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Emotional Reactions to Different Indoor Solutions: The Role of Age

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Abstract: Longer life expectancy and global population growth result in new environmental demands to meet different material and psychological needs across the lifespan. Since the physical environment is a fundamental factor in the quality of life, here we investigated which different indoor features (i.e., colors, materials/textures) have the most positive impact on individuals in terms of emotional reactions and whether these reactions could vary with age. Four groups of participants (i.e., younger adults, adults, middle-aged, elderly, age range 19–86 years) were presented with pictures of five different rooms: (1) Modern (white and cold colors with good-quality essential coverings); (2) Basic (white and blue colors; plastic and metal furniture); (3) Vivacious (red, blue, and green elements; soft-textured materials); (4) Comfort (different shades of blue and green; velvet coverings); (5) Nature (brown, orange, and green colors; wood furniture and leather coverings). Participants underwent a six-item questionnaire evaluating their positive and negative reactions to each image. The results showed a more positive evaluation of nature and vivacious rooms than all others. In turn, basic and modern rooms evoked more negative emotions than all others. Aged-related emotional reactions emerged, with the elderly appearing to be more inclined to rely on features, such as colors and covering materials, for the affective evaluation of the environment compared to adults and middle-aged adults. These preliminary results support the need for human-centered design approaches to improve well-being across the lifespan.

Keywords: indoor environmental features; interior colors and materials; emotional well-being; age-related emotional reaction

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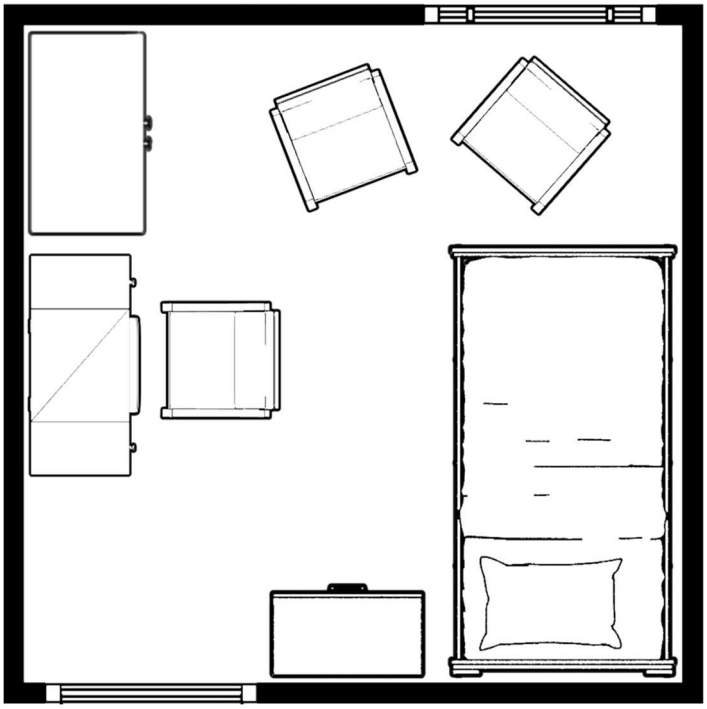
1. Introduction

Worldwide, people are living longer: the number of people over 65 years old is increasing [1], laying to the need to address age-related issues to improve the well-being and autonomy of elderly people [2,3]. Aging is a multidimensional process that includes biological, behavioral, cognitive, and social changes characterized by an age-dependent decline of cognitive and physical functions [4]. This makes it crucial to identify the factors that can reduce the negative impact of aging (e.g., loss of independence, autonomy, increased risk of illness) by promoting "active aging" [5,6].

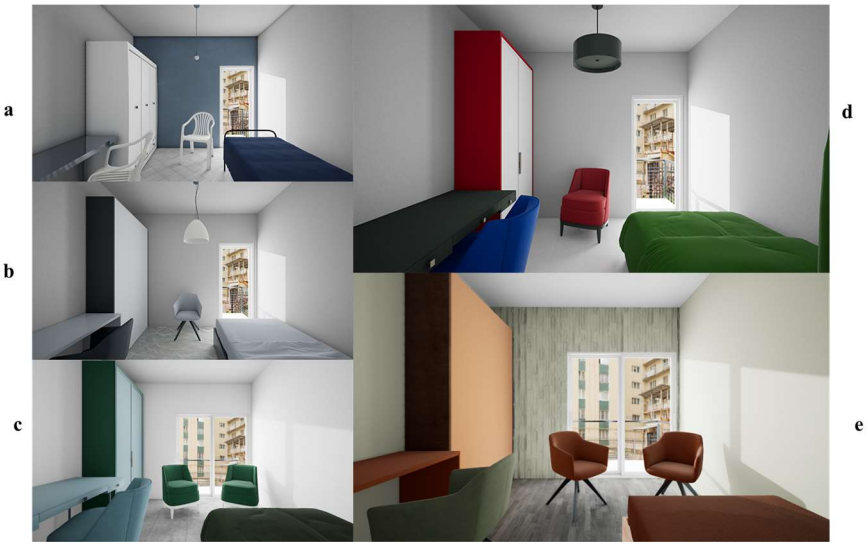
Active aging involves the maintenance of functional abilities that ensure psychophysiological well-being in several domains: low probability of illness and disability; high physical fitness; high cognitive functioning; positive mood; coping with stress; and being engaged with life [7,8]. Therefore, longer life expectancy and global population growth are posing new economic, social, and environmental demands on society to meet the material and psychological needs of the elderly [9]. In this perspective, built environments are

