

The Impact of the Surrounding Environment on People's Perception of Major Urban Environmental Attributes

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Abstract. Two differently planned communities inhabited by similar groups of people with various cultural backgrounds were compared to test whether environmental differences influence perceptions. The two groups were found to possess different perceptions which were linked to environmental differences. Due to the differences in the environment interacting with cultural differences, it is assumed that the differences in perception are not linear when the various cultural groups in each community are pooled together. Instead, the tested differences are mediated by the degree of congruence environmental differences have with essential human needs and desires as determined by cultural profiles. Only when each cultural group is analyzed separately according to the two communities, the hypothesis of perceiving a third common environment differently can be supported.

Introduction

In general terms, the interaction between humans and their environment is well recognized in many disciplines. General research findings related to the influence of the environment on people's behavior are now accepted [1,2,3].

Due to the complexity of everyday life, the field of environmental psychology is developing rapidly in response to problems presented by architects, planners, economists and legislators. However, given the multiplicity of independent variables associated with the study of the relationship between a person and his environment and the interactions between variables such as his social, cultural, environmental, inter-personal and intergroup differences, theoretical approaches borrowed from laboratory psychology are often not suitable for generalized findings [4]. Therefore, there is a need for a new theoretical and conceptual framework in behavioral science as a whole to serve the needs of environmental psychology research more adequately [4,5].

The effect of the environment on behavior is by no means direct, passive, simple or readily predictable [6]. This statement corresponds to the methodological orientations of both Cronbach [7] and Proshansky [5], who reject the investigation of, or search for, simple relations between individual traits or behaviors and physical or environmental characteristics as artificial [4]. Available readings suggest that the effects of the physical environment on human behavior are mediated by responses of an emotional nature [8].

Levy-Leboyer [4] attempted to dichotomize the theoretical attempts made in synthesizing the results of specialized research projects in environmental psychology. This dichotomy was based upon whether the researchers had an essentially deterministic view of the relation between the person and the environment, or whether they had analyzed the processes of interaction between the two and, thus, investigated how individual personality affected way the environment is perceived and understood. In the first category lies the work of Festinger *et.al.* [9], Lee [10], and Newman [11], in which architectural determinism is used as a concept linking the environment and a range of specific behavior such as socializing, vandalism and community life. These authors, as a group, do not translate the idea of environmental influence on behavior into the idea of mechanical determinism.

The proponents of the “interactive” model examine the role of personality in person-environment interactions. Here also, they do not assert that personality traits are the sole determinants of behavior. Rather they discuss specific individual needs and the environmental conditions which allow (or prevent) their fulfillment as well as the personality factors which introduce personal biases into the perception of the environment [12,13,14,15]. It could well be that a unitary theoretical model of person-environment relations is not possible, but when studying such relations as a whole, the great diversity and complexity of causal variables are inescapable [4].

In the monograph, “The Human Context: The Environmental Determinants of Behavior”, Moos [16] presents a useful model for exploring the effect of a man-made physical environment on human behavior called the inter-systems congruence approach developed by Michelson [17]. In this model, instead of giving environmental factors a dominant role over other variables, Michelson adds the environment as another system acting interdependently with the social, cultural and personality systems, with a certain degree of match or mismatch between the built environment and the other systems. Particular characteristics of urban physical settings emerge as congruent with, and supportive of, some social processes, and incongruent and disruptive of others. This model will be employed to explain the predicted differences in the study reported here in so far as the compared settings match or mismatch specific social processes and desires such as interaction, daily comfort and an overall feeling of satisfaction.

In discussing cross-cultural aspects of environmental design, Rapoport [18] defines environments as being culture-specific and congruent with specific life-styles. However, due to the broadness of culture as a concept when it relates to environmental design, he proposes [19,20] that culture typically leads to a particularized world view. World views reflect ideals and lead to choices but are still difficult to use. He cites Jones [21]; Szalay and Maday [22]; Szalay and Broysen [23] specifically in relation to the environment. Values are frequently embodied in images, resulting in particular life-styles such as characteristic ways of making choices about behavior, roles and the allocation of resources. By working with the elements and characteristics of both environment and life styles, an approach could be developed whereby the two can be described by way of profiles expressing differential choices and the congruence, or lack of congruence, among these choices [24]

The built environment is seen as a setting for human activities [25]. Such a setting may inhibit or facilitate to the extent of acting as a catalyst for the release of latent behavior; but it cannot determine or generate activities. Thus, in doing many experiments with students, Rapoport [18] discovered that if one works in a direction desired by people, apparently minor environmental elements can have major effects in predicted direction. When working against desired behaviors, major changes must be introduced and even major changes are often not successful. Such an approach is expected to direct the methodology and interpretation of the findings of this study in a suitable fashion.

1- Purpose

The aim of this paper is to attempt to utilize an interesting trend in community planning that has emerged in the Saudi Arabian urban environment in order to investigate the following hypotheses:

- 1- There is a direct relationship between the immediate environment and people's environmental perceptions of a larger scale urban setting, such as the city where they reside.
- 2- There is a relationship between other socio-cultural and personal variables and the perception of a large scale urban setting. Such a relationship is determined by the degree of congruence environmental differences have with people's socio-cultural and personal variables.

