

An Investigation about Housing Attitudes of Korean Residents in American Apartment Houses

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Abstract

When people encounter a new cultural housing setting, their housing attitudes are more changeable and complicated than when they enter a new housing environment in the same culture. The purpose of this study was to identify cultural impacts on housing attitudes, and to find the new design concepts based on the Koreans living experience in American apartments. Data were collected by the questionnaires of 125 Koreans who live in apartment houses in Pittsburgh. According to Korean common housing attitudes and transition by the time variable, the period of residence in the US, this research found that Korean residents' housing attitudes consist of unchanged cultural factors that have been the basic design concepts of Korean style apartments, changeable mixed factors that can be used to diversify Korean apartments, and changed desired factors that will be applied to new design concepts. Also, this research showed different housing attitudes by marital status and rent. This information may be helpful to Korean housing experts who have tried to improve apartments, and it is possible that American professionals can provide more suitable housing to fit minorities' unique living patterns in America.

Keywords: Housing Attitude, Korean Resident, Apartment Housing, Cultural Difference, Behavior, User-oriented Design

1. INTRODUCTION

Basic data collected on housing satisfaction, attitudes and needs has been an important instrument in understanding the effects of environmental housing conditions on residents' behavior and has been applied to the user-oriented design concept in which housing has to be created to meet residents' behaviors and needs.

Since early 1970s, researches of housing attitudes among cultural subgroups in the US have been conducted. Kinsey & Lane(1983) report that cultural differences exist in preferences for certain housing characteristics. However, most race-related researches that focus on black and white people are associated with racial discrimination and prejudice. In spite of their increasing numbers, it is clear that very few researches have focused on the Asian-Americans' housing attitudes, which are different from the European-Americans'. Many of them have mentioned the influences of cultural background in housing satisfaction, preferences, needs and value system (Crull *et al.*, 1991; Ha & Webber, 1992; Zhu & Shelton, 1996). Also, Canada (Cooper & Rodman, 1995) and Israel (Churchman & Mitrani, 1997) have been concerned with immigrants' living environments, and have conducted race-related research. Cooper & Rodman (1995) comment that all housing is a cultural and social product, not just housing built or used by people with cultural backgrounds different from the majority.

When people encounter to a new environment, they undergo a process of conflict-adaptation-settlement. During this process, people find convenient and inconvenient aspects in their new environment. By their evaluation about

their new environment, they modify their new environments or adapt their behaviors to the new environment.

Koreans in American apartment houses have experienced inconvenience between their activities and their housing. There is a wide gap between the American housing, which is produced to suit the American life style, and spatial use of Koreans who have a different life style than Americans. At the same time, they have found convenient aspects in American apartments, which Koreans did not experience in Korean apartments, and they have adapted themselves to those good features of American apartment houses.

The purposes of this paper are 1) to identify cultural impacts on housing attitudes, 2) to find unique Korean housing attitudes about American apartment houses, 3) to discover different responses by subgroups of respondents; marital status, the period of residence in the US and rent, and 4) to make guidelines for Korean apartment planning and give data to produce housing for Koreans in America.

2. DESCRIPTION OF THE DIFFERENCE BETWEEN KOREAN AND AMERICAN HOUSING SYSTEM

Apartment houses are not a Korean native housing type, which is a one-story, detached house. In 1962, when apartment housing was introduced in Korea from the West, Koreans thought that apartments were the symbol of the modern society and desired to live there. However, Koreans started to change apartment houses because the new housing type conflicted with Korean living patterns. That is, apartment houses have undergone a process of Koreanization, and Koreans have come to have the Korean-style apartments.

Korea is similar in area to the State of Oregon in the US, but Korean population is around 47.9 million. Korea has had to increase apartment housing because of insufficient building lots and a housing shortage although single-family dwellings continue to be preferred in the US (Myers, 1990). The fact that a total of 1.9 million apartments were constructed in buildings of four and higher stories by 1992 and apartments accounted for 81.6 percent of annual housing construction in 1992 (Lim *et al.*, 1996) demonstrates Korean housing situation. While detached houses are 61.6% of total American housing stock, they are 37.1% of total Korean housing stock by 2001 (KNHC, 2004). Also Korean populace prefer apartment houses to detached houses because apartment housing, which is supplied by large construction companies, has better housing quality than detached houses, which are produced by individuals or small businesses. Also, Koreans enjoy the convenience of city life, and apartment houses have access to various convenient facilities such as stores of all sorts, banks, hospitals, etc. The higher and larger the apartment housing is, the more the occupants and convenient facilities are. Therefore, many Koreans hope to live in high-rise apartments in large apartment complexes, which are more and more prevalent. In contrast to Korean large apartment complexes, America builds small apartment estates (see picture 1). The 50 or more units of the apartment housing is only 11.1% of total American apartments by 2001 (KNHC, 2004). Now, apartment houses are the major housing type in Korea. Although apartments are a modern, universal housing type, Korean apartment houses have unique characteristics because of Korean culture and climate.

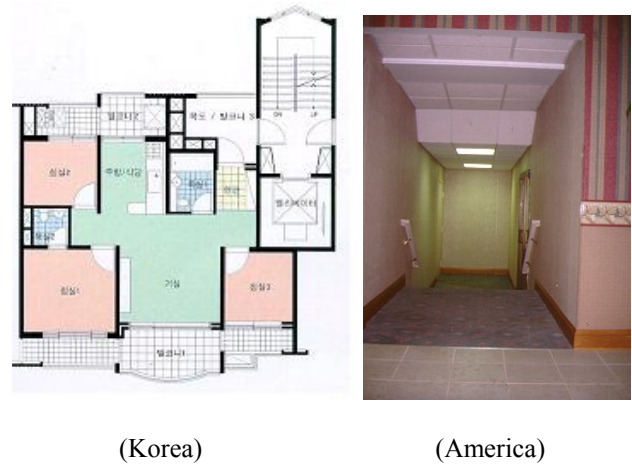


Picture 1. Scale of apartment complex

Korea, which is a peninsular, has four seasons and is affected by the continental climate in winter and by the oceanic climate in summer. Therefore, Korea has a cold, dry winter and a hot, humid summer, and Korean apartments have had to endure both hot summer and cold winter. Apartment houses' orientation and opening features can be used as a characteristic of Korean apartments.