fundamental since healthy aging requires supportive living contexts meeting the needs and wishes of old people [9–11]. However, well-being, that is, the balance between basic (e.g., physiological and safety) and high order (e.g., belonging, dignity, independence) needs and quality of life of elderly people are not yet sufficiently considered in urban regeneration projects to adapt buildings to the new demographic demands [9,10,12]. As a consequence, institutional long-term care facilities often do not sufficiently support elderly people's autonomy and well-being [3]. The recent literature has emphasized the need for integrating human emotional responses to the environment into planning processes, in line with a human-centered design approach [13,14]. This is important because the person–environment relationship is largely emotional in nature, and the affective quality of places influences people's mood, health, and well-being [15]. The impact of the physical environment is mediated by how individuals evaluate the quality of architectural features and how the environment fits the person's needs [16]. Evidence suggests that different environmental features may meet different psycho-physical needs, ranging from the regenerative and restorative power of greenness and natural elements [17–21] to the energizing and recharging power of colors and colorful architectural, functional elements (e.g., [16,22–25]). Therefore, the environment significantly affects the quality of life and impacts physical health and social interactions during our entire life span. In particular, elderly people spend more time at home or in residential care settings and have a stronger psychological attachment to places (having lived in the same place for several years) than their younger counterparts [3,9,26]. This makes the investigation of the psychological impact of living contexts during aging really important and points to the need for a multidisciplinary approach to address the new challenges of the "design of the future" [9,26,27]. In this perspective, a growing body of research has recognized the physical environment as a fundamental factor in promoting well-being and successful aging [28–30].

In the present study, we sought to identify which indoor features of buildings induce more positive emotions in healthy people ranging from 19 to 86 years. Therefore, we manipulated the features of rooms and investigated if people's preferences were affected by age. Thanks to the collaboration with architects, five rooms were designed in different colors, materials, and textures matched with a more basic or more comfortable furnishings style, while layout (e.g., furniture arrangement, window position) and size were fixed. In particular, we chose combinations of colors resembling nature, known to exert a relaxing effect, such as shades of green and blue or autumn-like colors (e.g., [18,20,21]), and combinations of multicolored elements, known to exert an arousing effect (e.g., [25,31]), contrasted with combinations of white and cold colors (see Figure 1B). Four groups of young and older participants were presented with pictures depicting five rooms and were asked to rate each image using a six-item questionnaire. The questionnaire assesses how calm (or nervous), happy (or sad), energetic (or tired) each picture makes one feel (see [32]). Based on previous evidence, we hypothesized that rooms with colors and materials evocative of nature and comfortable should be evaluated more positively and should induce more happiness and calmness than others; multicolored rooms should be evaluated more positively, and particularly more energic, than rooms with white and cold colors (see [25]). Furthermore, we examined whether and how the room types were evaluated differently as a function of age. Finding out age-related differences would be important to tailor the design of the living environment to the users.



(**A**)



(**B**)

Figure 1. (**A**) The picture represents a map of the furnishing arrangement of the rooms: the bed on the right side of the room, the table with the chair and the wardrobe on the left side of the room, and the armchair(s) in front of the window. (**B**) The panel shows the five rooms according to the subject's perspective, i.e., Basic room (**a**), Modern room (**b**), Comfort room (**c**), Vivacious room (**d**), Nature room (**e**).

2. Materials and Methods

2.1. Participants

A total of 113 healthy participants (54 males) aged 19–86 years took part in the study. On the basis of their age, they were arranged into four groups as follows: younger adults (N = 29, range 19–29 years); adults (N = 21, range 30–45 years); middle-aged adults (N = 42, range 46–65 years); elderly (N = 21, range 66–89 years). The number of males and females within each group was balanced (younger adults = 17 M, 12 F; adults = 9 M, 12 F; middle-aged adults = 20 M, 22 F; elderly= 8 M, 13 F). All participants were recruited by word of mouth and had a normal or corrected-to-normal vision. No one reported physical, sensory,

or cognitive impairments. The study complied with the requirements of the local Ethics Committee of the Department of Psychology of the University of Campania L. Vanvitelli (Italy) and the 2013 Helsinki Declaration [33].