Variations in perceptions, due to the direct or indirect influence of the environment, would help in understanding the important role the environment plays in determining other aspects of human behavior.

2- Setting

The emerging trend in community planning in Saudi Arabia relates to the activities of many governmental and, to a lesser extent, private agencies in the plan-

ning and constructing of communities to accommodate their staff. This is in contrast with the prevailing mode of speculative land subdivisions which dominate the urban design pattern. In Saudi Arabia, this latter system has intensified with the recent boom in city building and construction. Such a system produces housing developments which are mere grid-iron lots of different sizes whose ultimate shape is determined by minor and sketchy local regulations.

The selected setting for this research study consists of the planned community housing for King Saud University staff members (referred to later as the planned, or first community) and non-community housing, which is spread throughout the city of Riyadh (referred to later as the nonplanned or second community). The planned community is comprised of 45 apartment buildings three to four stories in height (Figs. 1 and 2). This community is surrounded by a ring-road, serving all common facilities and parking lots. Entering and exiting the ring is controlled by a check-point. Common facilities serving the community include: a housing office, a mosque, a school, a supermarket and a large recreation center. The area between the buildings is designated for pedestrians. This includes green areas and children's play-grounds.

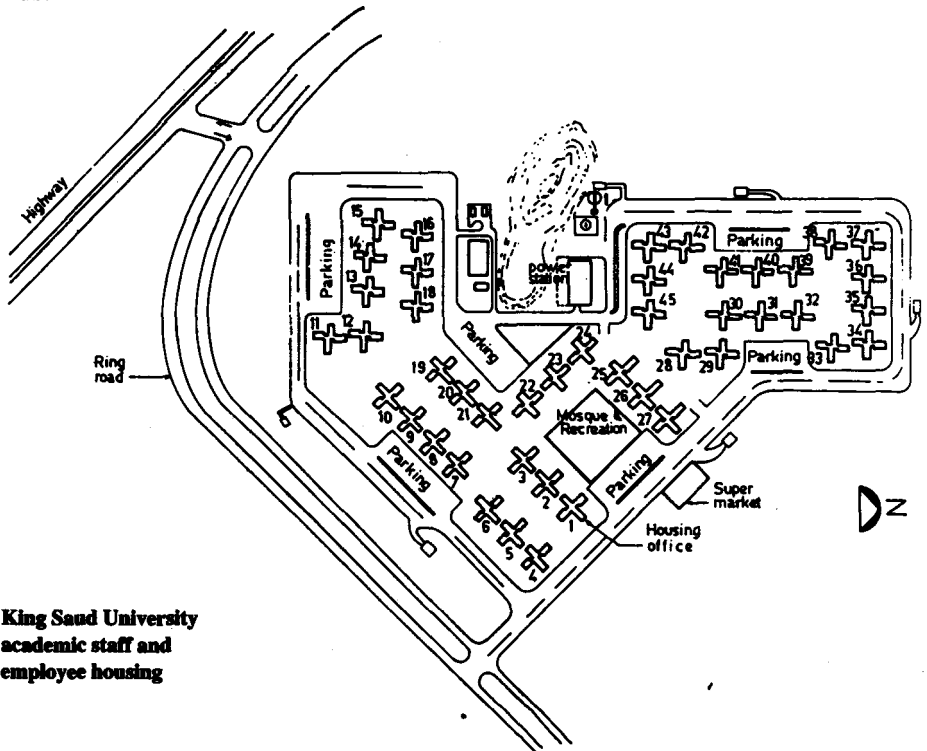


Fig. 1. The planned community

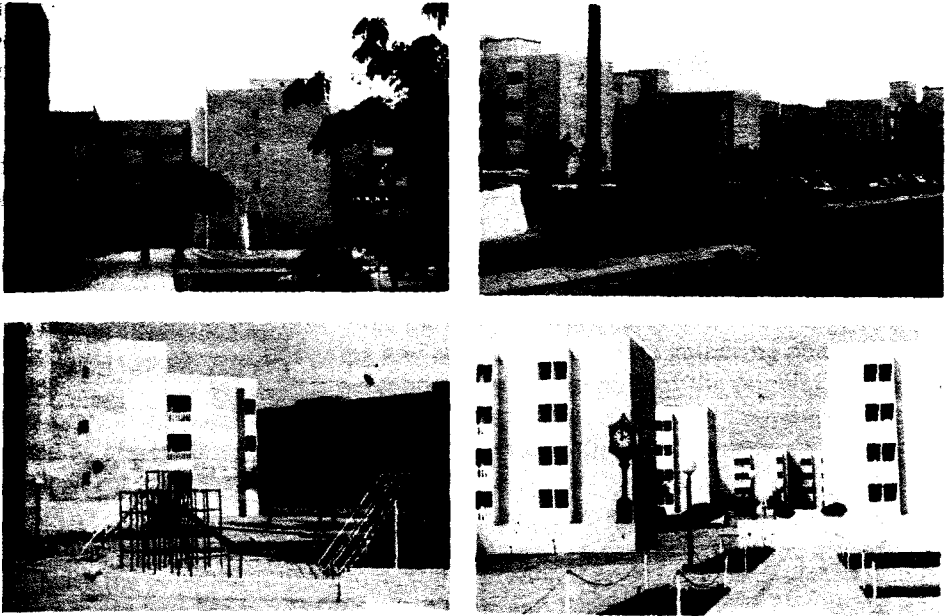


Fig. 2. Views from the planned community built and owned by the University

The non-planned community is comprised of 22 apartment buildings of different sizes spread throughout the city of Riyadh (Fig. 3). These buildings vary in design, quality, height, finishing materials, ect. They are rented by the university to accommodate staff members. When considering the two communities simultaneously, many differences between the two are apparent. Apart from the difference in the planning theme (community design versus individual buildings), there are also other differences:

- 1- The availability of common facilities in only the planned community.
- 2- The superiority of the planned community in many design, construction and spacing over the non-planned community.
- 3- The availability of furniture and central air-conditioning in only the planned community.

Two of the 45 buildings in the planned community are occupied by schools and the housing office. Each building is either three or four stories high and each floor comprises of four apartments. The total number of apartments is 630. The rented 22 individual apartment buildings in the non-planned community range from two to ten stories in height. In terms of size, these buildings accommodate from 10 to 74 apartments; the total number of overall apartments is 669.

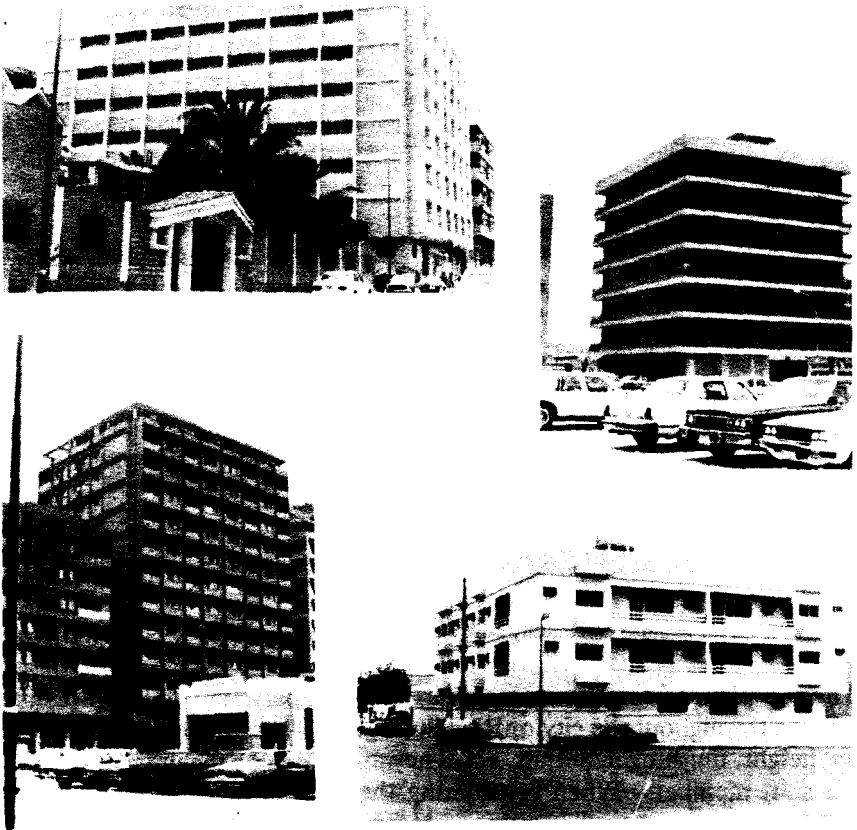


Fig. 3. Apartment buildings representing the non-planned community rented by the University

3- Population

When considering the overall differences between the two communities, the confirmation of the hypothesis to be tested requires a significant difference in the perceptions of the residents regarding a third and common environment, **such** as the city, in which they live. This necessitates that both populations be similar in most respects. It was found that the analysis of findings should adjust for any inequality in the distribution of the various nationality groups among the two communities.

Methodology

The congruence approach of Moos and Michelson discussed previously was adopted as the **theoretical** model used to help interpret the predicted differences in

responses coming from subjects of the two communities. The difference in environmental attributes between the two communities can be seen as being major. Another important difference within both groups is the cultural difference represented by the various nationality groups. It is expected that differences in the quality of environmental attributes and the extent to which such differences inhibit or facilitate the desires and comforts of people, as determined by their various cultural backgrounds, will have a great influence on their environmental perceptions.

1- Approach

This study was conducted with the aid of students attending a course called (Man and Environment). Due to the large number of total households and due to **limitations** of time needed for designing and conducting the data gathering phase, it was decided to look for systematic perceptions from a sample of the population which were expressed through a self administered questionnaire. This sampling was supported by observations of behavior and interviews that came before and after the development of the questionnaire.

2- The questionnaire

Since the population to be surveyed is predominantly **bi-lingual**, the questionnaire was produced in two languages: Arabic and English. The format of the **questionnaire** itself was divided into three parts: the first part sought personal and background data, the second part sought attitudinal and perceptual data regarding the living environment inside and immediately surrounding the building, the third part **sought** attitudinal and perceptual data regarding the city environment.

