Well-being of Older Adults in Continuing Education: Age and Gender Exploration

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Abstract

This pilot study, a precursor to more in-depth research, examines the relationship between age, gender, and well-being in older adults participating in educational programs. Employing a quantitative design, descriptive analyses, T-Tests, ANOVA, and correlations were used to assess participants' responses. The results highlight an imbalanced age and gender distribution, with a predominance of individuals aged 66–75 and a higher proportion of women. The analyses reveal significant differences in well-being based on gender and age. Correlations indicate that as age increases, so does satisfaction with past and future life, although interest in new challenging experiences decreases. This study underscores the importance of considering demographic differences when designing and implementing educational programs for older adults, emphasizing the need for specific adaptations to maximize well-being and participation.

Introduction

The intersection between age, well-being, and education in older adults has been a subject of increasing interest in the scientific literature, particularly in the context of the global population aging (Bingham 2019; Gómez 2016; Schmidt-Hertha, Findsen, and Li 2022; Veloso and Guimarães 2014). Various studies have addressed how these elements interact and affect the quality of life of individuals as they age, highlighting the importance of adapting educational and well-being interventions to the specific needs of this demographic group (Brian Findsen 2018; Formosa 2019; Hertha, Krašovec, and Formosa 2014).

Participation in educational activities has been consistently associated with an improvement in the well-being of older adults (Findsen and Formosa 2017; Grace 2013; Hertha, Krašovec, and Formosa 2014; Schuetze and Slowey 2013). Continuing education emerges as a powerful tool to foster active and healthy aging, providing cognitive, emotional, and social benefits. Education in later life contributes not only to the maintenance of cognitive capacities but also to the enrichment of social life and the strengthening of self-esteem (Findsen and Formosa 2016; Grace 2013; Lúcio 2017).

Well-being in later life is a multidimensional construct that includes physical, psychological, and social well-being. Various research has shown that well-being is intrinsically linked to participation in meaningful activities, interpersonal relationships, and the perception of autonomy and purpose. Hence, the importance of subjective well-being is strongly influenced by social, economic, and psychological factors (Leong et al. 2023; Ng et al. 2011; Rowe and Kahn 1998, 2000).

Gender emerges as a significant variable in the experience of aging and education. The literature indicates differences in how men and women experience old age, especially in terms of social roles, and expectations, and how these affect their well-being and participation in educational activities. A study by Pinquart and Sörensen found that women tend to report higher levels of satisfaction in group and educational activities, suggesting differences in educational preferences and needs between genders (Pinquart and Sörensen 2001).

The integration of active methodologies and the use of technology in older adult education has been the subject of analysis, with mixed results (Zheng and Z. 2012; Zhou and Salvendy 2015). While some studies underline the benefits of these tools for enhancing participation and learning, others point out barriers such as resistance to change and physical or cognitive limitations. However, personalization and adequate support can increase the effectiveness of these strategies (Xie 2011, 2012; Xie and Bugg 2009; Xie et al. 2012).

In this context, our research seeks to provide empirical evidence on how age and gender influence the well-being of older adults in educational settings, as well as to assess the impact of active methodologies and the use of technologies. Given global aging and the importance of promoting healthy aging, understanding these dynamics is essential for designing educational programs that effectively meet the needs of this population group.

Objectives

General Objective

To assess how demographic characteristics (age and gender) and the perception of overall well-being are related to each other in a group of older students, in order to better understand the needs and preferences of this collective within the educational context.

Specific Objectives

- Describe the demographic distribution of the sample in terms of age and gender, identifying main trends and imbalances.

- Analyze the reliability of the instrument used to measure overall well-being, considering the internal consistency of items related to this variable.

- Explore differences in the perception of well-being according to gender, using T-tests and ANOVA to compare responses between men and women.

- Investigate the relationship between participants' age and their perception of overall well-being, using correlation techniques to identify significant trends.

- Propose specific recommendations to improve educational and well-being practices, based on findings on how age and gender differences influence the perception of well-being.

Research Hypotheses

Main Hypothesis:

There is a significant relationship between the demographic characteristics (age and gender) of older students and their perception of overall well-being, implying that these variables should be considered when designing and implementing educational programs targeted at this population group.

Specific Hypotheses:

- H1: Participants of different age ranges will show significant differences in their perception of overall well-being, with higher levels of satisfaction in older age groups.

- H2: There are significant differences in the perception of overall well-being between men and women, with specific response patterns reflecting the unique needs and experiences of each gender.

- H3: The reliability of the instrument used to measure overall well-being varies depending on the demographic characteristics of the sample, suggesting the need to adjust the instrument to ensure its applicability to specific groups.

Materials and methods

Study Design:

This study adopts a descriptive and correlational quantitative design to examine how demographic characteristics (age and gender) and the perception of overall well-being relate to each other in a sample of older students. Through descriptive analysis, T-tests, ANOVA, and correlations, it aims to understand the needs and preferences of this collective in the educational context.

Participants:

As a pilot test of a larger study to be conducted shortly, the sample consists of 60 students from the University Program for Older Adults at the University of Alicante (UPUA), aged between 46 and 85 years. The participants are distributed as 60% women and 40% men, reflecting a gender imbalance. The selection of participants was made from the students of the subjects taught by one of the authors of this research, considering accessibility and the willingness of students to participate in the study.

Instruments:

A Ryff-type questionnaire (Blasco-Belled and Alsinet 2022; Brudek 2021; Mayordomo et al. 2016; Strizhitskaya 2020; Vera-Villarroel et al. 2013) was used to assess overall well-being, consisting of 41 items that participants answered on a Likert scale. To ensure the validity and reliability of the instrument, an analysis of internal consistency using Cronbach's Alpha coefficient was performed. Quantitative analyses were carried out using SPSS Statistics software, version 29.0.1.0, allowing efficient data handling and robust statistical interpretation.

Procedure:

Participants were informed about the aim and nature of the study before their participation. After obtaining their informed consent, they were provided with the questionnaire to complete anonymously. The collected data were stored and analyzed following confidentiality and privacy standards.

Data Analysis:

Data analysis included descriptive statistics to characterize the sample, T-tests and ANOVA to explore differences in well-being perception according to gender and age, and Pearson, Kendall, and Spearman correlations to investigate the relationship between age and overall well-being. This multifaceted approach allowed for a comprehensive understanding of how the studied variables interact with each other.

Ethical Considerations:

Confidentiality and anonymity of the participants were ensured, complying with the ethical principles of respect for autonomy, non-maleficence, beneficence, and justice. The study received approval from the corresponding ethics committee, ensuring that all practices were aligned with international ethical standards.