2.2. Materials

2.2.1. Visual Stimuli

Architects from the Department of Architecture and Industrial Design of the University of Campania L. Vanvitelli (Italy) designed five bedrooms. In order to avoid methodological confounds, we kept some features under control: the size of the room; the type and number of elements/objects; the spatial layout of elements; the viewing perspective. Specifically, each room had a surface area of 9 m^2, was furnished with a bed, a table a chair, an armchair, and a wardrobe, and had a window with an outdoor view (i.e., buildings facades). Moreover, all the rooms had the same arrangement: the bed on the right side of the room; the table with the chair and the wardrobe on the left side of the room; and the armchair in front of the window (see Figure 1A, depicting a map of the rooms). Finally, all rooms were viewed according to the same perspective (i.e., the window with the armchairs in front of the subject). Keeping these features stable, the rooms differed in colors, materials, textures, and furniture style (for previous studies using a similar approach, see [23,25]). We categorized the rooms as follows (see Figure 1B):

(1) Modern room: white environment with cold greyish colors (e.g., table and chair), modern and essential furniture style with good-quality leather materials; (2) Basic room: white and cold colors, basic furniture style, and low-quality materials (i.e., plastic and metal); (3) Vivacious room: multicolored environment with red, green, and blue colors, modern furniture style with soft-textured coverings; (4) Comfort room: different shades of green and light blue, modern furniture style, and velvet-textured coverings; (5) Nature room: autumn-like colors (e.g., orange, dark green, different shades of brown), modern furniture style with high-quality leather and wooden materials.

2.2.2. Questionnaire

We adapted a 12-item questionnaire devised in a previous study to assess the subjective emotional response to environmental visual stimuli (see [32]). The questionnaire is based on adjectives commonly used in studies assessing the emotional impact of environments on people (e.g., [34–40]), allowing for the evaluation of stimuli according to three different dimensions: valence (positive/negative); arousal (high/low); and emotion/mood.

Six out of twelve adjectives were chosen; thus, the final questionnaire consisted of the following items: calm vs. nervous; tired vs. energetic; and happy vs. sad. Participants were asked to rate each stimulus on a 9-point Likert scale (1 = Not at all; 9 = Extremely), expressing, for example, how calm (or nervous) the image made them feel. The 6-item questionnaire is provided in Appendix A.

2.3. Procedure

This study was conducted through an online survey. Participants had access to the web-based resource PsyToolkit, a software tool for setting up and running online experiments and surveys [41,42]. After receiving information about the study and providing informed consent, each participant was shown the rooms (5 in total) one at a time in random order and rated each room with the 6 adjectives from the questionnaire. The pictures of the rooms were presented in the center of the screen so that participants could have them in full sight during the evaluation, with the questionnaire presented immediately below each image. The entire experimental session lasted approximately 10 min.

3. Results

3.1. Data Analysis

To compare the five rooms, separate 4 × 5 mixed ANOVAs were performed on each positive and negative adjective with age as a 4-level between factor (younger adults, adults,

middle-aged adults, and elderly) and type of room as a 5-level within factor (basic, modern, vivacious, comfort, and nature).

To compare the different emotional responses within each room, two 4 (Age) × 3 (3 Positive or 3 Negative Adjectives) mixed ANOVAs were performed separately on the positive and negative adjectives. Only significant results are reported. Data points exceeding ± 2 SD were excluded (3.4% of the dataset). The Newman–Keuls test was used for post-hoc comparisons, and the magnitude of significant effects was expressed by partial eta-squared (η^2_p).

3.2. Comparison between Rooms

3.2.1. Positive Adjectives

Calmness. Age and type of room significantly interacted: $F(12,436) = 2.37$; $p < 0.05$; $\eta^2_p = 0.06$. The interaction was due to elderly participants evaluating the basic room as less calming than other rooms (at least, $p < 0.05$), except the vivacious one ($p = 0.27$). Instead, no significant differences emerged in the other age groups (see Figure 2). Furthermore, the nature and vivacious rooms were more calming for elderly participants than for adults (at least, $p < 0.01$), and the nature and modern rooms were more calming for the elderly than for middle-aged adults (at least, $p < 0.05$).

Happiness. A main effect of the group emerged: $F(3,109) = 9.34$; $p < 0.0001$; $\eta^2_p = 0.20$. Elderly participants reported higher happiness (M = 5.26; SD = 2.22) than other participants (at least, $p < 0.01$; younger adults: M = 4.07, SD = 1.82; adults: M = 3.27, SD = 1.60; middle-aged adults: M = 3.59, SD = 2.00).

A main effect of the type of the room also emerged: $F(4,436) = 18.14$; $p < 0.00001$, $\eta^2_p = 0.14$. As depicted in Figure 2, the nature (M = 4.53; SD = 1.55) and vivacious (M = 4.58; SD = 2.01) rooms evoked more happiness than other rooms (at least, $p < 0.05$). The comfort room (M = 3.99; SD = 1.81) evoked more happiness than modern (M = 3.42; SD = 1.86) and basic (M = 3.29; SD = 2.03) ones (at least, $p < 0.01$).

