences. Variable-centered studies have indicated that the perception and pursuit of meaning in life may vary across different academic years (Li et al., 2019). Additionally, significant gender differences have been found in life goals (Xi et al., 2018). These findings suggest notable demographic variations in the sense of meaning in life. However, what remains unclear is the demographic distribution characteristics of different meaning in life patterns when analyzed using a person-centered approach. This study aims to fill this gap by exploring the demographic distribution of various patterns of meaning in life.

Overall, our study first examines the potential different patterns of meaning in life that may exist within the population and attempts to describe the distribution characteristics of these patterns across demographic variables. Secondly, we aim to explore the relationship between different categories of meaning in life and levels of creativity. Therefore, our research seeks to address the following questions: (1) Identify the latent different patterns of meaning in life development among Chinese youth; (2) Examine the demographic distribution characteristics of different patterns of meaning in life; (3) Explore the relationship between creativity and different patterns of meaning in life.

Materials and Methods

Participants and Procedures

In July 2024, we recruited 1,184 university students from a comprehensive university in China as participants. All participants completed the online survey via Questionnaire Star under the guidance of the principal investigator in the classroom. Upon completing the survey, participants received a small gift. It is important to note that participants were informed of the compensation amount only after completing the survey. All participants voluntarily participated in the survey and signed informed consent forms before filling out the questionnaire. To ensure data quality, we established the following exclusion criteria: (1) survey completion time greater than 10 minutes; (2) responses with half or

more identical answers across the total scale length (Curran, 2016); (3) failure to pass the deception detection items within the survey. After excluding data that did not meet the analysis criteria, 1,023 valid responses (518 male and 505 female) were included in the final analysis (see Table 1 for detailed demographics). This study was approved by the Ethics Committee of Anhui Science and Technology University.

Measures

Meaning in Life. The Chinese version of the Meaning in Life Questionnaire (MLQ), revised by Chinese scholars in 2010, was used to assess individuals' meaning in life (Liu & Gan, 2010). This scale is based on the Meaning in Life Questionnaire (MLQ) developed by Steger et al. (2006). The scale uses a 7-point Likert scoring system (1 = absolutely untrue, 7 = absolutely true), with item 2 being reverse-scored. It comprises two dimensions: "Presence of Meaning" (MLQ-presence; items 2, 6, 7, 8, and 9) and "Search for Meaning" (MLQ-seek; items 1, 3, 4, and 5). The total score of all items was used to evaluate the individual's sense of meaning in life, with higher scores indicating a greater sense of meaning. In this study, the Cronbach's alpha was 0.827.

Creativity. In this study, the Runco Ideational Behavior Scale (RIBS) was used to measure participants' tendencies toward creative behavior in daily life (Runco et al., 2001). The RIBS is a self-report scale that accurately reflects individuals' use of innovative ideas or thoughts, and its translated version has demonstrated good local reliability and validity in China (Runco et al., 2011; Wang et al., 2022). The scale consists of 24 items scored on a 5-point Likert scale (1 = never to 5 = very frequently), with no reverse-scored items. The average score of all items was used as an indicator of individual creativity, with higher scores indicating higher levels of creativity. In our study, the Cronbach's alpha was 0.922.

Statistical Analysis

In this study, data entry and organization were performed using SPSS 26.0. Descriptive statistics were conducted on sample data and all variables, including the calculation of Pearson and Kendall correlation coefficients and R*C contingency table analysis (if more than 20% of the cells had expected values less than 5, the Fisher's exact test chi-square value was reported; otherwise, the Pearson chi-square value was reported). Latent profile analysis of meaning in life was conducted using Mplus 8.3. Single-factor analysis of variance (ANOVA) or unpaired t-tests (two-tailed) were performed using GraphPad Prism version 9.5.0 (GraphPad Software Inc.). The Shapiro-Wilk test was used to assess normal distribution, and Levene's test was used to assess homogeneity of variance. If the dataset conformed to a normal distribution but variances were unequal, a single-factor ANOVA with Geisser-Greenhouse correction was used; if the dataset did not pass normality and homogeneity tests, the non-parametric Kruskal-Wallis test was used. For multiple comparisons in ANOVA, the LSD post-hoc test was

used for parametric tests, while Dunn's multiple comparisons test was used for non-parametric tests following the Kruskal-Wallis test.

