

# RESIDENTIAL ENVIRONMENT EVALUATIONS IN ACCORDANCE WITH RESIDENTIAL STRUCTURE TYPE: THE CASE OF PUSAN METROPOLITAN

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## **Introduction**

Recently, the conception of housing has expanded from housing unit itself in physical terms to a series of residential sphere including social and psychological aspects. And the factors related with residential environments can give more effects on judging housing price and value. That is the evaluations for essential quality of housing must be considered not only in physical attributes terms but also in socio-cultural environments terms.

However, up to now, the housing policy in Korea, which has endeavored to increase housing stock, has more or less ignored to consider the importance of the environmental factors in housing. Also the supply-oriented housing provisions have decided the locations of housing and residential environment conditions in accordance with their will. Conversely, the opinions and requirements of demanders (current residents or future residents) have not regrettably reflected to such decisions. And the shortage of available land has rapidly escalated the high-density of residential pattern like apartment. There might be many differences in residential environments circumscribing them in accordance with each residential structural types, namely, apartment and

single detached unit.

Thus, this study seeks what factors among them are substantially meaningful to each housing and neighborhood evaluation of single detached unit and apartment. That is, it is important to know the correlates between its residential environment conditions and public facilities and each resident's evaluation on each different structural type (single detached unit and apartment).

## **Literature Review**

Many previous studies of residential evaluation have employed a considerable number of personal variables as predictors of residential satisfaction (Michelson, 1976; Marans and Rodgers, 1976; Galster and Hesser, 1981; Golant, 1982; Cook, 1988; Spain, 1988). They argue that the personal characteristics of respondents can influence their evaluation of their residential environment. That is, housing satisfaction will differ according to such personal characteristics as stage in the life style cycle, socioeconomic status, tenure status, etc., which are representative of characteristics of individuals.

From these studies a number of generalization may be drawn. Older age, higher income, and homeownerships are often associated with higher residential satisfaction, while minority, female head, and households with more children are associate with lower residential satisfaction. Some variables (education, marital status) fail to show consistent correlations.

However, most of the findings from these analyses (except Varady, 1983 and Spain, 1988) are limited by their small sample size and their being confined to specific regions, thus raising questions as their generalizability.

Previous research on residential evaluation has used a considerable number of housing unit variables as predictors of housing satisfaction (Varady, 1980, 1983; Galster and Hesser, 1981; Whiteford and Morris, 1986; Galster, 1987; Bartz and Cook, 1987). They have viewed these characteristics as crucial determinants of housing satisfaction.

From these studies, a number of generalization, may be derived. Larger dwelling units (i. e., more bedrooms and bathrooms) are associated with higher residential satisfaction, while older structures, or overcrowded conditions are associated with lower satisfaction. Those who have garages are more likely to express satisfaction with their housing. People living in single family detached housing also evidence higher satisfaction with their housing than those in other structure types (e. g., apartments, townhouses, mobile homes).

In many previous studies on residential satisfaction, most researches failed to consider the environmental characteristics as the explanatory variables. However, some researchers (Kim and Choi, 1997) has examined resident's satisfaction with aiming at improving residential environments, but their research scope limited to only single detached unit. Other researchers (Song, 1985; Park, 1987; Park, 1992; Chae, 1995) has investigated the correlates between residential satisfaction and physical attributes, neighborhood facilities, social psychological factors, etc., with focusing on residential environments, but they also limited their research scope to only apartment. Accordingly, this study include both single family detached unit and apartment, and explore the similarity and differences of their evaluations for their own residential environments between two structure type with focusing on residential environmental factors and public and neighborhood facilities rather than household and housing structure characteristics.

## **Data and Methods**

The data for this study comes from the individual household records of the 1997 Pusan Social Indicators Survey (PSIS). In the process of selecting sample households of PSIS, a statistic sampling, stratified sampling is used and thus its sample size consists of total 5,632 households sampling through selecting each 352 households out of 16 administrative district, county in Pusan. The PSIS is a detailed interview data administered by skilled interviewers rather than having respondents fill out a self-administered form.

