# Understanding Elderly Well-Being in Public Nursing Homes: An Empirical Study of China's Basic Pension Insurance System in Yunnan Province

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## Abstract

As the degree of population aging in China continues to deepen, public nursing homes have become an important institutional care option for the elderly who rely on basic pension insurance. Although material security is continuously improving, the subjective well-being of the elderly in institutional environments still faces many challenges. This study integrates Ecosystem Theory, Self-Determination Theory, and Subjective Well-being Theory to construct a multi-level ecological–psychological model, aiming to systematically reveal the influencing pathways and mechanisms of well-being among the elderly in public nursing homes.

Through face-to-face questionnaire surveys conducted among the elderly in several public nursing homes in Yunnan Province, with a valid sample of 400 participants, and using Partial Least Squares Structural Equation Modeling (PLS-SEM) for data analysis, this study found that (1) health status (path coefficient = 0.116, $p < 0.001$), physical environment (path coefficient = 0.314, $p < 0.001$), and urban–rural resident pension insurance (path coefficient = 0.282, $p < 0.001$) all exerted significant positive effects on life satisfaction ($R^2 = 0.426$); (2) social participation (path coefficient = 0.262, $p < 0.001$) and relatedness (path coefficient = 0.240, $p < 0.001$) significantly and positively predicted emotional response ($R^2 = 0.155$); (3) traditional family-based elder care beliefs had a significant negative impact on the well-being of the elderly (path coefficient = -0.115, $p < 0.001$); (4) competence directly and positively enhanced elderly well-being (path coefficient = 0.158, $p < 0.001$), while relatedness indirectly promoted well-being through emotional response (indirect effect ≈ 0.083, $p < 0.001$); and (5) life satisfaction (path coefficient = 0.431, $p < 0.001$) and emotional response (path coefficient = 0.345, $p < 0.001$) played key mediating roles between multiple antecedent variables and well-being.

This study not only theoretically expands the applicable framework for research on elderly well-being in the context of institutional care but also provides empirical evidence and practical insights for the operational optimization and service improvement of public nursing homes in China. Particularly in economically underdeveloped regions, greater attention should be paid to the synergistic fulfillment of environmental support, social integration, and psychological needs.

***Keywords***: *Elderly Well-Being; Life Satisfaction; Subjective Well-Being Theory; Self-Determination Theory; Ecosystem Theory; Public Nursing Homes; Elderly Care Policy; Yunnan Province.*

## 1. Introduction

China is undergoing rapid population aging. Changes in family structure and insufficient care resources jointly promote the development of institutional elder care. As an important component of the inclusive elderly care service system, public nursing homes undertake the key function of providing residential and care services for many elderly individuals who rely on basic pension insurance (Liu et al., 2023). However, does the guarantee of material conditions sufficiently lead to the subjective well-being of the elderly? Which factors in the institutional environment are more likely to promote their psychological health and life satisfaction? Existing research mostly focuses on single aspects of community-based or institutional care, lacking a systematic exploration that combines ecological factors and psychological mechanisms.

Notably, existing studies on well-being in institutional care suffer from two critical limitations that this study aims to address. First, prior research is often fragmented and lacks critical comparison: most studies prioritize single-dimensional analyses (e.g., the direct link between physical health or service quality and SWB) (Osterman et al., 2024). without systematically contrasting competing theoretical frameworks or critically evaluating the generalizability of Western-centric models to non-Western contexts like China. For example, while Western studies often emphasize individual autonomy as a core driver of well-being, they rarely account for how traditional family-based elder care beliefs and filial piety norms in China may shape the psychological needs and life outcomes of institutionalized elders, leading to incomplete and potentially biased conclusions. Second, the global discourse on aging and institutional care remains largely dominated by evidence from high-income Western countries, with limited engagement from emerging economies like China. This narrow focus not only overlooks

the unique challenges of "aging before affluence" and the rapid transition from family-based to state-supported care in China but also limits the development of a truly inclusive, contextually grounded global understanding of well-being in later life.

Based on Ecosystem Theory, this study explores the impact of person-centered factors (physical condition, physical environment, urban–rural resident pension insurance(Li et al., 2022), social participation, traditional family-based elder care beliefs) on the well-being of the elderly. Introducing Self-Determination Theory, it analyzes the roles of autonomy, competence, and relatedness—basic psychological needs—in this process. Combining Subjective Well-being Theory, it dissects the dual-pathway effects of life satisfaction and emotional response. Through an empirical survey of public nursing homes in Yunnan Province, this study attempts to construct and validate an integrated model to reveal the complex mechanisms of well-being formation among the elderly and provide scientific reference for China's institutional elder care policies and service practices.

