

PHYSICAL CORRELATES OF NEIGHBORLINESS IN APARTMENT BUILDINGS: A STUDY IN ENVIRONMENTAL PSYCHOLOGY*

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* This study was undertaken as a class project in a sophomore course in Environmental Psychology. The course was open to Architecture and Psychology students and was jointly taught by the authors. The training goal of the project was to sensitize students to the relationships between variation in physical structure and its behavioral consequences. All too often students in these disciplines develop a sort of "TUNNEL VISION" in which the major field expands to occupy his entire attention and concern, and scant attention is paid to the interface with the other discipline. The aim of the course, speaking generally, was to counteract the "TUNNEL VISION" tendency by presenting alternate viewpoints in class from instructors trained in different fields, by encouraging interaction among architecture and psychology students and by engaging in projects and course work of an interdisciplinary nature

The focus of the presently reported study is on the relationship between certain aspects of the physical structure of apartment houses and the distribution of friendship and acquaintance within the apartment. The style of living that takes place within the small apartment house is rapidly becoming a new norm for the Turkish middle class. Their rate of construction in Ankara alone is very high and in this respect the capital city of Turkey is not unusual. The data for this study was collected entirely from such apartment houses, in the hopes that the results would shed some light on the behavioral consequences of the new type of environment. The importance of the concepts of home and neighbor in Turkish culture can be seen easily; the turks are not a mobile group and homes are often lived in for generations. The language is replete with sayings linking the concepts of home and neighbor positively together (e.g. "Ev alma komşu al"). It follows that any change in living arrangements that affects hospitality and neighborliness becomes a relevant and interesting issue. In addition, there seems to be a world-wide increase in apartment house dwellers, as a result of both economic and demographic forces and results of studies involving such units increase in generalizability as a consequence. As the rate of homogenization of the built environment increases, the need for scientific information on behavioral effects becomes critical.

The currently reported study investigated the effects of variations in the public or common areas of apartment houses, specifically, differences in entrances and in stairways on reported acquaintance and friendship patterns of the occupants. In order to isolate the variable of interest from other variables that influence acquaintance and friendship, it was necessary to hold constant and to control a number of factors. As each of these becomes a self-imposed limit on the degree to which the results can be generalized, they are summarized into the list that appears below :

1. Only the most common type of five floor, 16-unit apartment building was used in the study. Larger and smaller buildings may have different types of results.
2. The building must not be older than five years, it must not have an elevator and the type of staircase must be clearly defined.
3. The locations of occupants that are related to each other, newly moved-in occupants and the director of the apartment building must be known and taken into account in evaluating the results of the study.

Within these limits, the aim of the study was to select a normal family within the apartment, interview each member of the family over five years of age and record the degree that they report knowing each other person living in the apartment. There were a number of objectives for the analysis of the data :

1. Most generally, the study was seen as exploring methods for generating data on the interface between behavior and environment.
2. At a somewhat more specific level, it was anticipated that general descriptive data on friendship and acquaintance ranges could provide some idea of the extent to which people do know each other in such structures.
3. More narrowly, it was hypothesized that the physical structure of the common areas of the apartment building would be related to behavioral indices of friendship and acquaintance. As the number of landings and other structures such as turns of the staircase increases, it was predicted that these measures of neighborliness would also increase.

METHOD

Each student was assigned to a specific apartment house and given a copy of the Data Recording Sheet. This sheet, as illustrated in Figure 1, was designed such that a matrix of the entire apartment building would be recorded.

The columns in figure 1 represent the specific apartment dwelling units, while the rows give the sex and status of each occupant in the building. Entries into a specific cell of the matrix represent the degree to which each member of the family that was interviewed knew a specific individual in a specific suite. All behavioral indexes described below were computed from the data given on the data recording sheet.

Once a student was assigned to specific building and given his data recording sheet, he was faced with three tasks. First, he had to calculate a set of basic ecological measures on the entrance and stairway of the building as described below. Second, he surveyed each dwelling unit within the building to find out the number of people and the age and sex of each person living in the unit. Thirdly, he selected a single family in the building to be interviewed. This family was called the "Target Family" and each member over the age of five was asked about their degree of acquaintance with every occupant of the building.

