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ENVIRONMENTAL PREFERENCES WITHIN URBAN NEIGHBORHOODS

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JAMES D. HARRISON

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ENVIRONMENTAL PREFERENCES WITHIN URBAN NEIGHBORHOODS

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INTRODUCTION TO THE PROBLEM

Studies of spatial organization and human acitivity

generally fall into one of two broad classes. The first

assumes an orderly pattern which is governed primarily by

economic competition. This may be a deterministic position

which attempts to explain the residential structure of

urban areas by viewing the particular location of any

individual householder in terms of a compromise decision

between attributes of residential site and accessibility

to services and facilities.[1] This has also been viewed as

an attempt to achieve an equilibrium between the desire

for isolation and the desire for proximity.[2]

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[1]William Alonso, Location and Land Use (Cambridge:
Harvard University Press, 1964). This position is generally
supported by Kain who found that reduction of transportation
cost and/or distance between home and work was a goal among
most householders; see John F. Kain, "The Journey-to-Work
as a Determinant of Residential Location," Papers and Pro-
ceedings of the Regional Science Association, IX (1962),
137-160.

[2]Stegman challenges the premise that central city
dwellers have greater proximity to major services and
facilities. His findings show that in cities of over one
million population, suburban dwellers have greater accessi-
bility (in time) to most activities; see Michael A. Stegman,
"Accessibility Models and Residential Location," Journal of
the American Institute of Planners, XXXV (January, 1969),
22-29.

Some spatial analysts have shifted away from such
a strong deterministic emphasis to a more behavioristic
approach.[3] Their concern is often directed to "intangible"
attributes of location. In residential studies, such
factors as the social prestige of the neighborhood or the
role of address as a status symbol may be considered in
explaining location behavior. Such behavioral approaches
generally do not ignore the economic capability of the
householder, but rather, they attempt to modify this with
more social (and almost inevitably less deterministic)
concerns, such as individual attitudes, knowledge, infor-
mation sources, and location ties to fixed points.[4]

Both general classes relate to a scale of preferences
for each individual householder. Deterministic models
assume such scales in the belief that each individual seeks
to maximize his place utility by seeking the best combina-
tion of site and situation alternatives available to him
through greater economic power. A preference scale exists
but it is essentially normative; that is, the same for all
individuals.[5] That such scales are believed to exist is

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[3] Gunnar Olsson and Stephen Gale, "Spatial Theory
and Human Behavior," Papers and Proceedings of the Regional
Science Association, XXI (1968), 229.

[4] Ibid., pp. 229-242.

[5] A discussion of the relationship of this classic model
of economically rational man to the ability to predict
behavior at different aspiration levels is developed in
Herbert Simon, "Theories of Decision-Making in Economics and
Behavioral Science," American Economic Review, XLIX (June,
1959), 253-283.

evidenced by the high advertising expenditures by developers to change or modify them.

In behavioral studies, on the other hand, more emphasis is placed on the individual's choice among available alternatives as a measure of his preferences.[6] Concurrently, the individual's behavior may be said to be governed by his perception; that is, by the attitudes and awareness that he possesses with regard to the alternatives.[7] Therefore, in this approach, preference scales are essentially probabilistic, varying with the background of the individual.

If it may be shown that preference scales are essentially the same for all urban residents, then it would be possible to determine one ultimate "good environment" for all. Of course, competition for optimum sites would still exist, but the problem of providing alternative environments for different preferences would be reduced. Certain factors, including mass production, national mass marketing and advertising, formal institutions, and uniform codes and laws, have indeed resulted in a greater degree of uniformity over

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[6]Gerard Rushton, "Analysis of Spatial Behavior by Revealed Space Preference," Annals of the Association of American Geographers, LIX (June, 1969), 394.

[7]Gilbert F. White, "Formation and Role of Public Attitudes," Environmental Quality in a Growing Economy, ed. by Henry Jarrett (Baltimore: Johns Hopkins Press, 1966), pp. 105-127; David Lowenthal, "Geography, Experience and Imagination: Towards a Geographical Epistemology," Annals of the Association of American Geographers, LI (September, 1961), 241-60.

the country. Obviously, environmental opportunities limit
in large measure the choices that an individual can make.
Therefore, empirical studies in such uniform urban environ-
ments may not reveal environmental preferences but, rather,
may merely reflect on the familiar and limited opportunities
which are available.[8]

Such forces for uniformity would appear to discourage
any divergent preferences from the accepted norms. Prin-
ciples which assume a common environmental ideal are perhaps
most evident in the building trades. For example, many of
the so-called "planned units" being built as sprawling
suburbs on the outskirts of most American cities today are
based on normative standards around neighborhood function,
land tenure, home design, architecture, and floor plan. In
the view of at least one prominent architect, such environ-
ments become monotonous and impersonal,[9] or perhaps what
Carson terms an "unnecessary scarcity of ideas."[10]

But normative standards, based on accepted notions
of a single "good environment" for all, are evident as well

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[8]Gerard Rushton, "The Scaling of Locational Prefer-
ences," in Behavioral Problems in Geography: A Symposium,
ed. by Kevin R. Cox and Reginald G. Golledge, Studies in
Geography No. 17 (Evanston: Northwestern University, 1969),
pp. 197-98.

[9]Henry Sanoff, "Visual Attributes of the Physical
Environment" (School of Design Research Report, Raleigh,
North Carolina State University, 1969), p. 1.

[10]Daniel H. Carson, "Human Factors in Urban Housing,"
Consulting Engineer, XXXII (March, 1969), 163.

in the public sphere. City planning standards, for example,
guide the relative location and function of some services
and facilities in many neighborhood planning efforts. It
is often assumed, as an example, that an elementary school,
together with associated recreation and playground space,
should be a primary functional focus of the neighborhood.
Equitable access to selected service packages has also been
identified as a goal of future city planning by a federal
study.[11] Zoning, subdivision regulations, and city codes
are designed to implement such environmental goals through
rigorous and demanding "minimum standards." While such
standards imply an infinite range beyond the minimum, they
often become design norms which tend to intensify environ-
mental uniformity.