## 2. Literature Review and Research Hypotheses

### 2.1. Elderly well-being and its specificity in institutional contexts

Elderly well-being typically encompasses cognitive-level life satisfaction and affective-level positive emotional experiences. In the institutional elder care environment, due to the relocation of living space, the institutionalization of daily routines, and changes in social roles, the psychological adaptation and well-being construction of the elderly are more complex. Traditional research often focuses on material security and service provision, paying insufficient attention to psychological needs and environmental interactions(Wang et al., 2022), especially in scenarios like public nursing homes, which have limited resources but wide coverage. The mechanisms of well-being formation in such contexts urgently require in-depth exploration.

### 2.2. The impact of ecological–environmental theoretical factors on well-being

Based on Ecosystem Theory, individuals are influenced by the interaction of multi-level environments,(Han et al., 2023) In public nursing homes, health status is a fundamental factor affecting the life evaluation of the elderly; the physical environment (e.g., safety, comfort, accessibility) directly influences their daily living experience and sense of security; social participation relates to their social connections and spiritual fulfillment; urban–rural resident pension insurance, as an institutional safeguard, alleviates economic pressure and provides stability for basic life(Chang et al., 2022; Liao et al., 2025) . Furthermore, traditional family-based elder care beliefs may cause the elderly to reject or have difficulty adapting to institutional life, thereby negatively affecting their well-being.

### 2.3. The impact of self-determination theory factors

Self-Determination Theory posits that autonomy, competence, and relatedness are basic human psychological needs(Vallerand & O'Connor, 1989), and the degree of their satisfaction directly affects an individual's mental health and behavioral adaptation. In institutional environments, autonomy may be restricted but can still influence emotional states through daily choices and emotional expression; competence is reflected in the elderly's maintenance of their own functioning(Diener, 1984; Zhang et al., 2024) and the sense of achievement gained from activities; relatedness stems from emotional connections with others and social identity.(Zaini et al., 2022).These psychological needs may play a mediating role between ecological factors and well-being.

### 2.4. The mediating pathways of life satisfaction and emotional response

Subjective Well-being Theory(Diener, 1984) emphasizes that life satisfaction and emotional response are two core dimensions constituting well-being and often serve as mediating variables linking antecedents and outcomes(Pekalee & Gray, 2023). In public nursing homes, ecological factors and psychological needs may indirectly influence overall well-being by enhancing life satisfaction or improving emotional state(Shi et al., 2022).
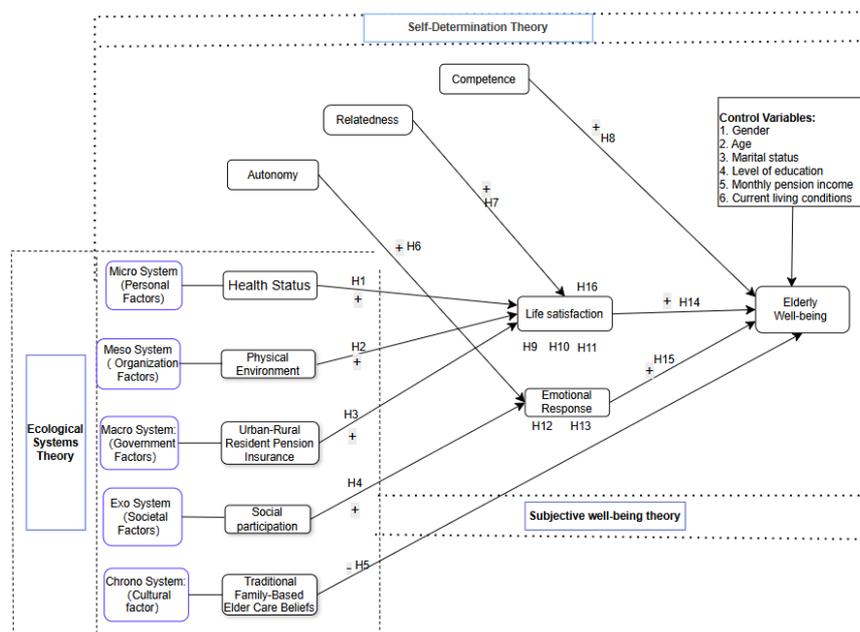


