Age, gender and psychological well-being in older students: A study on continuing education and active aging

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ARTICLE INFO	ABSTRACT
	Introduction: This study examined how age and gender relate to multiple indicators of psychological well-being among adults enrolled in university continuing-education programmes, to inform more inclusive learning designs for ageing populations. *Methods:* A quantitative, descriptive–correlational pilot study was conducted with 60 adult learners enrolled in the University Programme for Older Adults at the University of Alicante. Data were collected using a 41-item questionnaire based on Ryff's Psychological Well-Being framework and analysed using descriptive statistics, independent-samples *t*-tests, one-way ANOVA, and non-parametric correlations (Kendall's Tau-b and Spearman's Rho) when distributional assumptions were not met. *Results:* Participants were mainly aged 66–75 years (53.3%) and were predominantly women (60%). Statistically significant gender differences emerged in seven well-being items, and age-group differences were observed in ten items related to social support, loneliness, life satisfaction, stress management, and openness to change. Older age tended to be associated with higher life-satisfaction indicators and lower openness to new experiences. *Discussion:* Results support the need to tailor lifelong-learning programmes to the psychosocial profiles of adult learners, with attention to gendered patterns and age-related changes. Targeted strategies to enhance social connection, autonomy, and meaningful engagement may strengthen well-being and participation in later-life learning.

1. Introduction

Global population ageing has intensified scientific interest in understanding the relationship between age, well-being, and educational participation among older adults (Bingham, 2019; Gómez, 2016; Schmidt-Hertha, Findsen & Li, 2022; Veloso & Guimarães, 2014). A large body of research has shown that engagement in educational activities is positively associated with physical, psychological, and social well-being, promoting active ageing and contributing to the maintenance of cognitive abilities, self-esteem, and social integration (Findsen & Formosa, 2017; Grace, 2013; Hertha, Krašovec & Formosa, 2014; Schuetze & Slowey, 2013). Lifelong learning therefore emerges as a key space for meaning-making in later life, offering opportunities for personal growth, social connection, and self-actualisation (Findsen & Formosa, 2016; Lúcio, 2017).

Well-being in later life is conceptualised as a multidimensional construct integrating emotional, social, and cognitive components. In line with this, the present study adopts Carol Ryff's eudaimonic model of psychological well-being as its theoretical foundation. Eudaimonic models define well-being in terms of meaning, self-realisation, and the development of human potential (rather than pleasure or the absence of distress), and are typically operationalised through dimensions such as autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance (Ryff, 1989; Ryff & Keyes, 1995).

Educational anamnesis is introduced in this study as a key methodological and pedagogical concept. It refers to a structured process for collecting and analysing older learners' emotional histories, biographical trajectories, and motivational profiles to personalise learning environments and optimise psychological well-being. This approach builds on prior work validating its relevance in geragogical contexts (Rosser & Soler, 2024b).

It is closely shaped by engagement in meaningful activities, interpersonal relationships, and the sense of purpose—factors strongly

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influenced by sociodemographic variables such as gender (Leong et al., 2023; Ng et al., 2011; Rowe & Kahn, 1997). Evidence indicates that women often report higher satisfaction in educational and group settings, whereas men tend to display different patterns in emotional regulation and perceived social support (Pinquart & Sörensen, 2001). These findings highlight the need for an intersectional approach that considers the interplay between gender, life trajectory, and educational experiences.

The incorporation of active learning methodologies and digital technologies in older adults' education has attracted increasing attention. Although these approaches can enhance engagement and learning outcomes, studies also highlight barriers such as resistance to change, digital divides, and functional limitations associated with ageing (Zheng & Z., 2012; Zhou & Salvendy, 2015). The literature suggests that personalised instruction, pedagogical support, and adjusted pacing are essential for ensuring their effectiveness (Xie, 2011, 2012; Xie & Bugg, 2009; Xie et al., 2012).

Within this framework, the present study empirically examines how age and gender relate to different dimensions of psychological well-being among older adults participating in lifelong learning programmes. This work builds upon a consolidated line of research demonstrating the positive role of lifelong learning in emotional well-being, motivation, and life satisfaction (Rosser et al., 2024a–2024d; Soler & Rosser, 2023). However, specific interactions between age, gender, and psychological well-being in university contexts remain insufficiently studied.

Prior studies on psychological well-being in later-life learning have been conducted in diverse contexts (e.g., Universities of the Third Age and community-based adult education), but evidence from Spanish senior-university programmes remains limited. To our knowledge, no prior study has examined item-level gender and age-group patterns using this questionnaire within the UPUA context, which motivates the present pilot analysis.

The study responds to two core needs. First, to determine whether psychological well-being differs according to age or gender, identifying patterns in life satisfaction, autonomy, social relationships, and emotional perception. Second, to assess the extent to which participation in lifelong learning influences these dimensions, thereby informing evidence-based educational interventions aimed at promoting active ageing.

An interdisciplinary framework was adopted, integrating contributions from the psychology of ageing, educational gerontology, and eudaimonic models of well-being. From this perspective, well-being is understood as a dynamic process that evolves throughout the life course, shaped by emotional, social, and cognitive factors. Lifelong learning is recognised as a privileged setting for social connection, personal reflection, and self-development.

Finally, this study addresses the need for a clearly formulated research problem, explicit and testable hypotheses, and a rigorous methodological design to understand the relationship between the variables under examination. The following sections present the research objectives, hypotheses, and methodological procedures.