Energy. A main effect of the group emerged: $F(3,109) = 7.34$; $p < 0.001$; $\eta^2_p = 0.17$. Elderly participants (M = 4.73; SD = 2.31) reported feeling more energized than other participants (at least, $p < 0.05$; young adults: M = 3.6, SD = 1.8; adults: M = 3, SD = 1.7; middle-aged adults: M = 3.28, SD = 2).

A main effect of the type of the room also emerged ($F(4,436) = 20.46$; $p < 0.00001$, $\eta^2_p = 0.16$). The nature (M = 4.16; SD = 1.9) and vivacious (M = 4.33; SD = 2.08) rooms evoked more energy than other rooms (at least, $p < 0.05$). The comfort room (M = 3.57; SD = 1.88) evoked more energy than modern (M = 2.79; SD = 1.78) and basic ones (M = 3.03; SD = 0.87) (at least, $p < 0.05$, see Figure 2).

These results are summarized in Figure 2.

3.2.2. Negative Adjectives

Tiredness. A main effect of the type of the room emerged: $F(4,436) = 6.68$; $p < 0.001$; $\eta^2_p = 0.06$. Specifically, the modern (M = 2.96; SD = 1.87) and basic (M = 3.13; SD = 1.94) rooms evoked more tiredness than nature (M = 2.49; SD = 1.52) and vivacious (M = 2.40; SD = 1.50) ones (at least, $p < 0.05$). The comfort room did not differ from any other (M = 2.81; SD = 1.69).

Nervousness. A main effect of the type of the room emerged: $F(4,436) = 6.06$; $p < 0.001$; $\eta^2_p = 0.05$. The basic room evoked more nervousness (M = 2.63; SD = 1.67) than other rooms (at least, $p < 0.05$; vivacious room: M = 2.08, SD = 1.13; comfort room: M = 2.25, SD = 1.33; nature room: M = 2.11, SD = 1.27), except for the modern one (M = 2.37; SD = 1.50) ($p = 0.06$).

Sadness. A main effect of the type of the room emerged: $F(4,436) = 15.32$; $p < 0.00001$; $\eta^2_p = 0.12$. Specifically, modern and basic rooms evoked more sadness than all other rooms (at least, $p < 0.001$).

The related means were as follows: modern room (M = 3.48; SD = 2.23); basic room (M = 3.43; SD = 2.18); vivacious room (M = 2.19; SD = 1.45); comfort room (M = 2.76; SD = 1.84); nature room (M = 2.57; SD = 1.68).

These results are summarized in Figure 3.