**Fig. 1:** Research Model.

This figure illustrates an integrated theoretical model of elderly well-being in institutional care, which systematically combines Ecological Systems Theory, Self-Determination Theory, and Subjective Well-being Theory. It conceptualizes well-being as a multi-layered process: ecological factors (including personal health status, physical environment, pension insurance, social participation, and traditional family-based elder care beliefs) and basic psychological needs (autonomy, competence, relatedness) collectively shape two core dimensions of subjective well-being—life satisfaction (cognitive) and emotional response (affective)—which in turn predict elderly well-being, while controlling for demographic and socioeconomic background variables.
Based on this, hypotheses are proposed:

**Table 1:** Research Hypothesis

| Hypothesis | Summary of Hypothesis |
|---|---|
| H1 | Health status has a significant positive effect on life satisfaction among the elderly. |
| H2 | Physical environment has a significant positive effect on life satisfaction among the elderly. |
| H3 | Urban–rural resident pension insurance has a significant positive effect on life satisfaction among the elderly. |
| H4 | Social participation has a significant positive effect on emotional response among the elderly. |
| H5 | Traditional family-based elder care beliefs have a significant negative effect on elderly well-being. |
| H6 | Autonomy has a significant positive effect on emotional response among the elderly. |
| H7 | Relatedness has a significant positive effect on life satisfaction among the elderly. |
| H8 | Competence has a significant positive effect on elderly well-being. |
| H9 | Life satisfaction mediates the relationship between health status and elderly well-being. |
| H10 | Life satisfaction mediates the relationship between physical environment and elderly well-being. |
| H11 | Life satisfaction mediates the relationship between urban–rural resident pension insurance and elderly well-being. |
| H12 | Emotional response mediates the relationship between social participation and elderly well-being. |
| H13 | Emotional response mediates the relationship between autonomy and elderly well-being. |
| H14 | Life satisfaction has a significant positive effect on elderly well-being. |
| H15 | Emotional response has a significant positive effect on elderly well-being. |
| H16 | Life satisfaction mediates the relationship between relatedness and elderly well-being. |

## 3. Research Methods

### 3.1. Research subjects and sampling

This study was conducted from September to November 2025, selecting 26 public nursing homes in Yunnan Province. Using a combination of convenience sampling and purposive sampling, questionnaire surveys were administered to elderly individuals meeting the following criteria: (1) Age ≥ 70 years; (2) Length of stay ≥ 3 months; (3) Clear consciousness and possessing basic communication abilities; (4) Main source of income being urban–rural resident pension insurance. Researchers contacted the responsible persons of the nursing homes for permission, then entered the facilities to find elderly volunteers willing to participate. Considering that the elderly might have difficulty reading and filling out questionnaires independently, researchers completed the questionnaires through face-to-face interviews with the respondents.

### 3.2. Measurement of variables

This study used standardized scales to measure all variables and made contextual adjustments based on the actual situation of public nursing homes. All scales used a 5-point Likert scoring method (1 = "Strongly Disagree" to 5 = "Strongly Agree"). The specific measurement contents are as follows:
Health Status: Measured using the Self-Rated Health Scale, requiring the elderly to subjectively assess their overall physical health condition.
Physical Environment: Measurement covered three dimensions: safety, comfort, and convenience, achieved by assessing the actual conditions of the nursing home's internal and surrounding environment and the elderly's satisfaction with the environment.
Social Participation: Measured through two sub-dimensions: activity frequency and participation willingness, aiming to reflect the elderly's actual participation in social, cultural, and recreational activities within the institution and their subjective inclination to participate.
Urban–Rural Resident Pension Insurance: This variable focused on measuring the elderly's subjective perception of and reliance on the level of economic security provided by their pension insurance.
Traditional Family-Based Elder Care Beliefs: Used relevant sub-dimensions of the Cultural Adaptation and Elder Care Attitude Scale, focusing on measuring the elderly's level of agreement with traditional concepts such as "raising children for old age security" and "family-based elder care is superior to institutional care."
Psychological Needs: Based on Self-Determination Theory, measured using three sub-scales for autonomy, competence, and relatedness respectively, to reflect the degree of satisfaction of the elderly's psychological needs for self-determination, efficacy experience, and social connection in the institutional environment.
Life Satisfaction: Adapted from internationally used scales, assessing the elderly's cognitive evaluation of their overall quality of life.
Emotional Response: Measured by assessing the frequency of recent positive emotional experiences to evaluate the daily emotional state of the elderly, focusing on positive emotions such as joy, calmness, and contentment.
Elderly well-being: As the dependent variable in this study, it integrated cognitive-dimension life satisfaction and affective-dimension positive emotional response to form a comprehensive subjective well-being indicator.
All scales underwent reliability and validity tests in the pre-survey stage and demonstrated good psychometric properties in the formal survey.