Korean traditional houses were adapted to nature. Lee (1989) explains that "During the winter the village is sheltered from the chilly north wind by the mountain behind it, and the houses enjoy good sunshine because they face

south." These ideas for siting remain in Korea until now. For example, at present many Korean houses, which include apartment houses, are exposed to the south. Moreover, apartments have a horizontal, rectangular shape on an east and west axis to extend area facing the south, and are arranged parallel toward the south. Also, Korean apartments have a maximum window area in the south to receive valuable winter sunlight and to promote summer ventilation, and a minimum window area, which is for cross ventilation for summer, in the north to reduce heat loss during the winter (see picture 2, left). Korean people like apartments facing the air as much as possible. Therefore, Korean apartments are not double-loaded corridor types, which can commonly be found in American apartments (see picture 2, right) but staircase types or single-loaded corridor types.



Picture 2. A apartment housing unit plan & double-loaded corridor

Most apartment houses have a balcony, which functions as eaves in Korean traditional houses, to control summer and winter sunlight, to protect a house from water damage and to provide a dry space because Koreans prefer to dry the washing in the sun than by machine. Balcony space in present apartments has multipurpose such as storage, children play, study pod, rest space, etc. along with dry space (see picture 3).



Picture 3. Balconies in apartment houses

These climatic requirements and people's inclination for a house facing the south, natural lighting and ventilation produced typical Korean apartments' shapes, sites and facades

On the other hand, life style determines the characteristics of houses people build and live in. Americans usually do living activities sitting on a chair or standing in their houses; eating, watching TV, having family conversations, doing housework, etc. In contrast, Koreans rest and work in a sitting position on the floor with bare feet. This living pattern brings about Korean-style furniture and arrangement.

Koreans have unique furniture arrangement in their modern apartments. Korean-style furniture is lower than American-style furniture, because it was made suited to Korean lifestyle. Koreans have used floor cushions instead of a sofa, and they have slept on the floor with sleeping pads and quilts instead of on beds. Koreans have eaten at a low table in a sitting position on the floor while Americans eat at a high table sitting on a chair. Now Koreans use Korean-style furniture with American-style furniture together. But Korean using pattern of American-style furniture is quite different.

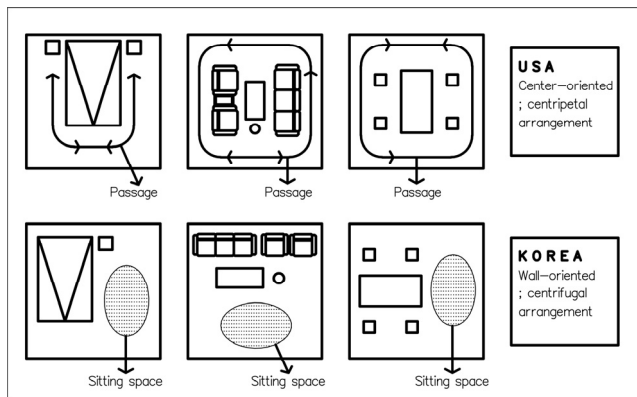


Figure 1. Furniture arrangement

Americans place their furniture at the center of the room, which is called the centripetal arrangement method and they use the margin space as a passage. But Koreans attach their furniture to the walls, which is called the centrifugal arrangement method, because they need to make sitting space in the middle being used for work or for rest (see figure 1). That is, four walls in a room are occupied by furniture and Korean people live in the middle and Korean apartment houses require more empty space than American apartments



Picture 4. Structure of bathrooms

On the other hand, bathrooms in Korean apartment houses have a different feature from Americans'. Because

Koreans have a dynamic bath habit that Koreans like to splash water on themselves during bath and do certain laundry items by hand in bathrooms, there is a floor drain and a waterproof floor of ceramic tiles in Korean apartments' bathrooms (see picture 4).

Korean apartments have a unique heating system, which was invented in the fourth century B.C., and has been used in Korean houses for several thousand years. Park (1996) explains that "The Korean traditional heating system "Ondol", which is a low-temperature radiation heating system, is made use of in the bedroom". This system is a Korean traditional house design element, which has the strongest continuity because almost all-residential houses in Korea adopted this system. It does not heat by air-circulation in the room, the convective heating system, which is used in American apartments, but it heats the floor of the room. Therefore, it is called an indirect radiant floor heating system. This system consists of a floor covering, hot water pipes and a concrete slab (see picture 5). This system arose to support Korean climate that has severe, cold winters and the Korean life style that Koreans rest and work in a sitting posture on the floor. In addition, this heating system influences and requires specific floor materials which are thin, smooth and can allow the warmth of the floor to be felt. Therefore, bedrooms in Korean apartments are laid oiled floor paper instead of wall-to-wall carpeting, which we can easily find in the US bedrooms.



Picture 5. Panel heating system

Korean rental housing has a different payment system than American monthly payment rent system. Korean tenants pay sizable sum of rent to owners before they move into new houses. Also, the expected life span of Korean apartment houses with poor maintenance is short because private housing owners have responsibilities for housing maintenance.