2. Objectives – academicenglishversion

2.1. General objective

The general objective of this study was to examine associations between age, gender, and psychological well-being among adults participating in a university continuing-education programme.

2.2. Specific objectives

1) To describe the sample by age group and gender.
2) To evaluate the internal consistency of the 41-item well-being questionnaire (Cronbach's alpha).

3) To test gender differences in well-being indicators using independent-samples *t*-tests.
4) To test age-group differences and age-related trends in well-being indicators using one-way ANOVA and non-parametric correlations.

2.3. Research hypotheses

2.3.1. Main hypothesis:
H0: Psychological well-being indicators do not differ by age group or gender in this sample.

- H1: At least one psychological well-being indicator differs by age group and/or gender in this sample.

2.3.2. Specific hypotheses:

- H1a: Men and women differ in at least one well-being indicator.
- H1b: Well-being indicators differ across age groups.
- H1c: Age is associated with selected well-being indicators (correlational trends).

3. Materials and methods

3.1. Study design

The study employed a quantitative descriptive and correlational design, suitable for analysing the relationship between sociodemographic variables (age and gender) and several dimensions of psychological well-being in older adults. This approach enabled the description of variable distributions, comparisons between groups through *t*-tests and ANOVA, and the identification of associations using both parametric and non-parametric correlations. The methodological rationale aligns with previous studies conducted in educational contexts for older adults (Rosser & Soler, 2024a; 2024c).

3.1.1. Operational definitions
Age was recorded in years and categorised into four programme-relevant groups (46–55, 56–65, 66–75, 76–85). Gender was self-reported (woman/man). Psychological well-being was operationalised using a 41-item questionnaire based on Ryff's framework (6-point Likert; higher scores indicate higher well-being; reverse-scored items were recoded before analysis). Analyses were conducted at item level, given the exploratory/pilot nature and the moderate internal consistency of the total score.

3.2. Participants

The sample comprised 60 adults enrolled in the University Programme for Older Adults at the University of Alicante (UPUA). Ages ranged from 46 to 85 years, reflecting the programme's admission policy and its heterogeneous learner profile. Gender distribution was 60 % women ($n = 36$) and 40 % men ($n = 24$). A convenience sampling strategy was used among learners attending courses delivered during the academic semester in which data collection took place. Inclusion criteria were: (a) enrolment in the programme, (b) classroom attendance on the administration day, and (c) provision of informed consent. Exclusion criteria were: incomplete consent or refusal to participate.

3.3. Instruments

A questionnaire based on Ryff's Psychological Well-Being Scale was used, an instrument widely validated across cultural contexts and applied in recent studies with adult and older-adult populations (Blasco-Belled & Alsinet, 2022; Brudek, 2021; Giraldo, et al., 2023; Mayordomo et al., 2016; Strizhitskaya, 2020; Vera-Villarroel et al., 2013). The instrument consisted of 41 items rated on a six-point Likert

scale (1 = strongly disagree; 6 = strongly agree). Total scores ranged from 41 to 246, with higher scores indicating greater psychological well-being.

Reverse-scored items were reviewed, and the instrument's sensitivity to age- and gender-related differences was examined. Internal consistency was assessed using Cronbach's alpha, yielding a moderate reliability coefficient ($\alpha = 0.580$), comparable to previous research involving heterogeneous samples of older adults (Rosser & Soler, 2024c). Data analyses were conducted using SPSS Statistics (version 29.0.1.0).

Although a formal power analysis was not conducted prior to data collection, the sample size was deemed appropriate for an exploratory pilot study aimed at identifying initial trends. Future research will include statistical power calculations to determine the optimal sample size based on effect sizes and required significance levels.

3.4. Procedure

After receiving written and oral information about the study (aims, voluntary participation, anonymity, and the right to withdraw at any point without consequences), participants provided informed consent and completed the questionnaire in paper format during regular classroom sessions at the University of Alicante. Completion required approximately 20–30 min. All distributed questionnaires were returned (response rate: 100 %). Missing data were below 1 % and were handled by pairwise deletion; no imputation was applied due to the minimal proportion of missingness. Data were stored securely in accordance with institutional regulations.

3.5. Data analysis

The statistical analysis comprised:

- descriptive statistics (means, medians, standard deviations, ranges),
- independent samples *t*-tests and ANOVA to compare gender and age groups,
- Pearson, Kendall and Spearman correlations to identify age-related trends in psychological well-being.

This multi-analytical approach is consistent with prior research on well-being and lifelong learning in older adults (Rosser & Soler, 2024a; 2024c).

3.6. Ethical considerations

The study adhered to ethical principles of autonomy, beneficence, non-maleficence, and justice. Participation was voluntary and non-incentivised. Ethical approval was granted by the Research Ethics Committee of the Universidad Internacional de La Rioja for the project "Educational Anamnesis for Emotional Well-Being in Lifelong Learning Programmes for Older Adults" (code PI:112_2024).

3.7. Limitations

Limitations include the relatively small sample size, the use of convenience sampling and the gender imbalance. Although these factors may restrict generalisability, this study forms part of a pilot phase that will be expanded in future stages to increase statistical power and explore demographic effects more thoroughly (Rosser & Soler, 2023; Soler & Rosser, 2024).

4. Results

4.1. Descriptive analysis (Age and gender)

The descriptive analysis provided an overview of the demographic

Table 1
Age frequencies.

Age range	Frequency	Percentage	Cumulative–%
46–55 years	4	6.67 %	6.67 %
56–65 years	20	33.33 %	40.00 %
66–75 years	32	53.33 %	93.33 %
76–85 years	4	6.67 %	100 %

Table 2
Gender representation in the sample.