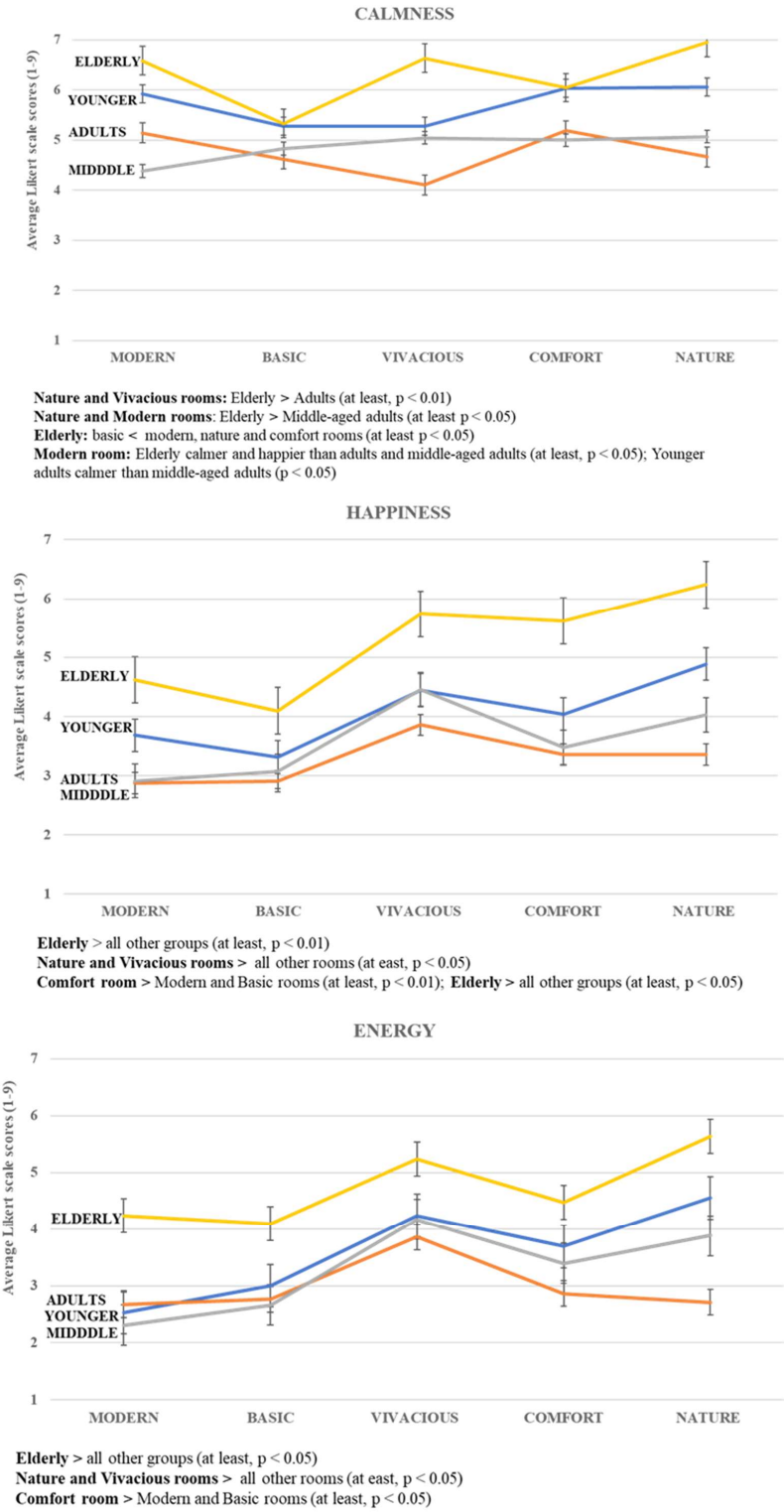
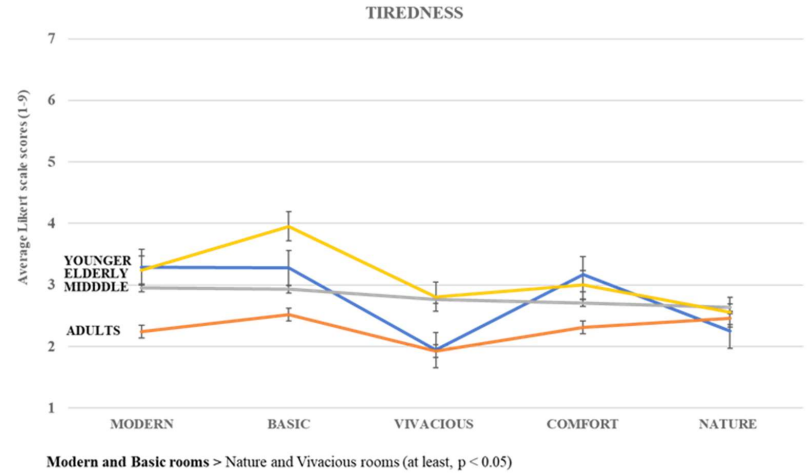
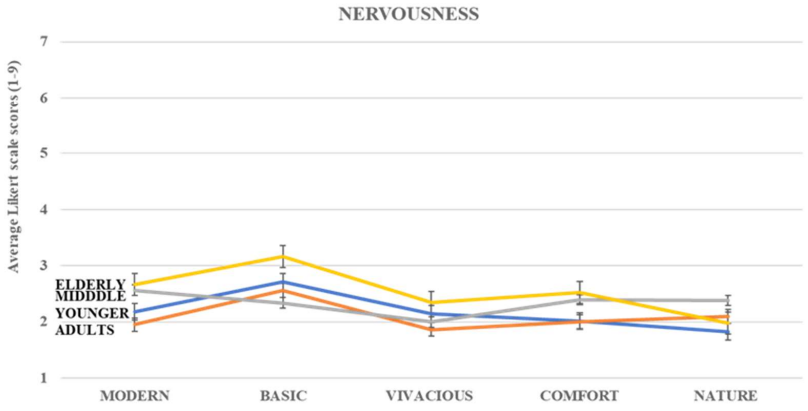


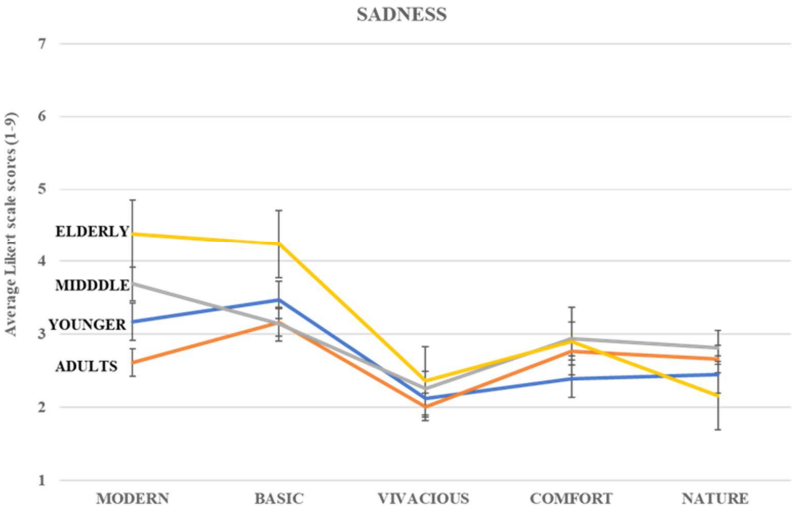
Figure 2. This figure represents a summary of the results of the comparison between types of rooms (modern, basic vivacious, comfort, and nature) and between positive (calm, happy, energetic) evaluations within each room. Average Likert-scale scores (range 1–9) for each emotion as a function of age group (younger, adults, middle-aged, elderly) are shown. Statistically significant differences for each ANOVA are reported below each graph. The symbol '>' stands for 'positive/negative ratings greater than'; The symbol '<' stands for 'positive/negative ratings less than'. Error bars represent standard error.