Limitations:

The study recognizes several limitations, including the small sample size and gender imbalance, which could affect the generalization of the results. Additionally, the use of convenience sampling limits the representativeness of the sample. Nonetheless, considering that this is a pilot test, the study will be expanded by increasing the sample size and including a broader age spectrum and a more balanced gender distribution to enhance the applicability of the findings (Rosser and Soler 2023; Soler and Rosser 2024).

Results

Descriptive Analysis (Age and Gender):

Here, we present the results of the Descriptive Analysis, featuring measures of central tendency and dispersion. The analyzed sample is characterized by a majority in the age range of 66–75 years (53.3%), followed by 56–65 years (33.3%), with minimal representation in the groups of 46–55 and 76–85 years (6.7% each). This inclination towards older ages limits the generalization of results to a wider range of ages and underscores the importance of considering the effect of this bias in data interpretation. Additionally, a gender imbalance is observed, with 60% women compared to 40% men, which may influence the generalization of findings to populations with more balanced gender distributions. This female predominance demands detailed analysis to ensure the validity of the identified trends, highlighting the need for adjustments in future analyses that consider these disparities in both age and gender (Tables 1–2).

Table 1. Age Frequencies

Table 2. Gender Representation in the Sample

Reliability: Cronbach's Alpha Results for Each Scale.

Based on the information analyzed previously and considering that the survey items are designed to measure similar constructs (overall well-being), we will calculate Cronbach's Alpha to assess the internal consistency of the items (Table 3).

Table 3. Reliability Analysis (Cronbach's Alpha)

A Cronbach's Alpha of 0.580 indicates moderate to low reliability. Generally, an alpha value above 0.7 is considered acceptable in social research, although values between 0.6 and 0.7 may be permissible in the early stages of research. The slightly higher value of the alpha for standardized items suggests that standardizing the items could improve internal consistency. With 41 items, the scale is quite extensive. The means and standard deviations of the items vary, indicating different levels of agreement among participants.

Indeed, the scale shows moderate to low internal consistency. This could indicate that some items are not effectively measuring the same construct of well-being among the group of older adult students, as concluded when analyzing means and modes. Cronbach's Alpha is a measure of internal consistency or reliability of a questionnaire. A Cronbach's Alpha value of .580, although moderately low, is not unusual in social sciences, especially in studies involving human attitudes and perceptions, which tend to be more subjective and variable. In this regard, variability in the ages of respondents could contribute to a lower Cronbach's Alpha. Differences in life stages could significantly influence how individuals respond to questions about their well-being, relationships, and self-perceptions. Each age group may have different perspectives and experiences affecting how they answer the questionnaire's questions.

Indeed, a person's priorities, concerns, and values can change significantly throughout their life. For example, younger individuals might be more focused on career development and relationships, while older individuals might reflect more on life satisfaction and deep personal connections. On the other hand, life's accumulated experiences can alter one's self-perception and perception of relationships. Older individuals may have a more nuanced perspective or accept aspects of their lives that younger ones are still exploring or challenging. Third, the quantity and quality of social relationships tend to change with age. Younger people might have wider but shallower social networks, while older individuals might have smaller but deeper networks.

These differences can lead to greater variability in responses among age groups, which could reduce the internal consistency of the questionnaire measured by Cronbach's Alpha (Table 4).

Table 4. Summary Item Statistics

Comparisons and Correlations: T-Test/ANOVA Results.

Given our interest in comparing responses between different groups, that is, comparing well-being according to age or gender, we will use the T-Test (for two groups) or ANOVA (for more than two groups).

T-Test by Gender

A series of independent sample t-tests have been conducted to compare the means of two groups by gender, across a variety of items related to the well-being and attitudes of older adult students in class. The groups are divided by gender (1 = men and 2 = women). The initial observation is that there are significant differences by Gender. Indeed, on several items, there are statistically significant differences between the two groups (Table 5).

Table 5. T-Test Results for Each Item with Significant Differences

The bar chart in Fig. 1 demonstrates how, indeed, the T-test analysis has identified several items where there are statistically significant differences between men and women. For instance, item 8, which relates to having people who listen, shows a higher mean for men, indicating that in this study they feel a stronger lack of social support than women do. This is supported by a significance level of $p = 0.004$, statistically significant, suggesting that the observed difference is unlikely to be due to chance.

For item 11, which deals with the ability to build a comfortable home and lifestyle, women have a higher mean, indicating greater satisfaction in this aspect compared to men, with a significance of $p = 0.017$.

Similarly, in item 12, women showed greater activity in carrying out self-proposed projects, with a significance of $p = 0.009$, suggesting that women may be more engaged or have greater autonomy in project activities.

Items 26 and 30 showed higher means for men, suggesting that men may more often experience a lack of close and reliable relationships and a tendency not to attempt significant improvements or changes in their lives, with a significance of $p = 0.021$ in both cases.

Finally, items 37 and 38 reflect higher means for women, indicating that they feel they have developed more as persons and that life has been a process of learning, change, and growth, with significances of $p = 0.012$ and $p = 0.007$, respectively (Fig. 1).

Figure 1. T-test Analysis of Various Items Showing Statistically Significant Differences Between Men and Women

Effect Sizes:

Effect sizes, such as Cohen's d, indicate the magnitude of these differences. Higher values suggest more pronounced differences between groups. For example, items 8 and 26 show relatively large effect sizes, suggesting notable differences in these aspects between groups. Generally, a Cohen's d of 0.2 is considered a small effect, 0.5 a medium effect, and 0.8 or higher a large effect (Table 6).

Table 6. Items with a Large Effect Size ($d \geq 0.8$)

The Forest Plot graph in Fig. 2 displays the effect sizes for five different items and evaluates the differences between men and women. Thus, Item 8 ("I don't have many people who want to listen to me when I need to talk") shows a Cohen's d effect size of 1.18934, which is considered large by conventional standards. This indicates a notable difference between genders in the perception of having social support to be heard, being more pronounced in men according to the study results.

Item 26 ("I haven't experienced many close and trusting relationships"), with a Cohen's d of 1.39596, also represents a large effect. This suggests a marked difference between men and women in the experience of close and trusting relationships, with a greater impact on the male group.

Meanwhile, Item 30 ("It's been a long time since I stopped trying to make major improvements or changes in my life"), with an effect size of 1.30744, also reflects a substantial difference between genders, where men report more frequently that they have stopped trying to make significant improvements or changes in their lives.

Lastly, items 37 and 38 have effect sizes smaller than 0.8 and, therefore, are not considered large according to the given classification. Although the outcome on these items might still be relevant, the differences between genders are not as pronounced as in the previous items (Fig. 2).

Figure 2. Forest Plot graph showing the effect sizes for five different items assessing the differences between men and women.

The violin plot in Fig. 3 provides a visual representation of the magnitude of differences between men and women for various items. The plot shows that items 8, 26, and 30 have wider distributions of simulated effects, implying a greater certainty that the observed differences are robust and consistent. Items 37 and 38 feature narrower distributions centered close to zero, indicating that any differences between groups are less pronounced and subject to greater variability or uncertainty (Fig. 3).