3- Sampling and procedure

Since the total number of apartment units in both housing categories is **630+669** \approx 1299, one-third of each community was selected as a sample size that could be managed by the students of the class. With a total number of 19 students, it was assumed that each student could handle (at least) 20 apartments, thus bringing the sample population to approximately **380** households. For the first community, a randomly selected sample gave a total of 15 buildings or 190 occupied apartments. For the second community, seven buildings were selected randomly representing **one-third** of the total number and giving a total of 201 occupied apartments. The questionnaire was developed and pretested in both languages and distributed to the selected households. The male head of the household was requested to complete the questionnaire, although a few single females were in the sample who also completed the questionnaire. By seeking the sole participation of male householders some possible sex differences may be implied. However, the aim of this emphasis was to avoid any sensitivity on the part of the predominantly male oriented cultures found among the tested **population**.

The survey resulted in a usable return of 147 questionnaires or 77% of the 190 apartments in the first community. The usable return from the second community

was 167 or 83% of **201** apartments. The gross return of 314 represents 80% of the total sample' of 391 apartments. The returned instruments were **analyzed** using the Michigan Interactive Data Analysis System (**MIDAS**), developed by the Statistical Research Laboratory at the University of Michigan, **Ann** Arbor, U.S.A.

Findings

In order to become acquainted with the population surveyed, general **descriptive** data were obtained (Table 1). A correlation matrix was then obtained for the entire set of variables. The correlation values revealed strong variations between the two communities in terms of their environmental features. For example, correlation values reached as high as **0.36, 0.64, 0.56, 0.36** and 0.47 relating the planning variable to people's satisfaction with environmental quality (i.e. greenery, trees, external social contacts and the availability of parking, respectively). Two way tabulation for the previous values favored the planned community over the non-planned one. Such a trend prevailed for almost all variables, including finishing materials, sanitary fixtures, lighting, air-conditioning, the external surroundings, efficiency of building administration and maintenance and exterior and interior signposting. Research on the general neighborhood's evaluation indicated that respondents who evaluated their neighborhoods as "well kept up," [26] or providing chances for more social interaction are more satisfied with their housing. This result is **similar** to a study made on planned residential communities [27], where it was found that housing in planned communities scored higher than that in less planned communities and was perceived as being more satisfactory by its residents.

The second step was to investigate relationships between both planning and other background variables, with variables related to the environmental attributes of the city of Riyadh. The background variables investigated were the floor level (**V.2**), planning (**V.4**), language (**V.5**), occupation (**V.6**), nationality (**V.7**), educational background (**V.8**), car ownership (**V.12**), age group (**V.56**), residence (**V.57**), and number of children (V.58). A set of univariate 1-way **ANOVA** tests were obtained for each background variable against **all** other variables, as shown in figs. 4,5 and 6. Except for the planning, nationality and the language variables, the strata of other background variables did not register any significant difference in the perception of the city of Riyadh.

Planning, nationality and language variables embody differences in community planning and culture (Figs. 4,5 and 6). The planning aspect and the cultural aspect represent the issues with which our hypotheses are contending. The second and third variables, nationality and language, are strongly correlated to each other (correlation coefficient = **.70**). Therefore, these variables can safely be taken as one variable.

Table 1. One-way tabulation for background data according to community

	Planned Community		Non-Planned Community							Grand total
1- Planning	147		167							314
2- Floor level	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	314
	(48) (23) 71	(32) (32) 64	(28) (30) 58	(38) (27) 65	(0) (19) 19	(0) (11) 11	(0) (2) 2	(0) (3) 3	(0) (19) 19	
3- Language	Arabic		English							314
	(102) (111) 213	(45) (56) 101								
4- Occupation	Technician	Employees	Assis. prof.	Assoc. prof.	Others					308
	(4) (15) 19	(26) (57) 83	(65) (40) 105	(37) (35) 72	(13) (16) 29					
5- Nationality	Saudi	Arab	Asian	European	American					309
	(53) (31) 84	(52) (75) 127	(27) (27) 54	(9) (11) 20	(6) (18) 24					
6- Degree	Secondary	Diploma	B.S.	M.S.	Ph.D.					300
	(8) (6) 14	(6) (15) 21	(17) (28) 45	(17) (36) 53	(97) (70) 167					
7- Car ownership	Yes		No							311
	(134) (130) 264	(13) (34) 47								
8- Age group	20's	30's	40's	50's						299
	(7) (16) 23	(59) (58) 117	(56) (63) 119	(19) (21) 40						
9- Residence	One-year	Two	Three	Four	Five					304
	(29) (56) 85	(20) (27) 47	(31) (42) 73	(24) (25) 49	(40) (10) 50					
10- Number of children	No	One	Two	Four	Six					313
	(29) (49) 78	(20) (36) 56	(67) (73) 140	(23) (8) 31	(7) (1) 8					

