Human-Centered Design and User Experience, Vol. 114, 2023, 272–280
https://doi.org/10.54941/ahfe1004244

Single-Person Household Satisfaction of Personal Spaces in Shared Houses

Danqiong Liu, Yujin Kim, and Yeonsook Hwang

Hanyang University, Seoul, Korea

ABSTRACT

Recently, shared houses in Korea are attracting attention among single-person households and young people. However, it is often built at low design costs, so user satisfaction is low. In residential spaces, user satisfaction is very important as it directly relates to residents' quality of life. The purpose of this study is, therefore, to identify satisfaction of shared house residents, in regard to their own personal space. An online survey was conducted on 316 single-person households, people in their 20s and 30s. The spatial elements of a shared house are composed of four elements: space composition, color and finishing materials, furniture arrangement, and indoor environment. These elements are further subdivided into sub-elements. Space composition includes the bedroom location and size, the convenience of access to the bedroom, and storage space, among others. Color and finishing materials include the colors and finishing materials of the closet, cabinet, walls and floors. Furniture arrangement includes bed and closet size, cabinet size, bed and closet type, and number of cabinets. Indoor environment includes lighting color and control, soundproofing condition, window size and location, ventilation and solar radiation. According to the user satisfaction evaluation, furniture arrangement was deemed to be most important among residents, followed by color and finishing materials, indoor environment, and space composition. According to user satisfaction with sub-elements, the convenience of access to the bedroom, the color of the closet, the size of the cabinet, and the soundproofing condition was low. To enhance housing satisfaction among single-person households and young individuals, it is necessary to improve the convenience of access to the bedroom, selecting an attractive closet color, checking the appropriate cabinet size, and soundproofing condition in the indoor environment. The elements of shared houses should be well planned to increase the satisfaction of both single-person households and young people.

Keywords: Single-person household, Shared house, Personal space

INTRODUCTION

Due to the escalating rates of youth unemployment, a growing influx of young people into urban areas, and soaring housing costs, the younger generation is facing an increasing a cost-of-living crisis. In response to this challenge, affordable shared housing has regained popularity to solve this problem. Within these shared houses, personal spaces play a crucial role, serving as homes where individuals engage in daily activities such as resting, eating, studying, and sleeping. It is therefore vital to plan shared houses in a manner that fosters psychological stability and a sense of belonging among

the residents through the physical environment. However, shared houses are often designed with the primary focus on minimizing housing costs, resulting in low levels of resident satisfaction. Consequently, there is a need to design shared house spaces that effectively address the diverse needs of the younger generation. Thus, the objective of this study is to analyze the preferred elements of spatial design in shared houses among individuals in their 20s and 30s, and to provide valuable insights for improving the design of personal spaces within shared houses.

The methodology and scope of this study are as follows: Firstly, an extensive review of previous studies on shared house space planning standards, both domestically and internationally, was conducted to define and gain a comprehensive understanding of the spatial configuration of shared housing. Secondly, an online survey was administered to 316 users of shared houses, primarily individuals aged 20-30, in order to analyze their utilization patterns. Thirdly, residents' levels of satisfaction were examined with respect to four key spatial elements. Lastly, based on the residents' satisfaction with shared house spaces, recommendations for improvements were derived.

BACKGROUND

Single-Person Households in Their 20s and 30s

The number of single-person households has been on the rise due to various demographic shifts, such as low birth rates, unmarried individuals, and an aging population. According to statistics from the Korean Statistical Office, the number of single-person households has significantly increased as a result of these population changes. It is projected that by 2045, within the next 20–30 years, single-person households will reach approximately 8.1 million, accounting for 36.2% of all households (Population and Housing Survey, KOSIS, 2019).

Currently, the highest proportion of single-person households in their 20s and 30s is observed in metropolitan areas such as Incheon, Gyeonggi, and Seoul (Single-Person Households in the Metropolitan Area, KOSIS, 2019).

Shared Houses

Shared houses are a type of rental housing that comprises personal spaces for individual residents and common spaces shared by all residents (such as a living room, kitchen, and bathroom) (Min Ho, 2014). The personal space is designed to ensure privacy and provide a comfortable resting area, typically including a bedroom, personal toilet, bathroom, and storage space. Currently, furniture such as a bed, a table, a closet, a chair, and other cabinets are arranged in the bedroom.

On the other hand, the common space encompasses essential living areas (shared kitchen, laundry room, dining room, guest room, delivery storage room, etc.), connecting spaces (corridors, hallways, stairs, etc.), community areas (living room, lounge, lobby, multipurpose room, etc.), leisure activity spaces (café, sports space, library, etc.), and other facilities (security room, cleaning room, etc.).