Results

Testing for Common Method Bias

To rule out potential common method bias that could confound the interpretation of the data, this study employed Harman's single-factor test by including all items from the scales in an exploratory factor analysis. The results yielded five factors with eigenvalues greater than 1, with the first common factor accounting for 29.85% of the variance, which is below the 40% critical threshold (Podsakoff et al., 2003; Zhou & Long, 2004). Therefore, no significant common method bias was detected in this study.

Descriptive Statistics and Correlation Analyses

Table 2 presents the correlation analysis among the variables in this study. The results indicate a positive correlation between creativity and meaning in life ($r=0.35$, $p<0.01$), suggesting that individuals with higher creativity scores also tend to score higher on meaning in life. Additionally, the data show that both grade ($r=0.07$, $p<0.01$) and age ($r=0.07$, $p<0.05$) are positively correlated with meaning in life.

Latent Profile Analysis of Meaning in Life

LPA was conducted using the scores of individual items from the Meaning in Life Questionnaire, with the number of model classes ranging from 1 to 6 to observe changes in model fit indices. According to existing research recommendations (Hipp & Bauer, 2006; Nylund et al., 2007; Preston et al., 2022), the following indices were used to determine the number of profiles: (1) Relative fit indices including AIC (Akaike Information Criteria), BIC (Bayesian Information Criteria), and aBIC (Adjusted BIC), where lower values indicate better model fit; (2) Entropy, which reflects the credibility of the classification, with higher values being preferable (an entropy value of at least 0.80 is required, with Entropy$ $0.80 indicating that classification accuracy exceeds 90%); (3) The Lo-Mendell-Rubin test (LMRT) and the Bootstrapped Likelihood Ratio Test (BLRT), which are used to compare differences between models with adjacent numbers of classes (significant results suggest that the k-class model fits better than the k-1 class model, with BLRT generally preferred over LMRT); and (4) Each sub-group should comprise at least 5% of the total sample. Although these indices are the primary criteria for determining the number of latent profiles, the final number of profiles and their interpretation should still be considered in the context of the actual data (Mun et al., 2008).

Table 3 provides detailed information on the model fit indices for different latent profiles of meaning in life. The results indicate that as the number of profiles

increases from 1 to 6, AIC, BIC, and aBIC all decrease sequentially, and Entropy remains above 0.8, suggesting good precision across all models. Notably, when the number of profiles is 4, the LMRT does not show a significant difference. However, at this number of profiles, Entropy reaches its maximum value of 0.90. Considering the original items of the scale, it was observed that the four-profile solution provides clear differentiation in meaning and does not include any categories with less than 5% of the sample. Therefore, this study concludes that the optimal model for classifying meaning in life is into four categories.

Subsequently, based on the original items of the Meaning in Life Questionnaire, we observed significant score differences and meaningful distinctions among the four profiles. As shown in Figure 1 [Figure 1: see original paper], Profile 1 has scores at a moderate level across all items of the original scale, thus it is designated as the General Meaning group (GM). Profile 2 scores low on the meaning-seeking dimension but high on the meaning-presence dimension, hence it is named the Early Closure of Meaning group (ECM). Conversely, Profile 3 scores high on the meaning-seeking dimension but low on the meaning-presence dimension, and is therefore termed the Meaning Seeking group (MS). Lastly, Profile 4 has high scores across all items on the original scale, and is designated as the High Meaning group (HM). Figure 2 [Figure 2: see original paper] further illustrates the distribution of scores across the nine items of the original scale for the four meaning in life groups.

Demographic Characteristics of Different Types of Meaning in Life

As shown in Table 4 , this study further examines the demographic characteristics associated with different types of meaning in life. The results of the cross-tabulation analysis indicate that gender, age, degree, and whether the participant is an only child are distributed relatively evenly across the GM, ECM, MS, and HM groups, with no significant differences. However, there is a significant variation in the distribution of meaning in life types by grade. Specifically, more than half (50.85%) of first-year students belong to the GM group. As students progress through their grades, the distribution shifts to a more balanced representation between the GM and HM groups. Regardless of the grade level, ECM and MS groups consistently represent only a small proportion.