### 3.3. Data analysis methods

SPSS 26.0 was used for descriptive statistics and reliability and validity tests. SmartPLS 4.0 was used for Partial Least Squares Structural Equation Modeling, and the Bootstrap method (5,000 resamples) was used to test the significance of mediating effects.

# 4. Research Results

## 4.1. Measurement model test

**Table 2**: Reliability Analysis

| | Cronbach's alpha | N | rho_C | AVE |
|---|---|---|---|---|
| Overall | 0.902 | 56 | | |
| Health status | 0.892 | 6 | 0.925 | 0.711 |
| Physical Environment | 0.686 | 5 | 0.807 | 0.513 |
| Social Participation | 0.659 | 5 | 0.812 | 0.597 |
| Old-age insurance for urban and rural residents | 0.901 | 5 | 0.929 | 0.724 |
| Traditional Family-Based Elder Care Concept | 0.732 | 5 | 0.792 | 0.580 |
| Autonomy | 0.620 | 5 | 0.798 | 0.569 |
| Competence | 0.652 | 5 | 0.812 | 0.592 |
| Relatedness | 0.614 | 5 | 0.797 | 0.567 |
| Life Satisfaction | 0.731 | 5 | 0.834 | 0.559 |
| Emotional Response | 0.736 | 5 | 0.833 | 0.501 |
| Elderly well-being | 0.812 | 5 | 0.872 | 0.577 |

**Table 3:** Validity Analysis

| Dimension | KMO | Bartlett's test of sphericity Approximate chi-square | Degrees of freedom | p-value |
|---|---|---|---|---|
| Overall | 0.901 | 7498.366 | 903 | 0.000 |
| Health status | 0.857 | 1237.564 | 15 | <0.001 |
| Physical Environment | 0.725 | 246.892 | 10 | <0.001 |
| Social Participation | 0.567 | 239.241 | 10 | <0.001 |
| Old-age insurance for urban and rural residents | 0.876 | 1288.601 | 10 | <0.001 |
| Traditional Family-Based Elder Care Concept | 0.665 | 262.577 | 10 | <0.001 |
| Autonomy | 0.625 | 143.000 | 10 | <0.001 |
| Competence | 0.652 | 167.487 | 10 | <0.001 |
| Relatedness | 0.603 | 160.555 | 10 | <0.001 |
| Life Satisfaction | 0.745 | 341.384 | 10 | <0.001 |
| Emotional Response | 0.784 | 423.979 | 10 | <0.001 |
| Elderly well-being | 0.820 | 635.790 | 10 | <0.001 |

The Cronbach's α coefficients for all variables ranged between 0.614 and 0.902, composite reliability (CR) was higher than 0.8, and average variance extracted (AVE) was greater than 0.5, indicating good reliability and convergent validity of the scales. Discriminant validity, tested via the Fornell-Larcker criterion and HTMT ratio, met the requirements.