Gender	Frequency	Percentage	Cumulative–%
Male	24	40 %	40 %
Female	36	60 %	100 %

composition of the sample. Age distribution showed a marked concentration in the 66–75 age range, representing 53.3 % of participants. The second most represented group corresponded to individuals aged 56–65 years (33.3 %). The extreme age groups (46–55 and 76–85 years) each accounted for 6.7 % of the sample. This structure indicated a bias toward older participants, which limits the generalisability of the findings to more heterogeneous populations and must be considered when interpreting variations related to autonomy, life satisfaction, or openness to new experiences.

Regarding gender, women represented 60 % of the sample, while men accounted for 40 %. This distribution is typical in lifelong learning programmes and has been documented in previous research (Rosser & Soler, 2024b). Such imbalance requires caution in comparative analyses, as female overrepresentation may influence the identification of patterns associated with subjective well-being and socio-emotional variables.

The following tables present the frequency distributions for age and gender (Tables 1–2).

4.2. Reliability: Cronbach's alpha results for each scale

The questionnaire based on Ryff's Psychological Well-Being Scale yielded a Cronbach's alpha coefficient of 0.580, indicating moderate internal consistency. The standardized item alpha reached 0.625, suggesting a slight improvement when item variances were homogenised. Although values above 0.70 are generally preferred, moderate coefficients are common in pilot studies involving heterogeneous samples of older adults.

The reliability levels observed reflect the considerable age diversity and varied life trajectories of participants, which influence how individuals interpret items related to well-being, autonomy, social relationships, and life satisfaction. The wide range of inter-item correlations illustrates this heterogeneity and its impact on internal coherence (Tables 3–4).

4.3. Comparisons and correlations: t-test/anova results.

4.3.1. T-Test by gender

Independent samples *t*-tests were conducted to compare the mean scores of men and women across several items related to psychological well-being, autonomy, interpersonal relationships, life satisfaction, and personal growth. Seven items exhibited statistically significant differences, indicating distinct gender-specific patterns (Table 5).

The observed differences reveal well-defined tendencies in perceived well-being:

- **Item 8** (perceived social support): men scored higher, suggesting a greater sense of unmet support needs.

Table 3

Reliability analysis (Cronbach's Alpha).

Test	Result
Cronbach's alpha	0.580
Standardised item alpha	0.625
Number of items	41

Table 4

Summary statistics of inter-item correlations.

Measure	Min	Max	Range	N items
Inter-item correlations	−0.885	0.874	1.759	41

- **Items 11 and 12** (satisfaction with home and autonomy for personal projects): women achieved higher means, reflecting stronger satisfaction and greater initiative.
- **Items 26 and 30** (close relationships and openness to change): men scored higher, indicating weaker perceptions of close bonds and lower willingness to implement significant changes.
- **Items 37 and 38** (personal development and lifelong learning): women presented higher scores, pointing to a greater perception of continuous growth.

Fig. 1 visually displays these differences, highlighting a female predominance in emotional well-being and personal development, and a male predominance in items associated with social support needs and lower readiness for change.

4.3.2. Effect sizes

Effect sizes were calculated using **Cohen's d** to assess the magnitude of the observed differences between men and women. According to conventional benchmarks, $d = 0.20$ represents a **small effect**, $d = 0.50$ a **medium effect**, and $d \geq 0.80$ a **large effect**. Three items exhibited large effect sizes, indicating substantial gender differences (Table 6).

Key findings include:

- **Item 8** (lack of people willing to listen): large effect ($d = 1.18934$), indicating substantive gender differences in perceived social support.
- **Item 26** (quality of close and trusting relationships): large effect ($d = 1.39596$), suggesting marked differences between men and women.
- **Item 30** (lack of intention to make meaningful life changes): large effect ($d = 1.30744$), highlighting substantial variation in openness to change.

In contrast, **Items 37 and 38**, while statistically significant in the *t*-tests, yielded effect sizes below 0.80. Although not classified as large effects, they remain relevant to understanding personal development and lifelong learning trajectories.

Fig. 2 displays the forest plot summarizing effect sizes, whereas Fig. 3 presents violin plots showing the distribution of simulated effects. Wider distributions in Items 8, 26, and 30 reflect robust gender differences, while the narrower distributions in Items 37 and 38 indicate smaller effects with greater variability.

Table 5

Items with statistically significant differences according to the *t*-test.

Item	p-value	Group with higher mean
8	0.004	Men
11	0.017	Women
12	0.009	Women
26	0.021	Men
30	0.021	Men
37	0.012	Women
38	0.007	Women

Table 6

Items with large effect sizes ($d \geq 0.80$).