Subsequently, this study employed multinomial logistic regression to further examine the relationships between various demographic variables and types of meaning in life. Using the GM group as the reference category, the analysis investigated the predictive effects of gender, grade, age, degree, and whether the participant is an only child on the ECM, MS, and HM groups (see Table 6 for details). The results indicate that, compared to undergraduate and graduate students, those with an associate degree are less likely to be classified into the HM group (OR=0.280, $p<0.05$). However, no significant predictive effects were found for other demographic variables.

The Relationship Between Creativity and Meaning in Life

This study employed ANOVA to examine the relationship between creativity and different types of meaning in life, with the results detailed in Table 5 . The analysis revealed significant differences in creativity tendencies across the different meaning in life groups ($F=39.86$, $p<0.001$). Post-hoc tests showed that the HM group exhibited the highest creativity tendencies, whereas the ECM group had the lowest creativity scores. Additionally, the MS group demonstrated higher creativity levels compared to the GM group.

Furthermore, the results of the multiple logistic regression analysis indicated that, compared to the GM reference group, individuals with higher creativity scores were more likely to be classified into the MS ($OR=3.203$, $p<0.001$) and HM groups ($OR=5.123$, $p<0.001$). The likelihood of being classified into the HM group was notably higher than that for the MS group. Figure 3 [Figure 3: see original paper] provides a visual representation of the logistic regression results for the HM group.

Discussion

Four Latent Profiles of Meaning in Life

This study adopts a person-centered approach to explore the different latent profiles of meaning in life among Chinese youth. Based on the LPA indicators and comprehensive considerations, our findings suggest that the meaning in life of Chinese youth can be categorized into four distinct types: General Meaning, Early Closure of Meaning, Meaning Seeking, and High Meaning.

Erikson posited that one crucial factor in meaning in life is whether individuals perceive themselves as important and see their past, present, and future as continuous and unified (Niu & Guo, 2021). Building on Erikson's work, Marcia developed the theory of self-identity, which categorizes the development of identity into four types based on exploration and commitment (Guo, 2003; Marcia, 1980). The results of our profile analysis of meaning in life among Chinese youth align with Marcia's self-identity theory. Thus, we referred to this theory when naming the latent profiles identified in this study.

For young people just entering university life, the search for the meaning of existence is a psychological journey that many are currently experiencing (Damon et al., 2010; Niu & Guo, 2021). As our results indicate, 46.73% of the youth were classified into the General Meaning group. This likely suggests that many young people have developed some perception of both meaning seeking and meaning presence, which may be a common state for many as they begin their university education (Erikson, 1968; King & Hicks, 2021).

The Early Closure of Meaning group shows good performance on the meaning presence dimension but performs poorly on the meaning seeking aspect, with only 8.02% of participants falling into this category. This indicates that a small

minority of Chinese youth experience this phenomenon: contemplating the existence of meaning without sufficient exploration. In China, this premature sense of meaning presence without a thorough search process may stem from parental planning of children's future goals and the emphasis on family continuity, obedience to authority, and maintaining stability in the construction of self-concept among Chinese youth (Guo et al., 2024; Pratt, 1991).

A total of 15.54% of participants were classified into the Meaning Seeking group, characterized by a high tendency for meaning seeking but low scores on meaning presence. This suggests that individuals in this group are primarily focused on continuous exploration and trial-and-error. Although they have not yet grasped the "truth" of personal life's meaning, many Chinese youth begin to engage with such topics early on. For instance, some studies indicate that Chinese youth may start contemplating life goals as early as age 13 (Wang et al., 2023). Thus, despite not having experienced the presence of meaning in life, a portion of these individuals start seeking the essence of life meaning early.

Furthermore, our study found that 29.72% of participants were categorized into the High Meaning group, performing well in both meaning seeking and meaning presence dimensions. This group aligns with the characteristics of identity achievement, which is not prematurely committing to self-roles but maintaining a high sense of meaning and exploration preference. These individuals exhibit high levels of openness and flexibility in their personality, allowing them to transition more smoothly into future life stages and realize their potential value (Marcia, 1980).