Modern and Basic rooms > Nature and Vivacious rooms (at least, $p < 0.05$)



Basic room > all other rooms (at least, $p < 0.05$) except for the modern one ($p = 0.06$)



Modern and Basic rooms > all other rooms (at least, $p < 0.001$)

Figure 3. This figure represents a summary of the results of the comparison between types of rooms (modern, basic vivacious, comfort, and nature) and between negative (tired, nervous, sad) evaluations within each room. Average Likert-scale scores (range 1–9) for each emotion as a function of age group (younger, adults, middle-aged, elderly) are shown. Statistically significant differences for each ANOVA are reported above each graph. The symbol '>' stands for 'positive/negative ratings greater than'. Error bars represent standard error.

3.3. Comparison between Emotions within Each Room

Basic room (positive adjectives). A main effect of the positive adjective emerged: $F(2,218) = 77.89$; $p < 0.00001$; $\eta^2_p = 0.42$. As illustrated in Figure 2, participants reported that the basic room made them feel calm (M = 5.00; SD = 2.10) rather than happy (M = 3.30; SD = 2.00) and energic (M = 3.00, SD = 1.8) (at least, $p < 0.0001$).

Basic room (negative adjectives). A main effect of the negative adjectives emerged: $F(2,218) = 11.04$; $p < 0.001$; $\eta^2_p = 0.09$. Participants reported that the basic room made them feel sad (M = 3.40; SD = 2.20) rather than nervous (M = 2.60; SD = 1.60) ($p < 0.0001$) and more tired (M = 3.10; SD = 2.00) rather than nervous ($p < 0.01$, see Figure 3).

Modern room (positive adjectives). Age and positive adjectives significantly interacted: $F(6,218) = 2.33$; $p < 0.05$, $\eta^2_p = 0.06$. The modern room made elderly participants feel calmer and happier than other groups (at least, $p = 0.01$), except younger adults ($p = 0.25$). The latter reported higher calmness than the middle-aged adults ($p = 0.01$). Moreover, the modern room made elderly participants feel more energic than other groups (at least, $p < 0.05$). Within each age group, participants reported feeling calm rather than happy and energic (at least, $p < 0.001$), with younger adults also feeling happy rather than energic ($p < 0.01$, see Figure 2).

Modern room (negative adjectives). A main effect of the negative adjectives emerged: $F(2,218) = 21.82$; $p < 0.00001$, $\eta^2_p = 0.17$. The modern room made the participants feel sad (M = 3.50; SD = 2.20) rather than tired (M= 2.90; SD = 1.90) and nervous (M = 2.40; SD = 1.50) (at least $p < 0.01$) and more tired than nervous ($p < 0.001$).

Vivacious room (positive adjectives). A main effect of the age emerged: $F(3,109) = 4.21$, $p = 0.01$, $\eta^2_p = 0.10$. Elderly participants rated this room more positively (M = 6.00; SD = 1.70) than the other groups (at least, $p < 0.05$; younger adults: M = 4.60, SD = 1.90; adults: M = 4.00, SD = 1.60; middle-aged adults: M = 4.50, SD = 2.00).

A main effect of Positive adjectives also emerged: $F(2,218) = 18.92$; $p < 0.00001$, $\eta^2_p = 0.15$. Participants reported feeling calm (M = 5.20, SD = 2.10) rather than happy (M = 4.60; SD = 2.00) and energic (M = 4.30; SD = 2.00) (at least, $p < 0.0001$; see Figure 2).

Vivacious room (negative adjectives). No significant effects were found.

Comfort room (positive adjective). Age and the positive adjectives significantly interacted: $F(6,218) = 2.66$; $p < 0.05$, $\eta^2_p = 0.07$. The comfort room made elderly participants feel happier than other participants (at least, $p < 0.05$). Younger adults, adults, and middle-aged adults felt calm rather than happy and energic (at least, $p < 0.0001$), while the elderly felt calm rather than energic ($p < 0.01$).