The argument here does not concern the need or im-
portance for such environmental goals or standards. Strong
city planning efforts must evolve from environmental,
including social and economic, goals and objectives.
Standards and codes, such as those for housing and health,
are intended to ensure the general welfare of the citizenry.
The argument, then, is not that environmental goals and
standards are unneeded or wrong. The argument is that many

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[11]U. S. Department of Housing and Urban Development,
Study in New Systems of Urban Transportation, Vol. I, "Guide-
lines for New Systems of Urban Transportation: Urban Needs
and Potentials," by Barton-Aschman Associates (Washington,
D. C.: Government Printing Office, 1968).

planning efforts remain based in certain traditional norma-
tive ideals, generally founded on the environmental orienta-
tions of a dominant white, middle-class culture. While
recent research efforts and programs are serving to challenge
the value of such norms for all groups, there remains a
growing need to better define and understand alternative
orientations.[12]

Is there, then, a generally "good" environment for
all?[13] Do urban residents, for example, share common
residential goals and objectives when selecting a neighbor-
hood location? Gans, among others, maintains that they do
not.[14] He suggests through a series of essays that both
needs and desires for residential living differ significantly
between different background groups. If his position is
correct, then the effort turns away from defining a single
residential model for all individuals. Rather, the emphasis
is placed on defining distinct environmental preference
scales (ideally reflecting on both individual needs and
wants) for different human groups. Further, the question
of why different groups hold distinct preference priorities
is raised. This position has the support of the behaviorists

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[12]See, for example, Harold M. Proshansky, William H.
Ittelson, and Leanne G. Rivlin, eds., Environmental Psy-
chology: Man and His Physical Setting (New York: Holt,
Rinehart, and Winston, 1970).

[13]This question is examined in White, "Public Atti-
tudes," p. 107.

[14]Herbert Gans, People and Plans (New York: Basic
Books, 1968).

who maintain that spatial models must be developed from knowledge of individual behavior and not, as traditionally conceived, the other way around.[15]

Statement of the Problem

The basic problem to which this thesis is directed is to determine whether environmental preferences differ between residents of diverse neighborhoods. The underlying assumption of the problem, which is to be tested, is that environmental preferences vary in some systematic fashion in accord with the spatial arrangement of identifiable residential groups. The problem, placed here into a spatial framework, follows the position of Gans in assuming that all urban residents do not share in a common environmental goal.

Residential neighborhoods are differentiated on the basis of certain background characteristics of the residents, including ethnic composition, socio-economic and demographic characteristics, and certain patterns of housing, mobility, and interaction. Such background differences are believed to be related to an individual's environmental attitudes. This relationship between the resident's background and his

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[15]Gunnar Olsson, "Inference Problems in Locational Analysis," Behavioral Problems in Geography: A Symposium, ed. by Kevin R. Cox and Reginald G. Golledge, Studies in Geography No. 17 (Evanston: Northwestern University, 1969), 14; Robert Gutman, "Site Planning and Social Behavior," Journal of Social Issues, XXII (October, 1966), 103-115.

environmental preferences is an integral part of the problem of this study.

Research Hypotheses

The main research hypothesis of the study is: significant variations in neighborhood preference scales are a function of cultural variations between sample neighborhoods. Thus, it is postulated that cultural differences, measured primarily by differences in ethnic background, will be the principal independent variable explaining the between-group, that is, between-neighborhood, variance on the environmental preference scales.

Also of concern, however, is the question of how environmental priorities might differ within each of the two neighborhoods; that is, within-group variance. Certain subject data are believed to at least partially explain some of the variance on individual preference scales within each of the groups. An individual's education or income might, for example, be related to particular environmental priorities. The problem, then, may be approached within the context of a primary and secondary hypothesis:

Primary Hypothesis: Preferences for neighborhood qualities and accessibility to urban facilities will differ significantly between two sampled neighborhood groups. Differences in cultural background, reflected by ethnic differences between the two neighborhoods, will serve to explain much of this variance.

Secondary Hypothesis: Variation of preferences for accessibility and neighborhood qualities within each of the two sampled groups will be significantly related and a function of selected individual background variables,

including socio-economic, demographic-life cycle,
housing, mobility, and personal association factors.

If the primary hypothesis may be accepted, at least
in part, it would support the contention that alternative
neighborhood environments should be planned to accommodate
differences in environmental priorities which are found to
be culturally based. If the secondary hypothesis may be
accepted, at least in part, it would support the position
that differences in socio-economic status, age, and other
background variables will result in different environmental
priorities among similar cultural groups. If, however,
the findings should reveal few, or no, significant patterns
of difference with regard to either hypothesis, then this
case study would provide evidence for the belief that,
despite cultural or class differences, Americans share in
certain common urban environmental priorities defined by
this study.

<div align="center">

Background Variables Influencing
Environmental Preferences
</div>

Man's relationship to his physical and man-made
environment is a basic geographic theme. Considerable
emphasis has recently been placed on the importance of the
psychological processes in examining this relationship.
Appendix I has been included to guide the reader to some of
the specific ideas and works which form the basis for this
study.

Studies in environmental perception indicate that many complex factors govern the way we sense our environment. White contends that there are four major factors which govern the formation of an individual's attitude toward his environment: (1) the individual's perception of the environmental situation which confronts him, (2) the individual's past experience with the situation, (3) the individual's perception of his role in the decision-process, and (4) the competence of the individual in dealing with environmental complexity.[16] The importance of an individual's background in molding his environmental attitudes is one of the man-environment themes discussed in more detail in Appendix I.

Perceptual differences have been linked to, among other things, physiological makeup, past stimulation, memory, and immediate emotional state.[17] More important for the purposes of this study, however, are differences in cultural and socio-economic background.

Cultural Differences

Cultural differences between-groups stand out as perhaps the major single variable in how one orders and relates to his environment. Differences in landscape preferences between Alaskan Eskimo and Delaware school children

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[16]White, "Public Attitudes," p. 121.

[17]James J. Gibson, The Perception of the Visual World (Boston: Houghton Mifflin, 1950).

have been attributed at least in part to the cultural fac-
tor.[18] Two groups of goods and services were defined for

Old Order Mennonites and "modern" Canadians in southwestern

Ontario. "Modern" goods and services were preferred about

the same among both groups, but there were distinct prefer-

ence differences for more "traditional" commodities.[19]

Cultural distinctions between American and Lebanese urban

dwellers seemed to be critical in the evaluation of the

contrasting consensus "image maps" for the two groups.[20]

Hall's works which show that each culture has its own way

of perceiving and structuring space have provided perhaps

the basic support for the position that cultural values are

primary to the understanding of different preference scales.[21]

Within urban neighborhoods, cultural differences are

often viewed as the most significant influence on group

attitudes toward the use of space. Hartman, for example,

argues that cultural patterns which desire privacy and

independence will seek environments quite different from

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[18]Joseph Sonnenfeld, "Equivalence and Distortion of
the Perceptual Environment," Environment and Behavior, I
(June, 1969), 83-99.

