Ilkogretim Online - Elementary Education Online, 2021; 20 (3): pp. 961-966
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2021.03.103

The Influence of Residential Environmental Factors and Design Factors on Residential Satisfaction in the Share House of Young Generation

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Abstract. This study aimed to analyze the qualitative and subjective factors through tenant survey to present a share house as a new alternative to the future direction of space service. Based on precedent studies, hypotheses regarding residential environmental factors (physical, environmental-psychological, social, and economic factors), design factors, and residential satisfaction were set up. 300 questionnaires were distributed to the tenants, of which 200 responses were collected. Valid 167 responses were tested for reliability and validity, and structural equation modelling was conducted using the SPSS Win Ver. 20.0 and AMOS 20.0. According to demographic results of the survey responders, the majority of the collected sample were female and age distribution was mainly focused on 20s and 30s. Approximately half of respondents earned less than 1.5 million won monthly. Among the residential environmental factors of the share house, physical, environmental-psychological, and social factors are shown to have positive impact upon design factors of share house. Economic residential factors are shown to have non-significant impact upon design factors. Design factors of share house are proven to have positive impact on residential satisfaction. Through these study results, the importance of physical, environmental-psychological, and social factors become highlighted when designing share house, rather than that of economic residential factors. Further research will be needed for relationship between residential environmental factors, design factors, and residential satisfaction according to the detailed spatial service form of the share house.

Keywords: Share house, One-person household, Residential environmental factors, Design factors, Residential satisfaction

Received: 08.12.2020	Accepted: 10.01.2021	Published: 03.02.2021

INTRODUCTION

Currently, the number of one-person households around the world, including Korea, continues to increase. The ratio of one-person households increased rapidly from 15.5% in 2000 to 29.6% in 2019, about double the rate[1]. As a result, from 2015, one-person households surpassed two-person households and became the first type of household. Proportion of single-person household exceeded 30% in European countries since 2010, and in Sweden, 51% of total households were consisted of one person in 2017[2]. The number of one-person households in Korea is also expected to continue to increase in the future.

Share house is a new type of housing that allows 'sharing', 'communication', and 'exchange' though using common spaces such as living rooms, kitchens, toilets, and front doors with other tenants other than private spaces.

Although it is similar to a share house in that boarding house and 'Goshiwon (accommodations for students who study for exams, which have generally very small space)' share public spaces, the share house aims not only to share space, but also to share social and emotional space among residents, and can also create social added value and reduce housing costs. As a result, a recent study identified the types of domestic share house are classified regarding the arrangement of private and public space and also affected by the characteristics of the residents[3].

The main topic involving the share house is 'how residents will reasonably communicate and share with each other'. This type of new housing is popular among young people in terms of sharing communities as well as reducing housing costs, and has become a common residential form in recent days.

People who live share house appeared to think their residence as transitional yet still meaningful[4].

In this study, the qualitative and subjective factors were quantitatively analyzed in order to present a new alternative in one-person household throughout a tenant survey. It is expected to provide a novel insight on factors considered to design a share house.

2. Materials and methods

2.1 Study Structure and Flow

The flow and analytic process of study is as shown in Table 1.

Table 1 The Study Structure

Study Flow	**Contents**
Introduction	1. Purpose of the Study
Theoretical Background	2-1. Study Structure Plan 2-2. Key Elements of the Study 2.2.1. Residential Environmental Factors 2.2.2. Design Factors 2.2.3. Residential Satisfaction 2-3. Study Model and Empirical Analysis
Survey / Analysis	3. Residents' Survey and Analysis - Validity and Reliability Testing - Structural Equation Modelling
Improvement Plan	4. The Way to Improve of Share House Operating Services and Conclusion

2.2. Key Elements of the Study

2.2.1. Residential Environmental Factors

Snyder and Catanese divided residential environmental factors into natural and artificial environments, cited climate, vegetation, terrain, soil, water resources, etc. in the former, and divided the latter into component factors that affect the spatial characteristics of the form, material, color, etc. of housing, and factors that give order to the spaces, such as density of housing, privacy, individual domain, and individual perception factors[5]. Kirschenbaum divided the components of the residential environment into demographic, residential, neighborhood, economic, location, service, environment, and social attachment[6]. And Cooper divided residential environmental factors into social and physical factors, the former consists of social status, crime and safety, while the latter consists of landscaping, trees, maintenance, and outer space[7]. In this study, based on prior studies, the factors related to residential environment of the share house were divided into physical, environmental-psychological, social and economic factors and thoroughly investigated.