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DATA SHEET FOR RECORDING OBSERVATION

		dwelling number															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
family members	grandfather																
	father			Father 3 Uncle 2 Mother 2	Father 3 Uncle 1 Mother 3 Aunt 2		Father 3 Uncle 1 Mother 3 Aunt 2			Mother 2			Father 2 Uncle 1 Mother 3 Aunt 2				
	1st son	Father 2 Uncle 2 Mother 2 Aunt 2				Father 3 Uncle 1 Mother 3 Aunt 2									Father 2 Uncle 1 Mother 3 Aunt 2	Father 2 Uncle 1 Mother 3 Aunt 2	Father 2 Uncle 1 Mother 3 Aunt 2
	2nd son																
	3rd son																
	uncle																
	First grandson						Father 1 Uncle 2 Mother 3 Aunt 2										
	Second grandson							Father 1 Uncle 2 Mother 3 Aunt 2									
	grandmother	Father 2 Uncle 2 Mother 2 Aunt 2															
	mother	Father 2 Uncle 2 Mother 2 Aunt 2	Father 3 Uncle 1 Mother 3	Father 3 Uncle 1 Mother 3	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2
	1st daughter					Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2	Father 3 Uncle 1 Mother 3 Aunt 2
	2nd daughter																
	3rd daughter																
	aunt																
	girl 1		Father 2 Uncle 2 Mother 2														
	girl 2		Father 2 Mother 2														

Fig. 1 Illustration of the data recording sheet used in the study

A number of characteristics of the Target Family were controlled in the study. They had to have lived in the apartment building for a minimum of two years; all members had to be available for individual interviews; they needed to be a normal family of at least two people.

The interviews with the Target Family centered on the identification of each dwelling unit in the apartment and the degree to which the respondent knew each person in each dwelling unit. Interviewers were cautioned not to coach the respondents or bias them by providing information. Typically, the interviewer would be forced to conduct the interviews with one respondent in the presence of other family members and could not control the cues given by other family members. Apart from providing valuable training to the students in the gentle art of conducting an information-getting interview, the lack of independence among family members meant that the data provided by the Target Family had to be handled as a unit. In the case of the behavioral indexes described below the data from each Target Family was treated as a unit.

ECOLOGICAL INDEXES :

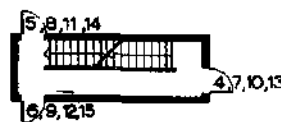
From the basic data provided on the apartment building, a number of different measures were derived. Three time

measures were calculated; T_1 = the time from the entrance of the apartment to the door of the first dwelling, T_2 = the time from the entrance to the building to the last door of the highest dwelling unit. T_3 = the time required to climb one flight of stairs. In addition to these measures, two additional measures were calculated as ratios; E_1 = the ratio of the number of platforms in the apartment to the number of floors and E_2 = the number of doors of dwelling units divided by the T_2 measure described above. Finally, each student drew and submitted a floor plan of the public areas of the apartment, including the stairways. An example of one floor plan is given in Figure 2.

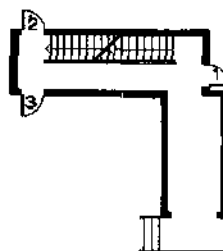
BEHAVIORAL MEASURES :

In addition to the measures of the physical environment described above, three measures were calculated from the interview data.

1. *Per Cent Acquaintance Range* was defined as the average number of occupants known by the Target Family divided by the total number of occupants of the apartment building minus the members of the Target Family and multiplied by 100.
2. *Friendship Index* was defined in the same way as the Per Cent Acquaintance Range, except that only occupants who The Target Family stated that they *knew well* were included in the first step, rather than including everyone the Target Family stated they knew. For the Purposes of the study, *KNOWING* was defined as being able to recognize an occupant and correctly identifying the dwelling unit number where he resides. *KNOWING WELL*, on the other hand, was operationally stated as being able to recognize the occupant in another context beside the apartment environment, and/or having visited him inside his home.
3. *Distance Acquaintance* and *Distance Friendship* ranges. These indexes were computed as described above but done separately for each dwelling unit and plotted on a graph for the apartment as a whole. Figure 3 displays an example of the graph for the Distance Acquaintance



TYPICAL FLOOR



GROUND FLOOR

INFORMATION :

1. IT IS 4 STOREYS HIGH, NOT INCLUDING THE ENTRANCE FLOOR.
2. IT WAS BUILT 4 YEARS AGO.
3. THE TARGET FAMILY HAS LIVED IN THE APARTMENT FOR 4 YEARS.
4. THE FATHER OF THE TARGET FAMILY WAS THE DIRECTOR (MANAGER) OF THE APARTMENT UNTIL LAST YEAR. NOW, NO. 16 IS THE DIRECTOR.
5. NO. 8 HAS MOVED IN 5 MONTHS AGO.
6. TWO OF THE FRIENDS STUDYING AT A UNIVERSITY, LIVE IN NO. 2.
7. THE AUNT AND UNCLE IN THE TARGET FAMILY, STAY THERE IN ORDER TO GO TO SCHOOL IN ANKARA. THE AUNT ALSO LOOKS AFTER THE 4-YEAR-OLD BROTHER BECAUSE THE MOTHER HAS TO WORK OUTSIDE.
8. THE MAN LIVING IN NO. 15 HAS BEEN RECENTLY MARRIED.
9. THE MEASURES :
 - t_1 = 5 SEC. (TIME TO REACH THE 1ST DOOR FROM ENTRANCE)
 - t_2 = 1 MIN. 10 SEC. (TIME TO REACH THE LAST DOOR FROM ENTRANCE)
 - t_3 = 12 SEC. (TIME TO CLIMB ONE FLOOR)