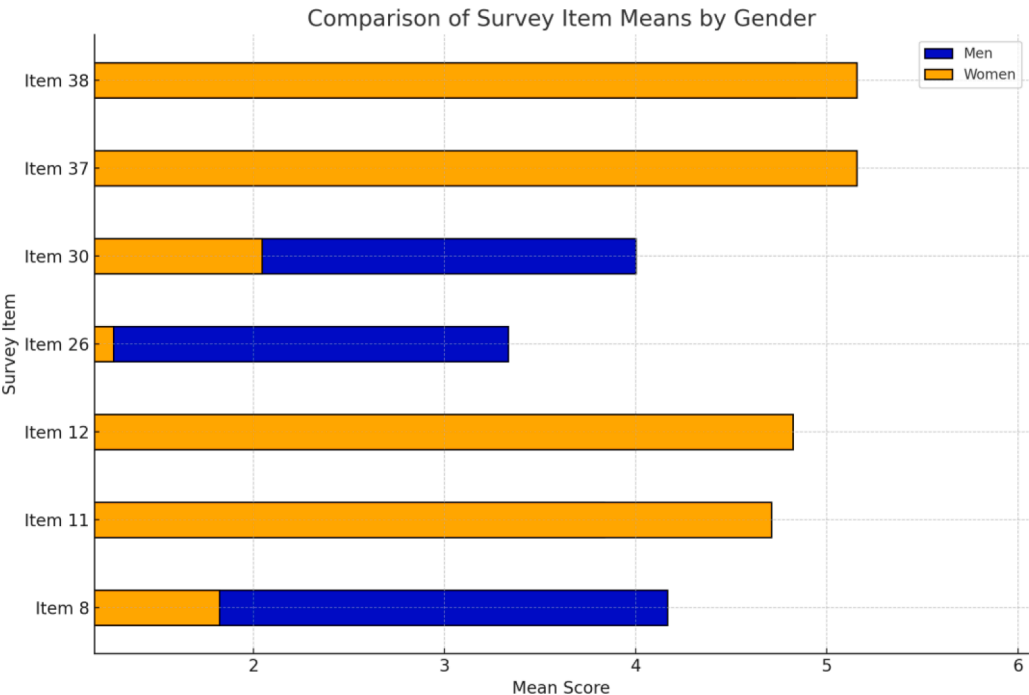| Item	Cohen's d	Hedge's g	Glass Δ	95–% CI (lower)	95–% CI (upper)
8	1.18934	1.26393	0.97183	0.406	2.818
26	1.39596	1.48352	0.86603	-0.037	3.381
30	1.30744	1.38944	1.33333	0.043	2.299
37	0.41345	0.43938	0.52705	-2.476	-0.171
38	0.48481	0.51522	0.52705	-2.646	-0.290

Fig. 1. T-test Analysis of Various Items Showing Statistically Significant Differences Between Men and Women.
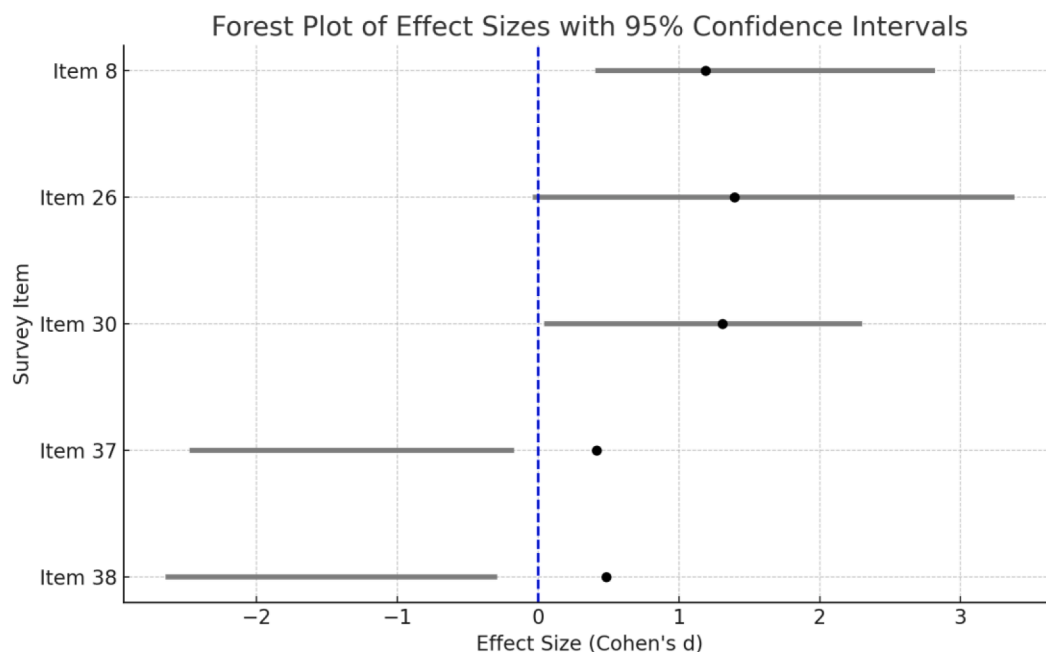
Fig. 2. Forest Plot graph showing the effect sizes for five different items assessing the differences between men and women.
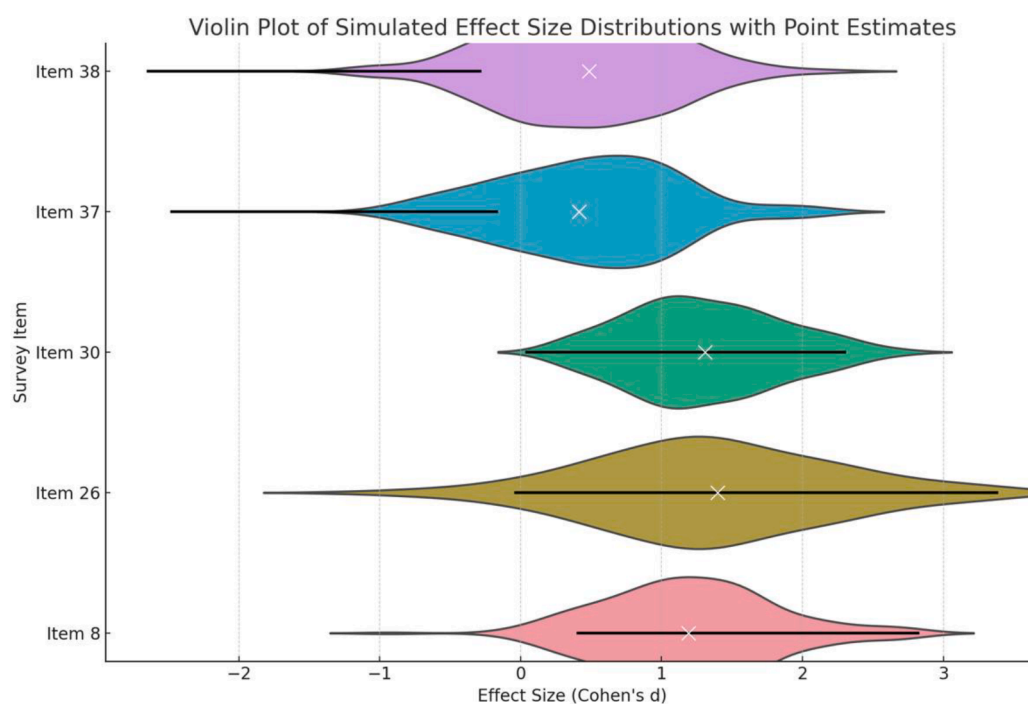