[19]Robert A. Murdie, "Cultural Differences in Consumer
Travel," Economic Geography, XLI (July, 1965), 211-233.

[20]Kevin Lynch, The Image of the City (Cambridge:
M. I. T. Press, 1960); John Gulick, "Images of an Arab
City," Journal of the American Institute of Planners, XXIX
(August, 1963), 179-98.

[21]Edward T. Hall, The Silent Language (Garden City:
Doubleday, 1959); The Hidden Dimension (Garden City: Double-
day, 1966).

groups who value propinquity and interdependence.[22] The

importance of home and family ties may reflect on the desire

for particular environmental frameworks in which interperson-

al behavior can be easily carried out.[23] The areal config-

uration of neighborhood, together with individual ties to

fixed physical points, appear related to the social identity

among certain cultural groups.[24] Hendricks and MacNair

clearly summarize the need:

> Urban residential places (or "neighborhoods") of an
> appropriate unit size should have a characteristic
> structure closely associated with the life styles of
> the people who inhabit them. The richness of the social
> process should find its physical expression in a
> pluralistic form that is adaptable to changing demands.
> The criteria for the residential units must be uniquely
> linked to distinct group and individual processes by
> "packages" of facilities and services. Such situations,
> if they are to exist would form congruent mappings of
> life styles upon life spaces.[25]

If diverse environmental goals can be found among different

cultural groups, reflected in American cities primarily by

differences in ethnic background, then the implied goal of

a common "best" physical landscape for all groups would be

denied.

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[22]Chester Hartman, "Social Values and Housing Orienta-
tions," Journal of Social Issues, XIX (April, 1963), 113-131.

[23]Marc Fried and Peggy Gleicher, "Some Sources of
Residential Satisfaction in an Urban Slum," Journal of the
American Institute of Planners, XXVII (November, 1961),
310-311.

[24]Ibid., p. 314.

[25]Francis Hendricks and Malcolm MacNair, "Concepts
of Environmental Quality Standards Based Upon Life Styles,"
Ekistics, I (August, 1970), 139.

Socio-Economic Differences

Economic differences, reflected in income and occupation, have often been utilized in differentiating human needs. Low income slum-dwellers have been shown to maintain different environmental priorities in terms of both neighborhood orientation and housing preferences from those of the middle-class.[26] A strong sense of "spatial identity" among the low income working-class, likened to a "territorial" use of space, has been contrasted with more selective and individualized uses of space by the middle-class.[27] Webber's "Nonplace" referred to such a selective use of space by the professional classes, whose locational ties are both scattered and weak, when compared with blue-collar workers, whose ties often are virtually complete within a single community.[28]

Occupational similarities have also been viewed by some as leading to shared norms; that is, to similarities

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[26]Hartman, "Social Values," pp. 113-131.

[27]Fried and Gleicher, "Residential Satisfaction," pp. 311-315; Marc Fried, "Grieving for a Lost Home: Psychological Costs of Relocation," Urban Renewal: The Record and the Controversy, ed. by James Q. Wilson (Cambridge: M. I. T. Press, 1966), pp. 361-370.

[28]Melvin W. Webber, "The Urban Place and the Nonplace Urban Realm," Explorations into Urban Structure, ed. by Melvin W. Webber, et. al. (Philadelphia: University of Pennsylvania Press, 1964), pp. 79-153.

in life styles and value systems.[29] The goal to move "up"

into more prestigious neighborhoods has often been linked

to income and occupational status. Perhaps Hoyt's comment of

several years ago remains valid: "Apparently each income

group tries to get as close as possible to the next higher

group in the economic scale."[30]

Differences in education are also believed to reflect

on how an individual comes to "see" and value his environ-

ment. The intensity of both interest and training forming

the background of the professional, for example, is felt to

result in unique attitudes and preferences. Sanoff maintains

that the design of the physical environment has not been

based on a systematic analysis of user's perceptions, but

rather on a group of aesthetically inclined individuals.[31]

Lansing and Marans empirically found that architect-planners

differed considerably from residents in selecting "good"

and "bad" neighborhoods.[32]

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[29]A discussion of this viewpoint is made in Arnold S. Feldman and Charles Tilly, "Interaction of Social and Physical Space," American Sociological Review, XXV (December, 1960), 877-84.

[30]Homer Hoyt, The Structure of Growth of Residential Neighborhoods in American Cities (Washington: Federal Housing Administration, 1939), p. 74.

[31]Sanoff, "Visual Attributes," p. 2.

[32]John B. Lansing and Robert W. Marans, "Evaluation of Neighborhood Quality," Journal of the American Institute of Planners, XXXV (May, 1969), 195-99.

Other Variables

It seems apparent that many other background variables may also be of major significance to the understanding of environmental preferences. Parr, for example, has suggested that age, a demographic variable, is a critical factor in how one mentally organizes and relates to his urban environment.[33] The use of particular facilities, such as hospitals, may vary somewhat according to religion.[34] Length of residence has been found a significant variable linking preferred environments with behavior patterns.[35] Still others could, of course, be defined. The discussion here, however, is intended only to suggest the importance of an individual's background when analyzing environmental preferences.

Interrelationships between Variables

Several problems become evident when trying to relate preference scales to individual backgrounds. Perhaps most

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[33]A. E. Parr, "The Five Ages of Urbanity," Landscape, XVII (Spring, 1968), pp. 7-10.

[34]Actually, race, religion, and income were all found to be significant variables in hospital use; see Richard L. Morrill, Robert J. Earickson, and Philip H. Rees, "Factors Influencing Distances Traveled to Hospitals," Economic Geography, XLVI (April, 1970), 161-171.

[35]Robert J. Earickson and Brian J. Murton, "Preferred Environments and Spatial Behavior in an Area of Rural-Urban Transition: The Kona Coast," Proceedings of the Association of American Geographers, II (1970), 52-55.

important is the obvious high correlation between certain

individual background variables; for example, between educa-

tion and income. While this might appear to initially aid

the researcher by reducing many individual variables to

fewer factors, it makes difficult the isolation of single,

independent measures for understanding preference differences.

Most critical to the study here involves the inter-

relationships between ethnicity and income in most American

cities. The degree of relationship between these two fac-

tors suggests that a poverty subculture exists, in which it

may be extremely difficult to separate the component factors

of culture and economic class as independent causal varia-

bles explaining differences in environmental preferences.