PSIS data provides numerous characteristics on households, housing units and neighborhoods for a Pusan sample. In effect, PSIS data adopted many parts of American Housing Survey administered by the US Bureau of the Census.

For this study, after deleting missing observations for selected variables suggested by Table 1, we obtain about 2,900 households (single-detached unit, 1,414 households; apartment 1,472 household). This sample is used for analyzing the determinants of each housing and neighborhood satisfaction of each different residential structure type through multiple regression analysis of ordinary least squares. The basic models are as follows;

$$(1) HS = C + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \beta_9X_9 \\ + \beta_{10}X_{10} + \beta_{11}X_{11} + \beta_{12}X_{12} + \beta_{13}X_{13} + \beta_{14}X_{14} + \varepsilon$$

$$(2) NS = C + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \beta_9X_9 \\ + \beta_{10}X_{10} + \beta_{11}X_{11} + \beta_{12}X_{12} + \beta_{13}X_{13} + \beta_{14}X_{14} + \varepsilon$$

( $X_1$  : Noise,  $X_2$  : Road,  $X_3$  : Crime,  $X_4$  : Trash,  $X_5$  : Odor,  $X_6$  : Dest,  $X_7$  : Scho,  $X_8$  : Shop,  $X_9$  : Mkt,  $X_{10}$  : Hosp,  $X_{11}$  : Bank,  $X_{12}$  : Post,  $X_{13}$  : Park,  $X_{14}$  : Lib)

C=constant,  $X_1$ - $X_6$  = Neighborhood condition variables,  $X_7$ - $X_{14}$  = Public/neighborhood facilities variables,  $\varepsilon$  = Error term

## Empirical Analyses

### Determinants of residential evaluation in single detached unit households.

As suggested by Table 2, first, in the single detached unit, the relationships between housing satisfaction and neighborhood conditions showed statistical significance in all variables except for 'trash' variable. The variables to denote crime, abandoned buildings, and odor showed the statistical significance with 0.01 level. The problems of noise and bad road had statistical significance

below 0.05 level. It means that poor conditions of neighborhood environment have a great influence in determining of their housing satisfaction by the dwellers of single detached unit. It is remarkable that the variable to denote abandoned structures within their surrounding has the highest 0.13 beta-weight value. Dwellers of single detached unit pointed out that ruined structure nearby is one of the factors of complaining their neighborhood environments. It might be that the crime and the deviations of vagabond or juvenile delinquent occurred around the ruined structures.

**Table 1. Variable Names and Definitions**

<b>Dependent variable</b>	
HS	Resident's satisfaction with housing, 1=Very Dissatisfied <-----> 5= Very Satisfied
NS	Resident's satisfaction with neighborhood 1=Very Dissatisfied <-----> 5= Very Satisfied
<b>Independent variable</b>	
Neighborhood conditions	
Noise	Noise in neighborhood, 1=Very Dissatisfied <-----> 5= Very Satisfied
Road	Conditions of streets and roads in neighborhood, 1=Very Dissatisfied <-----> 5= Very Satisfied
Crime	Street/neighborhood crime in neighborhood, 1=Very Dissatisfied <-----> 5= Very Satisfied
Trash	Trash, litter or junk in neighborhood, 1=Very Dissatisfied <-----> 5= Very Satisfied
Odor	Odor, smoke or gas in neighborhood, 1=Very Dissatisfied <-----> 5= Very Satisfied
Dest	Abandoned/ boarded up buildings neighborhood, 1=Very Dissatisfied <-----> 5= Very Satisfied
Public neighborhood facility	
Scho	Schools adequate in neighborhood, 1=Very Dissatisfied <-----> 5= Very Satisfied
Shop	Shopping facilities adequate in neighborhood, 1=Very Dissatisfied <-----> 5= Very Satisfied
Mkt	Market adequate in neighborhood, 1=Very Dissatisfied <-----> 5= Very Satisfied
Hos	Hospital adequate in neighborhood, 1=Very Dissatisfied <-----> 5= Very Satisfied
Bank	Bank adequate in neighborhood, 1=Very Dissatisfied <-----> 5= Very Satisfied
Post	Post office adequate in neighborhood, 1=Very Dissatisfied <-----> 5= Very Satisfied
Park	Park adequate in neighborhood, 1=Very Dissatisfied <-----> 5= Very Satisfied
Lib	Library adequate in neighborhood, 1=Very Dissatisfied <-----> 5= Very Satisfied