Fig. 3. Violin Plot on a visual representation of the magnitude of differences between men and women for various items.

4.3.3. ANOVA for comparing three or more groups (Age ranges)

A **one-way ANOVA** was conducted to compare wellbeing scores across the different age groups included in the sample. This analysis enabled the identification of the specific wellbeing dimensions that differed significantly between age groups, as well as those that remained stable.

Fig. 4 summarises the one-way ANOVA results across age groups using a heatmap. Rows represent questionnaire items; cell shading reflects the ANOVA p-value for each item (lighter shading indicates smaller p-values). Because heatmaps can be visually dense, we also list below the items meeting the $p < 0.05$ threshold and interpret only those

items in terms of age-related variation.

- **Item 2** (perceived loneliness)
- **Item 8** (perceived social support)
- **Item 9** (concern about others' opinions)
- **Item 11** (satisfaction with home and lifestyle)
- **Item 12** (personal initiative in carrying out projects)
- **Item 17** (satisfaction with life achievements)
- **Item 22** (stress management)
- **Item 29** (clarity of goals and purpose)
- **Item 34** (resistance to change)

Fig. 4. Heatmap summary of one-way ANOVA p-values across age groups (lighter shading indicates smaller p-values).

- **Item 35** (openness to new experiences)

These findings indicate that age exerts a significant influence on several components of wellbeing, including perceived social support, loneliness, satisfaction with past achievements, personal initiative, emotional regulation, and openness to challenging experiences—patterns consistent with established research on psychological ageing.

In contrast, a large number of items did not show significant differences ($p \geq 0.05$). These included:

- Dimensions of self-expression (Items 3, 4, 10, 21),
- Life satisfaction and self-perception (Items 1, 5, 7, 18, 19, 31),
- Social relations and perceived support (Items 14, 32),
- Responsibility management and attitudes towards change (Items 6, 28, 33, 38, 39),
- Personal development (Items 13, 36, 37),
- Goal-setting and life planning (Items 23, 30).

The stability of these items suggests that several dimensions of wellbeing remain relatively consistent across age groups, pointing to potentially universal patterns in life satisfaction, emotional self-regulation, and social connectedness within the context of lifelong education.

4.3.4. Correlations between age and overall well-being

Correlations between age and several wellbeing indicators were examined using the non-parametric **Kendall's Tau-b** and **Spearman's Rho** coefficients, both suitable for ordinal data and non-normally distributed variables. These coefficients range from –1 to 1, with negative values indicating inverse associations, positive values direct relationships, and values close to zero denoting no correlation. Statistical significance was set at $p < 0,05$.

Kendall's Tau-b revealed **moderate positive correlations** between age and several dimensions related to life satisfaction. Older participants tended to report higher levels of:

- satisfaction with having built a meaningful home and lifestyle
  (**Tau-*b* = 0.509; *p* = 0.030**),
- satisfaction when reflecting on past achievements and future expectations
  (**Tau-*b* = 0.567; *p* = 0.017**),
- overall satisfaction with their life trajectory
  (**Tau-*b* = 0.522; *p* = 0.029**).

Conversely, a **moderate negative correlation** emerged between age and the importance attributed to seeking new experiences that challenge personal views
(**Tau-*b* = –0.498; *p* = 0.035**), indicating a reduced inclination toward novelty among the oldest participants.

Spearman's Rho coefficients mirrored this pattern, confirming the robustness of the reported associations between age and these aspects of psychological wellbeing.

Fig. 5 displays the corresponding **correlogram**, where red shades denote positive correlations, blue shades indicate negative correlations, and neutral tones represent correlations of low magnitude.