Korean apartments have been built and modified according to Korean culture and climate since first introduced. Now, Korean apartments have come to have unique features because they have been adapted to Korean living patterns. As Koreans' housing needs are increasing and becoming varied, Korea needs to improve the adequacy of apartment houses in responding to their occupants' needs. Unfortunately, housing design experiments are not cost effective. Koreans living in the US face new housing environments willingly or unwillingly, and they evaluate new housing environments by a comparison between American and Korean housing system.

3. RESEARCH DESIGN

This research administered the questionnaires based on the framework advanced by Yim *et al.* (1996). The questionnaires were designed to measure attitudes, including satisfaction, perception, preferences, and needs, about general housing environments and unique features, which Korean apartments do not possess, in American apartment housing. During the spring 1998, questionnaires were distributed by the researcher to 250 Koreans living in apartment houses in Pittsburgh, Pennsylvania. Visits were made to four Korean church circles, two university campuses, a language program, two Korean restaurants, and a Korean grocery store. Each prospective respondent was given a six-page questionnaire and a self-addressed stamped envelope. The questionnaires were returned by 128 respondents (a response rate is 50.5%), and 125 questionnaires were used in this research after excluding incomplete questionnaires.

Satisfaction with the housing environments and unique features in American apartments was rated on a five point Likert-type scale ranging from "very satisfied" to "very dissatisfied". Housing preferences were recorded as a dichotomous scale and nominal scales depending on the questions. Two open-ended questions were used to identify what features of American and Korean apartments the respondents were most satisfied and dissatisfied. Three major characteristics of respondents were included in the analysis as the independent variables; marital status on people dimension, the period of residence in the US on time dimension, and rent which represents housing quality on space dimension.

Table 1. People characteristics of respondents

		Number(%)			
Marital Status	married	77(61.6)	Sex	female	101(80.8)
	unmarried	48(38.4)		male	24(19.2)
Age	≤ 25 years	30(24.0)	Academic credentials	graduate degree	19(15.2)
	26-29 years	31(24.8)		college degree	67(53.6)
	30-39 years	47(37.6)		high school degree	22(17.6)
	over 39	6(4.8)		unknown	17(13.6)
	unknown	11(8.8)			
	mean of age	29.8			
Occupation	student	58(46.4)	Number of family	1	25(20.0)
	researcher	3(2.4)		2	33(26.4)
	teaching	7(5.6)		3	29(23.2)
	business	2(1.6)		4	28(22.4)
	housewife	45(36.0)		5	2(1.6)
	unknown	10(8.0)		Unknown	8(6.4)
			mean of family	2.6	
Number of children	No	70(56.0)	Period of residence in the USA	≤ 6 months	38(30.4)
	1	27(21.6)		7months-2years	42(33.6)
	2	26(20.8)		Over 2years	45(36.0)
Reason of residence in the USA	3	2(1.6)			
	study abroad	90(72.0)	mean period of residence	2.1	
	visiting professor	19(15.2)			
	immigration	8(6.4)			
	language study	8(6.4)			

(n=125)

It was hypothesized that Koreans had the common housing attitudes to American apartment houses. Also, Koreans' housing attitudes would be different by marital status, the period of residence in the US, and rent.

Characteristics of respondents are given in Table 1. Approximately, two-third of the respondents was married and the majority of respondents were female. The sample was concentrated 20s and 30s in age, with a mean age of 29.8 years, and four-fifth had a college degree. Less than one-half were undergraduates and graduate students, while over one-third were housewives. Household size ranged from one to five with a mean of 2.6. Respondents ranged in the period of residence in the US from 1 month to 15 years, with a mean period of 2 years and 1month. Most respondents were short-term residents studying abroad (72.0%), visiting scholars (15.2%) and those studying in a language program (6.4%).

Over two-fifth of the respondents lived in two bedrooms. Rent ranged from \$300 to \$1,300. One-third spent \$600 or less for rent, while over two-fifth spent between \$601 and \$800. Most respondents (86.4%) lived in apartment houses without a balcony. One-fifth thought their apartment houses faced the south, while 26.4% of the respondents did not know or were not interested their units' orientation.

Table 2. Housing characteristics of respondents

		Number(%)			
Number of bedrooms	studio	13(10.4)	Rent	≤\$600	42(33.6)
	1 bedroom	46(36.8)		\$601-\$800	55(44.0)
	2 bedrooms	53(42.4)		over \$800	24(19.2)
	3 bedrooms	9(7.2)		unknown	4(3.2)
	unknown	4(3.2)		mean	700.5
Complex scale	1 bldg	81(64.8)	Apartment height	≤2 stories	13(10.4)
	2-5 bldg(s)	24(19.2)		3 stories	33(26.4)
	6-10 bldg(s)	5(4.0)		4, 5 stories	10(8.0)
	11-20 bldg(s)	8(6.4)		6-10 stories	52(41.6)
	unknown	7(5.6)		11-16stories	11(8.8)
	mean	2.7		unknown	6(4.8)
Age of the structure	≤ 5 years	4(3.2)	Building's orientation	mean	6.1
	6-10 years	10(8.0)		east	17(13.6)
	11-20 years	20(16.0)		west	14(11.2)
	21-30 years	28(22.4)		south	26(20.8)
	31-50 years	10(8.0)		north	14(11.2)
	Over 50 yrs	15(12.0)		southeast	10(8.0)
	unknown	38(30.4)		southwest	1(0.8)
mean	21.2	northwest	4(3.2)		
Presence of balcony	yes	16(12.8)	northeast	6(4.8)	
	no	108(86.4)	I don't know	33(26.4)	
	unknown	1(0.8)			

(n=125)

4. ANALYSIS AND RESULT

To understand general responses, frequencies and descriptive data were examined. Then, analysis of variance and Chi-square test were employed to identify the differences by the independent variables. The responses were analyzed in four parts: attitudes to the general American apartment' features, attitudes to unique American apartment' features, the comparison of American and

Korean apartment houses, and housing experiences and needs.