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

ANOVA for Comparing Three or More Groups (Age Ranges)

We have already mentioned the ANOVA results earlier when discussing how variability in age could explain alterations in the sample's reliability. Here, we'll explore other approaches.

The ANOVA results reveal areas where perceptions or experiences significantly vary between groups, as well as areas where differences are not significant. By analyzing the ANOVA study items that showed significant differences (Sig. < 0.05), we can gain valuable insight into the areas where the evaluated groups differ in their experiences or perceptions.

The heatmap graph in Fig. 4 visualizes the levels of statistical significance of items, measured through an ANOVA. Each row of the heatmap represents a survey item, and the color of each row corresponds to the p-value obtained in the ANOVA for that specific item. Darker colors (deep blue) indicate a higher p-value and, therefore, lesser statistical significance; lighter colors (red) represent lower p-values, indicating greater statistical significance (Fig. 4).

Figure 4. Heatmap of the statistical significance levels of a series of items, measured through an ANOVA.

When examining the graph, several points stand out. Certain items show lighter colors, indicating a p-value lower than 0.05, and therefore, statistical significance. This evidence suggests significant differences in how different groups have responded to these items. Specific items with significant differences include items 2, 8, 9, 11, 12, 22, 29, 34, and 35, indicating that perceptions and experiences related to these questions vary significantly among the compared groups.

Items 2 ("I often feel lonely because I have few close friends with whom I can share my concerns") and 26 ("I have not experienced many close and trusting relationships") have p-values of 0.025 and 0.041, respectively, suggesting that feelings of loneliness and the quality of close relationships may significantly vary between age groups.

Items 9 ("I tend to worry about what other people think of me") and 34 ("I do not want to try new ways of doing things; my life is fine as it is") with p-values of 0.026 and 0.027, respectively, reveal that concerns about others' opinions and resistance to change also significantly vary among groups.

Items like 12 ("I am an active person in carrying out the projects I set for myself") and 17 ("I feel good when I think about what I have done in the past and what I hope to do in the future") with p-values of 0.011 and 0.002 show significant differences in how individuals from different age groups feel about their activity and life satisfaction.

Thus, items on Loneliness and Social Relationships (Items 2, 26) focus on feeling lonely and lacking close and trusting relationships. The significant differences suggest some groups may experience more loneliness or have fewer intimate relationships compared to others. This could be influenced by factors such as age, lifestyle, or cultural differences (Fig. 5).

Items related to Concerns About Others' Opinions (Items 9, 34) address worry about what others think and resistance to trying new ways of doing things. The significant differences indicate some groups might be more susceptible to social influence or more resistant to change than others (Fig. 5).

Items on Attitude Toward Life and Achievements (Items 12, 17, 22, 29, 35) relate to activity in carrying out projects, satisfaction with past and future achievements, depression due to daily demands, clarity in life goals, and the importance of new experiences. The significant differences could reflect variations in motivation, resilience to stress, and openness to new experiences among the groups. This may be related to differences in education, economic situation, or mental health (Fig. 5).

Figure 5. Sequence diagram showing significant differences between groups in terms of loneliness, concern about others' opinions, and attitude toward life and achievements.

The presence of significant differences in these items highlights areas where the experiences and perceptions of individuals vary considerably between groups. This can be crucial for understanding the specific needs of each group. It's important to analyze these results within the broader framework of our research and consider how differences between groups might be affected by a variety of factors, including, but not limited to, demographics, socioeconomic, and cultural context.

Now, by analyzing the ANOVA items that did not show significant differences (Sig. ≥ 0.05), we can gain a deeper understanding of the aspects in which the evaluated groups have similar experiences or perceptions (Fig. 6). Thus, the items of Expression of Opinions and Self-Assessment (Items 3, 4, 10, 21), relate to confidence in expressing opinions and evaluating one's own life choices. The lack of significant differences suggests that, regardless of the group, people may have similar levels of confidence in their opinions and in how they assess their life decisions.

On the other hand, the items of Life Satisfaction and Self-Perception (Items 1, 5, 7, 18, 19, 31), address aspects such as satisfaction with past life, self-assurance, and personality perception. The absence of significant differences indicates that these feelings may be consistent across different groups, suggesting that factors like self-esteem and overall life satisfaction might not be strongly influenced by the variables that differentiate the groups.

The items of Social Relationships and Support (Items 14, 32), focus on the perception of friendships and trust in relationships. The similarity between the groups suggests that experiences related to social support and the quality of friendships do not vary significantly among them.

The items of Managing Responsibilities and Change (Items 6, 28, 33, 38, 39), explore how people handle responsibilities, their openness to change, and proactivity in improving their life situation. The lack of differences indicates that these aspects of daily life management and attitude toward change are similar among the groups.

The items of Self-improvement and Personal Growth (Items 13, 36, 37), address the perception of self-improvement and personal development. The similarity in results suggests a widespread tendency among the groups toward how they view their personal growth over time.

The items of Facing Challenges and Setting Goals (Items 23, 29, 30), relate to the clarity of life goals and attitudes toward facing challenges and changes. The absence of statistically significant differences could indicate that most individuals, regardless of their group, have similar levels of ambiguity or clarity regarding their goals and their willingness to address life changes.

Therefore, the lack of significant differences in these items is evidence that certain human experiences and perceptions might be universal or less influenced by the specific variables that differentiate the groups in the study (Fig. 6).

Figure 6. Sequence diagram showing how the evaluated groups share similarities across various categories based on the lack of significant differences in the ANOVA items.

To interpret the implications of the ANOVA results within the context of our research, it's crucial to consider the general theme and specific objectives of the study, as depicted in Fig. 7. On one side, there are Areas with Significant Differences (Sig. < 0.05). These items point to aspects where the experiences or perceptions of the groups significantly differ. For example, Loneliness and Intimate Relationships (Item 2), where differences in loneliness may suggest variations in the quality of social relationships among the groups. Concerns about Others' Perceptions (Item 9), where some groups may be more affected by external opinions than others. Activity in Personal Projects (Item 12), where differences in proactivity could reflect variability in motivation or resources among the groups. Lastly, Well-being and Life-related Depression (Items 17 and 22), may indicate differences in overall emotional well-being and how groups manage daily stress.

On the other side, there are Areas without Significant Differences (Sig. ≥ 0.05). Items without significant differences suggest that the experiences or perceptions in these areas are relatively similar among the groups. This implies that certain aspects of human experience or attitudes are more universal or less affected by the variables that differentiate the groups in the study.

Figure 7. Mind map to interpret the implications of the ANOVA results within the research context.