Evaluation Factors for Shared House Personal Space Design

To establish evaluation criteria for the design of shared house spaces, previous studies on planning standards and space design of shared houses, both domestically and internationally, were reviewed. Based on this research, we identified the key design elements that have an impact on the personal spaces within shared houses. Consequently, a total of 29 design factors for personal spaces were compiled.

Through factor analysis, it was confirmed that space design elements could be categorized into four items according to the correlation between each evaluation element. Therefore, the concept of spatial design elements was implemented by analyzing the characteristics of each factor through the derived results (Table 1).

Table 1. Spatial design elements by factor analysis.

Contents	Spatial Design Elements
Space Composition	Location of the bedroom
	Access to common spaces from bedroom
	Convenience of access to the bedroom
	Size of the bedroom
	Storage space in the bedroom
	Space area excluding furniture occupancy
	Floor plan of the bedroom
Color and Finishing Materials	Color of the bedroom
	Color of the closet
	Color of the cabinet
	Finishing materials of the bedroom
	Finishing materials of the bed
	Finishing materials of the closet
	Finishing materials of the cabinet
Furniture Arrangement	Size of bed
	Size of the closet
	Size of the cabinet
	Type of bed
	Type of closet
	Number of closets
	Number of cabinets
Indoor Environment	Color of lighting in the bedroom
	Method of lighting in the bedroom
	Adjust the brightness of the light
	Soundproofing condition of the bedroom
	Ventilation in the bedroom
	Size of the window in the bedroom
	Location of the window in the bedroom
	Solar radiation through a window

CHARACTERISTICS OF INVESTIGATION TARGET

Demographic Characteristics

Gender, age and education background were investigated as the demographic characteristics of the subjects (Table 2).

The gender of female (51.3%) was higher than that of male (48.7%). The age of 20 to 29 years old (68.0%) was the higher than of 30 to 39 years old (32.0%). The educational background of college graduates (55.06%) was higher than that of less than college graduate (30.1%) and graduate school graduates (14.8%).

Table 2. Demographic characteristics.

Contents		Frequency	Percentage
Gender	Male	154	48.7
	Female	162	51.3
Age	20–29 years old	215	68.0
	30–39 years old	101	32.0
Educational Background	Less than College Graduates	95	30.1
	College Graduates	174	55.1
	Graduate School Graduates	47	14.8
Each Total		316	100

Characteristics of Personal Space in Shared House

This study focuses on the personal space in a shared house. The area of personal space in the shared house was investigated (Table 3).

The areas of personal space, 10–14m^3 (49.4%) was the highest, followed by less than 10m^3 (23.1%), 15–20m^3 (12.7%), 21–25m^3 (10.1%), and more than 25m^3 (4.7%).

Table 3. Characteristics of personal space in shared house.

Contents		Frequency	Percentage
Areas of Personal Space	10m^3 or less	73	23.1
	10–14m^3	156	49.4
	15–20m^3	40	12.7
	21–25m^3	32	10.1
	25m^3 or more	15	4.7
Total	316	100	

RESULTS

Evaluation of Satisfaction With the Four Elements of Personal Space

As a result of the satisfaction evaluation of the four elements of personal space, it was found that the furniture arrangement (3.65) was highly evaluated and the space composition (3.55) was evaluated low.

Table 4. Evaluation of satisfaction with the four elements of personal space.

Contents		Mean
Personal Space	Space Composition	3.55
	Color and Finishing materials	3.59
	Furniture Arrangement	3.65
	Indoor Environment	3.58

Evaluation of Satisfaction With Spatial Elements of Personal Space

Personal space satisfaction evaluation was conducted for each detailed evaluation factor for the four elements of personal space in the shared house.

- Space composition: The location of the bedroom (3.65) showed a high satisfaction evaluation, and the degree of convenience of access to the bedroom (3.49) showed a low satisfaction evaluation.
- Color and finishing materials: The color of the bedroom (floor and wall color) and the finishing materials of the bed (3.59) showed a high satisfaction evaluation, and the color of the closet (3.46) showed a low satisfaction evaluation.
- Furniture arrangement: The size of the bed (3.62) showed a high satisfaction evaluation, and the size of the closet (3.31) showed a low satisfaction evaluation.
- Indoor environment: The color of lighting in the bedroom (3.64) showed a high satisfaction evaluation, and the sound insulation condition of the bedroom (3.52) showed a low satisfaction evaluation.

Table 5. Evaluation of satisfaction with spatial design elements of personal space.

Contents	Spatial Design Elements	Mean
Space Composition	Location of the bedroom	3.65
	Access to common spaces from bedroom	3.50
	Convenience of access to the bedroom	3.49
	Size of the bedroom	3.57
	Storage space in the bedroom	3.61
	Space area excluding furniture occupancy	3.58
	Floor plan of the bedroom	3.51
Color and Finishing Materials	Color of the bedroom	3.59
	Color of the closet	3.46
	Color of the cabinet	3.57
	Finishing materials of the bedroom	3.49
	Finishing materials of the bed	3.59
	Finishing materials of the closet	3.58
	Finishing materials of the cabinet	3.57
Furniture Arrangement	Size of bed	3.62
	Size of the closet	3.40
	Size of the cabinet	3.31
	Type of bed	3.54
	Type of closet	3.51
	Number of closets	3.38
	Number of cabinets	3.40

(Continued)

Table 5. Continued.