() = Planned () = Non-planned □ = Total

VAR. No.	VARIABLE	MEAN VALUES						F-STAT	SIGNIF
		1	2	3	4	5	6		
2	FLOOR LEVEL		■		●			49.44	.0000
4	PLANNING (PLANNED, NON)							N	N
5	LANGUAGE (ARABIC, ENGLISH)	■						N	N
6	OCCUPATION	Tech.	Emp.	Other	Asiatic	Assoc.		7.21	.0070
		Saudi	Arab	Asian	Europ.	Amer.			
7	NATIONALITY		■	●				9.89	.0018
8	EDUCATIONAL BACKGROUND				●	■		6.46	0.0115
12	CAR OWNERSHIP (YES, NO)	■	●					10.15	0.0016
	SATISFACTION	V.	SAT.	N.	SAT.	N.	A.		
13	QUALITY OF ACCOMODATION		■					N	N
14	ROOM SIZES		●					17.74	.0000
15	FINISHING MATERIALS		■	●				4.27	0.0394
16	INTERIOR DESIGN		■	●				9.83	0.0019
17	QUALITY OF FURNITURE		■	●				N	N
18	SANIT. FIXT. & INSTALL.		■	●				20.70	.0000
19	ACOUSTICS		■	●				N	N
20	INTERIOR LIGHTING		■	●				10.05	.0017
21	AIRCONDITIONING		■	●				20.13	.0000
22	EXTERIOR		■	●				4.9	.0276
23	SURROUNDING ENVIRONMENT		■	●				13.72	.0001
24	SURROUNDING GREENERY		■	●				99.04	.0000
25	AVAILABILITY OF TREES		■	●				73.81	.0000
26	OUTSIDE SHADE		■	●				8.28	.0043
27	HOUSING ADMIN.		■	●				4.63	.0322
28	SECURITY		■	●				N	N
29	PRIVACY		■	●				N	N
30	INTERNAL SOCIAL RELATION		■	●				N	N
31	EXTERNAL SOCIAL RELATION		■	●				30.09	.0000
32	MAINTENANCE		■	●				26.744	.0000
33	HOUSING PARKING		■	●				65.31	.0000
34	SIGNAGE		■	●				16.41	.0001
35	CITY OPEN AREAS		■	●				7.7	.0058
36	CITY CLEANLINESS		■	●				13.629	.0003
37	CITY GREENERY		■	●				5.10	.0245
	ANNOYANCE	V.	ANNOY.	N.	ANNO.	NOT A.			
38	TRAFFIC CONGESTION		■	●				5.81	.0165
39	CITY CLIMATE		■	●				N	N
40	CAR POLLUTION		■	●				N	N
41	DUST POLLUTION		■	●				3.98	.0468
42	ARCHITECTURAL STYLES		■	●				N	N
43	POPULATION CONGESTION		■	●				N	N
44	CITY CONSTRUCTION		■	●				13.73	.0002
	IMPORTANCE	MOST IMPORTANT ← → LEAST							
45	GREENERY		■	●				N	N
46	SCULPTURES		■	●				N	N
47	CLEANLINESS		■	●				N	N
48	SHADE		■	●				N	N
49	MODERN BUILDINGS		■	●				N	N
	BOTHER	MOST BOTHERSOME ← → LEAST							
50	DUST		■	●				N	N
51	CIGARETTES		■	●				8.02	.0049
52	TRAFFIC NOISE		■	●				3.99	.0465
53	EXHAUST GASES		■	●				N	N
55	WEATHER		■	●				8.44	.0039
		20's	30's	40's	50's				
56	AGE GROUP	1	2	3	4	5		N	N
57	RESIDENCE	1-Year	2	3	4	5		23.09	.0000
		NO	1	2	4	6			
58	NO. OF CHILDREN		■	●				17.67	.0000

N = Insignificant

Fig. 4. Univariate 1-way anova, case=all, strata=V4: community planning (planned = ■, non-planned = ●)