Correlations Between Age and Overall Well-being:

To explore relationships between different items or variables (in our case, the relationship between age and overall well-being), we'll use Pearson's correlation coefficient. Correlations measure the strength and direction of the linear relationship between two variables. Both Kendall's Tau-b and Spearman's Rho are rank correlation measures, meaning they consider the order of the values rather than the actual values. Tau-b is more suitable for data with many ties, while Spearman's Rho is a more traditional and general measure of rank correlation. Kendall's Tau-b correlation values range from − 1 to 1. A value of 1 indicates a perfect positive correlation, -1 indicates a perfect negative correlation, and 0 indicates no correlation. Significance indicates whether the observed correlation is statistically significant. Generally, a p-value < 0.05 indicates there's less than a 5% chance that the observed correlation is due to chance.

Now, let's analyze some interesting significant correlations (p < 0.05) using Kendall's Tau-b. Age shows a moderate positive correlation with "I have been able to build a home and a way of life to my liking" (Correlation: 0.509, Bilateral Significance: 0.030) and "I feel good when I think about what I have done in the past and what I hope to do in the future" (Correlation: 0.567, Bilateral Significance: 0.017). Also, "When I review the story of my life, I am happy with how things have turned out." (Correlation: 0.522, Bilateral Significance: 0.029).

There is a moderate negative correlation of age with "I think it's important to have new experiences that challenge what one thinks about oneself and the world" (Correlation: -0.498, Bilateral Significance: 0.035).

As for Spearman's Rho, similar correlations with age and the same variables are observed, indicating a consistent trend in both types of correlation analysis.

These results suggest that as people age, they tend to feel more satisfied with their past and future life, as well as with the home and lifestyle they have built. On the other hand, they show a tendency to value less the importance of having new experiences that challenge their perspectives. This is relevant in education, especially if we consider implementing active teaching methodologies. They may not always be well received.

The correlogram in Fig. 8 shows such correlations between different states of well-being and age. The color of each square indicates the strength and direction of the correlation: shades of red indicate a positive correlation, shades of blue indicate a negative correlation and light brown indicates a null or very low correlation (Fig. 8).

Figure 8. Correlogram showing the correlations that represent the correlation coefficient value between different states of well-being and age.

The bilateral significance indicates that all these correlations are statistically significant, with a p-value less than 0.05, implying there's less than a 5% probability that these correlations are the result of chance. We can graphically represent the most important information on how age affects satisfaction with home and lifestyle, past achievements, future plans, and the importance of new experiences (Fig. 9).

Figure 9. Bar chart showing the correlations representing the value of Pearson's correlation coefficient between different states of well-being and age.

As we've noted earlier, the tendency to value new challenging experiences less with age could mean that active teaching methodologies, or the implementation of AI, might not be as well received by an older audience. This is an important point to consider when designing educational programs for adults or implementing changes in the education of older individuals. Understanding these preferences can help in tailoring educational content and delivery methods that are more likely to engage and benefit this demographic, ensuring that the learning experience is both relevant and rewarding..

Discussion

The discussion of the methods employed in our study and its results is enriched by contrasting them with examples from the scientific literature that have applied similar techniques in related contexts. These examples provide a comparative framework for assessing the effectiveness and implications of our findings in the field of well-being and education among older adults.

The use of descriptive analysis to characterize samples in terms of age and gender is a common practice in research on students (Zaidi et al. 2021), as well as for older adults (Guo et al. 2018; Liu and Chen 2022; M. Pinquart and Sörensen 2001).

Cronbach's Alpha is widely used to assess the internal consistency of instruments in psychosocial studies (Guzmán-Camacho and Mendoza-González 2023; Kawakami et al. 2020; Namdeo and Rout 2016; Rencz et al. 2019; Tennant et al. 2007; Vaske, Beaman, and Sponarski 2017). It has also been applied to validate a well-being questionnaire for older adults (Arapi et al. 2023; Giraldo-Rodríguez, Álvarez-Cisneros, and Agudelo-Botero 2023; Iosimuta et al. 2023). Similar to our study, this methodological approach is critical to ensure that measurement instruments are reliable and valid for the target population.

The T-Test and ANOVA are common statistical tools for comparing means between groups. ANOVA has been used to investigate differences in emotional well-being and depression among groups of older adults (Costa et al. 2023; Kim and Seo 2022; Liang et al. 2023; Mayordomo et al. 2016). This

methodological approach is similar to the one employed in our research to explore well-being differences associated with variables such as age and gender, providing evidence on how these factors can influence responses to educational and well-being interventions.

Correlation analysis is fundamental for exploring relationships between variables. Some research used Pearson (Onoshima et al. 2019) and Spearman correlations (de Raadt et al. 2021; Puth, Neuhäuser, and Ruxton 2015; Vázquez-Cano et al. 2023) to also examine depression (Kim and Seo 2022), geotranscendence (Das, Yavagal, and Nandeeshwar 2023), among older adults. These findings are consistent with those of our study, underscoring the importance of considering the age dimension in the design of educational and technological programs for this group.

Conclusions

This study aimed to explore the relationship between age, gender, and the perception of overall well-being in a sample of older students, to better understand their needs and preferences within the educational context. Through a rigorous methodological approach, which included descriptive analysis, T-tests, ANOVA, and correlations, we have obtained valuable conclusions that allow us to assess the extent to which the initially posed hypotheses have been met.

The hypothesis that there would be a positive correlation between age and certain aspects of overall well-being has been partially confirmed. The analyses revealed that as people age, they tend to feel more satisfied with their past and future life, as well as with the homes and lifestyles they have built. However, there was also a tendency to value new experiences that challenge their perspectives less. This indicates that although aging may bring increased satisfaction in some areas of life, it may also reduce openness to new experiences.

The assumption that there would be significant differences in the perception of well-being based on the gender of the participants has been confirmed. Women showed greater satisfaction in aspects related to building a home and lifestyle to their liking, while men reported a greater need to be heard and lower satisfaction in some areas of well-being. These gender differences underline the importance of considering the gender perspective when designing educational and well-being programs for older adults.

It was suggested that the imbalance in gender distribution and the concentration of the sample in certain age ranges would limit the generalization of the results. This hypothesis has been fully confirmed. The predominance of a specific age range (66–75 years) and a higher proportion of women in the sample suggest that the findings may not be entirely applicable to a more diverse population in terms of age and gender. This aspect highlights the need for caution when extrapolating results to other demographic groups.

The findings of the study have significant implications for the adaptation and improvement of teaching directed at older adults, suggesting the need for a personalized approach that considers gender differences and changing preferences with age. Furthermore, they highlight the importance of fostering social support, especially for men, and promoting activities that increase satisfaction in crucial areas of well-being.

