# Insights of Residents' Satisfaction and Well-being Associated with the Architectural Design of Domestic Buildings

**Dalia Al-Tarazi[1]***

*Department of Architectural Engineering, Zarqa University, Zarqa, 13110, Jordan*

**Maram Alkhamaiseh[2]**

*EuroSys Shades - European System Company for Metallurgical Industries, Al Khobar, Saudi Arabia*

**Rachel Sara[3]**

*Birmingham School of Architecture and Design, Birmingham City University, Birmingham, B4 7BD, United Kingdom*

**Louis Rice[4]**

*School of Architecture and Environment, College of Arts, Technology and Environment, University of the West of England, BS19 1QY, United Kingdom*

**Colin Booth[5]**

*School of Engineering, College of Arts, Technology and Environment, University of the West of England, BS19 1QY, United Kingdom*

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*Corresponding author:

Email address: daltarazi@zu.edu.jo

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## Abstract

### *Purpose*

This study explores the relationship between homes' architectural design and inhabitants' satisfaction with their residence, aiming to identify elements that contribute to residents' well-being.

### *Design/Methodology/Approach*

Guided by a pragmatic stance, a sequential mixed-methods approach was employed to collect quantitative (n = 101) and qualitative (n = 15) data. A questionnaire survey was designed to reveal linkages between the physical structure of homes and residents' well-being and satisfaction with their homes. Interview inquiries aimed to understand and provide insights into the nature of these relationships.

### *Findings*

Results demonstrate statistically significant linkages between satisfaction with the physical structure and elements of the home—security, belonging, privacy, and personalization—and with aspects of physical structure—physical comfort, lighting, thermal conditions, space, and spatial distribution. Thematic analysis of the qualitative study revealed six themes contributing to satisfaction with the physical structure: physical comfort, preference for high ceilings, good views, sound insulation and privacy, spatial organization and layout, and provision of storage.

### *Originality*

Architectural design of homes can significantly influence residents' health and well-being. This became particularly evident after the pandemic, as many individuals opted to spend more time at home (e.g., remote work). However, the size and spatial qualities of houses have been declining over the past decades. This paper adds to this debate by exploring aspects of the home contributing to residents' well-being.

### *Implications*

The findings underscore the necessity for a shift in architectural research to prioritize housing policy and design, including a reassessment of existing minimum requirements.



### *Keywords*

Home, well-being, physical structure, architectural design, health

### *Paper Classification*

Research paper

## 1. INTRODUCTION

Built environments and man-made surroundings have recently become essential to human existence. People spend the majority of their waking hours navigating and interacting with architectural spaces in schools, offices, churches, and homes (Tawil *et al.*, 2021). The physical and aesthetic qualities of these spaces, which individuals encounter daily, can significantly impact cognition, emotions, behaviors, and thought processes, ultimately affecting mental health and psychological well-being (Burton *et al.*, 2014). These effects result from an interaction between the physical characteristics of the perceived space and individuals' traits, as well as the meanings they assign to those spaces (Corradi *et al.*, 2019).

Multiple studies in the fields of architecture and environmental psychology have examined the correlation between the built environment and user experience (Codinhoto *et al.*, 2009). Historically, research has demonstrated a significant impact of architectural design on users' psychological well-being. Most of these studies have focused on public spaces such as workplaces, schools, hospitals, and care homes (Kasser and Ryan, 1999). However, it is important to consider that a significant portion of the time spent within buildings – approximately two-thirds – occurs at home (Hodson, 2015). Furthermore, in the post-COVID-19 era, homes have taken additional roles beyond mere residences, functioning as workplaces, nurseries, schools, and more (Bouziri *et al.*, 2020). Despite this, there is a notable lack of research linking the architectural features of homes to occupants' psychological states (Stoneham and Smith, 2015), highlighting the potential impact of satisfaction with one's home (Asojo, 2022).

The concept of home is a broad and nebulous term that encompasses a wide variety of meanings, features, and types (Mallett, 2004). According to Sixsmith, there are three categories that illustrate the meanings of a home: the physical home, the social home, and the personal home. The physical home refers to the building itself, including its structure and architectural features. The social home pertains to a person's relationship with others within the home, encompassing the type and quality of those relationships. The personal home relates to individual concepts such as privacy, self-expression, and happiness (Sixsmith, 1986). The personal and social dimensions of home, or the household, are subjective and can vary significantly based on numerous factors that architects and economic status cannot influence or predict. This is why the physical aspect of home is crucial; it is the only dimension that can be controlled by planners, architects, and builders. Furthermore, the physical features of a home can either facilitate or hinder human behavior and activity (Kent, 1993). Therefore, by enhancing the physical aspects of a home, one can positively or negatively influence the other two dimensions, ultimately impacting the psychological well-being of its inhabitants. While the term Home is broad and may encompass a range of meanings—from people's homeland and neighborhood to their personal space (Sixsmith, 1986)—this study focuses specifically on the residential home. In this context, a home refers to an apartment, studio, flat, house, or other types of accommodations where a household resides.

### Literature and previous studies

While the influence of built environment on human well-being is widely recognized, research has primarily focused on public and commercial spaces, leaving the domestic sphere comparatively underexplored (Stoneham and Smith, 2015). This oversight is significant, as the home serves as the primary setting for daily life and can profoundly impact residents' psychological, social, and physical well-being (Sixsmith, 1986).