4.1 General features of American apartment houses

The respondents were asked to rate the levels of general housing satisfaction and individual satisfaction with 34 specific aspects of seven areas in housing environments. In general, the respondents were satisfied with their housing environments (mean=2.55) in which they live.

Table 3. Satisfaction with housing environment

	Items	Mean* (Rank)	Differences by groups		
			Marital status ①②**	Period of residence ①②③***	Rent ①②③****
Location conditions	Secure location	2.15(1)			③②①●
	Child's education environment	2.41(9)			
	Public transportation	2.65(18)			
	Convenient facilities (stores)	2.73(21)		②③①●	
Outdoor environments	Complex scale	2.53(12)			③②①○
	Parking lot	2.72(20)		③②①○	③①②●
	Natural environment	2.62(15)			③①②●
	Play ground	4.41(34)		③②①○	
	Outdoor (rest facilities)	3.50(32)		③②①○	
Building Features	Building's external appearance	2.89(23)			
	Building's orientation	3.02(25)			
	Building's color	3.02(25)			
	Floor of residence	2.27(5)			③②①○
Unit plan Features	Unit area	2.23(4)			
	Number of rooms	2.40(8)			
	Room size	2.29(6)			
	Window area	2.65(18)			
	Balcony	3.90(33)			
	Space arrangement	2.60(13)			
	Built-in closet	2.15(1)			
	Furnishing materials & condition	3.01(24)			
Indoor environments	Heating system	2.62(15)			
	Soundproofing condition	3.13(28)		③②①○	
	Illumination condition	3.14(29)		③②①○	
	Natural lighting condition	2.79(22)			
	Ventilation condition	3.16(30)			
Social Environments	Friendship level with neighbor	3.19(31)			
	Privacy	2.51(10)	①②○		
Maintenance/economic	Maintenance condition	2.51(10)		③①②○	③①②○
	Common facilities	2.63(17)			
	Equipment operation of units	2.61(14)		③①②○	
	Security condition of building	2.38(7)			
	Trash collection System	2.17(3)			③①②○
	Rent	3.06(27)		③②①○	
General satisfaction		2.55		③②①○	

* 1: very satisfied, 2: satisfied, 3: medial, 4: dissatisfied, 5: very dissatisfied,
 ** ①: married, ②: unmarried,
 *** ①: ≤ 6months, ②: 7months~2years, ③: over 2years
 **** ①: ≤ \$600, ②: \$601 - \$800, ③: over \$800,
 ※ high satisfied order by pertinent groups, ○: p<.05, ●: p<.01, ●: p<.001

Koreans were most satisfied with secure location, built-in closets and trash collection system of American apartments. It could be explained that Koreans feel safer where they live than they expected. Koreans experience the effect of built-in closets and trash collection system¹ is above Koreans' expectations. On the other hand, the most unsatisfying features were playgrounds, balconies and outdoor facilities. Low satisfaction in American apartment housing is related to outdoor spaces and minimal contact with natural environments in the estates. These aspects of American apartments with Korean satisfaction and dissatisfaction may impact on overall housing satisfaction, and make Koreans adjust to American housing settings more easily

A comparison among independent variables by the analysis of variance revealed significant differences in satisfaction with housing environments in American apartment houses.

Significant differences of satisfaction with housing environment by marital status were found in only one item. The satisfaction with privacy was higher for married respondents than unmarried respondents

Different satisfaction levels among subgroups by the period of residence in the US were found in ten items of housing environments. The respondents living the US longest were more likely to be satisfied with convenient facilities, parking lots, playgrounds, outdoor facilities, soundproofing, illumination condition, and rent. Also, their general satisfaction was higher than other groups. However, satisfaction with convenient facilities was highest in the mid ranges of the period of residence.

Subgroups by rent showed different satisfaction levels on seven items. The respondents with higher monthly rent were more satisfied with secure locations, complex scale, and floor of residence than those paying less for rent. The respondents who paid between \$601 and \$800 for rent were likely to be dissatisfied with parking lots, natural environments, maintenance condition, and trash collection system.

Koreans have long been interested in housing orientation. Significant differences of orientation satisfaction by the respondents' unit orientation were found, which reached significance at the .01 level. The respondents who lived in apartment units facing the south were most satisfied, while the lowest satisfaction level was reported by the respondents who lived in apartment units facing the north.

Table 4. Orientation satisfaction by apartment units' orientation

	East	West	South	North	Mixed	I don't know	F-value
Mean	2.76	3.50	2.50	3.64	3.20	2.97	3.678**
Rank	2	5	1	6	4	3	

* P<.05, ** P<.01, *** P<.001

1. American apartments were equipped a disposal in the kitchen sink for garbage and storages on the ground level for recyclable rubbish.

4.2 Unique features of American apartment houses

The respondents were asked to rate the level of satisfaction with 23 unique features in three areas of American apartments. Generally, the respondents reported higher satisfaction with unique American apartments' features, which Korean apartments did not have, than common housing environments (see table 3 and table 5).

The disposal in the kitchen sink, built-in closets, and the cooling system were clearly the most satisfying features whereas no balcony, no window in the kitchen, and old buildings were the most dissatisfying features of American apartment housing.

The married respondents were more satisfied with built-in closets than unmarried respondents. Higher satisfaction levels of the unmarried respondents were found in no balcony and common laundry rooms.