Demographic Characteristics of Different Meaning in Life Types

Following our exploration, we aimed to depict the demographic characteristics of different meaning in life types, but only found significant differences in grades among the four types, with no other demographic variables showing significant differences. Specifically, during the undergraduate stage, from freshman to senior year, the GM group had the highest proportion. However, at the graduate level, the HM group had the highest proportion. This result aligns with previous research, indicating that compared to undergraduates, graduate students might have a higher recognition of academic identity and performance, leading to a higher sense of meaning in life (Yukhymenko-Lescroart & Sharma, 2022).

Subsequent multinomial logistic regression revealed similar results. When examining demographic variables, we found that using graduate degree as a reference group, individuals with a college degree had a lower likelihood of being classified in the HM group. In other words, compared to graduate students, individuals with a college degree might have a lower sense of meaning in life. This could be due to the higher self-efficacy among the graduate degree group, as good self-efficacy is often associated with a higher sense of meaning in life (Lane et al., 2003; Yuen & Datu, 2020).

Relationship Between Creativity and Different Types of Meaning in Life Among Youth

Our research indicates a significant positive correlation between creativity and meaning in life, consistent with previous studies that suggest individuals with higher creativity levels are more likely to experience a greater sense of meaning in life (Han et al., 2024). Variance analysis results show that different groups of meaning in life exhibit significantly different levels of creativity.

Firstly, compared to the other three groups, the ECM group had the lowest creativity scores. This may be related to the overemphasis on family continuity and authority obedience in the construction of self-concept among Chinese youth. Erikson noted that if children's exploratory behaviors are encouraged, they develop initiative, laying the foundation for them to become responsible and creative individuals in the future. Conversely, if initiative is restricted in early life, they may prematurely accept others' expectations for their self-roles, leading to a lack of motivation to actively explore life's values (Erikson, 1968; Guo et al., 2024). This could explain why the ECM group has lower creativity levels compared to the other three groups.

The MS group scored high in the meaning seeking dimension but low in the meaning presence dimension, indicating that while individuals are willing to invest energy in exploring and seeking meaning in life, they have not yet experienced a sense of meaning presence. Both meaning therapy theory and the temporal model suggest that creativity provides an effective pathway for finding life meaning. This implies that those who strive to attain life meaning might focus more on creative activities or use creative activities as a powerful driver for life meaning (Frankl, 1985; Kaufman, 2018). This aligns with previous studies showing that individuals actively seeking life meaning often exhibit higher creativity (Allen et al., 2014).

Lastly, the HM group had the highest creativity scores among the four groups. The HM group scored high in both meaning seeking and meaning presence dimensions, which aligns with the concept of a fulfilled state of self-identity in self-identity theory (Marcia, 1980). Furthermore, Erikson pointed out that achieving self-identity involves resolving a series of conflicts and contradictions, an active process of exploration and seeking meaning. This investment in exploring self-identity and recognizing self-worth may predict higher creativity (Dollinger & Dollinger, 2017; Erikson & Erikson, 1981).

In the final part of this study, we employed multinomial logistic regression to examine the relationships between creativity, demographic variables, and types of meaning in life. Our results indicate that, with the GM group as the reference category, individuals with higher levels of creativity are more likely to be classified into the HM group.

The hierarchic model of meaning proposes that the sense of meaning comprises several levels: perception, action, goals, sources of meaning, and the overall

sense of meaning in life (Kwong et al., 2019; Schnell & Becker, 2006). Creativity is highlighted as a significant source of meaning. Additionally, from the perspective of positive psychology, creativity is viewed as an activity encompassing positive and beneficial attributes that can lead to favorable outcomes and increase well-being (Kaufman, 2018; Seligman & Csikszentmihalyi, 2000). Well-being, in turn, positively affects adolescents' life satisfaction, which subsequently enhances their sense of meaning in life (Nansook et al., 2009; Yang et al., 2017).