Multiple aspects of inhabitants' lives are affected by the place they live in; from their sense of security and belonging, their quality and amount of sleep, to their social interactions inside and outside their homes (UK-

GBC, 2016). For instance, numerous studies have highlighted the influence of light on sleep quality, mood, alertness, performance, quality of life, and overall health (Gharaveis, *et al.*, 2020). Additionally, exposure to natural daylight in homes has been shown to affect behavioral, physiological, and subjective measures of circadian health (Nagare *et al.*, 2021). Consequently, research has highlighted the importance of designing buildings with optimal natural daylight for the benefit of human health and well-being. In architectural settings, optimizing light to promote circadian alignment requires careful consideration of the duration, timing, appropriate levels and spectra of light to which occupants are exposed throughout the day. It is also essential to minimize exposure during the evening, and prior to bedtime (Nagare *et al.*, 2021). Another area of research on the response to built environments has examined the restorative effects of natural elements in homes. Studies suggest that natural environments can enhance cognitive function, reduce mental fatigue, and improve focus and attention (Kaplan, 1989). Multiple positive effects can be achieved by incorporating elements of nature into indoor living spaces, whether directly or indirectly (Tawil *et al.*, 2021). Research on biophilic design, which advocates for the integration of natural elements into indoor living spaces, has demonstrated a reduction in stress and a restorative effect (Yin *et al.*, 2019; Jie Yin, 2020). Additionally, another study supported the positive health benefits of having access to a home garden, suggesting that domestic gardens could serve as a valuable health resource, particularly during the COVID-19 pandemic (Corley *et al.*, 2021). Another research suggested that human beings display an optimal functionality with moderate levels of stimulation (Evans and Mccoy, 1998). Insufficient stimulation may lead to boredom and deprive individuals of the opportunity to adapt to environmental challenges. Conversely, excessive stimulation can cause distraction and overload, which interferes with cognitive processes that require effort and concentration. The levels of stimulation are influenced by the physical properties of the places we occupy. Factors such as the amount of available space, structural depth, visual exposure, brightness, perimeter openness and extent of view have all been shown to affect human behavior. All these physical attributes have the potential to induce stress and, as a result, impact the overall human health (Evans and Mccoy, 1998). Another line of research analyzing satisfaction with housing indicates that the physical characteristics of homes significantly impact residents' overall satisfaction with their living conditions and their quality of life (Shawabkeh *et al.*, 2020).

Despite the increasing interest in healthy building design, a conceptual gap remains in understanding how specific physical features of homes—beyond general housing quality—directly influence residents' psychological well-being. Given the significant amount of time people spend in their homes, which has increased substantially since the COVID-19 pandemic, and the substantial lack of research examining how homes influence psychological well-being, the residential home has been selected as the context for this inquiry. The primary aim of this research is to systematically investigate the impact of home's physical structure on occupants' satisfaction, while highlighting the importance of physical features in fostering a sense of home and enhancing users' psychological well-being. From an architectural perspective, physical structure is critically important for two reasons. First, it is the only component of a home that can be designed and managed by professionals in the built environment, such as planners and architects. Which means that their decisions can significantly affect social behaviors and psychological well-being (UK-GBC, 2016). Second, physical structure creates a space that serves as a nurturing environment, where activities, experiences, and meanings are developed (Saunders and Williams, 1988). Analyzing human responses to the physical attributes of homes may provide valuable insights for design strategies that promote mental and psychological well-being on a broader scale (Evans and McCoy, 1998).

Previous studies have identified multiple methodological and disciplinary incongruences between the fields of psychology and architecture (Edelstein and Macagno, 2012). Psychological research investigating the relationship between humans and their environments typically rely on subjective measures and observational methods, while architectural studies that connect human responses to design are grounded in

philosophical frameworks (Edelstein and Macagno, 2012). To this day, there is a general lack of a widely established methodology across these disciplines (Higuera-Trujillo *et al.*, 2021). However, environmental psychology research provides fundamental models for quantifying the complex phenomena of emotional experience and environmental preferences (Gifford, 2007). Several relevant and realistically viable survey techniques have been described, primarily relying on self-reports (Bechtel *et al.*, 2013). Despite certain methodological limitations, these techniques are effective for preliminary evaluations. These methodologies are particularly well-suited for systematic assessments of affective appraisals, which are defined as the emotional attributes of one's surroundings or as cognitions related to the anticipated mood effects evoked by a specific place (Bechtel and Churchman, 2003). The approach in this research aims to conduct a post-occupancy evaluation, measuring the self-reported feelings of satisfaction with the physical features of home and their impact on inhabitants' psychological well-being. The physical features in question include the building structure, lighting, spatial layout, and thermal comfort.

## 2. METHODOLOGY

This research is part of an interdisciplinary study that examines the relationship between various aspects of home – personal, social, and physical – and the psychological well-being of its inhabitants. This study presents findings on the importance of the physical structure of the home in facilitating and supporting social and personal interactions, ultimately promoting users' psychological well-being.

Following a critical realism philosophical approach, a sequential explanatory mixed methods strategy was developed to achieve a comprehensive understanding of the research findings through the triangulation of quantitative and qualitative methods (Robson, 2011). This approach was adopted for two primary reasons: to minimize the limitations associated with both quantitative and qualitative methods, and to ensure a thorough exploration of the research objectives. Similar methodologies are frequently employed in architectural studies, as demonstrated by Al-Tarazi *et al.* (2024).

### 2.1. Phase 1 – quantitative survey

The quantitative phase was conducted using a survey questionnaire designed to investigate the relationship between satisfaction with the physical structure of a residence and overall satisfaction with both the residence and life in general. The survey collected responses from 101 participants, who were recruited through online platforms and paper handouts. The sample size was planned to yield adequate statistical power for detecting a small to medium effect. This effect size was selected for identifying subtle yet practically meaningful associations, in consistence with social and behavioral research (Serdar et al., 2021). The electronic format, which included 61 respondents, was created using Qualtrics software and distributed via social media platforms. Meanwhile, paper copies, which garnered 40 responses, were distributed to participants in South West England, UK, in proximity to the institution where the research was conducted. However, the online version of the survey was not geographically limited, therefore, generalizability was not affected. Moreso, the sample allows for reproducibility across different settings/regions. Ethical approval was obtained from the University of the West of England Research Ethics Committee (UREC).

#### Measures

The survey comprised four components: overall satisfaction with life, satisfaction with living accommodations, satisfaction with the physical aspects of the living accommodations, and satisfaction with

additional elements of the accommodations. The following four sections detail the metrics employed to evaluate each component of the survey.

*Satisfaction with life measurement*

The first section of the survey aimed to assess participants' subjective well-being. Participants' satisfaction with their lives at the time of the study was evaluated using the Satisfaction with Life Scale (SWLS) (Diener *et al.*, 1985). The SWLS is a five-item scale that includes statements about life in general: "*most ways; my life is close to my ideal; conditions of my life are excellent; am satisfied with my life; I have gotten the important things I want in life; and I could live my life over; I would change almost nothing*". Scale measures well-being based on participants' evaluations of their lives (Pavot and Diener, 1993), providing a subjective reflection without any influence from the researcher. The results are analyzed using a seven-point Likert scale response set, ranging from "*Strongly disagree*" to "*Strongly agree*".