Fig. 2 Floor plans and basic information on ecological indices.

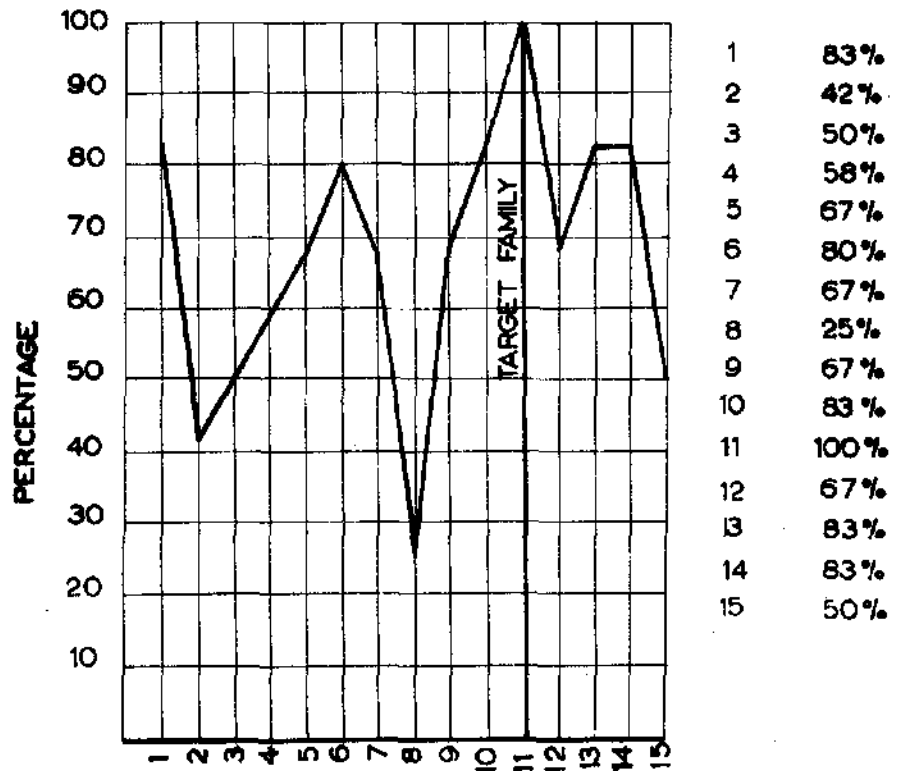


Fig. 3 Graph displaying the distance acquaintance index for the data in Fig. 1.

Range from the same apartment as in the Data Recording sheet given in Figure 1. Notice that the graph in Figure 3 is centered around the Target Family's dwelling and the curve radiates out from there.

RESULTS

SUCCESS OF THE DATA COLLECTION PROCEDURES :

The data recording sheet proved to be an extremely useful method of summarizing the interviews with Target Families; a total of 33 different apartments were included in the sample and in each case usable data were obtained on the Data Recording Sheet. Although many questions were raised by students as they encountered difficulties in their role as interviewers, none of their difficulties resulted in problems which were fatal to the data they had collected. The most confusion seemed to occur when an instance of knowing someone on the basis of some distinctive characteristic that was unrelated to the apartment building would happen. The rule for the study was clear; the respondent had to know the number of the occupant's dwelling unit or be able to point out the correct door if he was unable to recall the number. Somehow, if other cues rendered a person more distinctive, it was hard for the student to accept the statistical rule that such events would balance out in the long run if left to chance and the systematic relations between structure and behavior would appear.

THE WORLD OF THE 16-UNIT APARTMENT :

In general the data show quite an interesting picture of the degree and distribution of neighborliness among apartment

building occupants. The average Target Family showed a 70% Acquaintance Range, meaning that the average member of the Target Family was acquainted with nearly three-fourths of the building's occupants. The effect of the more conservative criterion in the Friendship index was to cut this rate of knowing in half. About 35% of the building's occupants were known well by the average member of the Target Family, using the criterion of recognition of the occupant in another context. In other words, slightly more than one-third of the occupants were known well by members of the Target Families. The most conservative behavioral index of knowing came, as might be expected, from the Distance Friendship Index. When percentages of positive responses are calculated as a function of the individual dwelling units, the average index of knowing well was 29%. Depending on the strictness or flexibility of the criterion that one uses, anywhere from 70 to 29 per cent can be found as an index of neighborliness.