Fig. 6 provides a bar chart summarising the most relevant correlations, highlighting the positive associations between age and life satisfaction, appreciation of one's past, and expectations for the future, as well as the negative association between age and the importance
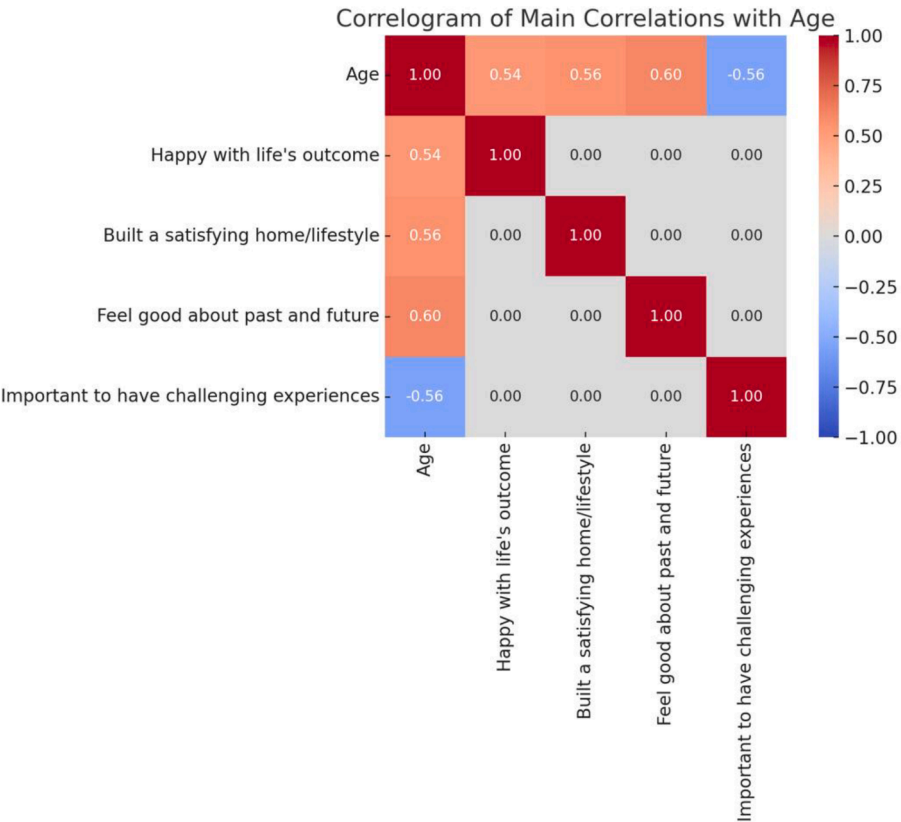
Fig. 5. Correlogram showing the correlations that represent the correlation coefficient value between different states of well-being and age.
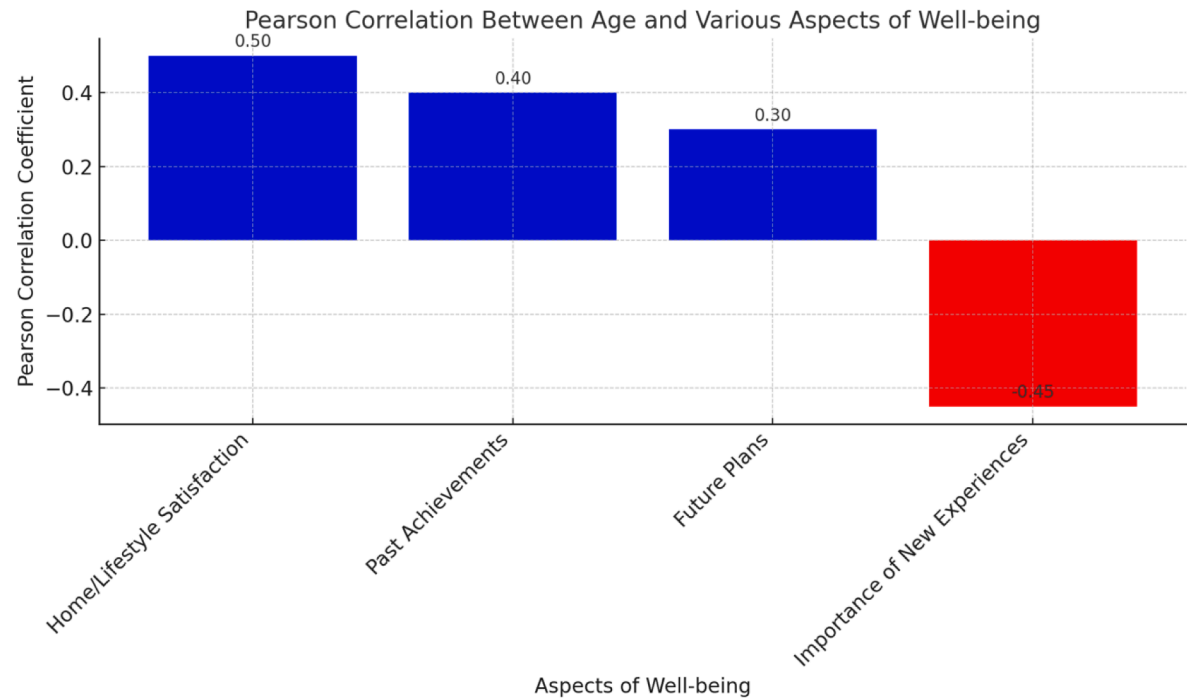

Fig. 6. Bar chart showing the correlations representing the value of Pearson's correlation coefficient between different states of well-being and age.

attributed to seeking new or challenging experiences.

Overall, the results suggested that greater satisfaction with one's lifestyle, as well as a more positive appraisal of past achievements and future prospects, increased with age. Conversely, the emphasis placed on exploring novel or challenging experiences tended to decline among older participants. These tendencies have direct implications for the design of educational programmes for older adults, as they point to differences in receptivity toward methodologies that require exploration, adaptation, or engagement with new learning environments.