VAR. No.	VARIABLE	MEAN VALUES						F-STAT	SIGNIF
		1	2	3	4	5	6		
		1st	2nd	3rd	4th	5th	6th		
2	FLOOR LEVEL			■	●			N	N
4	PLANNING (PLANNED, NON)		■	●				6.24	.0022
5	LANGUAGE (ARABIC, ENGLISH)	■	●					19.48	.0000
6	OCCUPATION	Tech.	Emp.	Other	Assis.	Assoc.		N	N
7	NATIONALITY	Saudi	Arab	Asian	Europ.	Amer.			
8	EDUCATIONAL BACKGROUND	Sec.	Dip.	B.S.	M.S.	Ph.D.		N	N
12	CAR OWNERSHIP (YES, NO)	■	●					8.72	.0002
	SATISFACTION	V. SAT.	SAT.	N. SAT.	N.A. SAT.				
13	QUALITY OF ACCOMODATION		●	▲	■			22.36	.0002
14	ROOM SIZES		●	▲	■			14.749	.0000
15	FINISHING MATERIALS		●	▲	■			N	N
16	INTERIOR DESIGN		●	▲	■			4.72	.0088
17	QUALITY OF FURNITURE		●	▲	■			22.90	.0000
18	SANIT. FIXT. & INSTALL.		●	▲	■			N	N
19	ACOUSTICS		●	▲	■			N	N
20	INTERIOR LIGHTING		●	▲	■			N	N
21	AIRCONDITIONING		●	▲	■			N	N
22	EXTERIOR		●	▲	■			5.66	.0038
23	SURROUNDING ENVIRONMENT		●	▲	■			8.65	.0002
24	SURROUNDING GREENERY		●	▲	■			6.05	.0026
25	AVAILABILITY OF TREES		●	▲	■			6.47	.0018
26	OUTSIDE SHADE		●	▲	■			6.21	.0023
27	HOUSING ADMIN.		●	▲	■			6.17	.0024
28	SECURITY		●	▲	■			3.94	.0203
29	PRIVACY		●	▲	■			N	N
30	INTERNAL SOCIAL RELATION		●	▲	■			N	N
31	EXTERNAL SOCIAL RELATION		●	▲	■			N	N
32	MAINTENANCE		●	▲	■			N	N
33	HOUSING PARKING		●	▲	■			N	N
34	SIGNAGE		●	▲	■			N	N
35	CITY OPEN AREAS		●	▲	■			7.02	.0010
36	CITY CLEANLINESS		●	▲	■			15.38	.0000
37	CITY GREENERY		●	▲	■			6.49	.0017
	ANNOYANCE	V. ANNOY	ANNOY	N. ANNOY	NOT A.				
38	TRAFFIC CONGESTION		●	▲	■			5.96	.0029
39	CITY CLIMATE		●	▲	■			12.28	.0000
40	CAR POLLUTION		●	▲	■			5.80	.0034
41	DUST POLLUTION		●	▲	■			7.4	.0007
42	ARCHITECTURAL STYLES		●	▲	■			16.64	.0000
43	POPULATION CONGESTION		●	▲	■			29.84	.0000
44	CITY CONSTRUCTION		●	▲	■			13.31	.0000
	IMPORTANCE	MOST IMPORTANT ← → LEAST							
45	GREENERY		●	▲	■			6.20	.0023
46	SCULPTURES		●	▲	■			N	N
47	CLEANLINESS		●	▲	■			5.17	.062
48	SHADE		●	▲	■			6.58	.0016
49	MODERN BUILDINGS		●	▲	■			9.62	.0001
	BOTHER	MOST BOTHERSOME ← → LEAST							
50	DUST		●	▲	■			N	N
51	CIGARETTES		●	▲	■			N	N
52	TRAFFIC NOISE		●	▲	■			N	N
53	EXHAUST GASES		●	▲	■			7.16	.0009
55	WEATHER		●	▲	■			8.42	.0003
		20'm	30'm	40'm	50'm				
56	AGE GROUP	1-Year	2	3	4	5		24.29	.0000
57	RESIDENCE	No	1	2	4	6		N	N
58	NO. OF CHILDREN		●	▲	■			15.993	.0000

N = Insignificant

Fig. 5. Univariate 1-way anova, cases=all, strata=V7 nationality

(saudi = ■, arab ●, ●, ▲, ■, ●, ●)

VAR. No.	VARIABLE	MEAN VALUES						F-STAT	SIGNIF
		1	2	3	4	5	6		
2	FLOOR LEVEL	1st	2nd	3rd	4th	5th	6th	N	N
4	PLANNING (PLANNED, NON)	■						N	N
5	LANGUAGE (ARABIC, ENGLISH)							N	N
6	OCCUPATION	Tech.	Emp.	Other	Assis.	Assoc.		N	N
		Saudi	Arab	Asian	Europ.	Amer.			
7	NATIONALITY		■	●				311.08	.0000
8	EDUCATIONAL BACKGROUND	Sec.	Dip.	B.S.	M.S.	Ph.D.		N	N
12	CAR OWNERSHIP (YES, NO)	■						8.91	.0031
	SATISFACTION	V. SAT.	SAT.	N. SAT.	N. A. SAT.				
13	QUALITY OF ACCOMODATION		■					N	N
14	ROOM SIZES		■					N	N
15	FINISHING MATERIALS		■					N	N
16	INTERIOR DESIGN		■					N	N
17	QUALITY OF FURNITURE		■					N	N
18	SANIT. FIXT. & INSTALL.		■					N	N
19	ACOUSTICS		■					N	N
20	INTERIOR LIGHTING		■					N	N
21	AIRCONDITIONING		■					N	N
22	EXTERIOR		■					7.60	.0062
23	SURROUNDING ENVIRONMENT		■					13.53	.0003
24	SURROUNDING GREENERY		■					13.49	.0003
25	AVAILABILITY OF TREES		■					12.14	.0006
26	OUTSIDE SHADE		■					13.23	.0003
27	HOUSING ADMIN.		■					N	N
28	SECURITY		■					N	N
29	PRIVACY		■					N	N
30	INTERNAL SOCIAL RELATION		■					N	N
31	EXTERNAL SOCIAL RELATION		■					N	N
32	MAINTENANCE		■					N	N
33	HOUSING PARKING		■					N	N
34	SIGNAGE		■					N	N
35	CITY OPEN AREAS		■					4.34	.0379
36	CITY CLEANLINESS		■					6.5	.0111
37	CITY GREENERY		■					N	N
	ANNOYANCE	V. Annoy	Annoy	N. Annoy	NOT A.				
38	TRAFFIC CONGESTION		■					N	N
39	CITY CLIMATE		■					20.39	.0000
40	CAR POLLUTION		■					8.12	.0046
41	DUST POLLUTION		■					5.26	.0224
42	ARCHITECTURAL STYLES		■					14.65	.0002
43	POPULATION CONGESTION		■					21.02	.0000
44	CITY CONSTRUCTION		■					13.95	.0002
	IMPORTANCE	MOST IMPORTANT ← → LEAST							
45	GREENERY		■					4.01	.0450
46	SCULPTURES		■					N	N
47	CLEANLINESS		■					13.07	.0004
48	SHADE		■					12.62	.0004
49	MODERN BUILDINGS		■					9.96	.0018
	BOTHER	MOST BOTHERSOME ← → LEAST							
50	DUST		■					N	N
51	CIGARETTES		■					N	N
52	TRAFFIC NOISE		■					4.36	0.0374
53	EXHAUST GASES		■					15.45	.0001
54	HOME APPLIANCE NOISE		■					N	N
55	WEATHER		■					12.30	.0005
56	AGE GROUP	20's	30's	40's	50's			11.06	.0010
		1-Year	2	3	4	5			
57	RESIDENCE	No	1	2	4	6		5.11	.0244
58	NO. OF CHILDREN		■					26.19	.0000