Turning to the ecological measures, one finds much less variability from one index to another, perhaps because the apartments buildings had been preselected to be quite homogeneous. On the average, the distance from the entrance to the stairs (T_1) could be traversed in less than 10 seconds, that from the entrance to the first landing (T_3) in less than 25 seconds and from the entrance to the door of the highest dwelling unit (T_2) in about one minute 15 seconds. In these data show, the amount of time that a building occupant is available in the public space of the apartment building is extremely small, hence the power of the ecological variable of the present study is rather limited.

RELATIONSHIP BETWEEN PHYSICAL AND BEHAVIORAL VARIABLES :

The product-movement correlation was used as a measure of association to search through the data for strong relationships. Results show that none of the time measures correlated significantly higher than zero with any of the behavioral measures. As mentioned above, the three time measures were only minimally differentiated from each other; in addition, individual differences in speed of walking may have added error variance to these measures as each student surveyed his or her own apartment building.

Fortunately, the second ecological index described in the method section (E_2), defined as the total number of doors in the building divided by the T_2 index, proved to be a considerably better predictor of the behavioral measures. Furthermore, it had a very interesting relationship with the three behavioral measures described in the last section. The correlation with Percentage Acquaintance Range was nearly zero ($r=+.01$), that with the Friendship Index was much greater ($r=+.11$) and the correlation with the Distance Friendship Index greater still ($r=+.14$). In other words, the more conservative the behavioral measure used in the study, the stronger its relation to the environmental variables. The latter correlation, while still indicative of a weak relationship, indicates that the more time spent in the hallways and stairway of an apartment, the greater the average percentage of occupants known well by the Target Family in each dwelling unit.

The idealized curve of the Distance Friendship Index is displayed in Figure 4. The vertical line on the right of the graph

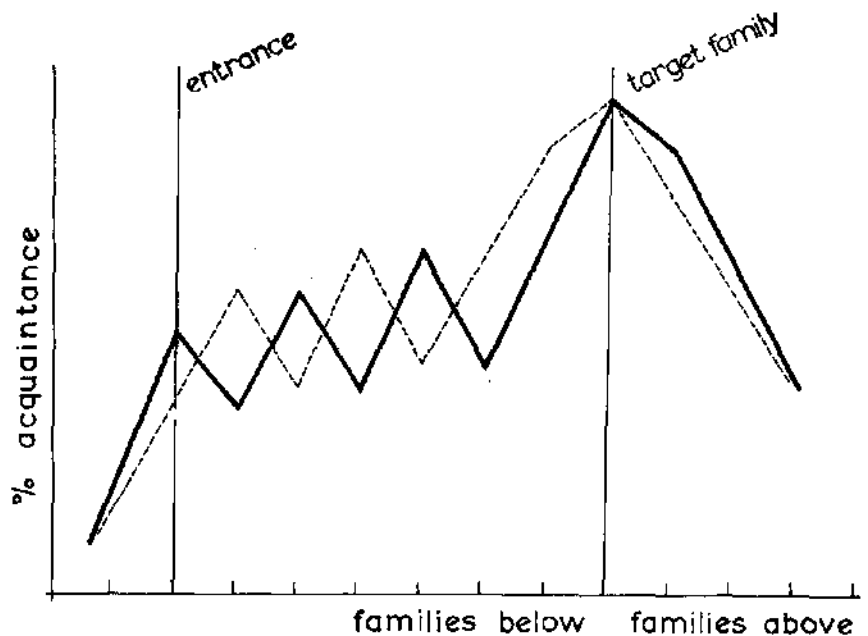


Fig. 4 Theoretical model of the neighborliness distribution

represents the dwelling unit of the Target Family. To the left of that vertical line are the dwelling units between the Target Family and the entrance. To the right are those upstairs from the Target Family.