4.4. Normality, outliers, and missing data

Before conducting inferential analyses, the dataset was examined to ensure compliance with basic statistical assumptions. Normality was assessed using the Shapiro–Wilk and Kolmogorov–Smirnov tests, which yielded significant results for most items ($p < 0.05$). These findings indicated deviations from normality, thereby justifying the use of non-parametric correlation coefficients (Kendall's Tau-b and Spearman's Rho) and robust procedures in the comparative analyses.

Potential univariate outliers were inspected through boxplots. Although a few atypical values were identified, none exerted a substantive influence on the overall structure of the data or on the outcomes of the statistical tests. No relevant multivariate outliers were detected.

Regarding missing data, all questionnaires were reviewed and no systematic patterns of omission were observed. The proportion of missing values was below 1 %, allowing the analyses to be performed on the complete dataset without the need for imputation techniques.

Overall, these diagnostic procedures ensured the reliability of the dataset and the validity of the descriptive, correlational, and comparative analyses, confirming that the results accurately reflected the participants' responses.

5. Discussion

The discussion integrates the empirical findings with established theoretical frameworks in the psychology of ageing, subjective wellbeing, and lifelong learning, while incorporating the specialised literature previously cited in the manuscript and the outcomes of our recent research, including contributions related to Educational Anamnesis (Rosser & Soler, 2024b). This approach strengthens the theoretical, methodological, and practical interpretation of the results.

Descriptive analyses confirmed demographic patterns widely documented in studies on adult students (Zaidi et al., 2021) and older learners (Guo et al., 2018; Liu & Chen, 2022; Pinquart & Sörensen, 2001). The predominance of women and the concentration of participants aged 66–75 reflect broader trends observed in lifelong learning contexts, where retirement and increased personal availability often facilitate reintegration into educational programmes, particularly among women. These tendencies are consistent with our earlier findings regarding wellbeing, emotional regulation, and motivation in older learners (Rosser & Soler, 2024a; Soler & Rosser, 2023).

The moderate internal consistency of the wellbeing scale ($\alpha = 0.580$) aligns with previous research applying psychological wellbeing instruments to older populations (Guzmán-Camacho & Mendoza-González, 2023; Kawakami et al., 2020; Namdeo & Rout, 2016; Tennant et al., 2007). Recent validation studies of wellbeing scales in older adults (Arapi et al., 2023; Giraldo-Rodríguez et al., 2023; Iosimuta et al., 2023) similarly reported fluctuations in reliability attributable to the diversity of emotional states, life trajectories, and sociocultural backgrounds. This phenomenon has also emerged in our recent research on wellbeing in university programmes for older adults (Rosser & Soler, 2024b).

The gender differences observed through *t*-tests and effect sizes are consistent with prior studies on gendered patterns of emotional wellbeing in later life (Costa et al., 2023; Mayordomo et al., 2016). Women in the sample showed higher levels of personal initiative, life satisfaction, and perceived growth, reflecting broader findings on emotional resilience and social engagement among older women. Conversely, men scored higher on perceived loneliness, lack of close relationships, and reduced motivation for personal change, patterns that mirror known vulnerabilities in male ageing. These findings align with our longitudinal research on emotional trajectories in older learners (Rosser & Soler, 2024c; 2024d).

These gendered dynamics have also been documented in international work. For example, Formosa (2019) highlights that older women tend to demonstrate stronger engagement, self-efficacy, and continuity in learning trajectories within European and Asia-Pacific lifelong learning contexts. Conversely, structural and cultural factors often place older men at higher risk of social withdrawal or disengagement, which helps explain the gender differences observed in this study. Integrating these findings reinforces the need to adopt gender-sensitive pedagogical approaches in lifelong learning programmes.

The ANOVA results illustrate age-related differences consistent with theoretical models such as socioemotional selectivity and emotional optimisation. Older participants showed stronger satisfaction with their life course and greater preference for stability, echoing international findings on age-related motivational shifts (Kim & Seo, 2022; Liang et al., 2023) and findings from our own research on active methodologies and technology adoption (Rosser & Soler, 2024a).

Correlation analyses reinforced these interpretations. Positive associations between age, life satisfaction, and biographical coherence align with studies on subjective wellbeing in later life (de Raadt et al., 2021; Düzel et al., 2019; Onoshima et al., 2019; Vázquez-Cano et al., 2023). The negative correlation between age and openness to new experiences corresponds with research on gerotranscendence and emotional continuity (Das et al., 2023).

Within this framework, Educational Anamnesis plays a central role (Rosser & Soler, 2024b). As a methodological tool developed and validated in our recent work, it enables the systematic integration of learners' educational histories, emotional trajectories, and motivational profiles into pedagogical planning. It supports:

- the identification of emotional and cognitive needs,
- the anticipation of resistance to methodological or technological change,
- the personalisation of learning experiences,
- emotionally safe learning environments,
- the reinforcement of wellbeing as a condition for learning.

In light of the results, Educational Anamnesis enhances the interpretative depth of quantitative findings and addresses the intrinsic heterogeneity of older learners, offering a more nuanced perspective than standardised questionnaires alone can provide.