For future research, we will expand the sample and strive for a more equitable representation in terms of age and gender. Furthermore, we will explore in greater depth how different teaching methodologies may be perceived by this collective, especially regarding the incorporation of new technologies and active methodologies in the education of older adults.

Loneliness and Education for Older Adults

The results obtained on loneliness and social relationships highlight a critical facet of older adult education: the imperative need to integrate social and relational components into educational programs aimed at this population. This study has shown that loneliness and the lack of close and trusting relationships are significant aspects affecting some groups of older adults, possibly exacerbated by factors such as age, lifestyle, or cultural differences (Hajek, Riedel-Heller, and König 2023; Jasper, Martin, and Bishop 2017; Martin Pinquart and Sorensen 2001; Martin Pinquart and Sörensen 2003). The significant variation in the experience of loneliness and the quality of interpersonal relationships suggests an opportunity for older adult education to serve not only as a means for knowledge acquisition but also as a vehicle for enhancing the social and emotional well-being of participants.

To effectively address these challenges, educational programs designed for older adults must incorporate specific strategies aimed at fostering social interaction and creating support networks. This could include the development of group activities that promote teamwork and collaboration, spaces for dialogue and sharing personal experiences, and programs that stimulate the creation of lasting interpersonal bonds. By doing so, educational programs can become a powerful means to combat loneliness and promote meaningful social relationships among older adults.

Moreover, these findings underscore the importance of adopting a holistic approach in older adult education, one that recognizes and addresses the emotional and social dimensions of learning. Recognizing loneliness as a significant factor that can influence the educational experience of older adults allows for the creation of more inclusive, empathetic, and effective learning environments, which not only enrich participants' knowledge and skills but also enhance their overall well-being and quality of life (Düzel et al. 2019lür et al. 2016; Ren et al. 2022; Srivastava et al. 2021).

Practical Implications:

The findings of this study offer several crucial practical implications for the design and implementation of educational and well-being programs aimed at older adults. These implications are geared towards improving the quality of life and educational experience of this demographic group, considering the particularities revealed in terms of age and gender.

The evidence suggests it is fundamental to personalize educational programs to fit the needs and preferences of older adults, considering gender differences and changes in preferences that accompany aging. This could include adapting content to make it more relevant to their interests and including methodologies that promote emotional and social well-being.

Given that men expressed a greater need to be heard, it is important to integrate opportunities for social support and interaction within educational programs. This could take the form of discussion groups, collaborative activities, and peer support networks, fostering an environment where all participants feel heard and valued.

The results indicate that older adults highly value satisfaction with their past and future life. Therefore, incorporating elements that encourage reflection on personal achievements and future plans can significantly enrich their educational experience. This could include workshops on life planning, goal setting, and reminiscence techniques.

The tendency to value new challenging experiences less with age suggests the need to balance the introduction of new technologies and active methodologies carefully. It is crucial to offer guidance and additional support when these innovations are introduced, ensuring that older adults do not feel overwhelmed or excluded.

Programs should not be limited solely to the educational realm but extended to well-being interventions that address aspects such as emotional health, stress management, and promoting healthy lifestyles, within the concept we have coined of Educational Anamnesis(Rosser and Soler 2024). Implementing workshops on stress management, mindfulness, and adapted physical activities can have a positive impact on their overall well-being.

The significant differences in the perception of well-being between men and women underline the importance of considering gender when planning and executing programs. This implies both offering content that resonates with the specific needs of each gender and creating safe spaces for the expression of individual concerns and needs.

Declarations

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).

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Tables

Table 1. Age Frequencies

Age Range	Frequency	Percentage	% Cumulative
Between 46 and 55	4	6,666667	6,666667
56-65	20	33,33333	40
66-75	32	53,33333	93,33333
76-85	4	6,666667	100

Table 2. Gender Representation in the Sample

Sex	Frequency	Percentage	% Cumulative
Male	24	40	40
Female	36	60	100

Table 3. Reliability Analysis (Cronbach's Alpha)

Tests	Results
Cronbach's Alpha	0,580
Cronbach's Alpha for Standardized Items	0,625
Number of Items	41

Table 4. Summary Item Statistics

	Mean	Minimum	Maximum	Range	Max/Min	Variance	N of Items
Item Correlations	,039	-,885	,874	1,759	-,988	,137	41

Table 5. T-Test Results for Each Item with Significant Differences

Item	Significance (p-value)	Group with Higher Mean
Item 8	0,004	Men
Item 11	0,017	Women
Item 12	0,009	Women
Item 26	0,021	Men
Item 30	0,021	Men
Item 37	0,012	Women
Item 38	0,007	Women

Table 6. Items with a Large Effect Size (d ≥ 0.8)

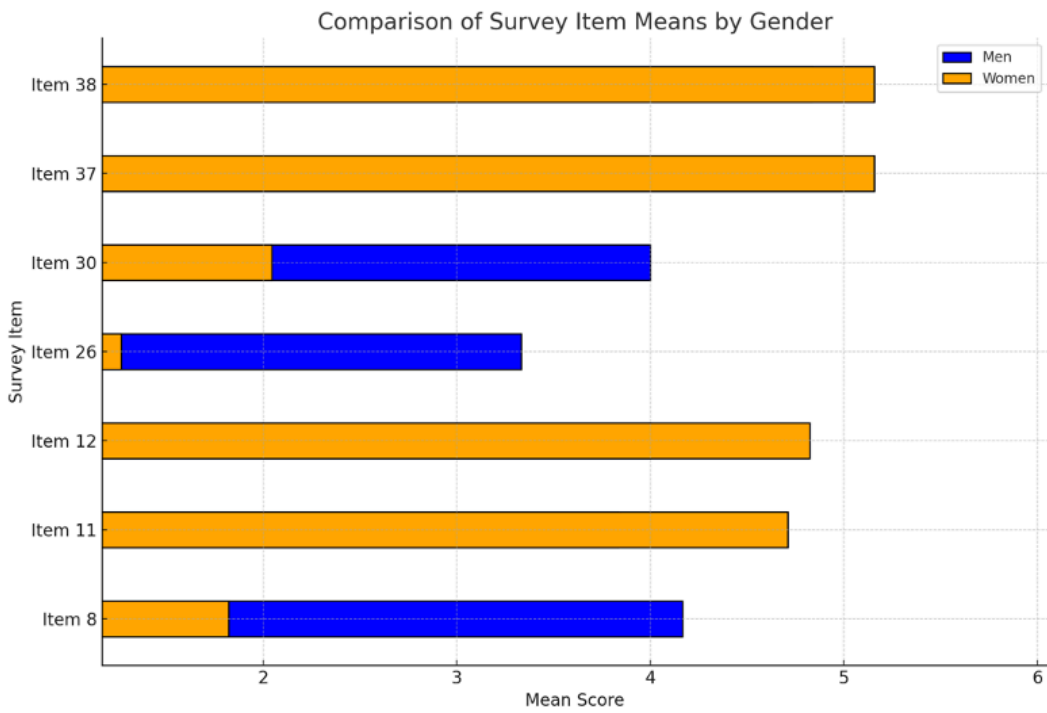| Item	Cohen's d	Hedges' g	Glass' Δ	95% CI Lower	95% CI Upper
Item 8	1,18934	1,26393	0,97183	0,406	2,818
Item 26	1,39596	1,48352	0,86603	-0,037	3,381
Item 30	1,30744	1,38944	1,33333	0,043	2,299
Item 37	0,41345	0,43938	0,52705	-2,476	-0,171
Item 38	0,48481	0,51522	0,52705	-2,646	-0,29