Table 5. Satisfaction with unique characteristics

	Items	Mean*	Differences by groups		
			Marital status ①②**	Period of residence ①②③***	Rent ①②③****
Interior Space	Equipped kitchen	1.93(5)		③②①○	
	Disposal in the kitchen sink	1.79(1)		③①②○	
	Carpeted floor	2.86(13)		③②①●	
	Built-in closet	1.80(2)	①②○		③①②●
	Bathroom without A floor drain	3.29(19)		③②①●	
	No ceiling lights	3.50(20)			
	No window in the kitchen	3.72(23)			
	No balcony	3.97(24)	②①○	③②①○	
	Convection heating	3.02(15)			
	Cooling system	1.82(3)			
Public Space	Many electric outlets	1.93(5)			③②①○
	Small-scale complex	2.38(10)			
	Double corridor	3.09(17)			
	Entrance lobby (lounge)	2.22(9)			
	Outdoor pool	2.07(7)			
	Barbecue place	2.42(11)			
Maintenance	Common laundry room	2.88(14)	②①○		
	Manager system	2.05(6)		③②①○	
	Rent system	2.80(12)			
	Entrance key system	1.87(4)			
	Deposit system	3.06(16)		②③①●	
	No guard	3.17(18)			
Old building	3.56(21)				

* 1: very satisfied, 2: satisfied, 3: medial, 4: dissatisfied, 5: very dissatisfied
 ** ①: married, ②: unmarried
 *** ①: ≤ 6months, ②: 7months~2years, ③: over 2years
 **** ①: ≤ \$600, ②: \$601 - \$800, ③: over \$800,
 ※ high satisfied order by pertinent groups, ○: p<.05, ●: p<.01, ●: p<.001

Satisfaction with equipped kitchens, carpeted floor, bathrooms without a floor drain, no balcony, manager system, and deposit system were likely to be greatest for the residents who have lived the longest in the US. These items can be the periphery element by Altman (1980). The result indicates people may modify their expectations and adapt

their behaviors to their new housing environments. In general, the period of residence in the US appeared to have a statistically significant effect on satisfaction.

Built-in closets, bathrooms without a floor drain and preferring apartment type, and common laundry rooms among unique features of American apartment houses were examined in more detail (see table 6 to table 8).

Although the convenient locations of the built-in closet were slightly different by marital status and rent, generally, bedroom, around entrance door, corridor, over 2 places, and living room were ordered.

Table 6. The convenient locations of built-in closets by marital status and rent

	Marital status		Rent			Total
	Married	Unmarried	≤ \$600	\$601-\$800	Over \$800	
Living room	2(2.7)	7(14.6)	8(17.8)	-	1(4.2)	9(7.4)
Bedroom	36(48.6)	26(54.2)	22(48.9)	25(47.2)	15(62.5)	62(50.8)
Corridor	13(17.6)	2(4.2)	5(11.1)	8(15.1)	2(8.3)	15(12.3)
Around entrance door	16(21.6)	9(18.8)	8(17.8)	14(26.4)	3(12.5)	25(20.5)
Over 2 places	7(9.5)	4(8.3)	2(4.4)	6(11.3)	3(12.5)	11(9.0)
χ^2	10.156*		15.851*			122(100)

* < .05, ** < .01, *** < .001

n(%)

Two-third of the respondents reported that they felt inconvenient by bathrooms without a floor drain. However, significant differences were found by the period of residence in the US. The longer the period of residence in the US, the more the convenient they felt. Also, as the respondents have lived longer in America they were more familiar with American style housing. However, generally the respondents preferred compromised style apartments (95, 76.0%) to American style apartments (17, 13.6%), or Korean style apartments (13, 10.4%). This finding suggests that Koreans perceive the good points in both countries' apartment housing, and that they want to combine these features in their houses

Table 7. Attitudes to bathrooms without a floor drain and preferring apartment type by the period of residence

	Bathroom without a floor drain			Apartment type			
	Con-venient	Incon-venient	χ^2	Ameri-can	Korean	Com-promise	χ^2
≤ 6months	5(13.5)	32(86.5)	13.874***	1(2.6)	2(5.3)	35(92.1)	11.051*
7months - 2years	13(32.5)	27(67.5)		5(11.9)	6(14.3)	31(73.8)	
Over 2years	21(53.8)	18(46.2)		11(24.4)	5(11.1)	29(64.4)	
Total	39(33.6)	77(66.4)	116(100)	17(13.6)	13(10.4)	95(76.0)	125(100)

* P< .05, ** P< .01, *** P<.001

n(%)

Common laundry rooms are a unique feature of American apartments. In Korea, people have their own laundry machines in their apartments and they do not use dryers. Responses those presently in the US, were differed

according to the respondents' marital status. More unmarried respondents have used both the washing machine and the dryer conveniently than those who have used both of them by no choice. However, the married respondents showed the opposite attitudes of the use of common laundry rooms (see table 8). This suggests that the common laundry room system is more suitable to the unmarried person's life style than the married person's.

Table 8. Attitude to common laundry rooms by marital status

	Use conveniently	Use only the Washing machine	Use inconveniently by no choice	Do not use the laundry room	χ^2
Married	18(24.3)	9(12.2)	32(43.2)	15(20.3)	7.598*
Unmarried	22(46.8)	5(10.6)	16(34.0)	4(8.5)	
Total	40(33.1)	14(11.6)	48(39.7)	19(15.7)	

* P<0.5, ** P<.01, *** P<.001

4.3 Perception and preferences for different features between American and Korean apartments

The respondents were asked to identify the good and bad points of American and Korean apartment houses. The open-ended questions gave the respondents an opportunity to describe apartment housing features desirable to them. Responses were recorded to the tenth and the results are given in table 9.