Implications, Limitations and Future Directions

This study makes several significant contributions to the current field. Firstly, on a theoretical level, it suggests that there may be different patterns in the development of meaning in life among Chinese youth. Individuals with high meaning in life, high search for meaning, and non-early closure of meaning are likely to exhibit higher levels of creativity. Additionally, creativity can predict an individual's pattern of meaning in life, providing crucial insights into the psychological mechanisms underlying the relationship between creativity and meaning in life. Secondly, on a practical level, our current results indicate that encouraging individuals to engage in creative activities may benefit the healthy development of self-identity. However, further research is needed to validate these findings through more robust study designs. This points to the potential for interventions focused on promoting creativity as a means to enhance meaning in life and overall well-being.

However, our study has several limitations. Firstly, the use of self-reported questionnaires to assess meaning in life and creativity may introduce bias, requiring cautious interpretation of the results. Future research could develop behavioral experimental paradigms to more accurately assess individuals' sense of meaning in life and creativity. Secondly, the cross-sectional design of this study cannot establish causality. Therefore, the significant differences observed in the current data may need further confirmation through longitudinal studies. Although our profile analysis did not include a low meaning in life group, this does not mean that such individuals do not exist in the sample. This could be due to the limitations of the statistical methods, potentially overlooking those few individuals with a confused sense of meaning. In fact, youth with a confused sense of meaning deserve more attention. These individuals have neither experienced a sense of meaning nor possess the motivation to pursue it, which may lead to a sense of hopelessness and meaninglessness. Future research could improve methods to explore this group more deeply. Lastly, due to convenience sampling, there was an imbalance in the number of participants across different degree and grades. Future research should aim to expand the sample size and address these issues to ensure more generalizable findings.

Conclusion

In traditional research, studies often use variable-centered approaches to examine the characteristics of meaning in life. However, this approach can overlook potential individual differences, especially for a complex and elusive psychological experience like meaning in life. Therefore, this study employed an individual-centered latent profile analysis method to identify four distinct developmental patterns of meaning in life.

Our investigation into demographic variables revealed an uneven distribution of meaning in life patterns across different grades, with higher-grade students more frequently falling into the GM and HM groups. Additionally, we observed that different meaning in life patterns were associated with varying levels of creativity. Individuals with high meaning in life showed better creativity, while those with early closure of meaning exhibited lower creativity.

Overall, these findings support the notion that meaning in life is heterogeneous among Chinese youth, with differences in meaning in life patterns across various grades and educational levels. Encouraging young individuals to engage in creative activities may help them seek and perceive meaning in life more effectively.

Declarations

Ethics approval and consent to participate. Our research is conducted in strict accordance with the ethical principles outlined in the Declaration of Helsinki, ensuring the utmost protection of the safety, privacy, and rights of all participants. The studies involving humans were approved by the Ethics Committee of Anhui University of Science and Technology. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Consent for publication. Not applicable.

Availability of data and materials. All data generated or analyzed during this study are included in this published article.

Competing interests. The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Authors' contributions. HDS: Conceptualization, Formal analysis, Investigation, Writing – original draft, Funding acquisition. TTY: Conceptualization, Project administration, Methodology, Supervision, Writing – original draft, Writing – review & editing. XGW: Writing – review & editing, Supervision.

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Tables

Table 1. Detailed Demographic Information

Variable	Percentage	Cumulative Percentage
Gender		
Female	50.60%	50.60%
Grade		
Freshman	69.00%	69.00%
Sophomore	5.10%	74.10%
Junior	15.00%	89.10%
Senior	1.90%	90.90%
Graduate Student	9.10%	100.00%
Age		
18-24 years	91.40%	91.40%
25-30 years	8.60%	100.00%
Degree		
Associate Degree	4.89%	4.89%
Bachelor's Degree	89.44%	94.33%
Graduate Degree	5.67%	100.00%
Only Child		
Yes	29.33%	29.33%
No	70.67%	100.00%

Table 2. Descriptive statistics and correlation analyses of variables

Variable	SD	Gender	Grade	Age	Degree	Only child	Creativity	Meaning in Life
Gender								
Grade		0.14**						
Age		0.48**	0.09**					
Degree		-0.15**	-0.15**	-0.11**				
Only child		0.24**	0.37**	-0.06*	0.05*			
Creativity		-0.06*	0.09**	0.09**	-0.06*	0.07**		
Meaning in Life		0.07*	0.07*	0.35**				

p<0.05; ***p<0.01;*** p<0.001

Table 3. Summary of model fit information for latent profile analysis of Meaning in life