These findings have significant implications for the design and delivery of lifelong learning programmes. Applying universal design for learning (UDL) principles may help ensure that educational content and environments remain accessible, adaptable, and responsive to older adults' diverse functional capacities and learning preferences. Furthermore, incorporating intergenerational elements—such as collaborative activities with younger learners or community-based engagement—may strengthen social connectedness, reduce stereotypes, and enhance wellbeing, in line with broader educational gerontology perspectives and frameworks on social capital that highlight the role of civic engagement and trust in community cohesion (Hertha, Krašovec & Formosa, 2014; Findsen & Formosa, 2016; Putnam, 2000).

6. Conclusions

Taken together, the results of this study provide strong evidence for the need to design educational programs for older adults that explicitly incorporate the emotional and biographical dimensions of learning, foster safe and affectively meaningful learning environments, and respect the diversity of life trajectories.

Both the specialised literature and our previous research converge on a central conclusion: psychological well-being is a structural component of learning in later life, and understanding it deeply is essential for promoting meaningful and sustainable educational experiences.

The findings confirmed that age was positively associated with retrospective and prospective life satisfaction, as well as with the perception of having built a lifestyle coherent with personal preferences. This tendency is congruent with theoretical approaches such as socioemotional selectivity and gerotranscendence, which describe a progressive prioritisation of emotional stability, affective goals, and

biographical coherence in older adulthood.

Likewise, the negative correlation between age and openness to new experiences suggests that learning processes in later life require methodologies that combine stability, predictability, and emotional support, particularly when introducing innovative activities or digital technologies.

Significant differences between men and women in key dimensions of psychological well-being further underscore the importance of integrating a gender perspective into educational design. Women reported higher satisfaction with home life, personal development, and growth, while men presented greater difficulties in areas related to social support, emotional closeness, and motivation to initiate life changes. This pattern aligns with research highlighting the relative fragility of male social networks in later life and the differing emotional coping strategies associated with gender.

Although the demographic composition of the sample limits the generalisability of results—characterised by a predominance of women and a concentration of participants aged 66 to 75—it reflects well-established patterns in lifelong education programs. These results highlight the need for future research to broaden demographic diversity and incorporate longitudinal designs to better understand the evolution of well-being in relation to educational participation.

From an applied perspective, the findings highlight the importance of designing educational experiences tailored to the specificities of ageing and gender. A person-centred approach that incorporates social support, biographical reflection, and strategies balancing stability with openness to new experiences can significantly enhance well-being among older learners. For men, in particular, interventions centred on emotional expression, network-building, and socio-affective support may be especially beneficial.

The integration of technologies and active learning methodologies should be gradual, contextualised, and emotionally supported to prevent frustration or disengagement. Technological training adapted to learners' needs and close pedagogical guidance are essential to facilitate effective learning.

Finally, the results support the relevance of the Educational Anamnesis approach (Rosser & Soler, 2024b), developed in our previous research, as an essential tool for understanding the life history, emotional background, and relational context of older learners. Its application enables the adjustment of educational interventions to real personal needs, strengthens subjective well-being, enhances motivation, and improves participation in lifelong learning programmes. Systematic integration of this tool can contribute to building more inclusive, affective, and biographically respectful pedagogical models that reflect the diversity of contemporary ageing.

Future research should prioritise expanding the sample, conducting longitudinal analyses, and deepening the study of emotional, social, and biographical dynamics and their influence on the learning experience of older adults. These developments will contribute to advancing an integrated educational model that promotes active, meaningful, and emotionally sustainable ageing.

6.1. Loneliness and education for older adults

The findings related to loneliness and social relationships confirmed that these are central dimensions of well-being in later life. Variability in perceptions of social support, interpersonal trust, and emotional closeness indicates that loneliness affects different age and gender groups in distinct ways. This pattern aligns with research documenting the prevalence of loneliness in older adults and its impact on physical, emotional, and cognitive health.

To mitigate these effects, educational programs for older adults must incorporate activities aimed at strengthening social connections, cooperation, and sense of belonging. Strategies such as dialogic learning, guided discussion groups, collaborative projects, and stable spaces for interpersonal encounters can foster meaningful networks and reduce perceived isolation, particularly among men, who often exhibit more fragile social networks (Hajek et al., 2023).

6.2. Recommendations and practical implications

The study provides clear practical implications for the planning of educational interventions:

1) Adapting content and learning pace to the interests, capacities, and motivations of older adults, incorporating opportunities for biographical reflection, goal-setting, and recognition of personal achievements.
2) Introducing active methodologies and digital technologies progressively, ensuring emotional and technical support to prevent frustration or disengagement.
3) Integrating a gender-sensitive perspective, recognising the distinct needs and experiences of men and women.
4) Applying the Educational Anamnesis approach systematically, enabling educators to understand learners' life history, emotional states, available support networks, and personal meaning-making processes.

The systematic incorporation of this approach can help generate more human, profound, and transformative educational experiences, enhancing not only academic results but also subjective well-being, motivation, and participation.

Ethics statement

Surveys conducted in this study were anonymous, and informed consent was obtained from all participants prior to their participation.

Name of the Institutional Review Board (IRB): COMITÉ DE ÉTICA DE LA INVESTIGACIÓN - International University of La Rioja, Spain

Approval number PI:086/2023

HIPAA identifiers

HIPAA identifiers are not necessary since our research is not related to health and, therefore, does not include protected health information (PHI).

CRediT authorship contribution statement

Pablo Rosser: Writing – review & editing, Visualization, Software, Methodology, Investigation, Conceptualization. **Seila Soler:** Writing – original draft, Validation, Investigation, Formal analysis, Data curation.

Declaration of competing interest

The authors declare no conflicts of interest.

Data availability

No data was used for the research described in the article.

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