2.2.2. Design Factors

Just as the human body needs to be organically coupled with nerves, tissues, skeletons and skin to show normal functions, the design of a good residential environment requires a robust structure to shape

the environment, space, and facilities that produce high performance.

Establishing factors for design of residential environment is to create a living space so that human beings and the environment are closely related by applying the resident's norms about the residential environment during the interior planning process. This means that a desirable residential environment should be created by reflecting users' values, attitudes, and preferences in planning and designing residential spaces. On the other hand, Marans claimed that the value of residential environment is more influenced by planning and design than by individual circumstances (economic environment, family, life, health, etc.)[8].

Michelson argued that residential architecture should consider social and psychological aspects as well as functional, economic, or aesthetic spatial composition[9]. In addition, one of domestic studies on construction emphasized that building design should be able to harmonize technical, functional, morphological and aesthetic factors with those already under consideration. Based on prior studies above, this study was performed with land factors, market factors, building process factors, and energy factors.

2.2.3. Residential Satisfaction

Satisfaction refers to the friendly feelings and attitudes experienced in the process of purchasing, using or evaluating a product or service[10], or to the difference between the benefits expected and the benefits realized[11]. Therefore, residential satisfaction in share house refers to friendly feelings or attitudes experienced in the process of using and evaluating the share house. It also means the expression of emotional reactions to the social and physical environment in which people live. And this is not just the reflection of physical characteristics of the residential environment, but also an important criterion for evaluating functional and socioeconomic environmental factors. Since residential satisfaction is the criterion for judging the quality of living, it is necessary to enhance residential satisfaction in order to improve the quality of human life.

With respect to healthy living conditions, the WHO (World Health Organization) has divided factors related to healthy housing satisfaction into comfort, health, efficiency and safety. Hampel emphasized that information that is systematically established in relation to residential satisfaction should be used as a valuable indicator of the community because it addresses a wide range of physical and social issues[11]. Therefore, residential satisfaction was set to be divided into comfort, healthiness, convenience, safety, and sociality in this study.

Comfort is highly related to personal privacy. This is because humans control the degree of openness of space according to the degree of privacy they want. Therefore, assessing whether a share house is relatively closed or open is an important factor in housing satisfaction.

Healthiness means that you must be physically and mentally healthy and able to lead your daily life calmly. In other words, healthiness should be able to safely protect residents from certain obstacles in the residential environment: instability, non-cleanness of the dwelling, noise, smoke, odour, etc. in the use of the surrounding beneficial facilities.

Convenience is the most basic means of designing residential environment, with individual housing units and the most universal system, and is an indicator of welfare and stability. Convenience maintains functional space allocation and residents' productivity, and allows residents to adapt to residential space with minimal effort.

Safety, along with convenience, is the most basic means of designing a residential environment, which means that it must be safe from crime prevention, gas, and various disasters. Residents should be protected from this insecurity and be able to live emotionally pleasant. However, the large-scale, dense, and high-rise apartment houses are adding to the residents' anxiety. Safety is also required for apartment corridors, staircases, elevators, etc., but the importance of safety is also increasing to require regular safety education for residents.

Sociality is a factor that has recently increased in importance, and is the degree of interest in relationships with people around it. Residents should be able to improve and maintain their closeness to friends, family and neighbors, with affection for the share houses where the residents live, while striving for maintenance.