*Other Scales*

Other scales were adapted to address the remaining research constructs: satisfaction with living accommodation (Home Well-being), satisfaction with physical structure, and satisfaction with other aspects of home. To measure satisfaction with living accommodations, a scale was designed based on an adaptation of the Satisfaction with Life Scale (SWLS) (Diener *et al.*, 1985), substituting wording related to life well-being with home well-being. This scale was used to assess overall satisfaction with the home. The results were analyzed using a seven-point Likert scale response set, ranging from "*Strongly disagree*" to "*Strongly agree*" following the adapted SWLS. The 7 points yield more accurate results and high reliability particularly with general satisfaction measurements (Finstad, 2010). Additionally, a linear scale from 0 to 10 was employed to measure overall satisfaction with their home. Further scales were developed from an extensive literature review (Diener *et al.*, 1985; Mallett, 2004; Deci and Ryan, 2008) and adapted to measure satisfaction with physical structure and other aspects of home, including security, belonging, privacy, and personalization. This was accomplished through four-point Likert scales to eliminate neutral midpoint options, and thus, minimize central-tendency responses (Kutscher and Eid, 2024). Finally, a descriptive text entry box was provided for additional comments.

*Analysis*

Descriptive statistics were employed to explore the data and assess measures of central tendency. Subsequently, multivariate statistical techniques were utilized to determine the relationships between key research variables. Pearson's correlation was initially applied to identify associations among all variables, serving as a precursor for further analysis (Cohen, 2013). Multiple Linear Regression was then conducted to develop more statistically robust models that explain the relationships identified through the correlational analysis (Field, 2013). Additionally, Spearman's correlation was used to evaluate the relationship between satisfaction with the physical structure and various elements of physical structure, including physical comfort, lighting, thermal comfort, space, and spatial distribution.

### 2.2. Phase 2 – qualitative interviews

The interviews were conducted using a semi-structured design, featuring one-on-one, face-to-face interactions to provide insight and flexibility in addressing key issues based on the interviewees' responses

(Robson, 2011). Participants discussed their residence's physical characteristics and their feelings regarding how these features influence their perception of home. Recruitment was carried out through a door-to-door leaflet distribution (400-450 leaflets) to a residential area with a radius of 250m. This area was selected due to the rich variety of property types and property ownership types, as the interviews aimed to recruit people from a diverse range of housing and ownership categories while minimizing other factors of variation. Interviewees were selected based on living in the 250m radius area and agreeing to participate. The interviews were primarily held in the interviewees' homes to help participants feel more connected to the subject matter, as collecting data in the relevant environment – specifically, their residences – can evoke emotions and enhance their engagement with the questions (Creswell and Clark, 2018). Recruitment continued until data-saturation point was reached at 13 interviews, which aligns with mixed-methods research that indicates 10 interviews as the minimum to follow quantitative research (Onwuegbuzie and Collins, 2007). The interview sample included residents of flats, detached houses, terraced houses, and council housing. The sample also included owned, rented, and leased properties. Ethical approval was obtained from the University of the West of England Research Ethics Committee (UREC).

*Analysis*

A thematic analysis approach (Robson, 2011) was employed to analyze the interviews. The interviewer transcribed all audio recordings immediately after each interview, and the data was then manually coded. Once all interviews were coded, themes were generated, and the data was analyzed.

## 3. RESULTS AND FINDINGS

This study presents findings in two phases, phase one: the quantitative findings, and phase two the qualitative findings.

### Phase 1 - Quantitative Findings

The survey questionnaire tested the following central hypothesis:

H: Satisfaction with the physical structure of the residence has a positive impact on overall satisfaction with home (home well-being).

Furthermore, the survey explored two research questions: (1) Does satisfaction with the physical structure of the residence have an influence satisfaction with other aspects of the home?; and (2) Do elements of physical structure have an impact on overall satisfaction with the physical structure?.

*Background Profiles of Respondents*

A total of 101 respondents between the ages of 24-59 years participated in the questionnaire. The majority were female (55%) and 36% were male, while some respondents (9%) chose not to specify their gender. Most respondents were UK nationals (58%), 11% were overseas nationals, and 31% preferred not to specify their nationality (31%). The sample equally represented people living in houses, as well as in flats/apartments (46%), respectively, with a minority living in other accommodation. Almost half of the participants' households were members of a family group (43%), with slightly less participants living with

partners or friends (36%), and a minority living with sharers or alone (21%). House ownership was roughly equally distributed, with slightly more owners (58%) than renters (42%).

*Descriptive and Inferential Analysis*

The mean value of home well-being, satisfaction with physical structure, and satisfaction with other elements of home were computed (Table I). Respondents reported average levels of satisfaction in terms of Home Wellbeing ($\bar{x}$ = 4.42) corresponding to *neither satisfied nor dissatisfied* on the developed 7-point likert scale. Satisfaction with aspects of home was measured using 4-point Likert scale, with security ($\bar{x}$ = 3.50) and privacy ($\bar{x}$ = 3.27) satisfaction mean scoring highest, and satisfaction with personalization scoring lowest ($\bar{x}$ = 2.87). Cronbach's Alpha (α) was computed to test reliability of scales adopted for measuring these research constructs. This yielded a minimum value of 0.75 (except for security with a value of 0.61) indicative of very reliable questionnaire (Field, 2013).

Table I: Mean and standard deviation of key variables

| | Home well-being | Physical structure | Security | Belonging | Privacy | Personalization |
|---|---|---|---|---|---|---|
| Mean ($\bar{x}$) | 4.42 | 3.19 | 3.50 | 3.06 | 3.27 | 2.87 |
| Std. Deviation (SD) | 1.49 | 0.72 | 0.67 | 0.81 | 0.75 | 0.94 |
| Cronbach's Alpha (α) | 0.89 | 0.82 | 0.61 | 0.78 | 0.75 | 0.79 |

**Source(s):** Authors own work

*Questionnaire Findings*

Correlational tests were run to determine whether age is associated with satisfaction with the physical structure of the home. The results yielded significant correlation, although weak at ($r = 0.23$; $p < 0.05$; $n = 101$), indicating older participants were more satisfied with the physical structure of their homes.