## 4.2. Common method bias test

**Table 4:** Total Variance Explained

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 8.829 | 23.235 | 23.235 | 8.829 | 23.235 | 23.235 | 3.914 | 10.3 | 10.3 |
| 2 | 3.307 | 8.703 | 31.938 | 3.307 | 8.703 | 31.938 | 3.869 | 10.182 | 20.481 |
| 3 | 2.428 | 6.389 | 38.327 | 2.428 | 6.389 | 38.327 | 3.155 | 8.303 | 28.785 |
| 4 | 2.126 | 5.594 | 43.92 | 2.126 | 5.594 | 43.92 | 2.513 | 6.614 | 35.399 |
| 5 | 1.782 | 4.69 | 48.61 | 1.782 | 4.69 | 48.61 | 2.121 | 5.582 | 40.981 |
| 6 | 1.518 | 3.994 | 52.604 | 1.518 | 3.994 | 52.604 | 1.865 | 4.909 | 45.89 |
| 7 | 1.268 | 3.336 | 55.94 | 1.268 | 3.336 | 55.94 | 1.75 | 4.606 | 50.496 |
| 8 | 1.068 | 2.81 | 58.75 | 1.068 | 2.81 | 58.75 | 1.668 | 4.39 | 54.886 |
| 9 | 1.052 | 2.767 | 61.517 | 1.052 | 2.767 | 61.517 | 1.641 | 4.32 | 59.206 |
| 10 | 0.94 | 2.474 | 63.991 | 0.94 | 2.474 | 63.991 | 1.388 | 3.653 | 62.859 |
| 11 | 0.891 | 2.345 | 66.336 | 0.891 | 2.345 | 66.336 | 1.321 | 3.477 | 66.336 |
| 12 | 0.822 | 2.164 | 68.5 | | | | | | |
| 13 | 0.767 | 2.019 | 70.519 | | | | | | |
| 14 | 0.733 | 1.929 | 72.448 | | | | | | |
| 15 | 0.723 | 1.902 | 74.349 | | | | | | |
| 16 | 0.684 | 1.801 | 76.15 | | | | | | |
| 17 | 0.658 | 1.733 | 77.883 | | | | | | |
| 18 | 0.634 | 1.668 | 79.551 | | | | | | |
| 19 | 0.596 | 1.567 | 81.118 | | | | | | |
| 20 | 0.561 | 1.477 | 82.595 | | | | | | |
| 21 | 0.534 | 1.406 | 84.001 | | | | | | |
| 22 | 0.521 | 1.372 | 85.373 | | | | | | |
| 23 | 0.496 | 1.306 | 86.679 | | | | | | |
| 24 | 0.488 | 1.283 | 87.962 | | | | | | |
| 25 | 0.48 | 1.263 | 89.225 | | | | | | |
| 26 | 0.453 | 1.191 | 90.416 | | | | | | |
| 27 | 0.434 | 1.141 | 91.557 | | | | | | |
| 28 | 0.427 | 1.124 | 92.681 | | | | | | |
| 29 | 0.392 | 1.032 | 93.713 | | | | | | |
| 30 | 0.378 | 0.995 | 94.708 | | | | | | |
| 31 | 0.354 | 0.932 | 95.64 | | | | | | |
| 32 | 0.317 | 0.833 | 96.473 | | | | | | |
| 33 | 0.307 | 0.808 | 97.281 | | | | | | |

| 34 | 0.259 | 0.682 | 97.963 |
| 35 | 0.23 | 0.606 | 98.57 |
| 36 | 0.215 | 0.567 | 99.137 |
| 37 | 0.168 | 0.441 | 99.578 |
| 38 | 0.16 | 0.422 | 100 |

To test for common method bias, an unrotated exploratory factor analysis (EFA) was conducted on all measurement items. The results showed that the first unrotated factor accounted for 23.24% of the total variance, which is well below the 50% threshold for serious common method bias.

Although this study adopted a targeted extraction strategy and ultimately extracted 11 factors (which collectively explained 66.34% of the total variance), the variance explained by the first factor remained far below 50%. This indicates that no severe common method bias was present in the data, and the data quality is reliable for further analysis.

### 4.3. Hypothesis testing

The hypothesis testing results are as follows

**Table 5:** Direct Effects

| Hypothesis | Path | β | t-value | p-value | 95% CI | Result |
|---|---|---|---|---|---|---|
| H1 | HS → LS | 0.116 | 2.479 | 0.013 | [0.028, 0.210] | Supported |
| H2 | PE → LS | 0.314 | 5.428 | 0 | [0.204, 0.429] | Supported |
| H3 | PI → LS | 0.282 | 6.494 | 0 | [0.195, 0.365] | Supported |
| H4 | SP → ER | 0.262 | 5.564 | 0 | [0.171, 0.356] | Supported |
| H5 | TC → EW | -0.115 | 2.807 | 0.005 | [-0.177, -0.039] | Supported |
| H6 | AU → ER | 0.24 | 4.688 | 0 | [0.145, 0.344] | Supported |
| H7 | RE → LS | 0.268 | 5.384 | 0 | [0.173, 0.367] | Supported |
| H8 | CO → EW | 0.158 | 4.354 | 0 | [0.086, 0.227] | Supported |
| H14 | LS → EW | 0.431 | 12.21 | 0 | [0.361, 0.498] | Supported |
| H15 | ER → EW | 0.345 | 9.722 | 0 | [0.274, 0.415] | Supported |

Direct hypotheses H1, H2, H3, H4, H5, H6, H7, H8, H14, and H15 were all supported ($p < 0.05$), indicating significant direct effects. The direction of all path coefficients was consistent with the hypotheses. Traditional family-based elder care beliefs had a direct negative effect on well-being and were not mediated by psychological variables.