2.3. Study Model and Empirical Analysis

The hypothesis of this study is depicted in Figure 1.

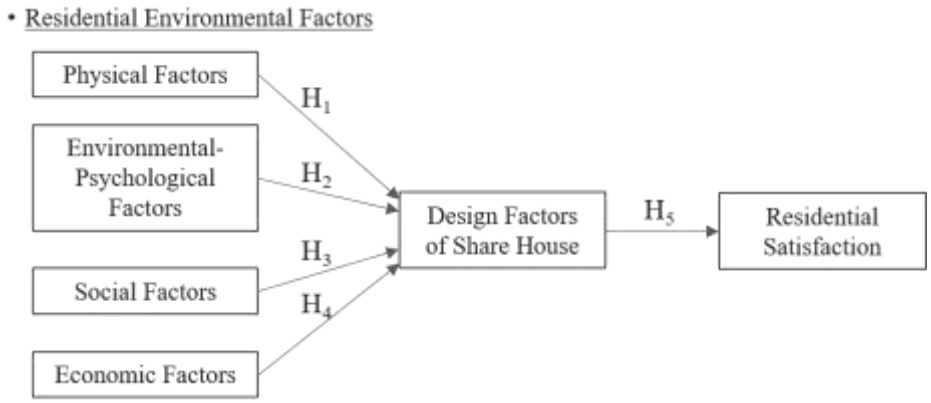

Figure 1 Hypothesis Model of the Study

Based on prior studies, hypotheses for this study were set up as follows:
H_1. Physical factors will have a positive (+) impact on design factors of share house.
H_2. Environmental-psychological factors will have a positive (+) impact on design factors of share house.
H_3. Social factors will have a positive (+) impact on design factors of share house.
H_4. Economic factors will have a positive (+) impact on design factors of share house.
H_5. Design factors of share house will have a positive (+) impact on residential satisfaction.

The hypotheses and research topics established based on empirical data were analyzed. For the empirical analysis, this study examined the characteristics of the sample and the general characteristics of the survey respondents, and analyzed the reliability of the questionnaire, which is a measurement tool. The confirmatory factor analysis was performed to verify the validity of the measuring instruments used in this study, then the load values of the factors loaded on each factor, AVE (average variance extracted), and CCR (composite construct reliability) were examined to verify the structural equation modeling based on the study hypotheses and research model.

All the analyses were made using the SPSS Win Ver. 20.0 and AMOS 20.0.

3. Results and Discussion

Of 300 questionnaires distributed, 200 responses were collected and 167 valid responses were used for the actual analysis. The demographics of sample population – who answered all the demographic items are shown in Table 2.

Table 2 Responder Demographics

Items		**Numbers responders (n)**	**ofPercentage of responders (%)**
Gender	Male	38	22.8
	Female	129	77.2
Age	≤ 20 years old	6	3.6
	21-29 years old	82	49.1
	30-39 years old	53	31.7
	≥ 40s	26	15.6
Occupation	College student	82	49.1
	Office worker	53	31.7
	Self-ownership	13	7.8
	Professional practice	19	11.4

	≤ 1.50 million won	80	47.9
	1.51-2.00 million won	22	13.2
Monthly income	2.01-3.00 million won	48	28.7
	3.01-4.00 million won	15	9.0
	≥ 4.01 million won	2	1.2
Total		167	100.0

According to demographic results of the survey responders, the majority of the collected sample were female (77.2%). Age distribution was focused on 20s and 30s (49.1% and 31.7%, respectively). Composition in occupations of sample population was made of college student (49.1%), office worker (31.7%), professional practice (11.4%), and self-owned business (7.8%). Approximately half of respondents earned less than 1.5 million won monthly (47.9%).

Confirmatory factor analysis showed the validity and reliability of this measurement model. The results from structural equation modelling to verify the research model and hypotheses are shown in Figure 2 and Table 3.