Figures

Figure 1

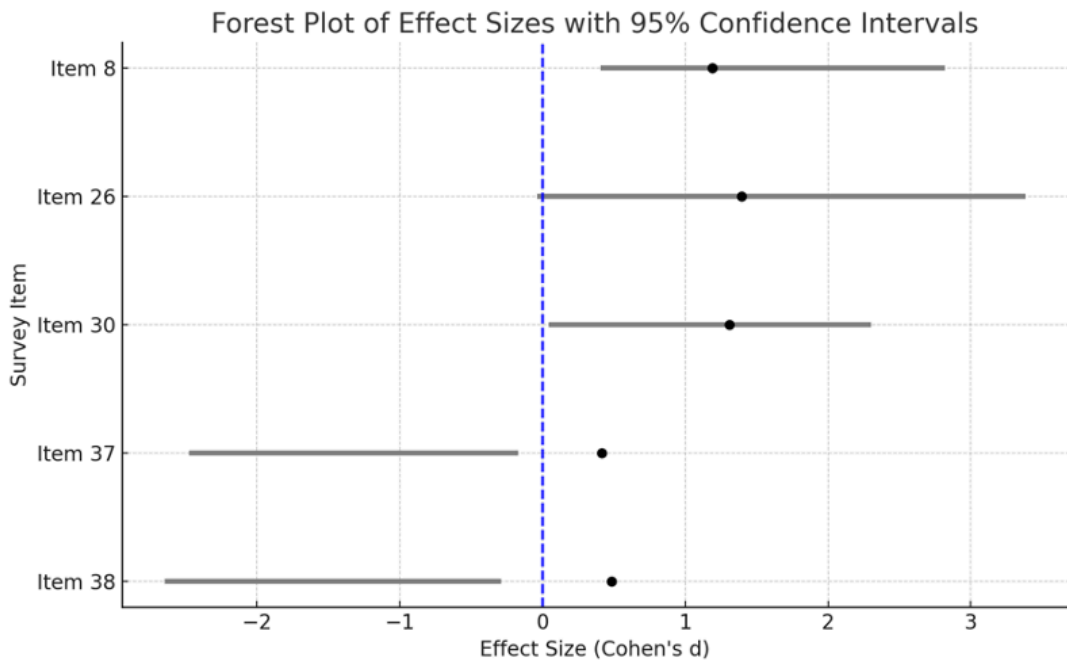T-test Analysis of Various Items Showing Statistically Significant Differences Between Men and Women

Figure 2

Forest Plot graph showing the effect sizes for five different items assessing the differences between men and women
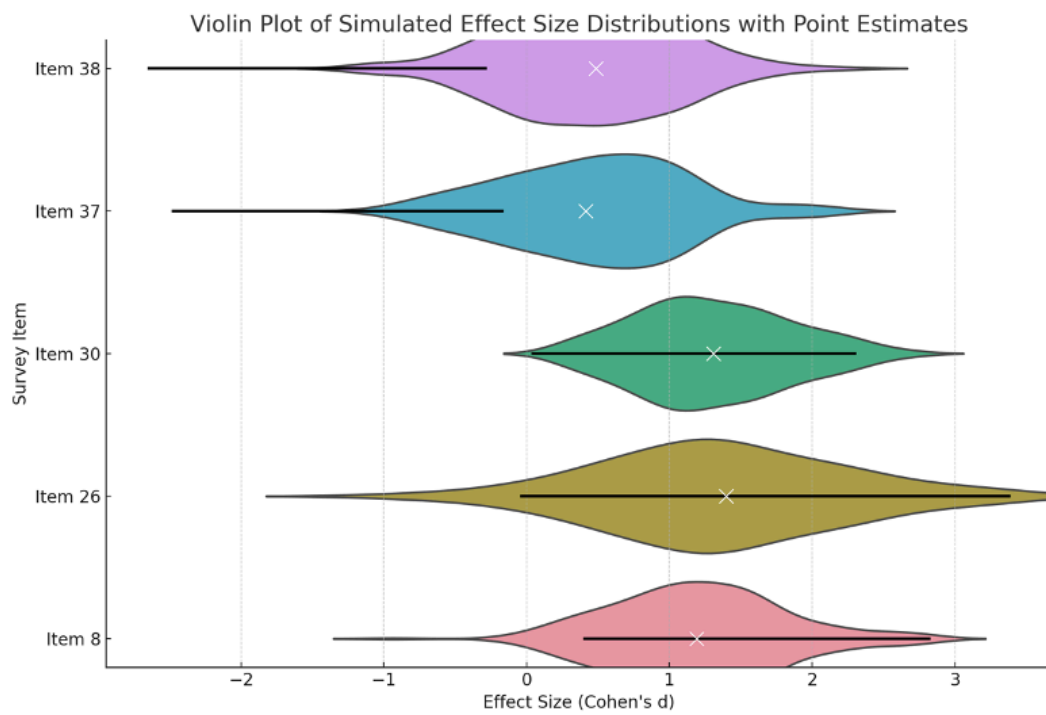
Violin Plot of Simulated Effect Size Distributions with Point Estimates