Two sets of Independent Sample T-tests were performed to identify differences between sample groups in terms of gender and house ownership. No significant differences were reported between female (Mean = 3.21; S.D. = 0.70) and male participants (Mean = 3.22; S.D. = 0.67); [$t(91) = 0.066$; $p > 0.05$]. Similarly with house ownership, the results of the t-test did not show significant differences with rented properties (Mean = 3.09; S.D. = 0.72) and owned properties (Mean = 3.36; S.D. = 0.68); [$t(87) = 0.198$; $p > 0.05$].

Finally, a one-way ANOVA was conducted to determine the difference between types of residence (house, flat). The results indicate a significant effect, [$F(3, 92) = 2.66$; $p > 0.05$]. Post Hoc tests were conducted using Tukey's HSD test. The comparison revealed no significant difference between house residents' (Mean = 3.24; S.D. = 0.71) and flat residents' (Mean = 3.21; S.D. = 0.66).

## Regression Modelling

In order to test the research hypothesis, the first step was to determine the relationship between satisfaction with the physical structure and overall satisfaction with home (Table II):

Table II: Correlations between key variables (physical structure and home well-being)

| | | **Home well-being** |
|---|---|---|
| **Physical structure** | Pearson Correlation | 0.463** |
| | Sig. (2-tailed) | 0.00 |
| | N | 97 |

** Correlation is significant at the 0.01 level (2-tailed).

**Source(s):** Authors own work

A strong relationship between satisfaction with the physical structure and overall satisfaction with home (home well-being) was identified (r = 0.46; $p < 0.01$; n = 101) as predicted in the hypothesis H. To further test the causality of the relationship between the variables, the correlation was then followed up with regression modelling.

A more robust approach for establishing predictive capabilities of the variables was then carried out using Multiple Linear Regression (MLR) analysis. MLR is a statistical modelling technique that is used to understand the relationship between a single dependent variable and multiple independent variables. It is appropriate for predicting the outcome of the dependent variable based on the values of other variables (Field, 2013). The classical MLR modelling was used to assess the relationship between the predicted outcome $Y_p$ and the predictor variables ($X_1, X_2, X_{k-1}, X_k$) using the stepwise method. This method iteratively analyses the statistical significance of each independent variable ensuring the development of optimum regression models based on the variables' significance. (Brace *et al.,* 2003). The model established a relationship between satisfaction with physical structure (predictor) on the one hand and home well-being (outcome) on the other.

## Regression Model – Home Well-being

The central hypothesis tested in this study was that 'Satisfaction with Physical Structure has a positive influence on overall Home Well-being'. Regression analysis was applied to test this hypothesis with Home Well-being as the outcome variable, and satisfaction with physical structure as the independent variable. Table III below shows the output of the regression analysis. The analysis of variance (ANOVA) resulted in statistically significant result indicating that the regression model is a useful predictor of outcomes variable (i.e. overall satisfaction with home-wellbeing), F [1, 95] = 25.938; $p < 0.001$. The $R^2$ was 0.214, with adjusted $R^2$ of 0.206, indicating that 20.6% of the variation in home well-being is accounted for by the predictor variable in the model; physical structure. Furthermore, the t-test for the ß-value of physical structure impact on home well-being (t=5.093, $p < 0.001$) is strong evidence that satisfaction with physical structure is a strong predictor of overall satisfaction with home.

This regression model denotes that home well-being increases per 0.463 unit increments in level of *physical structure* ability in a home ($p < 0.001$; $n = 101$), yielding statistically significant results as a predictor of home well-being. The regression is reported in Table III and Figure 1.

Table III: Summary of Regression Results

| Variables in Equation | | | | | | | |
|---|---|---|---|---|---|---|---|
| | β | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| (Constant) | 1.293 | 0.63 | | 2.053 | 0.043 | | |
| Physical Structure | 0.979 | 0.192 | 0.463 | 5.093 | 0.000 | 1.000 | 1.000 |
| Std. Error = 1.342; Durbin-Watson = 1.903<br>ANOVA ($F$ (1,95) = [25.938], $p < 0.001$) | | | | | | | |

**Source(s):** Authors own work

The Durbin-Watson test recorded value of 1.903 indicative of no independence of the error term. The VIF (variance inflation factor) were within acceptable range (1.000) for *Physical Structure* (Hair *et al.,* 2010). All required assumptions for MLR were met including normally distributed data in scree plots which have not been presented for brevity.

To surmise, the regression model analysis confirms the research hypothesis H: Satisfaction with the physical structure of the residence has a positive impact on overall satisfaction with home (home well-being).

## Additional Analysis

Haven established that Physical Well-being has an impact on home well-being, further analysis was carried out to address the sub-research questions. Correlation between physical structure and other aspects of home; security, belonging, privacy, and personalization were explored (Table IV).

Table IV: Correlations between key variables (physical structure and other aspects of home)

| | | Security | Belonging | Privacy | Personalization |
|---|---|---|---|---|---|
| Physical structure | Pearson Correlation | 0.452** | 0.465** | 0.277** | 0.343** |
| | Sig. (2-tailed) | 0.00 | 0.00 | 0.007 | 0.001 |
| | N | 96 | 96 | 93 | 92 |

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

**Source(s):** Authors own work

A strong relationship between satisfaction with the physical structure and other aspects of home was identified. Satisfaction with the physical structure was found to be strongly correlated with satisfaction with security levels (r = 0.45; $p < 0.01$; n = 101), satisfaction with levels of belonging (social aspect of home) (r = 0.47; $p < 0.01$; n = 101), satisfaction with levels of privacy (r = 0.28; $p < 0.01$; n = 101), and satisfaction with levels of personalization (r = 0.34; $p < 0.01$; n = 101). These findings suggest an enabling role of the physical structure of the home in satisfaction with the other aspects of home (Figure 1). This was also supported by written responses into the text entry space. One participant responded to a question about ways to improve satisfaction with the physical structure by writing: *"Better quality of social space, more privacy (sound insulation)"*.