**Table 2. Multiple Regression Analysis of Residential Satisfaction Using Residential Environmental Attributes and Public facilities**

Ind.Variable	Single Detached		Multi-family		Total	
	Housing Satisfaction	Neighbor Satisfaction	Housing Satisfaction	Neighbor Satisfaction	Housing Satisfaction	Neighbor Satisfaction
(intercept)	2.035706**	1.617949**	2.272871**	1.631662**	2.022649**	1.573782**
Residential Environment						
(Noise)	0.034502* (0.0423681)	0.049389** (0.064778)	0.077050** (0.1048361)	0.071335** (0.097005)	0.054189** (0.068020)	0.060563** (0.079968)
(Road)	0.035507* (0.0396211)	0.088955** (0.106011)	0.051002* (0.0627225)	0.063054** (0.077499)	0.040397** (0.045858)	0.080389** (0.095990)
(Crime)	0.046276** (0.0487631)	0.013269 (0.014932)	0.041514 (0.0445692)	0.070165** (0.077499)	0.043397** (0.045453)	0.029093** (0.032048)
(Trash)	0.028845 (0.0313557)	0.040624** (0.047140)	0.030113 (0.0343252)	0.004131 (0.004703)	0.039032** (0.043067)	0.036529** (0.042379)
(Odor)	0.055163** (0.0648153)	0.078186 (0.098063)	0.012667 (0.0107861)	0.095297 (0.013890)	0.042306** (0.051183)	0.082592** (0.086074)
(Dest)	0.122628** (0.1302061)	0.093919** (0.106428)	0.038877 (0.0432343)	0.012498** (0.013890)	0.107057** (0.115060)	0.076181** (0.086074)
Public Facility						
(Scho)	-0.015083 (-0.018283)	0.038632** (0.050015)	0.008254 (0.0107861)	0.042932* (0.056074)	-0.006427 (-0.00786)	0.039822** (0.051266)
(Shop)	0.004187 (0.005871)	0.020614 (0.030870)	-0.018582 (-0.027085)	0.036669 (0.053417)	0.006255 (0.008774)	0.021071 (0.031848)
(Mkt)	-0.041379* (-0.05691)	0.030272 (0.0444658)	0.072007** (0.1008751)	0.022850 (0.031992)	-0.015075 (0.008774)	0.023419 (0.033633)
(Hos)	0.013914 (0.018595)	-0.014630 (-0.020883)	-0.011308 (-0.015024)	0.004768 (0.005429)	-0.002909 (-0.02058)	-0.015419 (-0.02136)
(Bank)	0.012639 (0.016137)	0.014129 (0.019266)	0.047516 (0.0614022)	0.082346* (0.106351)	0.029895 (0.037809)	0.039860** (0.053030)
(Post)	0.029144 (0.039411)	0.007223 (0.010432)	-0.016276 (-0.023367)	0.003781 (0.005429)	0.012643 (0.017165)	0.002043 (0.002917)
(Park)	0.018083 (0.025765)	0.028582* (0.043498)	0.008104 (0.012818)	0.038406* (0.060711)	0.018098 (0.026384)	0.038469** (0.058992)
(Lib)	0.002973 (0.003824)	0.011700 (0.016067)	0.019827 (0.0264222)	0.002818 (0.003927)	0.004967 (0.006450)	0.005588 (0.007632)
R-square	0.2727	0.3218	0.2602	0.3342	0.2734	0.3317
Adj R-square	0.2689	0.3182	0.2512	0.3259	0.2707	0.3292
Prob>F	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Note: 1) ( ): beta-weight coefficient, 2) \*: significant at 0.05 one-tailed test, \*\*: significant at 0.01 one-tailed test.

In relations with public and neighborhood facilities, most variables showed positive sign but they hadn't statistical significance. Unexpectedly, market variable showed statistical significance with negative sign below 0.05 level. It might be that there were traditional markets nearby single detached unit and generally such facilities are almost worn-out. Thus, they thought such traditional markets and facilities were not suitable to residential environments.