The built-in closets were most frequently mentioned as a good feature of American apartment houses. The equipped kitchen was the second most frequent satisfied response. Maintenance system was listed as the good point of American apartments. The remaining responses were quite diverse.

Table 9. Merits and demerits of American and Korean apartment housing

	Merits	Demerits
American apartment Housing	<ul style="list-style-type: none"> -Built-in closet (48) -Equipped kitchen (23) -Maintenance system (22) -Security (9) -Cooling system (9) -Entrance key system (9) -Large unit area (9) -Monthly rent system (9) -Functional interior (9) -Protection of privacy (8) -Total 34 items (211) 	<ul style="list-style-type: none"> -Carpeted floor (30) -Bathroom without a floor drain (24) -Poor ventilation (21) -Inadequate soundproofing (13) -Convection heating (5) -No balcony (11) -Common laundry system (10) -Monthly rent system (9) -Low lighting level (8) -Old buildings (8) -Total 30 items (189)
Korean apartment housing	<ul style="list-style-type: none"> -Panel floor heating (27) -Balconies (25) -Convenient facilities (17) -Floor materials (16) -Bathroom with drain (12) -Adequate ventilation (12) -Sanitation / cleanliness (10) -Large windows (9) -Playgrounds (9) -Utility rooms (7) -Total 26 items (180) 	<ul style="list-style-type: none"> -Insufficient storage space (22) -Poor maintenance (11) -Small unit area (9) -Expensive housing cost (8) -Guard control system (6) -Shortage of parking lots (6) -Poor equipment (6) -No cooling system (6) -Poor soundproofing (6) -Ease access of strangers (6) -Total 37 items (142)

(number of responses)

On the other hand, 30 Koreans thought that the carpeted floor was the worst point. The bathroom without a floor drain was the second most frequent issue of dissatisfaction cited by Koreans. Poor ventilation and inadequate soundproofing were also significant factors of negative housing attitudes.

While panel floor heating, balconies, convenient facilities near apartments, and floor materials were found as the merits of Korean apartment houses, a shortage of storage space was the significant demerit of Korean apartment houses. Other demerits of Koreans apartment housing included poor maintenance, small unit area, and expensive housing cost. The significant perception of built-in closets represents the need for adequate storage and spaces for Korean apartments. From the analysis on the merits and demerits of American and Korean Apartment houses, it is clear that the floor materials related to heating system, natural ventilation and maintenance features of apartment housing are the foremost concern for Koreans

The respondents were asked to indicate their preferences for nine different relative features that between Korean and American apartment housing. The respondents, who live in the American apartments with the experience in Korean apartments, stated to prefer the heating system, floor and wall materials, and bathroom type of Korean apartment style. However, in security system, storage type, complex scale and apartment height, they preferred the American apartment style.

Table 10. Preferences for features between Korean and American apartment housing

	Heating system	Security system	Floor material
Korea	Floor panel heating (64.8)	Guard (25.6)	Oiled paper (78.6)
USA	Convection heating (35.2)	Entrance key (74.7)	Carpet (21.4)
	Complex scale	Apartment height	Wall material
Korea	Large complex (27.3)	High-rise (14.2)	Wallpaper (68.1)
USA	Small complex (72.7)	Low-rise (85.8)	Painting (31.9)
	Outdoor facility	Storage type	Bathroom type
Korea	Playground (53.5)	Wardrobe (1.7)	Drain (65.0)
USA	Swimming pool (46.5)	Built-in closet (98.3)	No drain (35.0)

(%)

The married respondents and the residents who have lived 6 months or less in the US preferred oiled paper as floor materials to their counterparts. The unmarried respondents and the respondents paying \$600 or less wanted a swimming pool as an outdoor facility. No significant differences in preferences for floor material were found by rent.

Table 11. Preferences for floor materials and outdoor facilities by independent variables

		Marital status		Rent		
		Married	Un-married	≤ \$600	\$601-\$800	Over \$800
Floor material	Oiled paper	60(85.7)	32(68.1)	35(79.5)	45(83.3)	12(63.2)
	Carpet	10(14.3)	15(31.9)	9(20.5)	9(16.7)	7(36.8)
	χ^2	5.201*		N.S.		
Outdoor facility	Play ground	50(70.4)	11(25.6)	14(32.6)	33(66.0)	14(66.7)
	Swimming Pool	21(29.6)	32(74.4)	29(67.4)	17(34.0)	7(33.3)
	χ^2	21.646***		12.184**		

* P< .05, ** P< .01, *** P< .001

n (%)

Newcomers, who have lived in the US six months or less, preferred the features of Korean housing to American housing. They are conflicting with American apartment housing environments, which are quite different than Korean those. More than a half the respondents, group with the longest staying, preferred Korean-style heating system and wall materials. This finding explains that floor panel heating and wallpaper can be unchanged factors. On the other hand, in bathroom type and complex scale, the longest residents preferred American style. Bathrooms without a floor drain and small-scale complex can function as changeable factors.

Also, in apartment height and rental system, significant differences by marital status were found. The married respondents more preferred low-rise apartments (67, 91.8%) to the unmarried respondents (36, 76.6% / $\chi^2=5.421$, P<.05). In rent system, the married respondents' preference for monthly rent system (29, 40.8%) was lower than that of unmarried respondents (30, 66.7% / $\chi^2=7.348$, P<.01).