Contents	Spatial Design Elements	Mean
Indoor Environment	Color of lighting in the bedroom	3.64
	Method of lighting in the bedroom	3.54
	Adjust the brightness of the light	3.53
	Sound insulation condition of the bedroom	3.52
	Ventilation condition of the bedroom	3.62
	Size of the window in the bedroom	3.55
	Location of the window in the bedroom	3.55
	Solar radiation through a window	3.60

(Continued)

Evaluation of Satisfaction With Personal Space Design Elements Based on the Area of Personal Space

The area of personal space was divided into five categories: less than $10m^3$, $10–14m^3$, $15–20m^3$, $21–25m^3$, and more than $25m^3$. As a results of the F-test indicated that users occupying an area of less than $10m^3$ responded negatively to the four elements of personal space (space composition, color and finishing materials, furniture arrangement, and indoor environment) compared to users with other areas.

- Space composition: The convenience of access to the bedroom and the floor plan of the bedroom were found to be significant.
- Color and finishing materials: The color and finishing materials of cabinets, the finishing materials of bed and closet, and the finishing materials of bedroom were found to be significant.
- Furniture arrangement: The size and type of bed, closet and the number of cabinets were found to be significant.
- Indoor environment: The method of lighting in the bedroom, the soundproofing and ventilation conditions of the bedroom, the size and location of the windows in the bedroom, the size and location of the windows in the bedroom, and the solar radiation through the windows were found to be significant.

Table 6. Evaluation of satisfaction with personal space design elements based on the area of personal space.

Contents	Spatial Design Elements	Personal Space Area (m^3)					
		less than 10	10–14	15–20	21–25	more than 25	F
Space Composition	Location of the bedroom	3.28	3.62	3.55	4.05	3.83	1.93
	Access to common spaces from bedroom	3.06	3.57	3.33	3.73	3.80	1.92
	Convenience of access to the bedroom	3.00	3.46	3.37	3.96	3.73	2.76*
	Size of the bedroom	2.89	3.63	3.48	3.86	3.70	2.26
	Storage space in the bedroom	3.28	3.63	3.49	3.89	3.83	1.36
	Space area excluding furniture occupancy	3.33	3.54	3.43	4.05	3.73	2.29
	Floor plan of the bedroom	2.94	3.50	3.37	3.91	3.87	3.04*
Color and Finishing Materials	Color of the bedroom	3.22	3.63	3.43	3.93	3.83	2.13
	Color of the closet	3.06	3.47	3.39	3.68	3.63	1.02
	Color of the cabinet	2.89	3.60	3.42	4.00	3.87	3.46**
	Finishing materials of the bedroom	3.06	3.47	3.33	3.89	3.93	3.33*
	Finishing materials of the bed	2.83	3.67	3.42	4.00	3.87	3.79**
	Finishing materials of the closet	2.83	3.66	3.38	3.93	3.97	4.20**
	Finishing materials of the cabinet	2.78	3.65	3.38	3.86	4.07	4.76**

(Continued)

Table 6. Continued.

Contents	Spatial Design Elements	Personal Space Area (m^3)					
		less than 10	10–14	15–20	21–25	more than 25	F
Furniture Arrangement	Size of bed	3.17	3.53	3.53	3.86	4.20	2.81*
	Size of the closet	3.06	3.22	3.40	3.52	4.10	3.30*
	Size of the cabinet	3.17	3.22	3.33	3.25	3.77	1.23
	Type of bed	2.83	3.51	3.44	3.71	4.30	4.50**
	Type of closet	3.06	3.41	3.42	3.66	4.23	3.55**
	Number of closets	3.22	3.36	3.34	3.36	3.70	0.55
	Number of cabinets	2.89	3.31	3.36	3.41	4.20	3.83**
Indoor Environment	Color of lighting in the bedroom	3.22	3.56	3.56	4.00	3.93	2.17
	Method of lighting in the bedroom	2.78	3.52	3.44	3.77	4.10	3.80**
	Adjust the brightness of the light	3.06	3.56	3.40	3.82	3.83	1.96
	sound insulation condition of the bedroom	2.83	3.58	3.34	3.84	3.90	3.57**
	Ventilation condition of the bedroom	2.89	3.60	3.52	3.98	4.00	3.47**
	Size of the window in the bedroom	3.33	3.46	3.45	3.84	3.97	1.88
	Location of the window in the bedroom	2.83	3.54	3.45	3.86	3.93	3.04*
	Solar radiation through a window	2.89	3.59	3.50	3.98	3.97	3.58**

* $p < 0.05$ ** $p < 0.01$

CONCLUSION

This study aims to investigate the impact of space design elements on users' satisfaction with personal spaces in shared houses and propose design directions for personal spaces considering these elements. The results of the study are presented as follows.