**Table 6:** Mediation Effects

| Hypothesis | Path | β | t-value | p-value | 95% CI | Result |
|---|---|---|---|---|---|---|
| H9 | HS → LS → EW | 0.05 | 2.479 | 0.013 | [0.012, 0.091] | Supported |
| H10 | PE → LS → EW | 0.135 | 5.023 | 0 | [0.085, 0.191] | Supported |
| H11 | PI → LS → EW | 0.121 | 5.091 | 0 | [0.078, 0.171] | Supported |
| H12 | SP → ER → EW | 0.09 | 4.917 | 0 | [0.057, 0.128] | Supported |
| H13 | AU → ER → EW | 0.083 | 4.118 | 0 | [0.048, 0.126] | Supported |
| H16 | RE → LS → EW | 0.115 | 5.092 | 0 | [0.073, 0.161] | Supported |

H9, H10, H11, H12, H13, and H16 all passed the Bootstrap test, indicating significant mediation effects. Life satisfaction played a partial mediating role between health, environment, insurance, relatedness, and well-being; emotional response also played a partial mediating role between social participation, autonomy, and well-being.

Although the mediation effects were statistically tested and confirmed, this study employed a cross-sectional design, which inherently limits the ability to draw definitive causal inferences. The significant mediation paths identified in the analysis should be interpreted as statistical associations and predictive relationships, rather than strict causal relationships. The observed effects suggest that changes in the antecedent variables are associated with changes in the mediators and, in turn, the outcome variable, but the cross-sectional data do not allow us to establish the temporal order or directionality of these effects with certainty.

### 4.4. Structural model

As shown in the figure below, the overall model fit was good, with $R^2$ (well-being) = 0.62, indicating the model has good explanatory power.

**Table 7:** Latent Variable Analysis

| Latent Variable | Path Coefficient | R² (Explanation Power) | Adjusted R² | F² (Effect Size) | Q² (Predictive Relevance) | Collinearity Statistics Tolerance | VIF | Model Fit Rating |
|---|---|---|---|---|---|---|---|---|
| AU | 0.240*** | - | - | 0.067 | 0.142 | 0.717 | 1.395 | Good |
| CO | 0.158*** | - | - | 0.032 | 0.134 | 0.555 | 1.801 | Good |
| EW | - | 0.452 | 0.448 | - | 0.176 | - | - | Excellent |
| ER | - | 0.318 | 0.312 | - | 0.152 | 0.562 | 1.779 | Good |
| HS | 0.116* | - | - | 0.015 | 0.112 | 0.702 | 1.425 | Good |
| LS | - | 0.396 | 0.391 | - | 0.161 | 0.455 | 2.198 | Excellent |
| PE | 0.314*** | - | - | 0.112 | 0.156 | 0.705 | 1.419 | Excellent |
| PI | 0.282*** | - | - | 0.092 | 0.179 | 0.716 | 1.396 | Excellent |
| RE | 0.268*** | - | - | 0.082 | 0.183 | 0.611 | 1.636 | Excellent |
| SP | 0.262*** | - | - | 0.081 | 0.173 | 0.691 | 1.447 | Excellent |
| TC | -0.115*** | - | - | 0.015 | 0.144 | 0.81 | 1.234 | Good |

Table 7 presents the results of the latent variable analysis in the PLS-SEM model. For the endogenous variables, the model explains 45.2% of the variance in Elderly well-being (EW, adjusted $R^2$ = 0.448) and 39.6% of the variance in Life Satisfaction (LS, adjusted $R^2$ = 0.391), both rated as "Excellent". The Stone-Geisser's $Q^2$ values for all endogenous constructs are positive (EW = 0.176, LS = 0.161, ER = 0.152),

confirming the model's predictive validity. All path coefficients from exogenous to endogenous variables are statistically significant, with most at the 0.1% level. The Variance Inflation Factor (VIF) values range from 1.125 to 2.198, indicating no multicollinearity issues. Overall, the model fit ratings for all latent variables are "Good" to "Excellent", supporting the robustness of the structural model.