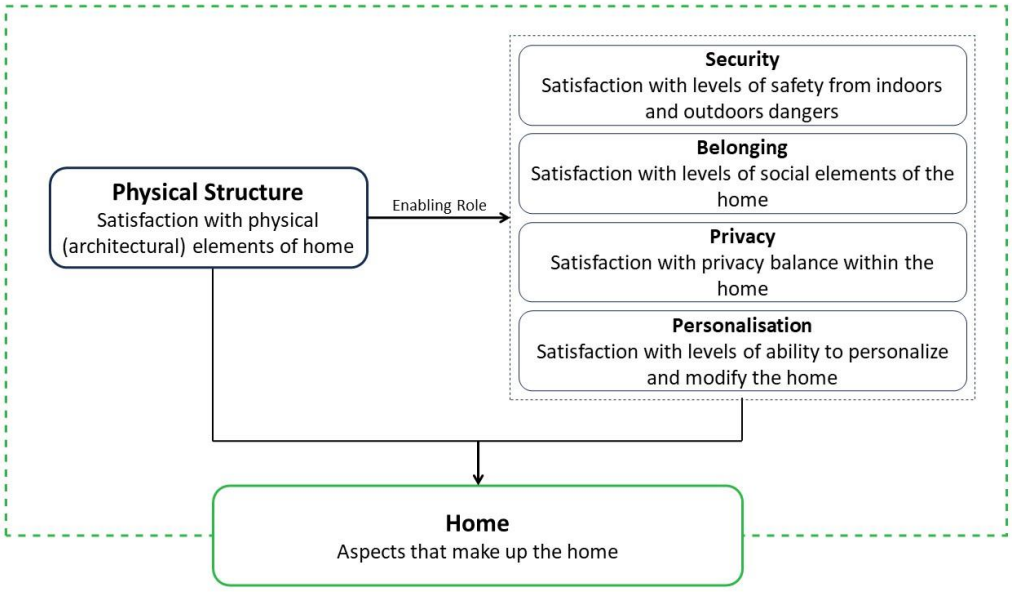


*Figure 1: The Enabling Role of Physical Structure in Overall Satisfaction with Home*

**Source(s):** Authors own work

Additional analysis was performed to identify the elements of the physical structure contributing to satisfaction with the residence. Five elements were identified and tested; physical comfort, lighting, thermal conditions, space, and distribution of space. Spearman's rank correlation was run to assess the relationship between overall satisfaction with the home (HWB) and satisfaction with each of the named elements.

Table V: Correlations between additional variables

| | | | Physical comfort | Lighting | Thermal condition | Space | Distribution of space |
|---|---|---|---|---|---|---|---|
| Spearman's rho | Home well-being | Correlation Coefficient | 0.436** | 0.327** | 0.286** | 0.470** | 0.400** |
| | | Sig. (2-tailed) | 0.000 | 0.001 | 0.005 | 0.000 | 0.000 |
| | | N | 96 | 97 | 97 | 97 | 97 |

** Correlation is significant at the 0.01 level (2-tailed).

**Source(s):** Authors own work

The analysis showed statistically significant and positive correlation between home well-being and all five elements: physical comfort ($r = 0.44$; $p < 0.01$; $n = 101$), lighting ($r = 0.33$; $p < 0.01$; $n = 101$), thermal conditions ($r = 0.29$; $p < 0.01$; $n = 101$), space ($r = 0.47$; $p < 0.01$; $n = 101$), and distribution of space ($r = 0.40$; $p < 0.01$; $n = 101$). This was further corroborated through written responses into the text entry space. One respondent wrote *"Better light in my room in the afternoon. More outside space which sees the evening sun"* in response to a question about qualities that can improve satisfaction with the physical structure.

*Summary of Quantitative Findings*

After conducting a comprehensive quantitative analysis, the research hypothesis H was confirmed: Satisfaction with the physical structure of a residence positively impacts overall satisfaction with the home (home well-being). Additionally, the key research questions were established as follows: Satisfaction with

the physical structure of the residence influences satisfaction with other aspects of the home. Furthermore, elements of the physical structure significantly affect overall satisfaction with the home (home well-being).

**Phase 2 - Qualitative Findings**

Following the significant findings from the quantitative inquiry, a qualitative exploration of the concept of personalization in relation to creating a sense of home was conducted. This aimed to develop a deeper and more contextual understanding of the quantitative results. Morse (2000) suggests conducting 5-50 interviews for qualitative research; however, in the context of mixed methods research, a minimum sample size of ten interviews is recommended to follow the quantitative phase (Creswell, 2011). Consequently, a total of 13 interviews were conducted, involving 15 individuals, four of whom were couples. Participants' ages ranged from 24 to 75 years, with a total of ten females and five males. Eight interviewees lived in houses, while five resided in flats. Additionally, the interviewers considered previous properties where the interviewees had lived. Of the 13 properties, ten were owned, one was leasehold, and two rented. Most of the interviewees were living with their partners or families (partner and children), while two participants lived alone, and one resided in shared accommodation.

The analysis revealed several themes contributing to participants' satisfaction with the physical structure of their homes as illustrated in Figure 2 below; these are physical comfort (lighting, warmth, and ventilation), high ceilings, feel of spaciousness, views, sound insulation and privacy, distribution of space and storage.