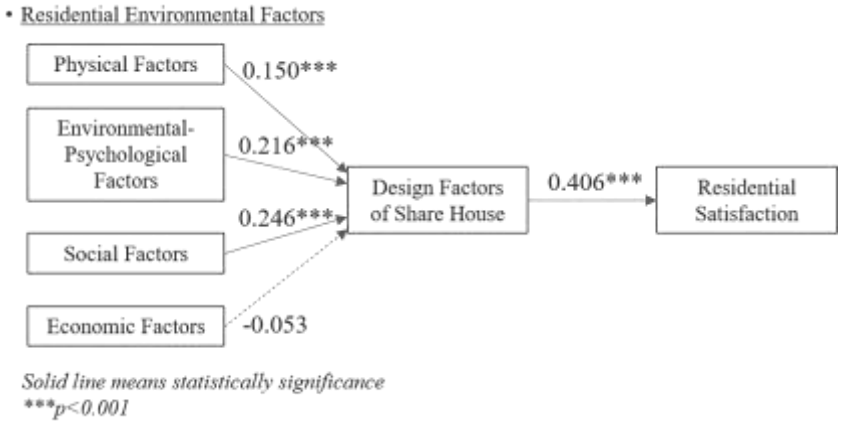

Figure 2 Verification of research model

Table 3 Standardised path coefficient of theoretical model

Measurement Variables		**Path Coefficient**	**S.E.**	**C.R.**	**p**	**Outcome**
H_1	Physical → Design Factors	0.150	0.045	3.602	***	Accept
H_2	Environmental-Psychological → Design Factors	0.216	0.058	4.007	***	Accept
H_3	Social → Design Factors	0.246	0.059	4.296	***	Accept
H_4	Economic → Design Factors	-0.053	0.064	-0.875	0.382	Reject
H_5	Design Factors → Residential Satisfaction	0.406	0.057	7.096	***	Accept

The results of the standardised path coefficient for each hypothesis are shown above. Among the residential environmental factors of the share house, physical, environmental-psychological, and social factors are shown to have positive impact upon design factors of share house. Economic residential factors are shown to have non-significant negative impact upon design factors. Design factors of share house are proven to have positive impact on residential satisfaction.

4. Conclusions

The results of this study are summarized as follows. First, an analysis of the relationship between the residential environmental factors and design factors of share house showed that physical, environmental-psychological and social factors have a positive impact on design factors of share house. Second, the design factors of share house appeared to have a positive relationship with residential satisfaction. Third, the hypothesis of the economic factors among the residential environmental factors and design factors in the share house were rejected as they showed a lack of explanatory power ($p = 0.382$).

Based on these findings, the importance of economic costs could be reduced, which include the cost of managing and operating a share house, the economic burden of repair and maintenance, heating, security and crime prevention, price compared to other share houses, and the importance of cleanliness and hygiene. Instead, physical residential environmental factors including landscaping, trees, and maintenance of facilities, environmental-psychological factors such as openness, safety, noise, territoriality, and crime prevention, and social factors like community consciousness, and privacy should be paid higher attention when design share house.

Throughout this research, the residential environmental and design factors for good share houses were studied, and theoretical studies were conducted on residential satisfaction of share house. In addition, research theories were established and verified based on the research models derived from these theoretical considerations. Practically, the efficient design plan of the share house would provide the residents a higher quality of life, so that they could increase their residential satisfaction. And share house business could refer to it in the design and planning of their share houses. In other words, this research of the relationships of residential environmental factors (physical, environmental-psychological, and social), design factors, and residential satisfaction of share house will provide useful data for the share house providers' business strategy.

Further research will be necessary for the correlation between residential environmental factors (physical, environmental-psychological, social, and economic factors), design factors, and residential satisfaction according to the detailed spatial service form of the share house, suggesting what kind of space service should be oriented. Additionally, in order to solve the problems of youth housing, community spaces could be proposed to lay the groundwork for research necessary to present the direction of youth living facilities as public goods.

5. Acknowledgements

This research was financially supported by Hansung University.

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