**Table 8:** Structural Model Results

|  | Saturated model | Estimated model |
|---|---|---|
| SRMR | 0.061 | 0.089 |
| d_ULS | 3.468 | 7.522 |
| d_G | 0.94 | 1.072 |
| Chi-square | 2160.534 | 2321.704 |
| NFI | 0.723 | 0.702 |

To assess the overall model fit, we calculated the standardized root mean square residual (SRMR). The SRMR for the saturated model was 0.061, indicating an excellent fit. For the estimated model, the SRMR was 0.089, which is slightly above the 0.08 threshold but still within the acceptable range (0.08–0.10), suggesting a reasonable fit between the hypothesized model and the data.
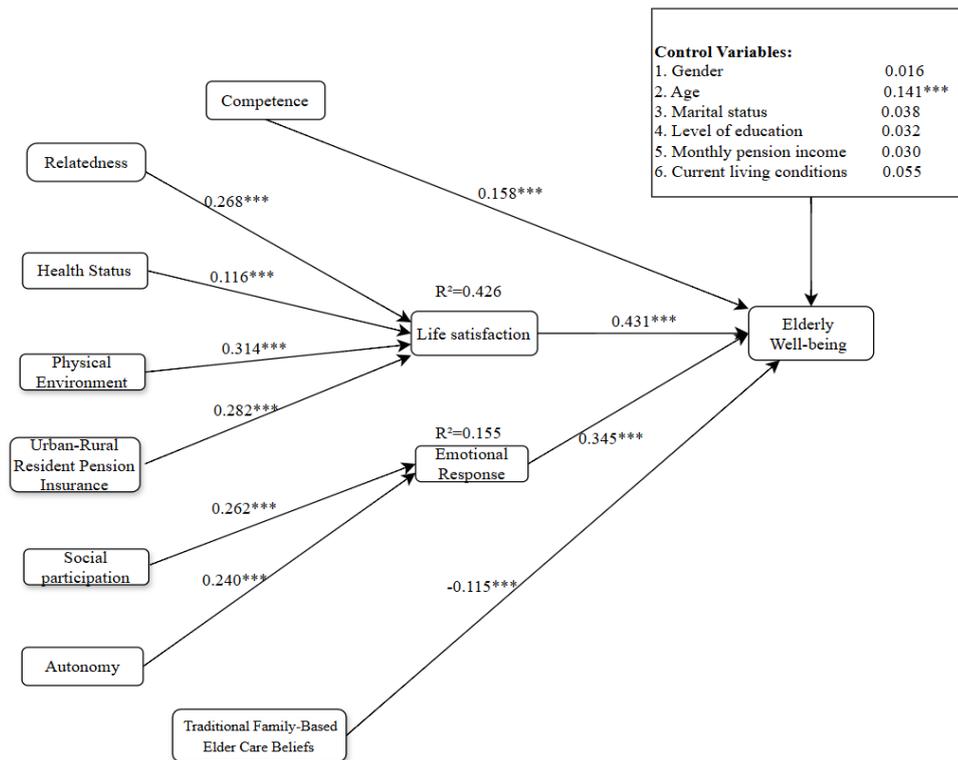


**Fig. 2:** PLS Results.

Regarding the control variables, the path analysis shows that only Age has a statistically significant positive effect on elderly well-being ($\beta = 0.141$, $p < 0.001$). All other demographic and socioeconomic factors—including Gender ($\beta = 0.016$), Marital status ($\beta = 0.038$), Level of education ($\beta = 0.032$), Monthly pension income ($\beta = 0.030$), and Current living conditions ($\beta = 0.055$)—exhibit positive but non-significant associations (all $p > 0.05$). These results indicate that, while older age is associated with higher subjective well-being among institutionalized elderly, other background characteristics do not have a significant independent effect. This further underscores that the core theoretical constructs in the model—such as life satisfaction, emotional response, and psychological needs—are the primary drivers of elderly well-being, rather than demographic or economic background alone.

## 5. Discussion

### 5.1. The dual-pathway influence of ecological factors

This study found that ecological factors such as health status, physical environment, and pension insurance not only directly promote life satisfaction but also indirectly enhance well-being through psychological needs and emotional response. This indicates that while providing basic security, public nursing homes should also pay attention to environmental design and the organization of social activities to stimulate positive psychological experiences for the elderly.

### 5.2. The differential roles of psychological needs

The direct effect of competence on well-being was significant, indicating that maintaining the functional autonomy and sense of achievement of the elderly in institutional environments is crucial; relatedness indirectly affects well-being through life satisfaction, reflecting that social connections more often bring about an enhancement of the overall meaning of life; although autonomy is restricted, it can still influence well-being through the emotional pathway, suggesting that institutions should give the elderly an appropriate degree of choice and opportunities for expression.