Complex Relationships

A further, and not entirely unrelated, problem refers

to the complexity of the relationship between an individ-

ual's background and his environmental preferences. While

such background variables as ethnicity, income, education,

and age may seem relevant in determining distinct preference

groups, Michelson cautions that no simple relationship

exists.[36] This is a particularly crucial question for

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[36]William Michelson, "An Empirical Analysis of Urban Environmental Preferences," Journal of the American Institute of Planners, XXXII (November, 1966), 358. Also see Fred I. Steele, "Problem Solving in the Spatial Environment," (paper presented at the First Annual Environmental Design Research Association Conference, Chapel Hill, June, 1969); reviewed in Man-Environment Studies (July, 1969), Section S-15.

planners. If these preference scales do not realistically relate to relatively simple background measures--for example, to data that might be found in the U. S. Census publications--then the effectiveness of preference studies for many planning operations may be minimized. The cost and complexity of developing intensive preference surveys for each situation might effectively preclude their use for most builders, architects, and planners.

Nevertheless, relatively complex measurements have been devised to explain preference differences. Michelson found that "value orientations" and the "nature and extent of social interaction" were the two most important factors in predicting preference scales.[37] Sonnenfeld also discounts simple social or economic bases for classifying environmental preferences. Rather, he identifies certain "environmental personalities" which he relates to differences on individual scales of environmental sensitivity, mobility, the need to control the environment, and a predilection to take risks.[38] In turn, however, he found

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[37]Michelson, "An Empirical Analysis," p. 360.

[38]Joseph Sonnenfeld, "Personality and Behavior in Environment," Proceedings of the Association of American Geographers, I (1969), 138. In a separate report, Sonnenfeld concluded that both personal adjustment and adaptation levels are critical factors to both the lack of a universal landscape goal and the ability of an individual to relate to his environment; see Joseph Sonnenfeld, "Variable Values in Space and Landscape: An Inquiry into the Nature of Environmental Necessity," Journal of Social Issues, XXII (October, 1969), 81.

that certain background groups had a tendency to score high-
er on some scales than other groups; for example, women and
the less educated were inclined to take fewer risks than men
or the more educated. Sonnenfeld's study seems to suggest
that more primitive and profound social and cultural values,
as opposed to simple class and ethnic differences, may be
significant to the understanding of environmental preferences.

Research Design

Despite the argument, usually made by the sociolo-
gists, against the areal unit as a valid organizing
structure in studying human variables,[39] it remains a fact
of American urban life that a certain degree of spatial
segregation of ethnic minority groups exists. The major
concern, or "ecological fallacy," of the argument is that
mean data for such a relatively large group will be meaning-
less.[40] It is argued that the use of group data might
lead to the fallacious inference that group means reflect on
individual members. Further, it may be that while between-
group differences may be found, the range of within-group

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[39]Cf. Paul Hatt, "The Concept of Natural Area,"
American Sociological Review, XI (August, 1946), 423-27;
Leslie Kish, "Differentiation in Metropolitan Areas," Amer-
ican Sociological Review, XIX (August, 1954), 388-98;
Jerome K. Myers, "Note on the Homogeneity of Census Tracts:
A Methodological Problem in Urban Ecological Research,"
Social Forces, XXXII (May, 1954), 364-66.

[40]Gaston Bardet, "Social Topography: An Analytico-
Synthetic Understanding of the Urban Texture," in Studies
in Human Ecology, ed. by George A. Theodorson (Evanston:
Row, Peterson, and Co., 1961), p. 371.

variation may be so great that effective prediction from mean scales is not practicable.

Nevertheless, for numerous purposes, urban residential areas are spatially differentiated into both social and economic groupings. Although the criteria may not be given, city planning departments often subdivide residential areas into "neighborhood units,"[41] usually at least in part based on within-area similarities and between-area differences. In many cases, ethnic and income differences have obviously been considered.[42]

Many forces, of course, have promoted such areal differentiation, including racial discrimination and segregation practices, new subdivision developments for the upper-middle classes, and zoning regulations which effectively exclude certain groups. Since these neighborhood units sometimes become the basic organizing structure by which the planning body relates to the residents, it is also important to some planning operations that such units represent a

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[41]No reference is intended here to Perry's "neighborhood unit concept;" see Clarence A. Perry, "The Neighborhood Unit," Vol. III, Regional Survey of New York and Environs (Regional Plan of New York, New York, 1929), pp. 22-140. The term as used in this dissertation is merely a reflection of a common planning practice to subdivide the urban area into "planning units," generally for the purposes of physical planning.

[42]Some other factors which are often considered in making such areal differentations are natural boundaries, common historical growth, accepted perceptual differentiation by the local residents (often based on the above), and temporal (as well as structural) similarities under a common subdivision developer.

maximum of internal homogeneity. If such units have been developed and systematically utilized by a city planning department, then it would seem apparent that these same areal units may be utilized to test the existence of a common environmental goal for all neighborhood groups.

Utilizing neighborhood unit boundaries provided by the city's planning department, two neighborhood groups from Austin, Texas were sampled. The major criterion for selecting the two sample neighborhoods was high between-unit ethnic variance. One sampled neighborhood was predominantly Mexican-American; the other predominantly Anglo-American.

This study followed the basic argument developed in certain models that the residential structure of an urban area results from a large number of individual householder decisions made in tradeoff between accessibility to functional nodes of the city and spacious suburban living. Chapin has reduced this idea to the two basic variables that he feels an individual considers when moving. One of these is the quality of the neighborhood site, including the home itself; the other is the neighborhood setting, measured primarily by accessibility to certain features, including place of work.[43]

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[43]F. Stuart Chapin, Jr., "Activity Systems and Urban Structure: A Working Schema," Journal of the American Institute of Planners, XXXIV (January, 1968), 16.

Identical preference surveys were conducted in each

of the two neighborhoods using a battery of tests, termed

"Environmental Display Games," developed especially for this

study. These games, which attempt to simulate at least some

of the components that might go into real-world decision-

making, were designed to force the subject to develop envi-

ronmental priorities by limiting his ability to achieve all

of the alternatives offered. The findings should suggest

which environmental goals tend to be "universal," if any,

and which are related to particular groups. (See Chapter II

for a complete discussion of the methodology.)

Justification

With the need for over two million housing units to

be added annually to America's housing inventory,[44] it

would seem imperative to understand the preferences of the

potential users. Nothing less is being asked than what

kind of physical city do the people want. Yet, despite this

challenge to house America's future urban population, there

remains the lack of well-defined development goals based on

the behavioral needs and aspirations of the people.[45] A

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[44]Catherine Bauer Wurster, "Housing: A Wider Range of
Choice," in Metropolis: Values in Conflict, ed. by C. E. Elias,
Jr., James Gillies, and Svend Riemer (Belmont, California:
Wadsworth, 1969), p. 174.