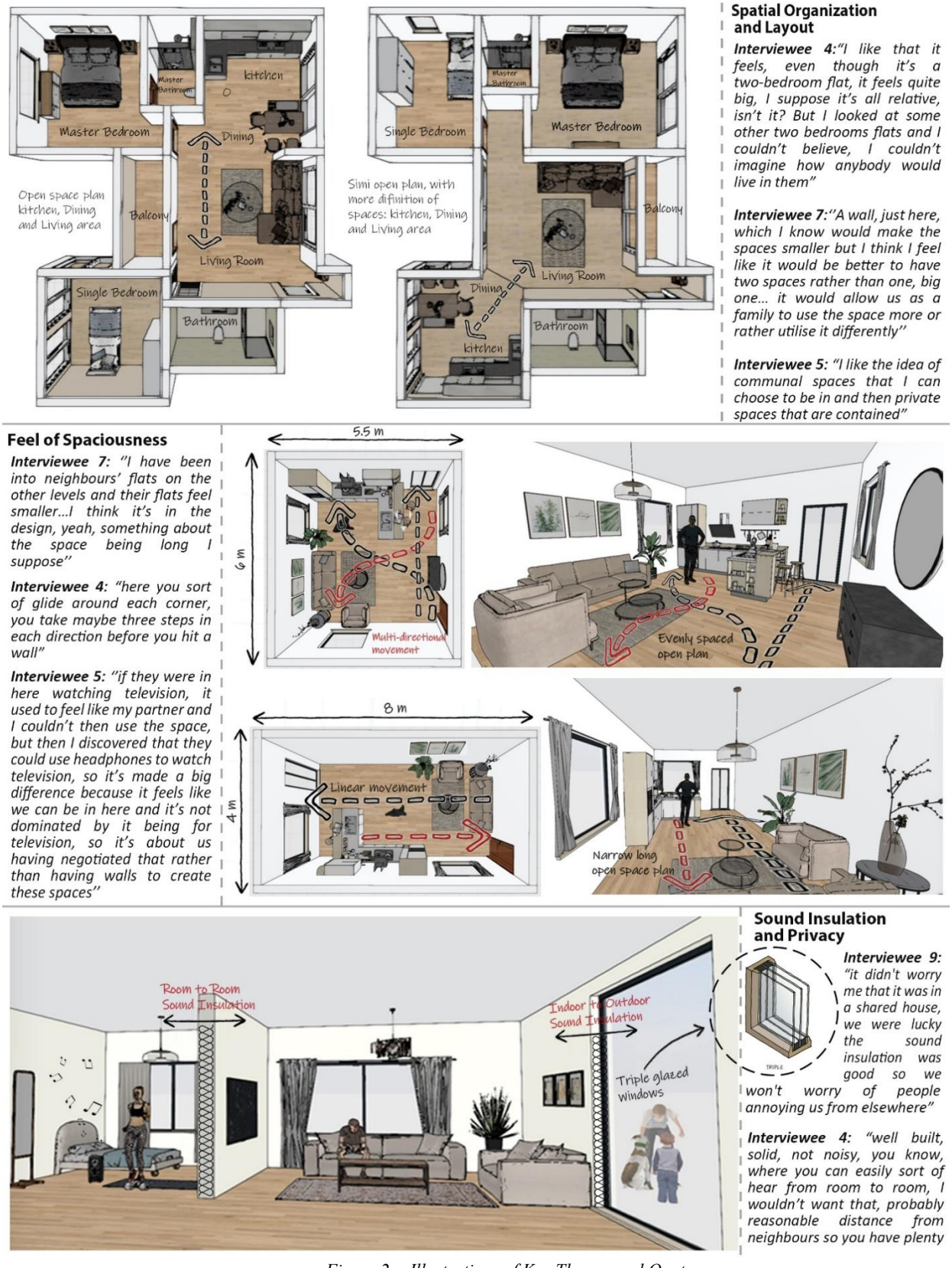


*Figure 2a: Illustrations of Key Themes and Quotes*

**Source(s):** Authors own work

**Physical Structure (Light, Warmth and Ventilation)**

***Interviewee 7:*** *"I think the light has a huge amount to do with it, that we've got windows just about on every side"*

***Interviewee 9:*** *''we would never dream of living in a house that didn't have some good south sunlight in it''*

***Interviewee 3:*** *"It doesn't matter how nice a house feels or a flat feels when you walk into it, if when you've moved in it's difficult to heat and you're cold and you are not just physically happy, I don't think you'll be emotionally happy either"*

***Interviewee 7:*** *"when it's summer, because we're on the top floor we can open all the windows and have lots and lots of air coming through"*

***Interviewee 9:*** *''I had a window that had only a slit ventilation on top of my face and so I overheated ... it got too hot in the summer I felt uncomfortable there, I think that's probably the only time the physical determinacy of a building made me actively uncomfortable''*

***Interviewee 6:*** *"when I moved in here there was no central heating, so I had central heating put in which immediately, I think if you feel warm in your house it makes it feel more homely"*

**Good Views**

***Interviewee 9:*** *"big area rooms of this sort, a nice view, I can look out there and I can see the hills in the distance and that's very important to me"*

***Interviewee 9:*** *"but one of the things that primarily made us just not go for it was there's no outlook...the outlook was just boring and there was no distant view and that was ... I thought I don't wanna live like that''*

**Storage**

***Interviewee 9:*** *"this is how my ideal would be, a huge living room and then some cupboards off that you would use for cleaning and sweeping and things like that".*

***Interviewee 9:*** *"we made use of the utility room on landing where there was a loo so the washing machine is in there"*

**Ceiling Hight**

***Interviewee 4:*** *"I really like high ceilings, from a mental point of view, I always like to think of it as sort of a space to think, I always think of it as sort of projecting beyond the body, so I certainly feel when I'm in a smaller space I feel that my tension is more taken over by the fact, I don't know I find it less easy to think in a smaller space''*

***Interviewee 2:*** *"if I was to live in a perfect house I'd have slightly lower ceilings, these are higher than necessary, it's more than four meters, which is ridiculous, I would like them maybe 400 millimetres less"*

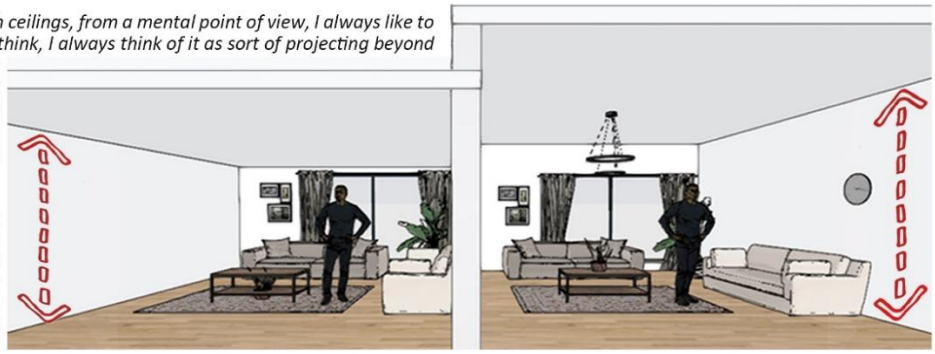

*Figure 2b: Illustrations of Key Themes and Quotes*

**Source(s):** Authors own work

Interviewees emphasized the importance of *physical comfort* factors that contribute to their satisfaction with their homes, particularly lighting, warmth, and ventilation. Natural light emerged as the most frequently mentioned aspect in the interviews, as it enhances the 'homely' atmosphere of a residence. The size, number, and placement of windows, as well as their orientation and exposure to direct sunlight, were key topics of discussion among the interviewees. Some participants associated feelings of security and happiness with the presence of adequate light, while others suggested that a lack of or insufficient daylight created negative associations with their homes.