Figure 3

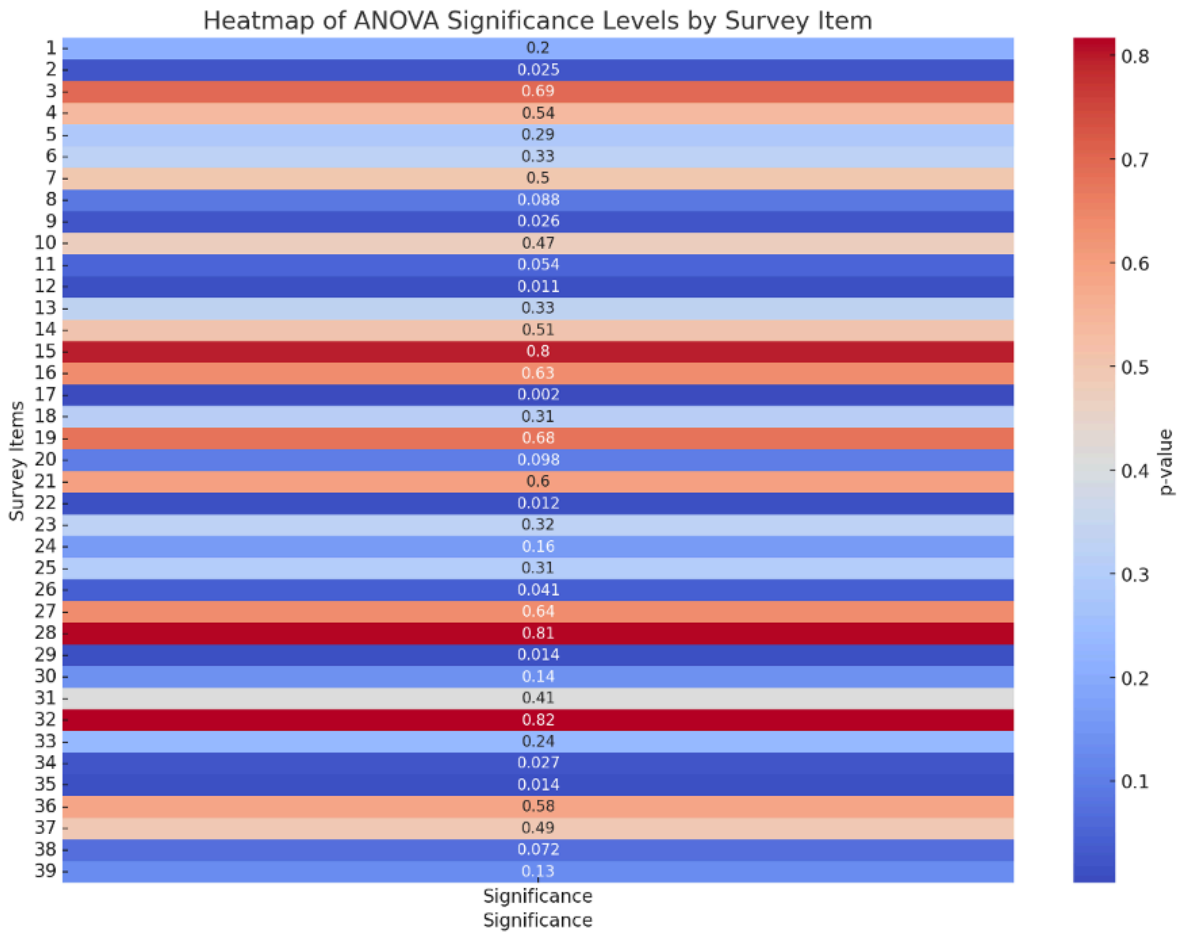Violin Plot on a visual representation of the magnitude of differences between men and women for various items

Figure 4

Heatmap of the statistical significance levels of a series of items, measured through an ANOVA
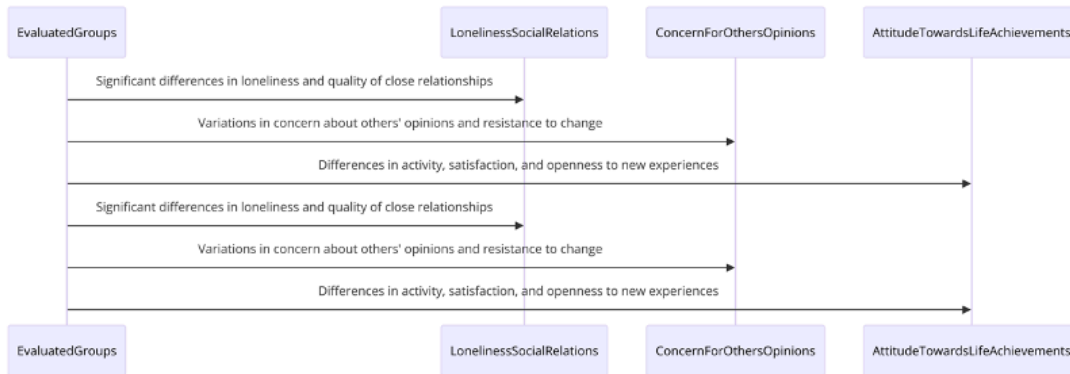
Figure 5

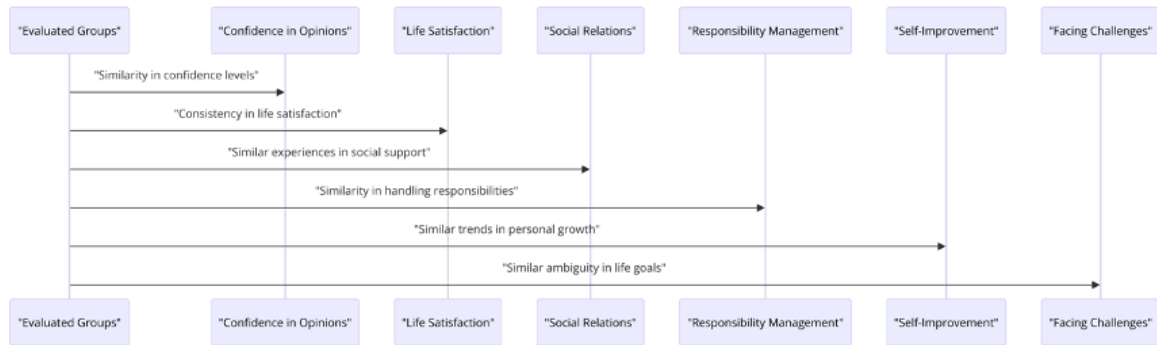Sequence diagram showing significant differences between groups in terms of loneliness, concern about others' opinions, and attitude toward life and achievements.