Firstly, in order to organize the evaluation items for spatial design in shared houses, a comprehensive analysis of previous research related to planning standards and spatial design of shared houses, both domestic and international, was conducted. Based on this analysis, evaluation elements for shared house spatial design were identified, and a total of 29 detailed evaluation items were extracted, focusing on four key aspects: spatial composition, color and finishing materials, furniture arrangement, and indoor environment.

Secondly, examining the characteristics of the survey subjects, it was found that a significant number of women resided in the shared houses, with a high proportion of respondents in their 20s and the most participants had a university education. Most of the types of personal space were single rooms, and a high proportion of people living in 10–14 m^2 of personal space were occupied.

Thirdly, the study investigated satisfaction with personal spaces, focusing on the four aspects derived from the spatial design elements: spatial composition, color and finishing materials, furniture arrangement, and indoor environment. Furniture arrangement received the highest positive evaluation, followed by color and finishing materials, indoor environment, and space composition. Analyzing the satisfaction levels of specific evaluation factors, the location of the bedroom received a high satisfaction rating, while the convenience of bedroom access received a low satisfaction rating in terms of space composition. Regarding color and finishing materials, the color of the bedroom was highly rated, while the color of the closet received a lower satisfaction rating. In terms of furniture arrangement, the size of the bed received a high satisfaction rating, while the size of the closet received a lower rating.

Regarding the indoor environment, the color of bedroom lighting received a high satisfaction rating, while the sound insulation condition received a lower rating.

Lastly, the result of categorizing the area of personal space into five types and analyzing it, in most of the items, area of 21-25m^3 and more than 25m^3 showed high satisfaction, and areas of less than 10m^3 showed low satisfaction. Currently, the result of performing the F-test, it was found that the convenience of access to the bedroom and the floor plan of the bedroom were significant in terms of space composition. The color and finishing materials of cabinet and the finishing of bedroom, bed and closet were found to be significant in terms of color and finishing materials. The size and type of bed and closet, and the number of closet, cabinet were found to be significant in terms of furniture arrangement. In terms of the indoor environment, the color and method of lighting in the bedroom, the soundproofing condition and ventilation of the bedroom, the location of the window in the bedroom, and the solar radiation through a window were found to be significant.

This study has certain limitations, as it generalizes the results based on the spatial and research scope of shared houses. Additionally, the data used in the study was limited to single-person households in their 20s and 30s residing in shared houses in Seoul. To establish the universality of the study, a larger sample size and broader analysis of spatial and research scope will be required. Therefore, future research can delve deeper into the revitalization of shared houses by addressing these limitations and expanding the analysis.

ACKNOWLEDGMENT

The paper is written based on the first author's dissertation.

REFERENCES

Danqiong, L. (2023). Evaluation on Space Design Elements of Shared Houses for Single-person Households [Unpublished doctoral dissertation]. Hanyang University, South Korea.

Jae-Hyuck, L., Young-Hoon, K. (2017). Analysis of Characteristics of Domestic Share Houses according to Individual Space Layout. Journal of the Korean Institute of Architectural, 37(1), pp. 45–46.

Lee-Hyeon, O., Jin-Sang, Y. (2016). A Study on the Share-house case analysis of internal shared and private space. Journal of the Korean Institute of Architectural, 36(2), pp. 165–174.

Min Ho, S. (2014). Planning Characteristics and Development Guideline of Urban Share House for Single-household [Unpublished master's thesis]. Sun Moon University, South Korea.

Naeri, K., Lee-Yong, S. (2017). A study on the space analysis though the function of Sharehouses in Japan. Journal of the Korean Institute of The Convergent Research Society Among Humanities, Sociology, Science, and Technology, 7(12), pp. 1–8.

Population and Housing Survey (2019). Korean Statistical Information Service (KOSIS) Website: https://kosis.kr/index/index.do.

Single-Person Households in the Metropolitan Area (2019). Korean Statistical Information Service (KOSIS) Website: https://kosis.kr/index/index.do.

So-Yeon, W. (2013). A Study of Foreign Small-sized Apartments for Space Design of Urban Life Housing [Unpublished master's thesis]. Hanyang University, South Korea.

Sung-Kyu, K., Hwan-Jin, K., and Kyung-Bea, K. (2016). A Study on the Architectural Planning Characteristics of Urban Share House in Korea and Japan. Journal of the Korean Institute of Architectural, 36(2), pp. 1163–1165.