In terms of *warmth*, the majority of interviewees identified it as a key contributor to the sense of home. They suggested that homes that can be easily warmed are essential for physical comfort, which, in turn, fosters emotional well-being. Furthermore, they indicated that most household activities tend to gravitate toward the warmer parts of the home. Good ventilation and the absence of dampness also significantly influence how people feel about their homes. Interviewees expressed a preference for natural ventilation through architectural openings, such as windows and doors.

The second theme identified was *a preference for high ceilings*. Most interviewees suggested that high ceilings create a more spacious and less claustrophobic atmosphere. While high ceilings were a common preference among the interviewees, excessively high ceilings had a negative impact, as they evoked feelings of coldness and emptiness. Moreover, interviewees stressed the importance of the perceived spaciousness of their homes. The sense of spaciousness is not necessarily related to the actual size of the house, but it could be related to the interior design or special organization of the house. In fact, the larger the house, the more challenging it was for interviewees for two reasons: first, it occupied too much unnecessary space, and second, it presented maintenance challenges.

*Good views* emerged as a significant factor in interviewees' satisfaction with their accommodations. Individuals who had lived in various houses and apartments were generally more satisfied with locations that offered appealing views. Conversely, the absence of good views influenced people's decisions to move into particular residences. Moreover, interviewees expressed concerns regarding *sound insulation, neighbor noise, and privacy*. Sound insulation was particularly significant for those living in shared housing, apartment or flat.

A major theme expressed by the interviewees was the *spatial organization and layout* of homes. In fact, many participants reported that the design and arrangement of space are more important than the actual size of the house. Several interviewees indicated that their ideal home would resemble their current residence but feature a different distribution of space. This does not necessarily imply the creation of more open areas; some interviewees preferred more discrete and defined spaces. Additionally, several participants expressed the need for a space that can be used for multiple *storage* purposes. Interviewees indicated that storage areas are an essential component of organizing their lifestyles.

## 4. DISCUSSION

The current study highlights the importance of a home's physical structure in influencing residents' overall satisfaction with their living environment, as well as their satisfaction with various other aspects of the home. The quantitative phase of this mixed-methods research established several key findings: satisfaction with the physical structure of home directly affects overall satisfaction with the home; satisfaction with the physical structure also influences satisfaction with other aspects of the home, including security, sense of belonging, privacy, and personalization; and specific elements of the physical structure—such as comfort,

lighting, thermal conditions, spatial layout, and distribution of space—have a direct impact on overall satisfaction with the physical structure itself. These findings align with existing research that underscores the importance of particular aspects of home (Dimuna and Olotuah, 2019; Ibrahim, 2020). The findings also emphasize the critical role that physical structure plays in fostering a sense of home, as well as supporting the psychological and social dimensions of the household. These dimensions are integral to the overall concept of home. This aligns with the definition of home as the physical space that enables the social and personal activities of its inhabitants (Al-Tarazi, 2021).

Further qualitative research was conducted through semi-structured interviews to gain a deeper understanding of the particular elements of physical structure that contribute to satisfaction with the home. The findings from this qualitative phase provided insights into the elements of physical structure that users particularly identify as important. These elements include physical comfort (such as lighting, warmth, and ventilation), high ceilings, a sense of spaciousness, views, sound insulation and privacy, as well as the distribution of space and storage.

In terms of physical comfort, numerous studies address this issue by focusing on models of thermal comfort, such as Fanger's model (Katić *et al.*, 2016), which suggests that regulating temperature and ventilation contributes to a healthy indoor environment for residents (Zhao *et al.*, 2021). The interviewees in this research identified three factors that enhance their comfort within their residences: natural light, ventilation, and warmth. These elements are well-documented in the home architecture literature (Sixsmith, 1986; Despres, 1991; Smith, 2006), as well as in the literature on human psychological well-being (Diener, 1995; Shishegar *et al.*, 2016). Furthermore, this aligns with global building performance standards, such as those set by ASHRAE (2013) and ISO (2005), which utilize metric assessments to evaluate indoor environmental quality based on human comfort zone. Findings related to physical comfort highlight the need for greater attention to the architectural design of homes, particularly regarding orientation, the number and size of fenestrations (façade design), layout, and proper insulation. Therefore, this research advocates for a re-evaluation of existing building regulations, especially for flat blocks, terraced houses, and semi-detached homes, to ensure the provision of sufficient and appropriate natural light and ventilation, alongside the implementation of advanced insulation technologies to prevent dampness.

High ceilings are a concept emphasized by several interviewees. This preference may be attributed to the perceived sense of openness that high ceilings provide, in contrast to the obscure feeling that results from lower ones (Vartanian *et al*., 2015). In fact, ceiling heights have gradually decreased from 9-10 feet (2.7-3.1 meters) to 6-7 feet (1.8-2.1 meters), which has become the norm (Rybczynski, 2009). A preference for higher ceilings is associated with greater overall satisfaction with accommodations, as it correlates with higher levels of psychological well-being (Shimatani, 2024) and enhanced satisfaction with the aesthetics of the residence (Vartanian *et al*., 2015). Furthermore, it is suggested that people are willing to pay a premium for homes with higher ceilings, despite the increased cost (Handley, 2011). Therefore, the findings of this study indicate that the standard lower ceiling heights should be re-evaluated, particularly in smaller residences.