N = Insignificant

Fig. 6. Univariate 1-way anova, cases=all, strata=V5; participant language (arabic = ■, english = ●)

The mean values plotted in figs. 4,5 and 6 correspond to the following scale :

- 1 = Very satisfactory
- 2 = Satisfactory
- 3 = Not satisfactory
- 4 = Not satisfactory at all

The same numerical values apply to the scales of annoyance, importance and bother. For the variables 35, 36 and 37, which investigate the perceived satisfaction of the respondents with the availability of open areas (V.35), the general cleanliness of the city of Riyadh (V.36) and the availability of green areas in the city's streets and neighborhoods (V.37), we find that people living in the **planned** community (Fig. 4) expressed more dissatisfaction than the residents of the non-planned community. This clearly contrasts with their perceptions about their own residential communities, where they generally expressed greater satisfaction.

Moving to other variables relating to annoyance attributes (38-44) which investigate perceived annoyance with traffic congestion (V.38), climate (V.39), car pollution (V.40), dust pollution (V.41), architectural styles (V.42), population congestion (V.43) and the presence of construction work (V.44), we find that the same kind of attitude prevails. The planned community expressed more annoyance than the nonplanned one when considering the three variables which demonstrated significant differences in perception (traffic, dust, and construction).

Additional variables (50-55) investigated the perceived bother by dust (V.50), cigarettes smoking (V.51), traffic noise (V.52), exhaust gases (V.53) and the daily weather (V.55). The smoking of cigarettes, although not necessarily a city attribute, &included on the basis of it being commonly shared by both communities. The five variables yielded only one significant finding relating to cigarette smoking. More bother was expressed by the planned community. However, the attributes of traffic noise and weather demonstrated a reverse perception to that towards other attributes. This can be attributed to congestion and lack of adequate airconditioning within the non-planned community, whose buildings are located within the city of Riyadh.

1-Specific analysis

Since both nationality and type of environmental setting produced different perceptions regarding a common environment, the question here is whether or not the two variables are dependent. A two-way tabulation of nationality against the community type indicates that more than 60% of Saudi nationals live in the planned community as opposed to a similar percentage of Arabs, Europeans and North Americans who live in the non-planned community (Table 2). Also, within both communities the ratio of Saudis to non-Saudis for example, is not equal: 36.6% and 19%,

respectively (Table 2). The relative imbalance of population distribution in terms of nationality among the two communities may have influenced the stratified perception according to the type of community. This renders the community planning variable dependent on the nationality variable. However, since the nationality groups are not equal in size, the author attempted another method of testing wherein each nationality group was tested separately according to the type of community. If mean values turn out to be equal within each group, then this would support the null hypothesis that the community type **has no** influence on perceptions. However, if mean values are significantly different (0.05 level of confidence) then the hypothesis of having community influence is supported.

Table 2. The distribution of nationality groups among planned and non-planned communities

Nationality	Planned			Non-planned			Row total	
	No.	% Col.	% Row	No.	% Col.	% Row	No.	%
Saudis	53	36.6	63.1	31	19.0	36.9	84	100
Arabs	52	35.9	40.9	75	45.7	59.1	127	100
Asians	26	17.9	48.1	28	17.0	51.9	54	100
Europeans	8	5.5	70.0	12	7.3	60.0	20	100
North Americans	6	4.1	25.0	18	11.0	75.0	24	100
	No.	145		164			309	
	%		100		100			
Missing			2			3		5

In attempting to compare mean values for the nationality groups according to the type of community, it was noticed that **the Europeans** and North Americans constitute small groups compared to other ethnic groups. Therefore, the two were grouped into one category. This gave us a unified group of 14 in the planned versus 30 in the non-planned community (Table 2). Due to the inequality of group (cells), a total number of 14 responses were randomly drawn from other cells for analysis (Table 3). The table reveals that for each nationality there is a great difference **in perceiving** an environmental variable (V.36) according to the type of community people live in. In fact, the mean difference for Saudi and Asian groups **is larger in value than** the total mean difference for all nationalities. Since group numbers were small in the cells of Table 2, another attempt was made whereby Asians **were added to Europeans** and North Americans. Since Asians do not share the same cultural heritage of either Europeans or North Americans, the idea of combining them was **to increase** the number in the cells, while distinguishing Middle Eastern culture from other cultures. This leaves the Saudi group in the non-planned community as the **smallest** (3 responses) cell (Table 2). A similar number of responses were drawn **randomly from** other groups and their mean values for all groups are shown in Table 4. here **al so,** the table reveals a significant difference in mean values within each group. The **same** analysis was repeated for various variables other than (V. 36). Similar results **were** obtained.