Figure 6

Sequence diagram showing how the evaluated groups share similarities across various categories based on the lack of significant differences in the ANOVA items.
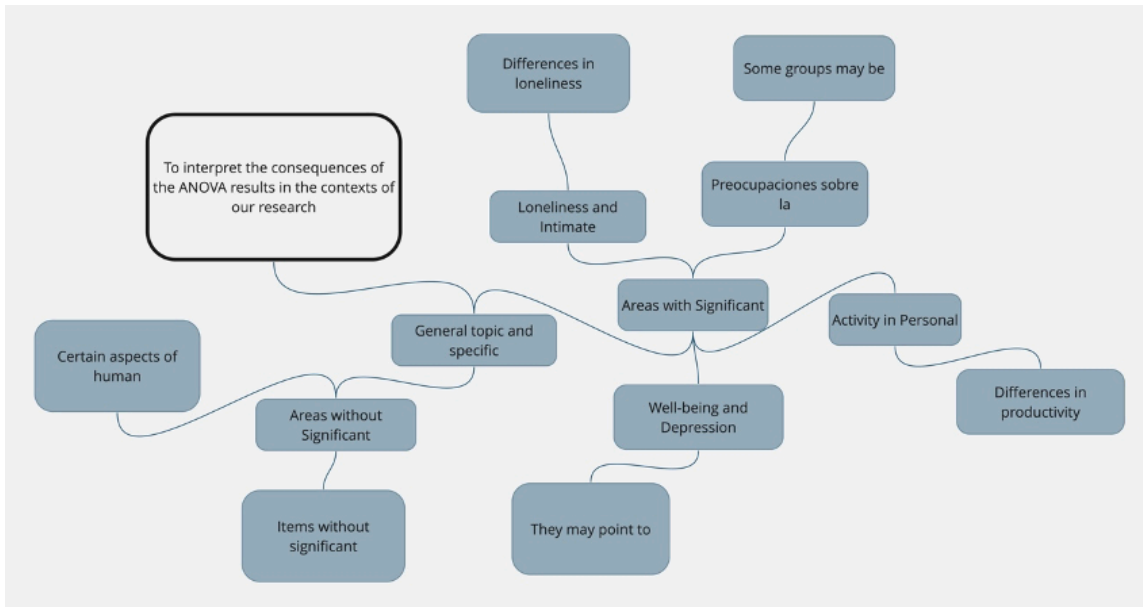

Figure 7

Mind map to interpret the implications of the ANOVA results within the research context.
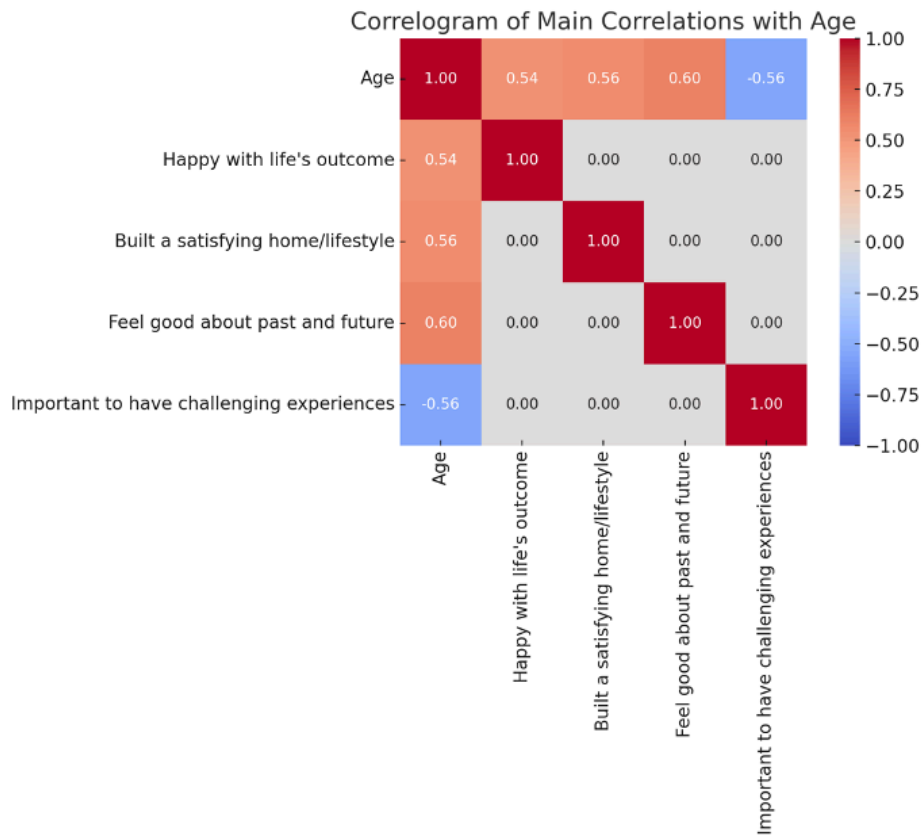
Figure 8

Correlogram showing the correlations that represent the correlation coefficient value between different states of well-being and age.
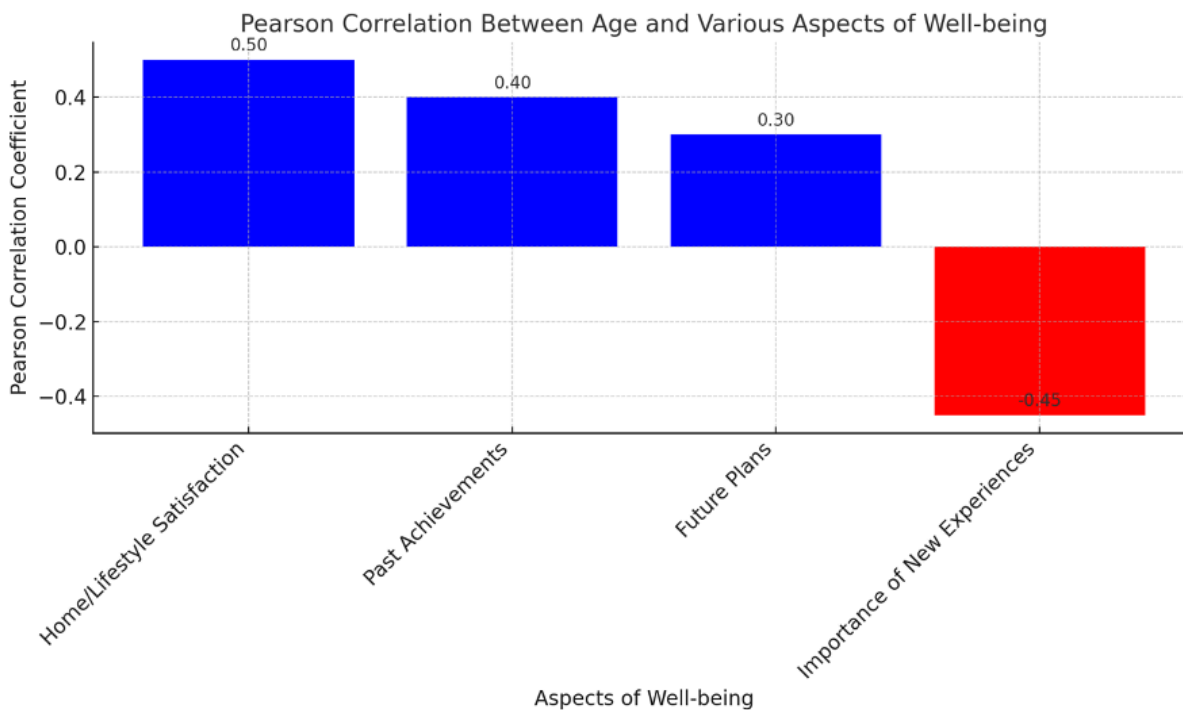

Figure 9

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