Table 12. Preferences for features between American and Korean apartments by the period of residence

	Heating system			Bathroom type		
	Panel heating	Convection heating	χ^2	Drain	No Drain	χ^2
≤ 6months	29(78.4)	8(21.6)	6.811*	32(86.5)	5(13.5)	16.510***
7months - 2years	27(67.5)	13(32.5)		27(67.5)	13(32.5)	
Over 2years	23(51.1)	22(48.9)		17(42.5)	23(57.5)	
	Complex scale			Wall material		
	Large Scale	Small Scale	χ^2	Wall Paper	Painting	χ^2
≤ 6months	17(44.7)	21(55.3)	10.848**	31(83.8)	6(16.2)	6.186*
7months - 2years	11(26.8)	30(73.2)		25(62.5)	15(37.5)	
Over 2years	5(11.9)	37(88.1)		25(59.5)	17(40.5)	

* P< .05, ** P< .01, ***P < .001

n(%)

4.4 Housing experiences and needs

The residents evaluate their present houses by past experiences, adaptation processes, aspiration levels, and individual personality characteristics (Kinsey 1883, Crull 1991, Yim 1997).

That is, these factors influence residents' behavior and attitudes to their houses

The respondents were asked to report about their housing characteristics of the past and present houses as well as the future houses, which the respondents desire. It attempts to discover the association between the attainment of housing needs and the satisfaction with present housing features.

Over 70 percent of the respondents had lived in apartment housing, but they wanted to live three housing types evenly: detached houses, town houses and apartments. Most of the respondents living in small-scale apartment complexes, 5 buildings or less, hoped to live in small apartment complexes. More than a half the respondents had lived three bedroom apartments in Korea, but their apartment scale decreased to two bedroom apartments in the US. Then, they wanted three bedroom apartments as future apartment scale. Over half of the respondents who had experiences both heating systems of panel and convection preferred panel floor heating to convection heating. Most respondents owned their past houses (72.8%) but rented their present houses (96.8%) and wanted to own houses in the future (78.4%).

Table 13. The respondents' housing experiences and needs

	Items	past	present	future
Housing Type	Detached house	23(18.7)	-	38(31.9)
	Townhouse	9(7.2)	7(5.6)	39(32.8)
	Low-rise apt	14(11.2)	61(49.2)	19(16.0)
	High-rise apt	77(61.6)	56(45.2)	23(19.3)
	Unknown	2(1.6)	1(0.8)	6(4.8)
Floor of residence	1 st	16(12.8)	33(26.4)	20(16.0)
	2 nd - 5 ^t	53(42.4)	60(48.0)	75(60.0)
	6 th - 10 th	24(19.2)	26(20.8)	13(10.8)
	Over 10 th	26(20.8)	5(4.0)	1(0.8)
	Unknown	6(4.8)	1(0.8)	16(12.8)
Complex Scale	Small	38(30.4)	105(84.0)	53(42.4)
	Medium	14(11.2)	8(6.4)	26(20.8)
	Large	58(46.4)	5(4.0)	24(19.2)
	Unknown	15(12.0)	7(5.6)	22(17.6)
Number of bedrooms	Studio	1(0.8)	13(10.4)	2(1.6)
	1 bedroom	5(4.0)	46(36.8)	6(4.8)
	2 bedroom	16(12.8)	53(42.4)	21(16.8)
	3 bedroom	80(64.0)	9(7.2)	82(65.6)
	Over 3 bedroom	20(16.0)	1(0.8)	5(4.0)
	Unknown	3(2.4)	3(2.4)	9(7.2)
Heating system	Panel floor Heating	114(91.2)	-	69(55.2)
	Convection Heating	9(7.2)	123(98.4)	40(32.0)
	Unknown	2(1.6)	2(1.6)	16(12.8)
Ownership Type	Monthly rent	3(2.4)	121(96.8)	7(5.6)
	Deposit rent	29(23.2)	-	7(5.6)
	Own	91(72.8)	2(1.6)	98(78.4)
	Unknown	2(1.6)	2(1.6)	13(10.4)

(n=125) * small scale: 1-5 buildings, medium scale: 6-10 buildings, large scale: over 10 buildings

5. DISCUSSION AND APPLICATION

The results of this study show that Koreans have common attitudes to the features of American apartment houses. Also, Koreans have different opinions about American apartment housing by marital status, the period of residence in the US, and rent.

In general, Koreans were relatively satisfied with the American apartment housing environments. The most satisfying features were the secure locations, built-in closets, trash collection system and unit area, while the most unsatisfying features were playgrounds, balconies and outdoor facilities. Different satisfaction levels on convenient facilities, parking lots, playgrounds, outdoor facilities, soundproofing condition, illumination condition, maintenance condition, equipment operation in units, and rent, and general satisfaction were found by the period of residence in the US. The longer the period of residence of respondents, the higher the satisfaction levels. Different satisfaction levels on secure location, complex scale, parking lots, natural environments, floor of residence, maintenance condition and trash collection system were found by rent. The lowest satisfaction levels of the respondent with low rent can be interpreted that their housing environments and quality are lower than other rent groups.

Koreans showed high levels of satisfaction with unique features in American apartments, which Korean apartments did not have. The respondents were highly satisfied with the disposals in the kitchen sink, built-in closets, and cooling systems. On the other hand, they reported dissatisfaction with no balconies, the kitchen without windows, and aged American apartment buildings. In satisfaction with built-in closets, no balconies, and common laundry rooms, different satisfaction levels were found by marital status. Also, the period of residence affected satisfaction levels with equipped kitchens, disposals, carpeted floor, bathrooms without a floor drain, no balconies, manager systems, and deposit systems. The group with longest residence in the US showed the highest satisfaction level on six items. Significant differences in satisfaction levels by rent were found on only two items; built-in closets and many electric outlets.