When considering differences between groups, the previous tables 3 and 4 indicate the existence of some degree of variation between mean values of different groups in each community. In Table 3, a significant difference is clear between Arabs and other nationalities in both communities. The same pattern will be noticed in Table 4.

Table 3. Mean values for the different nationality groups in perceiving city cleanliness (V. 36), according to the type of community.

Nationality	Planned community			Non-planned community			Mean difference	Signif.*
	No.	Mean	S.D	No.	Mean	S.D.		
Saudis	14	2.35	0.73	14	1.57	0.53	0.78	0.0200
Arabs	14	1.57	0.60	14	1.35	0.47	0.22	0.0500
Asians	14	2.42	0.88	14	1.64	0.48	0.77	0.0200
Europeans + North Americans	14	2.21	0.81	14	1.71	0.52	0.50	0.0300
Grand	56	2.14	0.76	56	1.57	0.50	0.57	0.0300

* Approximate

Table 4. Mean values for the different nationality groups in perceiving city cleanliness (V. 36), according to the type of community.

Nationality	Planned community			Non-planned community			Mean difference	Signif.*
	No.	Mean	S.D	No.	Mean	S.D.		
Saudis	32	2.25	0.67	31	1.80	0.60	0.45	0.0070
Arabs	31	1.74	0.51	31	1.58	0.70	0.16	0.0400
Asians Europeans + North Americans	32	2.21	1.00	32	1.65	0.47	0.56	0.0030
Grand	95	2.05	0.75	94	1.68	0.60	0.37	0.0090

* Approximate

Conclusion

The findings tend to support the hypothesis that the type of setting one lives in influences perception of a common environment within two communities. Also the cultural background, represented by nationality and language, exerts a strong influence

ence. In fact at least in this case, these two factors are stronger than other background characteristics, such as occupation, education, age group, residence or number of children.

At this point, although the community type demonstrates what appears to be a direct influence on people's perceptions, other mediating factors related to the characteristics of each community, in terms of its design, service systems, maintenance, landscape and its promotion of social interactions all lead to varying degrees of satisfaction and congruency with people's essential needs and desires as determined by their cultural determinants. This resulting state of congruence explains the mediating effect these characteristics have on perceptions linked with the communities at hand as proposed by the earlier described theoretical model.

Although our findings have the limitation of being based on the perceptions of a small and exclusive segment of the society, they suggest the need for further investigation of environmental and housing qualities and standards lacking in Saudi Arabian cities. In fact, following the near completion of major infrastructure undertakings in major Saudi cities, it is expected that people would start being sensitive to the need for enhancing their environment. Now that the boom years of the "Seventies" have passed, basic necessities such as housing, public services, health and education have been nearly completed. This is coupled with a dramatic improvement in living standards. In addition to a zero inflation rate for 1984, minor environmental elements, whether added or modified, will have major effects in predicted directions of behavior, or perception, according to our model.

Another limitation in this study lies in the fact that only 84 of the 309 responses or 27% were Saudis. The next research project would here to investigate and compare various planned and non-planned communities inhabited by Saudis in order to obtain a deeper interactive analysis that could direct future decision-making for the housing sector.

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تأثير البيئة المحيطة على تصورات السكان لسهات البيئة العمرانية الرئيسية

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يخلص البحث. عمدت هذه الدراسة إلى مقارنة بيئتين مختلفتين من ناحية التخطيط، وتقطنها مجموعتان منشاهتان من السكان، للتحقق من الفرضية التي تقول بوجود تأثير للفروقات البيئية على تصورات السكان. اتضح من نتيجة الدراسة وجود فوارق في تصورات المجموعتين يمكن إسنادها إلى تلك الفروقات البيئية. لكن بالنظر إلى تفاعل تلك الفروقات البيئية مع أوجه الاختلاف الثقافي والاجتماعي للسكان داخل كل مجموعة، يفترض أن اختلاف التصورات لا يسير في اتجاهات متوازية إذا أخذنا بعين الاعتبار دمج تلك الفئات الثقافية والاجتماعية لكل مجموعة. فبدلاً من التوازي نجد أن الفروقات في التصور تسير في اتجاه يؤثر إلى حد كبير بدرجة انسجام أو تطابق الفروقات البيئية مع الاحتياجات والرغبات الإنسانية الضرورية التي تقررها خصائص كل فئة ثقافية واجتماعية. أما في حالة إلغاء مبدأ الدمج لتلك الفئات، أي بتحليل تصورات كل فئة على حدة لكلاً من البيئتين، فإنه يمكن إثبات الفرضية السابقة والتي تنادي بتصوير بيئة واحدة ومشتركة بشكل مختلف.