Comfort room (negative adjective). A main effect of the negative adjectives emerged: $F(2,218) = 8.9$; $p < 0.001$; $\eta^2_p = 0.07$). The comfort room made the participants feel more tired (M = 2.80; SD = 1.70) and sad (M = 2.70; SD = 2.00) rather than nervous (M = 2.20; SD = 1.30) (at least, $p < 0.001$).

Nature room (positive adjective). A main effect of the age emerged ($F(3,109) = 12.35$; $p < 0.00001$; $\eta^2_p = 0.25$). Elderly participants rated the nature room more positively (M = 6.30; SD = 1.30) than other groups (at least, $p = 0.01$). Moreover, younger adults rated this room more positively (M = 5.20; SD = 1.40) than adults (M = 3.60, SD = 1.50) ($p < 0.01$) and middle-aged adults (M = 4.30; SD = 1.80) (approaching significance, $p = 0.054$; see Figure 2).

A main effect of the positive adjectives also emerged: $F(2,218) = 37.61$; $p < 0.00001$; $\eta^2_p = 0.26$. The room evoked more calmness (M = 5.60; SD = 2.00) than happiness (M = 4.50; SD = 2.00) and energy (M = 4.10; SD = 2.00) (at least, $p < 005$) and more happiness than energy ($p < 0.001$).

Nature room (negative adjective). A main effect of the negative adjectives emerged ($F(2,218) = 5.88$; $p < 0.01$, $\eta^2_p = 0.05$). The nature room made the participants feel sad (M = 2.50; SD = 1.70) and more tired (M = 2.50; SD = 1.50) rather than nervous (M = 2.10; SD = 1.20) (at least, $p < 0.01$).

All results are summarized in Figures 2 and 3 and Table 1.

Table 1. Findings summary.

Emotional Evaluation	Effect of Type of Room	Effect of Age
Positive adjectives	**Nature room** -Evoked more calmness/happiness than energy. **Vivacious room** -Evoked more happiness/energy than other rooms (except nature room); -More calmness than happiness and energy; **Comfort room** -Receive an intermediate appreciation. **Basic and Modern rooms** -Evoked more calmness than happiness and energy	**Elderly** -Overall calmer, happier, and more energized. -Calmer than adults/middle-aged adults in the nature/modern rooms. -Calmer than adults in the vivacious room **Younger adults** -Appreciate nature room more than adults/middle-aged adults. -Calmer than middle-aged adults in the modern room
Negative adjectives	**Nature room** -Evoked more sadness and tiredness than nervousness. **Comfort room** -Evoked more tiredness and sadness than nervousness. **Basic room** -Evoked more sadness and tiredness than nervousness. **Modern room** -Evoked more sadness and nervousness than tiredness.	

4. Discussion

The aim of this study was to identify the emotional reactions of individuals of different ages to an indoor space (i.e., a bedroom). Specifically, participants were presented with five rooms of the same size and furnishing components but different in colors (nature-like vs. cold), materials, and covering textures (e.g., plastic vs. leather and wood) matched with a basic or modern and comfortable furniture style. Participants had to rate each environment according to the three positive and three negative emotional adjectives.

As for the comparison between the rooms with each adjective, the results showed that nature and vivacious rooms evoked more happiness and energy than the others, and consistently, modern and basic rooms evoked more sadness and tiredness than the others. The comfort room received an intermediate appreciation. In line with our hypothesis, rooms with vivacious and nature-like colors combined with soft and high-quality materials (i.e., nature and comfort rooms) were preferred over the modern and basic rooms, characterized by combinations of cold colors, such as white and blue, and poor materials, such as plastic. Then, the positive effect of nature-like colors is confirmed.

In line with previous studies showing the calming effect of nature on people's mood (e.g., [17–21,43]), the present study showed that the nature room evoked more calmness and happiness than others, and the comfort room evoked more happiness than the basic and modern rooms. The energizing effect of the multicolored room is also confirmed. In line with previous studies (e.g., [22–25]), the results showed that the vivacious room, along with the nature one, induced more happiness and energy than other rooms. This is coherent with the strong impact of colors on individuals' emotions and their effect on arousal/excitement (e.g., [25,31,44,45]).

Interesting results also emerged from the comparison of the adjectives within each room and the comparison between the different age groups.

As for the positive adjectives, the participants of all ages reported that the basic and modern rooms made them feel calm rather than happy and energic. The nature room evoked more calmness than happiness and energy and more happiness than energy. The comfort and vivacious rooms were more associated with calmness than other emotions. These results confirmed that nature-like colored rooms evoked more calmness and happiness than energy. In contrast with our expectations, the multicolored room evoked more calmness than happiness and energy. This could be because a bedroom is not a place for

physical activity, such as exercising in open spaces (e.g., parks) [46,47], but, rather, a place for rest. Indeed, calmness is a positive emotion with a low level of arousal.