In the analysis of satisfaction of general housing environments and unique features in American apartment housing, the period of residence in the US, as the time variable shows Koreans' adaptation process to American apartment setting in certain aspects. In this point, we can find the changeable factors of housing attitudes by the time variable. Time is a significant factor in which people adapted their behaviors to new environments. "The ability of an individual to adapt to a particular physical environment or social situation may vary with the amount of time involved" (Gelwicks, 1970). As people live in an environment longer, they will be more familiar with it and change certain aspects of their behaviors.

The respondents preferred heating system, floor and wall materials, and bathrooms with a floor drain among features

of Korean apartment style. However, in security systems, storage types, complex scales and apartment height, the respondents preferred American apartment style. More married respondents preferred oiled paper as a floor material and low-rise apartments, while the unmarried respondents showed absolutely high preference levels on the swimming pool as an outdoor facility and monthly rent system. The longer the residents lived in the US, the more the residents preferred certain American apartments' features. Although the respondents' preference increased with the period of residence, there were different tendencies. In heating systems and wall materials, the majority preferred Korean apartment features to American apartment features, while the reverse was true in the bathroom type and complex scale. These results can be interpreted as changeable factors and unchanged factors in housing attitudes over time.

Experiences living in the US of Korean respondents had an interest in their future housing characteristics. The respondents showed a deep interest in town houses, which are regarded as a low-quality housing type in Korea. They wanted to live in small-scale apartment complexes and low-rise apartment buildings, which were the opposite features to Koreans' preference for super high-rise apartments and large scale apartment estates. The respondents hoped to live in their own houses; that is, owning a house is most Koreans' dream. Although Koreans had a craving for home ownership, they regarded that American monthly rent system had much merits, realistically.

6. CONCLUSION

This research confirms the results of precedent studies by Altman (1980), Rapoport (1982), and eminent researchers that the cultural background has an impact on people's attitudes to housing setting. Koreans living in American apartments experience both positive and negative influences. Some features are suitable to Korean living while some features conflict with it. Many Koreans are satisfied with functional, maintenance and management aspects such as security, built-in closets, and maintenance conditions in American apartments. Features that the largest portion of the respondents showed dissatisfaction with indoor environment systems such as convective heating system, carpeted floor, poor ventilation and soundproofing, no balcony, etc. arise from different a life style that Koreans do living activities sitting position on the floor. Also, the high levels of dissatisfaction associated with playgrounds and outdoor facilities may stem from different residents' family stages of two countries' apartments. In general, Koreans were more satisfied with the unique features in American apartment houses than with general housing environments.

A noticeable finding of this study that the period of residence in the US functions as the time variable, and shows a Koreans' adaptation process to American housing setting. By common housing attitudes and a transition by the time variable, the period of residence in the US, this research found that Korean respondents' housing attitudes

to American apartments consist of unchanged cultural factors, changeable mixed factors, and changed desired factors. They correspond with the theory of periphery element and cultural core element by Altman (1980).

Balconies, natural lighting and ventilation, which were related to window size, and corridor types, heating systems, floor and wall materials, building orientations, bathroom types, playgrounds, and outdoor facilities, which were generally found in Korean apartment housing, appeared as unchanged cultural factors. These factors have been continuously used to produce Korean style apartment houses as basic design concepts.

The respondents have various portions of changeable mixed factors in their housing attitudes according to their experiences and life styles. Equipped kitchens, common laundry rooms, bathrooms without a floor drain and monthly rent systems are changeable mixed factors because their satisfaction and preferences increase in proportion to the period of residence in the US with broad ranges. These factors can be used to promote diversity in Korean apartment housing.

Korean respondents showed new housing needs, changed desired factors, after they experienced and found convenient points in new American housing environments. Built-in closets, management and maintenance systems, security systems such as entrance key systems, disposals in the kitchen sink, equipped kitchens, cooling systems, small-scale complexes and low-rise apartment buildings, which are discovered as changed desired factors, will be applied to new design concepts to produce more appropriate, suitable, efficient apartment houses for Koreans.

The result of this research suggests that the highest priorities for improvement in Korean apartment houses would be built-in closets, and maintenance and management systems. Koreans eagerly want built-in closets and more storage spaces than current Korean apartments have. Concretely, this result can be used as a suggestion that the increase of storage spaces in each unit and extra storage in basements or outdoors can be checked. Research on maintenance and management systems, and monthly rent systems would be useful to diversify Korean apartment housing. American rent systems may be helpful in rental apartment housing designed for students or young couples. Also, small-scale complexes, low-rise apartment buildings should be considered as features of future desired Korean apartments.

To create more suitable apartments for married people in Korea, small-scale complexes, low-rise buildings, natural environments, playgrounds, built-in closets, floor materials, and maintenance and management system should be reflected in design. The monthly rental apartment houses with common laundry rooms, equipped kitchens can be new housing type for the unmarried people.

A top priority for improvement in apartments with low rent would be secure. When apartments with high rent are produced, site planning has to be given priority because playgrounds, children's school environments and natural

environments are appeared important features in apartment housing which residents perceived.

The results from this study have implications for Korean and American designers and administrators. Some attributes in American apartments that Koreans like may function as improvement alternatives about Korean apartment housing. Also, this study has implication for Koreans who have experiences living abroad. They can find their cultural values by conflict between living pattern and housing setting. In addition to, American policy makers should recognize that Koreans, who live in America, have unique housing needs and attitudes.

Designers and developers of housing for minorities in the US could be assisted by the findings of this research. With better understand of ethnic differences by their unique housing attitudes rooted each different cultural background in preferred housing environments and the importance of these preferences, it is possible that a new design method can be developed to meet different housing needs within the same structure. The policy implication of this result is that Koreans in the US should be provided with more suitable housing for their unique living patterns. Also, this research method is applied to development on various ethnic groups' housing in one country. In global society, most countries needs to develop "cultural fit housing" for residents who have diverse cultural backgrounds.

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