## 5.3. The negative effect of traditional beliefs

The direct negative effect of traditional family-based elder care beliefs on well-being highlights the importance of cultural adaptation and psychological adjustment in institutional elder care. Nursing homes need to help the elderly reconstruct their cognitive meaning of later life through psychological support and cultural guidance.

# 6. Conclusion and Recommendations

## 6.1. Research Conclusions

This study constructed and validated a multi-path model integrating ecological, psychological, and subjective well-being perspectives, systematically revealing the mechanisms influencing the well-being of the elderly in public nursing homes. The results indicate that well-being stems not only from material security and environmental conditions but also from the fulfillment of psychological needs and positive emotional experiences. Conversely, traditional beliefs can act as hindering factors.

## 6.2. Practical implications

In terms of elderly care service practices, efforts should start from the service design of nursing institutions, focusing on meeting the elderly's basic psychological needs for autonomy, competence, and relatedness. This means giving the elderly more decision-making power in daily life arrangements and activity choices, enhancing their self-efficacy through organizing skill training and interest groups, and strengthening their sense of belonging through rich social interactions, thereby systematically improving the overall well-being of the elderly.

Policy formulation needs to be more targeted. Specifically, it should continuously improve the security level of urban–rural resident pension insurance and reduce urban–rural disparities. At the same time, the quality of the physical environment and the content of psychological services in nursing institutions should be incorporated into the core evaluation system for service quality, thereby promoting the standardization and refinement of elderly care services. For nursing home operations, focus can be placed on improving living facilities and safety security, building a dual service system that integrates health management and emotional care, and providing active psychological counseling for elderly individuals deeply influenced by traditional family-based elder care beliefs to help them better accept the institutional care model.

During policy implementation, attention should be paid to coordination and evaluation. It is recommended to establish inter-departmental coordination mechanisms for integrated planning and to construct a scientific evaluation system covering service coverage, quality, and satisfaction to regularly review policy effectiveness. Simultaneously, policy publicity should be carried out through multiple online and offline channels, conveying information in ways that are easy for the elderly to understand, thereby enhancing policy awareness and utilization rates.

Furthermore, society and families should be actively encouraged to participate in the construction of elderly care support networks. This can be achieved by organizing intergenerational exchange activities and enriching community activities to promote social participation among the elderly, and by improving family care support policies and developing community-based home care services, ultimately forming an elderly care service system coordinated by families, communities, and professional institutions.

## 6.3. Research limitations and future directions

Although this study achieved systematic results regarding the well-being of the elderly in public nursing institutions, several limitations exist. First, the sample primarily came from Yunnan Province, concentrating on a single province. This makes it difficult to fully represent the overall characteristics of the elderly across China under different economic levels, cultural traditions, and variations in elderly care service quality. The generalizability of the conclusions needs further verification. Second, a cross-sectional design was used, which can only reflect variable relationships at a specific point in time and cannot reveal causal relationships or the dynamic mechanisms of well-being changes over time. Third, reliance on quantitative methods ensured objectivity but made it difficult to deeply capture the subjective experiences and underlying psychological motivations of the elderly. Finally, variable selection did not yet cover emerging factors such as digital technology use and environmental sustainability, which may affect the model's explanatory power.

Looking ahead, future research can be expanded in the following aspects: Conducting cross-regional comparative analyses to test the applicability of conclusions in different areas; implementing longitudinal tracking to explore long-term changes and dynamic influencing mechanisms of well-being; combining qualitative methods to deeply understand the life experiences and psychological roots of the elderly. At the theoretical level, further integration of theories such as Social Exchange Theory and Life Course Theory could be undertaken to construct a more comprehensive analytical framework, and new variables such as digital literacy and green environments could be introduced to expand the model's coverage. Simultaneously, cross-cultural comparisons could be conducted to verify the applicability of the theory under different elderly care models.

Methodologically, methodological innovation can be promoted by employing advanced statistical techniques such as latent growth curve modeling and multi-level analysis, conducting mixed-methods research combining quantitative and qualitative approaches, and leveraging big data and smart devices for real-time monitoring and dynamic assessment of elderly well-being.

Despite its limitations, this study provides a useful foundation for understanding the mechanisms influencing elderly well-being. As the aging process accelerates, future research needs to continue deepening related studies, advancing from multiple aspects such as theoretical construction, methodological innovation, and cross-cultural comparison to provide more solid academic support and practical guidance for improving the quality of life for the elderly.

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