[45]Lyle C. Fitch, "Goals for Urban Development," in
Urban Analysis: Readings in Housing and Urban Development,
ed. by Alfred N. Page and Warren R. Seyfried (Glenview,
Illinois: Scott, Foreman and Co., 1970), p. 30.

systematic approach to the formulation of such goals must

not only recognize that there are many diverse groups, each

of which may want and need different things, but must also

account for the dynamic nature of environmental preferences,

which likely evolve as socio-economic and technological

changes occur through time. The implication is that the

foundation for the future city must be made more humanistic

through a better understanding of man's evolving psycholog-

ical needs.[46]

Preference studies are not an end in themselves but,

rather, are an inventory effort leading to analysis. They

attempt to grasp the mind and spirit of the people by

encouraging that their opinions be heard. As such, prefer-

ence studies are a type of public opinion poll. Results

from public opinion surveys should serve to both aid in

reaching actual decisions and, possibly, altering public

attitudes.[47]

The emphasis on planning with people requires

monitoring operations sensitive to different behavioral goals.

The building and rebuilding of the future city should concur

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[46]Cf. Edgar Anderson, "The City is a Garden," Land-scape, VII (Winter, 1957-58), 3-5; Charles A. Blessing, "Perception in Planning," Journal of the American Institute of Planners, XXXVI (February, 1960), 2-4; Stanley Milgram, "The Experience of Living in Cities," Ekistics, I (August, 1970), 145-50.

[47]David Lowenthal, "Assumptions Behind the Public Attitudes," in Environmental Quality in a Growing Economy, ed. by Henry Jarrett (Baltimore: Johns Hopkins, 1966), 132-33.

with the development of realistic, as well as pluralistic,
physical planning goals and standards based on objective
analyses of different value and need systems. An equitable
modern society, one based on an advancing technology, must
learn to structure the environment to facilitate its needs.
There is need to have strong commitments to secure healthy
subcultural contrasts as well as equality for all groups.
The use of preference studies should not only provide a
means to gauge group reaction to environmental planning and
change but should also survey areas of environmental dis-
satisfaction.

Of course, building environments to meet preferences,
or providing high environmental quality, does not necessarily
imply a high quality of life. Physical environmental
quality is only meaningful in terms of social values. In
addition, what an individual claims, and may sincerely be-
lieve, that he wants is not necessarily commensurate with
either the "best" alternative offered, evaluated from some
objective position, or with the individual's behavioral
needs. Nevertheless, if we are to be able to construct res-
idential goals based on behavioral considerations, then we
must come to utilize cognitive representations as a means to
understand environmental decision-making.

Finally, this study attempts to develop a methodology
which allows individual householders to estimate their

priorities with regard to certain physical components of the neighborhood. The Environmental Display Games, as developed here, represent a rather intensive technique based on the notion of tradeoffs in decision-making. The scheme lends itself, particularly, to the development of urban environmental priorities, which may then be related to the background of the sample players.

Organization of the Study

The dissertation is organized into six chapters. Chapter II explains the methodology and sampling techniques used to gain the field interviews. Also included in this chapter are profiles of the sample groups. The findings are presented and compared in Chapter III. Chapter IV tests the primary hypothesis through an analysis of preference dimensions which are related to between-group ethnic variance. Within-group variance, or the secondary hypothesis, is tested in a similar manner in Chapter V. Chapter VI summarizes the major findings and conclusions of the study.

CHAPTER II

THE RESEARCH DESIGN: ENVIRONMENTAL DISPLAY GAMES

SAMPLING TECHNIQUES, AND SAMPLE PROFILES

The research design is presented in two parts.
Part one is devoted to an explanation of the interviewing
techniques; that is, the Environmental Display Games. Part
two is a discussion of the sampling techniques, including
profiles of the sampled groups.

Environmental Display Games

Attempts to gauge decision-making using environmental
displays should ideally provide a system of both limitations
and rewards. Most rating schemes do neither. Simple rating
scales (for example, 1 = unimportant; 2 = somewhat important;
3 = very important) of environmental elements usually result
in most items being ranked as at least somewhat important.
The semantic-differential, while more sensitive, also allows
the respondent full freedom in his response. Such techniques
were designed primarily by the psychologist for measuring
personality. The geographer, however, is faced with the
slightly different task of measuring environmental needs in
terms of environmental preferences. Simple rating techniques
do not impose the necessary real-world constraints on

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decision-making behavior.

If simple priorities are required, then the subjects may be asked to rank the various elements, such as Gould had students do for the residential desirability of states (see Appendix I, page 199). Obviously, the subject is limited in the sense that each rank may serve only one element. But when the alternatives are many or complex, simple ranking is often difficult for an honest respondent to make.

One alternative method which is gaining some attention is that of paired-comparisons. The work of both Rushton and Sonnenfeld, among others, may be again noted with regard to this method.[1] Michelson has reported on a research effort using a simple form of the idea.[2] He had a group of subjects assess the relative importance of different levels of the environment (home, block, neighborhood, city) from sketches that each had previously drawn of their "ideal" environment. By pairing all of the dichotomous combinations between the four levels, he found that various conceptions of the neighborhood level stood out as most important. Paired-comparisons, then, provides a reasonable method for assigning environmental priorities and has the added advantage of being backed by a considerable body of statistical literature, including

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[1]Rushton, "The Scaling of Locational Preferences," pp. 202-203; Sonnenfeld, "Equivalence and Distortion of the Perceptual Environment," pp. 83-99.

[2]William Michelson, "Urban Sociology as an Aid to Urban Physical Development: Some Research Strategies," Journal of the American Institute of Planners, XXXIV (March, 1968), 107.

Torgerson's "Law of Comparative Advantage"[3] and several computer software packages.[4]

While paired-comparisons offers a valuable research tool, it is sometimes cumbersome to test combinations when the number of elements is very large. Further, preference testing in this manner may result in the subject being confronted with pairs which are difficult, or arbitrary, to rank. In some cases, the testing situation may appear to the subject as being far removed from the real world. One possibility may lie in developing environmental displays which present to the subject more conventional situation frameworks for making decisions.

Three empirical studies may be noted which have utilized simulated real world displays at the neighborhood level. Although a concrete system of rewards has yet to be developed, each of the experimental environmental displays imposes a system of limitations. Generally, environmental displays which present a hypothetical environment from which a limited number of selections may be made are referred to in geographical literature as "games."