Next, in the relationships between neighborhood environment conditions and residential satisfaction, the variables to denote noise, road, trash, and ruined structures showed statistical significance below 0.01 level. Particularly, the trash variable did not show statistical significance in relationships of housing satisfaction, but showed statistical significance in neighborhood satisfaction.

It might be to some extent related with recent 'trash quota system' policy. Trash quota system surely reduced total quantity of trash. but it caused frequent friction of neighbor by unlawful litter.

In relating with public and neighborhood facilities, the variables to denote schools and parks showed statistical significance. It means that these variables are more strong factor to express the satisfaction of neighborhood than any variables in single detached unit. Probably in the case of the school, it seems to be highly estimated by the household with students. In the case of park, it might be highly evaluated in terms of their leisure and health.

### **Determinants of residential satisfaction in apartment households**

In Apartment, it has shown that both noise and road conditions variables are statistically significant predictors, although most variables to denote neighborhood environment conditions have positive sign in relating with housing satisfaction at Table 2. Apartment dwellers answer that the problems of the noise and road conditions are highly associated with their evaluations of housing. In beta-weight value, the noise and road conditions variables are ranked as the first and second respectively.

Only market variable among 8 variables to denote public and

neighborhood facilities was found to be statistically significant predictor. Surprisingly, the market variable in apartment is positively significant predictor differently from negative sign in single detached unit. This result is that apartment dwellers recognize the market as convenience. In effect, it is very often that the markets place around apartment is newly built or redeveloped and reconstructed.

In relationship between neighborhood satisfaction and neighborhood environment conditions, the variables to denote noise, road, crime, destroyed structure showed statistical significant below 0.01 level ( $P < 0.01$ ). Especially, the trash variable is not statistical significant predictor, even if it has positively sign correlates. Perhaps, there are public trash grounds on every apartments and thus trash problem is not big one in comparison with other factors in evaluating their neighborhood.

In relating with public and neighborhood facilities, three variables to denote school, bank and park among 8 variables showed as the predictors with positively statistical significance below 0.05 level. Especially, both school and park variables of public and neighborhood facilities are found to strongly influence with their neighborhood evaluation in apartment as well as in single detached unit.

## **Conclusion**

The aim of this paper is to explore the determinants of the dwellers evaluations in each different structural type against their residential environments, through dividing residential structural type into single detached unit and apartment. In this respect, this paper focused on the neighborhood environment conditions and public and neighborhood facilities rather than household characteristics and housing structural types as the explanatory variable for residential evaluations.

As the result of the analysis, first, it is found that poor conditions of neighborhood environments of single detached unit have great influence in their expressing of its own housing dissatisfaction, and especially, they



pointed out that ruined structure nearby their residence was one of the reasons to express the worst complaint for their housing.

The dwellers of single detached unit who express their dissatisfaction with public/ neighborhood facilities within their boundary are apt to complain their housing, but their correlates did not have statistical significance.

In Apartment, it has shown that both noise and road conditions variables are statistically significant predictors of housing satisfaction. This suggests that the problems of the noise and road conditions rather than any other neighborhood environmental conditions are likely to associate with their housing dissatisfaction.

In relating housing satisfaction with public and neighborhood facilities, the market variable among 8 variables was found to be statistically significant predictor. Remarkably, the market variable in apartment is the predictor with positive sign differently from in single detached unit. This meant that the viewpoint for market between single detached unit dwellers and apartment dwellers could be much different.

In relating with neighborhood satisfaction with neighborhood environmental conditions in apartment, the variables of noise, road, crime, destroyed structure with statistical significance were more likely to influence on evaluating their neighborhood than any other variable such as trash and odor.

The public and neighborhood facilities to influence on their neighborhood satisfaction of the apartment dwellers had much similarity to those in the single detached unit. Particularly, the school and park variables of the public and neighborhood facilities were found to be statistical significant predictor of neighborhood evaluation in both apartment and single detached unit. It means that such variables are the most important factors to evaluate their own neighborhood level without relation to their structural type, whether they live in apartment or single detached unit.

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