The solid line in Figure 4 represents the distribution of the Distance Acquaintance Index in percentage form. Note that the curve drops the further one travels from the Target Family; to this extent, the index simply supports the well-known thesis that proximity favors interaction. Two other characteristics of Figure 4, however, are less obvious and both support the importance of the physical context of the building. In the first place, the curve drops away much more rapidly above the Target Family than below the Target Family; thus the friendship distribution of a family occupying a higher dwelling unit in the building will be higher than a family occupying a place closer to the building entrance. This point is consistent with the positive correlation presented above as well, since a family who lives further from the entrance will spend more time in the public area of the building. The second feature of Figure 4 is illustrated by the dotted lines extending outward from the vertical line representing the Target Family's dwelling. Note that this dotted line is higher for the dwelling units immediately adjacent to the Target Family than is the solid line. This difference is intended to illustrate the nonobvious fact that one's chances of encountering a neighbor are partly dependent upon the relation between your door and his; if his door is directly within your line of sight from the entrance to your unit, then you have a greater chance of seeing him than you do another neighbor who may actually be closer to you in distance but not in terms of line of sight. Thus, the difference between the dotted and the solid line in Figure 4 describes the difference between a merely physical concept of the environment and one which takes perceptual characteristics into account. In general, the model that is visually presented in Figure 4 is consistent with the data collected in

this study. However, for simplicity's sake, the theoretical model in Figure 4 is presented for the case of an apartment with only two dwellings on each floor.

DISCUSSION

LIMITATIONS OF THE PROJECT :

The present study was designed as an exploratory and descriptive effort to break new ground for a scientific approach and to provide training and some research skills for students. On these objectives it was successful, although in some respects the results fell far short of the investigators' plans. Originally the hope was that different types of staircases could be systematically compared for their effects on the neighborliness variables. Unfortunately, the sample of 33 apartment buildings that were used in the study had so little variation in the structure of the entrance and staircase that systematic comparisons proved to be impossible. Apparently, the similarity of the newer apartments is greater than those built in the past and the decision to restrict the sample of buildings to those made in the last 3 to 5 years had the effect of drastically reducing the variability in the sample. One important limitation is that the theoretical model which was generated for neighborliness predicts only half of the distribution. In other words, the side of neighborliness having to do with knowing others is directly predicted from the dwelling unit of the Target Person but the other side of neighborliness, being known by others is precisely the opposite side of the coin. Therefore the predictions should simply be reversed, but they were not studied. Different Target Families should be interviewed who live close to the entrance in order to validate this point.

NEXT STEPS :

The data in the present study can be extended several meaningful directions; samples of larger apartments can be surveyed, for example and comparisons can be made on the neighborliness variable. Most of the literature would argue that frequency of contact between people is negatively related to size. More interesting perhaps is the possibility of cross-cultural comparisons on the neighborliness variables, and their relations to Ecological Indexes. In terms of better data on the behavioral measures systematic observation should be attempted as an alternative to the interviewing procedure of the present study. Observers could be stationed inside an apartment building at critical times of the day and their observations on interpersonal contact could be compared with data gleaned from interviews.

CONCLUDING COMMENTS :

This report has described the results of a project in which the behavioral variable of "Neighborliness" was systematically studied in apartment buildings and related to several indexes derived from the physical environment. Results have shown (a) that Friendship and Acquaintance measures vary between 30 and 70 when expressed as a percentage of the total occupants in the apartment, (b) that quantitative relations can be constructed with Ecological Indexes and (c) that the

distribution of friendship is positively related both to proximity (the closeness of two dwelling units to each other within an apartment building) and to the distance of a dwelling unit from the entrance to the building. Thus, the implications for neighborliness are clear: if one wants to know many people and be social, one should live far above the entrance. If, on the other hand, one prefers to be antisocial, one should live close to the building entrance or even below the street level, if possible. Note another instance of the meaningful relation between space and behavior.

APARTMAN BİNALARINDA KOMŞULUĞUN FİZİKSEL KORELASYONLARI

ÖZET

Bu raporda, apartman binalarında, bir davranış değişkeni olarak komşuluğun sistematik olarak incelenmesi ve çeşitli fiziksel çevre indeksleriyle yapılan karşılaştırılmasında çıkan sonuçlar anlatılmaktadır.

- (a) Bir apartmanda oturan toplam kişilerin birbirlerini tanıma yüzdesi 30-70 arasındadır.
- (b) Bu tür çalışmalarda ekolojik indekslerle, kantitatif ilişkiler kurulabilmektedir.
- (c) Tanıma ve tanınma, dairelerin birbirlerine yakınlıkları ve apartman giriş kapısından olan uzaklıkları ile doğru orantılıdır.

Dolayısıyla , komşuluk konusunda çok kişi tanımak isteyen fakat tanınmayı kendi seçimlerine bırakmak isteyenler üst katlarda, apartman girişinden uzakta, tanınmak isteyen fakat tanımayı kendi seçimlerine bırakmak isteyenler, alt katlarda, apartman girişi yakınında oturmalıdırlar.

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