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[3]Warren S. Torgerson, Theory and Methods of Scaling (New York: Wiley, 1958), pp. 155-204.

[4]Available, for example, from the Computer Institute for Social Science Research, Michigan State University.

Perhaps the most significant contribution in this regard has been made by Wilson.[5] In this work, two game boards were devised. The subjects, residents of two North Carolina towns, were provided a limited number of counters which they could use to "buy" certain services and amenities which were shown on the game boards. One of the game boards was primarily concerned with access preferences, measured in time from the subject's home. Different public facilities, such as schools and recreation facilities, and private shopping facilities, were each placed on a five-unit time-distance scale; from a three minute walk to a twenty-five minute drive. The location of the facility with reference to the subject's home would determine its cost; that is, locating the facility closer to home would cost the subject more counters. Since the number of counters provided was limited, the subject was forced to determine his locational, or access, priorities.

The second game board developed by Wilson was concerned with facilities and amenities of the housing site, or neighborhood. Each element had a variable cost structure in an attempt to give relative weights to the items; for example, paved streets cost eight counters, a private telephone cost five counters, and police within

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[5]Robert L. Wilson, "Livability of the City: Attitudes and Urban Development," in Urban Growth Dynamics in a Regional Cluster of Cities, ed. by F. Stuart Chapin, Jr., and Stanley F. Weiss (New York: Wiley, 1962), pp. 359-99.

three minutes of one's home cost two counters. Again,
the number of counters given the subject to play the game
was limited.

Wilson also asked each subject to comment on what
he liked and disliked within the city, as well as to rank
the importance of certain phrases (for example, "a city
should have a mixture of all types of persons"). Photographs
of different types of neighborhoods were also rated by
having the subjects check one of several possible responses
for different quality scales.

Building on the study by Wilson, a series of
research projects have been developed out of the Department
of Engineering at Northwestern University, particularly
around the work of George L. Peterson. Two of these are
of interest here. In the first, Peterson and Worrall
utilized what they termed an "Accessibility Game" relating
home and eight urban facilities along a time scale.[6] The
respondents were first asked to rank each of the services in
increasing order of desired proximity to the home. They were
then requested to make selections from pairs of services
(pair-selection). Finally, they were requested to locate
each service at an "optimum" desired location from their home.

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[6]George L. Peterson and R. D. Worrall, "An Analysis
of Individual Preferences for Accessibility to Selected
Neighborhood Services" (paper presented before 49th Annual
Meeting of Highway Research Board, Washington, January, 1970).

Another procedure which had the subject attempt to equate variable housing expenditures with accessibility preferences proved unsuccessful.

Peterson has also attempted to develop a "model of preference" for the "visual appearance of residential neighborhoods."[7] A group of resident subjects ranked several color photographs of various residential scenes for each of ten neighborhood quality variables. Factor analysis reduced the ten variables to three independent factors, since several measured about the same order of preference (for example, greenery, open space, privacy, and closeness to nature were apparently similar measures of a factor related to overall preference). A form of discriminant analysis further revealed that the subjects could be placed into one of five different preference groups.[8]

The empirical preference studies cited above, together with the work reviewed in Appendix I, provided the basis for both the rationale and techniques developed in this dissertation. The Environmental Display Games, described below, were based on the two factors that Chapin found moving

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[7]George L. Peterson, "A Model of Preference: Quantitative Analysis of the Perception of the Visual Appearance of Residential Neighborhoods," Journal of Regional Science, VII (Summer, 1967), 19-31.

[8]George L. Peterson, Robert L. Bishop, and Edward S. Neuman, "The Quality of Visual Residential Environments," in The Quality of the Environment: Quantitative Analysis of Human Response, ed. by Heinrich D. Selle, Jarir S. Dajani, and George L. Peterson, Department of Civil Engineering (Evanston: Northwestern University, 1969), pp. 7-30.

families to consider: accessibility and neighborhood
quality. Each of these factors is approached through a
semiprojective game situation where alternative opportunities
are presented which force the subject to make a limited
number of selections. The results of this method should
provide a gauge of the relative importance of elements
presented in each game; that is, a measurement of each
individual's, and each group's, environmental priorities.

The Environmental Displays are comprised of two
basic games: the Accessibility Game and the Neighborhood
Quality Game. Each game has more than one part. Identical
interview procedures were used in both sample neighborhoods.
Although at least some English was generally spoken and
understood in the Mexican-American neighborhood, the game
boards, and other displays, utilized for this group included
all written material in both English and Spanish. In
addition, the surveyor was a Mexican-American woman who spoke
fluent English and Spanish. The game boards used in the
Anglo-American neighborhood were printed in English only.
The interview procedures are included as Appendix II and
reproductions of the two illustrated game boards are included
in the pocket on the inside back cover (Figure 1).

Accessibility Game

Preference Rankings.--The Accessibility Game was
divided into two parts. Part one had the respondent develop
his most preferred residential setting with regard to

selected urban nodes and facilities. The Accessibility
Game board incorporated a total of twenty-four urban places,
which may be located at varying distances from the home.
The game forced the subject into making tradeoffs between
facilities, rather than merely indicating an "optimum"
location for each. This was done by requiring the subject
to "buy" accessibility using the limited number of tokens
given to him at the beginning of the game. The goal of each
respondent was to acquire maximum satisfaction for access
given his limited "buying power."

Each subject was given sixty tokens at the game's
beginning. The "buying scales" were held constant for each
facility; that is, the cost of placing any of the twenty-four
facilities near the home was the same. Distance was measured
in time and represented on the game board by seven discrete
classes: walking distance (6 tokens); driving time of three
minutes (5 tokens); five minutes (4 tokens), fifteen minutes
(3 tokens), thirty minutes(2 tokens), sixty minutes (1 token)
and over one hour (0 tokens). The scales generally proved
useful for a city of 275,000, although several respondents
found it difficult to differentiate between a three and five
minute driving time.

Selection of the twenty-four facilities to be included
on the game board was made with two principal objectives:
range of activities and comparative analysis. In the first,
range of activities, an attempt was made to include

representations of facilities from various functional
classes, for example, government (city hall, post office),
recreation (playground, city park), education (elementary
school and high school), and shopping (grocery stores,
shopping center). Facilities which might be expected to
consistently induce a negative response (such as junkyards
or industrial districts) were not included, primarily
due to scaling difficulties. Although the number of
presented alternatives was relatively large, important
omissions were noted by the respondents. Among the Anglo-
American group, recreational facilities which were not
included on the game board were often cited; for example,
a golf course. Although care was taken to avoid building
cultural bias into the game boards, the Mexican-American
subjects cited several omissions. Most mentioned were the
lack of a public laundromat, fire department, and recreation
center.