As for the negative adjectives, both basic and modern rooms evoked more sadness than tiredness and nervousness; both nature and comfort rooms evoked less nervousness than sadness and tiredness. This is consistent with the idea that bedrooms might induce more low-arousing emotions.

As for the effect of age, in general, elderly participants reported feeling happier, calmer, and more energized than other participants. Figure 2 clearly shows that elderly participants rated the nature room more positively than other groups, and younger adults rated this room more positively than adults aged from 30 to 65 years. The comfort room was evaluated as eliciting higher happiness by elderly participants than all others. Elderly participants rated the vivacious room more positively than the other groups. Furthermore, elderly participants evaluated the basic room as less calming than others, except the vivacious one, and evaluated the nature, modern and vivacious rooms as more calming than adults aged 30–65 years indicated. When exposed to the modern room, the elderly reported higher calmness and happiness (except for younger adults) and more energy than other groups, while younger adults reported higher happiness than energy and higher calmness than middle-aged adults.

As shown in Figure 3, participants felt overall sad and tired when exposed to the basic and modern rooms and nervous when exposed to the basic room compared to all others.

On the whole, this pattern of results suggests that the positive effects of nature and vivacious rooms are particularly important in old age. Furthermore, comfort and modern rooms made the elderly happier than other participants. The results would suggest that the elderly pay attention to and look for the environments in which they can feel better (e.g., happier, more relaxed, or energized). In their own private space, elderly people want to feel comfortable and safe to exert their autonomy and individuality. This is consistent with the fact that elderly people spend more time at home or in residential facilities, developing a stronger psychological and emotional attachment to their own place [9,26,27]. Finally, younger adults appreciated the nature room more than adults and middle-aged adults. This might not be surprising considering that young people, similarly to the elderly, spend a lot of time in their rooms (at home or in student residences) that become safe places for their social, emotional, and psychological well-being [48,49].

To sum up, this study showed that environmental features influence individuals' emotions by exerting a more or less positive impact depending on their characteristics, with a central role of nature-like materials and colors. Indeed, spaces with high-quality natural materials, soft textures (e.g., wood, leather, and velvet), and warm natural colors were preferred over spaces with low-quality materials (e.g., plastic and metals) and cold or white colors. This is in line with the effect of relaxation, rest, and comfort given by soft and pleasant-to-touch textures (e.g., [50]). However, the current study presents some limitations. First, all pictures of rooms were presented on a PC screen. Although an online experiment is adequate when investigating the subjective emotional responses to an environment (e.g., [51]), the lack of opportunity to explore or interact with the environment could affect the ecological validity of the experiment. In addition, our results offer guidelines for a more age-friendly design at a preliminary stage, thus employing a methodology that ensures everyday-like experiences of the environment, including affective–emotional reactions, would strengthen and further clarify our findings. Therefore, to increase the ecological validity of the results, future studies should use Immersive Virtual Reality technology, which allows us to set up three-dimensional simulations with a high degree of similarity to the actual environment while maintaining adequate experimental control [52–54]. Finally, future studies are needed to explore the specific contribution of colors and furnishing materials on subjective affective–emotional reactions.

5. Conclusions

This exploratory study can be framed within the field of studies linking design, architecture, and well-being [9–11] and offers preliminary data confirming the importance of a human-centered design based on the individuals' preferences and needs to improve well-being across the lifespan. The results of the current study show that elderly people particularly benefit from the positive effect of nature-like materials and colors. Therefore, indoor spaces must be rethought and designed with priority for the following:

- colors reminiscent of nature, such as shades of green and blue, but also brown and orange hues for a relaxing and calming effect;
- multicolored contrasts over monochrome for an arousing effect;
- nature-inspired covering materials for floors and furnishing accessories;
- high-quality, soft materials for surfaces for chairs and beds.

In addition, this study argues for a multidisciplinary approach to the "design of the future" to re-conceptualize and realize environments, especially hospitals, to be more "home-like" and move away from the care-centered medical model. This would facilitate a complex and negative process that increasingly involves elderly people: relocation to long-term institutionalized settings (e.g., residences and health care facilities) [3,55–57]. A familiar, home-like environment would result in a better quality of life (physically and psychologically) for its occupants and employees [19,26,28,58,59].

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Data Availability Statement: Data are available on request from the authors.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A. 6-Item Evaluation Questionnaire [32]

How Much the IMAGE You Just Saw Makes You Feel:									
CALM	1 Not at all	2	3	4	5	6	7	8	9 Extremely
NERVOUS	1 Not at all	2	3	4	5	6	7	8	9 Extremely
TIRED	1 Not at all	2	3	4	5	6	7	8	9 Extremely
ENERGETIC	1 Not at all	2	3	4	5	6	7	8	9 Extremely
HAPPY	1 Not at all	2	3	4	5	6	7	8	9 Extremely
SAD	1 Not at all	2	3	4	5	6	7	8	9 Extremely

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