Class	Entropy	LMRT	BLRT	Category Proportions and Counts
1		p<0.001		647(0.63)/376(0.37)
2		p<0.001	p<0.001	197(0.19)/483(0.47)/343(0.34)

Class	Entropy	LMRT	BLRT	Category Proportions and Counts
3		p=0.1517	p<0.001	478(0.47)/82(0.08)/159(0.16)/304(0.29)
4	0.90	p=0.0368	p<0.001	41(0.04)/52(0.05)/461(0.45)/169(0.17)/300(0.29)
5		p=0.0109	p<0.001	45(0.04)/34(0.03)/302(0.30)/285(0.28)/133(0.13)/224(0.22)
6				

Table 4. Distribution of Demographic Information Across Different Meaning in Life Groups

Variable	GM	ECM	MS	HM	^{2}
Gender					0.14
Male	77(14.86%)	161(31.08%)	234(45.17%)	46(8.88%)	
Female	244(48.32%)	36(7.13%)	82(16.24%)	143(28.32%)	
Grade					26.44**
Freshman	359(50.85%)	51(7.22%)	111(15.72%)	185(26.20%)	
Sophomore	22(42.31%)	4(7.69%)	4(7.69%)	22(42.31%)	
Junior	58(37.91%)	58(37.91%)	16(10.46%)	21(13.73%)	
Senior	7(36.84%)	3(15.79%)	1(5.26%)	8(42.11%)	
Graduate Student	31(33.33%)	10(10.75%)	20(21.51%)	32(34.41%)	
Age					12
18-24 years	445(47.59%)	74(7.91%)	142(15.19%)	274(29.30%)	
25-30 years	30(34.09%)	33(37.50%)	17(19.32%)	8(9.09%)	
Degree					0.009**
Associate Degree	27(54.00%)	5(10.00%)	8(16.00%)	10(20.00%)	
Bachelor's Degree	435(47.54%)	71(7.76%)	138(15.08%)	271(29.62%)	
Graduate Degree	16(27.59%)	6(10.34%)	13(22.41%)	23(39.66%)	
Only Child					
Yes	94(31.33%)	127(42.33%)	23(7.67%)	56(18.67%)	
No	351(48.55%)	59(8.16%)	103(14.25%)	210(29.05%)	

GM: General Meaning group, ECM: Early Closure of Meaning group, MS: Meaning Seeking group, HM: High Meaning group

Grade: 15% of the cells have expected counts less than 5

Degree: 16.7% of the cells have expected counts less than 5

p<0.05; ***p<0.01;*** p<0.001

Table 5. Comparison of Creativity across different Meaning in Life groups

Group	N	Creativity	Post hoc comparisons
GM	478	3.11$±0.41| < , < , < , < , < || ECM|82|3.06±0.58||| MS|159|3.33±.47||| HM|304|3.44±$0.48	

F=39.86, p<0.001

Table 6. Multinomial Logistic Regression of Creativity and Demographic Variables on Different Types of Meaning in Life

Variable	ECM	MS	HM
	OR (95% CI)	OR (95% CI)	OR (95% CI)
Creativity	0.722 (0.425-1.225)	3.203*** (2.081-4.931)	5.123*** (3.551-7.392)
Gender (Female)			
Grade (Freshman)			
Age (18-24 years)			
Degree (Associate Degree)			0.280*
Only Child (Yes)			

GM: General Meaning group, ECM: Early Closure of Meaning group, MS: Meaning Seeking group, HM: High Meaning group

p<0.05; ***p<0.01;*** p<0.001

Figures

Figure 1. Four latent profiles of Meaning in life derived from scale item scores. GM: General Meaning group; ECM: Early Closure of Meaning group; MS: Meaning Seeking group; HM: High Meaning group

Figure 2. Distribution of responses to 9 scale items across different Meaning in life groups. GM: General Meaning group; ECM: Early Closure of Meaning group; MS: Meaning Seeking group; HM: High Meaning group

Figure 3. Odds Ratios for Creativity and Demographic Variables in the HM Group from Logistic Regression. # indicates reference group; *p<0.05;* ***p<0.01;*** p<0.001

Note: Figure translations are in progress. See original paper for figures.