In selecting the facilities to be represented on the
game boards, an attempt was made to include places similar
to those utilized in other empirical studies. This would
hopefully encourage comparative anlaysis which is felt to
be a beginning stage in modeling urban accessibility
preferences.

Since the buying scales were held constant, the
assumption is made that each facility is equally available

to all residents, an assumption which is obviously false.[9]
While a scheme which "weights" certain features in accordance
with their occurrence and the associated costs of locating
near them might be feasible, the goal here was to develop
simple accessibility priorities for the two sample groups.
In addition to easing the burden of data compilation and
comparison, this game technique facilitates cross-cultural
testing since fewer assumptions, perhaps culturally-biased,
are built into the interview.

Neighborhood Composition.--The second part of the
Accessibility Game was an attempt to arrive at an empirical
definition for the functional neighborhood. The subjects
were asked to consider each of the twenty-four facilities
on the game board as "part of their neighborhood." No prior
definition of "neighborhood" was given. Each subject was
requested to arrange the facilities into three groups:
(1) those facilities which they definitely wanted within their
neighborhood, (2) those facilities which they definitely
did not want within their neighborhood, and (3) those
facilities toward which they were generally indifferent as
to location.

This technique allowed the neighborhood concept to
be examined in terms of function. The approach follows Lee

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[9]For at least two reasons: (1) the occurrence of a
facility within an urban area varies and (2) the economic
and social restrictions on individuals, and groups, also
vary.

who related the "unit neighborhood" to the service function.[10]
By equating these findings with the first part of the game,
as well as to the frequency of their use, it may also be
possible to determine neighborhood on a spatial scale; that
is, the temporal space that constitutes a functional neigh-
borhood for each sample group.

Neighborhood Quality Game

The Neighborhood Quality Game has the subject rank
certain types of environmental alternatives, including
neighborhood photographs, and then, using his preferred
rankings, develop the most satisfying neighborhood to him,
again given a limited "buying power" to achieve this goal.
The game board is composed of thirty "qualities" of the
neighborhood site, ranging from density alternatives to the
quality of "beauty." While architectural and cost consid-
erations of the home were included, the Neighborhood Quality
Game was directed mainly to the neighborhood surroundings,
or macro-level, and not to micro-variables of the home
itself.[11] The game is played in three parts.

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[10]Terence Lee, "Urban Neighborhood as a Socio-Spatial
Schema," Human Relations, XXI (August, 1968), 250.

[11]In geography, macro-scale usually refers to much
larger areal units than a neighborhood. The author agrees
with Goodey that there is need for an "intermediate-level"
terminology; see Brian Goodey, "A Small Space for small-space?"
Area, III (1971), 93-95.

Environmental Alternatives.--The first ten items
listed on the game board were primarily concerned with
location and design qualities. Each of these ten items
included five illustrated alternatives from which to choose.
Part one of the game had each subject first rank his
preferences for these environmental alternatives. For
example, under item one, "Size of City Want to Live Within,"
there are five alternatives which the subject was asked to
rank in the order of his preferences (one through five):
Metropolitan Area, Large City, City, Small Town, and Rural
Area. (See Appendix II and Figure 1.)

Photo Ranking.--A series of eight 5 x 7 color photo-
graphs were presented to the subjects for use with items
numbered twenty-three through thirty on the game board.
(These photographs are reproduced in black and white on
pages 79-80.) Each subject was asked to rank the eight
photographs with regard to the neighborhood quality shown
on the game board. For example, for item number twenty-
three, "privacy," the subject was asked to select which of
the pictured neighborhoods was to him most private, which
next most private, and so on until all eight photos had been
ranked. The procedure was then repeated for the other
qualities (items 23-30) on the game board. The subject was
also asked to make a final photo ranking according to his
"preference for residential living."

Preference Rankings.--Part three of the Neighborhood
Quality Game is played in somewhat the same manner as the
Accessibility Game. Each subject was again given a limited
number of tokens (again, sixty) at the beginning of this
phase of the game. With these tokens he was requested to
"purchase" the neighborhood qualities in accordance with the
relative importance (or preferences) he placed on each for
a good neighborhood. For this purpose a buying scale
(4-3-2-1-0) is shown under the heading "Response" on the
game board. The subject was given a chart which directed
his expenditures. Essentially, the more important the item
was regarded, the more tokens (up to four) were required.
The goal of each respondent was to gain the best neighborhood
given his limited buying power.

The spending of tokens with regard to the relative
importance of the item proved more feasible in the field
than was originally anticipated. Apparently, most subjects
were able to quickly grasp the idea. The few difficulties
were generally encountered in the Mexican-American neighbor-
hood, although whether this could be attributed to differences
in formal education or cultural background was not clear.

Three general types of neighborhood considerations
were represented on the board: (1) location and design,
(2) services and facilities, and (3) physical and social
qualities. The relative degree of expenditures between these
three general categories should prove of interest. Wilson,

for example, found a high service orientation among his respondents.[12]

Qualities of the particular dwelling unit, that is the housing itself, were not directly considered on the environmental displays. In this regard, the subjects were asked to assume that the housing was satisfactory; that is, square footage, room arrangement, and the like were to be considered adequate. The effort here is not to minimize the possible importance of the micro-environmental factor; to be sure it must be considered. Nevertheless, the research here is centered on the neighborhood level.

Again, several respondents indicated that some important features for a good neighborhood were omitted from the Neighborhood Quality Game board. While the Anglo-American group again cited recreational facilities, many other omissions were negatively phrased; that is, neighborhoods were preferred which had no mobile homes, no through traffic, and no airport nearby. The Mexican-American sample again cited more items, ranging from recreational facilities and a corn mill to legal aid services and political independence.

Sampling Techniques

Neighborhood Selection

The city of Austin, Texas was selected as the field area. Since a fundamental goal of this case study was to

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[12]Wilson, "Livability of the City," p. 396.

experimentally test the Environmental Display Games, it was deemed important that the field area be both convenient and receptive to the effort. In addition, a high incidence of minority Mexican-American neighborhoods and active city planning and Model Cities programs were desired. Austin satisfied these needs.

In accordance with the problem of the study, two neighborhoods were selected within Austin. Delineation of the city's neighborhood boundaries was provided by the Austin City Planning Department with reference to their comprehensive planning program. Although there was considerable variation, most of the units contained approximately 6000 persons. The two neighborhood units selected for this study followed these planning designations.