In terms of the perception of spaciousness, this concept is directly related to the previous theme: the higher the ceiling, the more spacious the space appears (Zhu and Meyer-Levy, 2007). Additionally, larger windows and increased natural light contribute to the perception of spaciousness and enhance the desirability of a space (Bokharaei and Nasar, 2016). The manipulation of interior design by architects also influences perceived spaciousness; for instance, the arrangement of furniture and the furniture-to-area ratio (İmamoğlu, 1986), as well as the distribution of light (Wänström Lindh, 2020). While numerous factors affect the perception of spaciousness, it is suggested that architects can enhance the sense of space through strategic layout design, window placement, and the window-to-wall ratio.

Access to views is restricted by the urban context in which a residence is located, as well as by the architectural design of the residence itself. Numerous studies have linked access to natural views in homes with improved psychological well-being (Chang *et al.* 2020). Furthermore, access to natural views through windows has been found to be more significant than the availability of gardens and parks (Soga *et al*., 2021). Planning strategies, such as low-rise, high-density developments, are proposed as potential solutions to the obstructions caused by high-rise constructions (Marcus and Sarkissian, 2023). Therefore, the responsibility lies with planners and architects to ensure proper site planning and architectural design that provides adequate access to views.

Acoustic comfort and privacy significantly impact residents' well-being and satisfaction with their homes (Park *et al*., 2017). Sound insulation and privacy issues in residential buildings can be attributed to various factors, including urban noise, building materials, sound insulation techniques, and human behavior (Hongisto *et al*., 2015; Wang *et al*., 2015). Some of these factors can be predicted based on the residence location; for instance, residences situated near a motorway, or a shopping center may experience more noise. Additionally, the type of residence plays a role, with detached houses being the least affected by noise, followed by semi-detached and terraced houses, while flat blocks are more susceptible to noise and privacy problems (Wu *et al*., 2019). Multi-story flats face the added challenge of vertical noise transfer through ceilings and floors, making them more vulnerable to urban noise, such as that from motorways, and they tend to be more densely populated (Wang *et al*., 2015). This research suggests that architects, planners, and policymakers should prioritize the implementation of noise reduction strategies, including careful site selection, building orientation, and the use of specific building materials.

The layout and spatial organization of a residence significantly impact various aspects of living, including psychological comfort, privacy, and social relationships (Bao *et al.*, 2023). Different layouts cater to the needs of diverse users (Femenias and Geromel, 2020). For instance, an open-plan layout provides more connectivity and interactivity, transforming the kitchen into a social hub rather than merely a space for cooking. However, this type of layout is also linked to lower levels of privacy and increased noise disturbance. Conversely, a fully defined and separate layout offers enhanced productivity and a better work-life balance for individuals working from home, particularly in the aftermath of the COVID-19 pandemic, as it more effectively facilitates the allocation of living and working spaces, such as a home office (Allen *et al.*, 2021). Therefore, it is crucial to understand the requirements of the household and to create flexible layouts that can be adapted to meet changing needs (Al-Tarazi *et al.*, 2024).

Despite the trend of residential units becoming smaller (Park, 2017), the quantity of belongings that people possess has significantly increased, resulting in a greater demand for space than in previous decades. The lack of storage for occupants' belongings can lead to a sense of physical and emotional overload (Raines *et al.*, 2015), which can have serious consequences on their well-being, mood, satisfaction, and overall health (Roster, 2016). It is argued that housing regulations and architectural design should prioritize the provision of adequate storage space, particularly since it is not currently mandatory. As a result, many architects and clients often overlook the inclusion of such spaces in favor of adding more rooms or enlarging existing ones (Marco, 2022). This highlights the need for implementing standards and regulations regarding storage provision in residential buildings, as well as increasing awareness among architects and designers about the impact of storage on residents' satisfaction.

Moreover, it is argued that international and national housing design standards—such as the UK's Nationally Described Space Standard (NDSS), ASHRAE guidelines for thermal comfort, and the World Health Organization's housing and health recommendations—offer mere baseline requirements for safety,

space, ventilation, lighting, and thermal performance. However, many of these standards prioritize structural adequacy and minimum space provision over holistic well-being, often neglecting factors such as perceived spaciousness, visual connection to nature, acoustic comfort, and flexibility for personalization (AWADA, 2021). This research suggests that current regulations should evolve beyond minimum technical criteria to incorporate well-being-oriented principles, ensuring that homes not only meet physical safety benchmarks but also promote psychological and emotional health.

## 5. CONCLUSIONS AND RECOMMENDATIONS

The findings of this research highlight the importance of the physical structure of homes for residents' psychological well-being, as well as their satisfaction with the home in general. The quantitative phase of the research established the following hypothesis: satisfaction with the physical structure of the residence has a positive impact on overall satisfaction with home (home well-being). The quantitative inquiry also found that satisfaction with the residence physical structure influences satisfaction with other aspects of the home (security, belonging, privacy, and personalization); and that elements of physical structure (physical comfort, lighting, thermal conditions, space, and distribution of space) have an impact on overall satisfaction with the physical structure.

The findings of the qualitative inquiry identified six additional themes related to the physical structure that respondents deemed important to their satisfaction with their homes. These themes are physical comfort, access to views, a preference for high ceilings, perceived spaciousness, sound insulation and privacy, spatial organization and layout, and storage space.

These themes highlight the crucial role that architectural design plays in residents' well-being and satisfaction with their homes. Physical structure is arguably the primary aspect of a home over which architects, planners, and policymakers have control. Therefore, the responsibility lies in creating healthy living environments, especially in the post-COVID-19 era of remote work. Those themes highlight the limitations of current housing design standards, which often prioritize technical compliance over psychological comfort.

This research has significant implications across various sectors. For architects, the findings highlight essential design elements – such as natural light, flexible layouts, acoustic insulation, and adequate storage – that should be incorporated into standard practice to promote holistic well-being. For policymakers, the results emphasize the need to revise housing regulations and design standards beyond minimum requirements, embedding well-being metrics into planning codes. For developers, prioritizing these design features can improve marketability, increase long-term value, and enhance resident satisfaction. Finally, for academics, this study provides a robust evidence base that encourages further interdisciplinary research bridging architecture, psychology, and urban policy, with the aim of creating homes that support both the functional and emotional needs of residents.

Despite the significant findings of this study, there are additional elements of home that warrant exploration in relation to residents' psychological well-being. Future research should investigate elements of physical structure and spatial organization more thoroughly. A post COVID-19 replication of the study would also yield valuable insights into the significance of transformability in this new era.

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