Several criteria were set forth to guide the final selection of the two neighborhoods. It may be recalled that the problem of the study is essentially an effort to differentiate preferences between Mexican-American and Anglo-American groups. In this regard, the goal was to achieve maximum ethnic variance between the sampled neighborhoods. Beyond ethnic variance, the objective was to control certain other background variables, including neighborhood stability (length of ownership), and the subject's income, age, and household status. On the latter, the effort was to gain some semblance of similarity between the samples, thereby helping to isolate the ethnic factor.

The city of Austin has a population of approximately 275,000 (1972), of which about 14 percent are regarded as Mexican-American (Spanish Surname).[13] There are several indications that this ratio is currently increasing in favor of the Mexican-American. Perhaps as many as four of the Planning Department's "neighborhoods" may be regarded as predominantly Mexican-American.[14] Anglo-Americans, of course, dominate many neighborhood units. The several neighborhoods which were regarded as ethnically "mixed" were excluded from further consideration for sampling.

One complicating factor in the use of Austin as the field study area was the presence of the University of Texas. This large university (about 40,000 students) spills over into adjacent residential areas, with the result that there is a high incidence of rental property (either converted older homes or new apartments) in several of the neighborhoods. The decision was made to confine the study to home-owners, since it was felt that ownership generally results in a greater commitment and interest to one's surroundings. As a result, neighborhoods with large amounts of rental property were also excluded. Recommendations of the

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[13]Other percentages: Anglo-American, 75.2%; Non-White, 10.6%. Based on January, 1972, estimates provided by Mr. Milton Rube of the Austin City Planning Department.

[14]This must be regarded as an approximation since detailed data on neighborhood ethnic composition was not currently available.

City Planning Department were also followed in selecting

neighborhoods which had ownership longevity, or stability.

The attempt was made to hold several socio-economic

and demographic variables constant for both sample groups.

Income and education were regarded as most important. The

effort to minimize income differences between the two sample

groups presented the most difficult problem in selecting

the neighborhoods. While the problem might be rather unique

to Austin,[15] it deserves some mention here.

One sampling objective of this study was to confine

both samples to low income neighborhoods. Low income

Mexican-American neighborhoods were immediately located.

The problem occurred in selecting a low income Anglo-American

neighborhood. To be sure, low income Anglo-Americans reside

in Austin. But low income Anglo-American neighborhoods,

meeting the sampling criteria of this study, did not exist.

Low income neighborhood units were found to be either predom-

inantly Mexican-American (or Negro), ethnically mixed,

unstable (short ownership tenure), or had a high incidence

of rental property (generally college students). Smaller

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[15]Austin is somewhat a "unique" city. Beyond a
relatively high student-resident ratio, the occupational
makeup of the city reflects the lack of a lower, middle-class,
"blue-collar" labor force based on industry. Jobs in
manufacturing within the city in 1970 constituted only 5 per-
cent of the total employment, none of which were considered
in "heavy industry." Most of the labor force is employed in
government, education, and retail trade. Estimates provided
by Mr. Josh Farley, staff economist, Austin Planning Department.

Anglo-American low income "sub-neighborhoods," encompassing perhaps 500 to 1000 persons, were possible to locate, but no major, well-defined neighborhood unit, as delineated by the Planning Office, incorporated all of the sampling criteria. Although not pursued in any detail, the initial observation was that Anglo-American ethnic solidarity began only when incomes exceeded about $9,000.[16] In areas with incomes less than this, "invasions" of minority groups or rental property seemed to occur.

Education, as sociologists have long noted, is generally correlated with income. Although this relationship is probably too-often accepted without evidence, it was generally found valid in selecting the sample neighborhoods. Therefore, this correlation led to problems similar to those described above for the income variable. Gross data on neighborhood income was available; data on education was generally lacking for the neighborhood units. Therefore, the education variable was not considered in the final selection of the sample neighborhoods.

Age was considered a less difficult variable to control. But here, too, problems occurred in the field sample. The research design called for only adult, head of households (or spouse), ages eighteen to fifty, to be sampled. Early

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[16]In a recent address, the current Director of City Planning for Austin, Mr. Richard Lillie, commented that land integration of the Mexican-American in Austin is primarily a problem of income discrimination, and not ethnic discrimination. (Public Address at Southwest Texas State University, San Marcos, Texas, October 14, 1971).

field sampling in the Mexican-American neighborhood
revealed a marked number of household heads who were over
fifty years of age. Since many in the Mexican-American
sample population also refused to be interviewed, the
decision was made to raise the age ceiling to sixty years
in both neighborhoods, although head of household status
(or spouse) was still required.

Due to the income problems, the final selection of
the two neighborhoods became a matter of sampling prior-
ities. Ethnic variance between groups was held as most
important. The two neighborhoods finally selected were
ethnically quite dissimilar, as shown in the group profiles
of the next section. The effort to control the other
variables was not as successful. The incidence of rental
property was higher than expected among both groups, although
the group with the highest percentage of renters, the
Mexican-Americans, had also the longer length of residence.
Both neighborhoods, however, may be regarded as relatively
stable.

Control of the ethnic variable allowed only limited
manipulation of the income variable. The average income of
the sampled Anglo-American neighborhood was over twice that
for the Mexican-American. Education levels had a similar
variance. Age levels were more similar between groups,
but raising the sample age ceiling to sixty was a factor in
the Mexican-American neighborhood.

The two neighborhoods selected were also unique in other ways. The Anglo-American neighborhood was an older, but very well-kept area on Austin's north side (see Figure 2, page 45). Although the homes were generally small, this was once a rather prestigious subdivision in the advancing sector of the city's upper income development.[17] Although commercial arterials bound the area on virtually every side, there is little mixed use within the neighborhood. The neighborhood is some distance from the CBD, but the two largest shopping centers in Austin, along with many other services and facilities (for example, a large medical complex) are within a few minutes drive. Real estate agents indicated that most homes in the neighborhood would currently market for about $20,000 (1971).

The Mexican-American neighborhood appears quite different. It is located in a much older section of the city, and for some within walking distance of the downtown (Figure 2). The north-south Interstate Highway through the city provides the western boundary for the neighborhood. Mixed land uses prevail, particularly at the northern end where a major rail spur greatly fragments the area. Due to its location near the downtown and along a major east-west arterial street, there is considerable commercial land use,

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[17]The "prestige" developments currently taking place in the city are primarily on the city's northwest side.

ANGLO-
AMERICANS

UNIV.
TEXAS

CBD

MEXICAN-
AMERICANS

Scale

N

1/2 0   2   3 miles

2-15-70
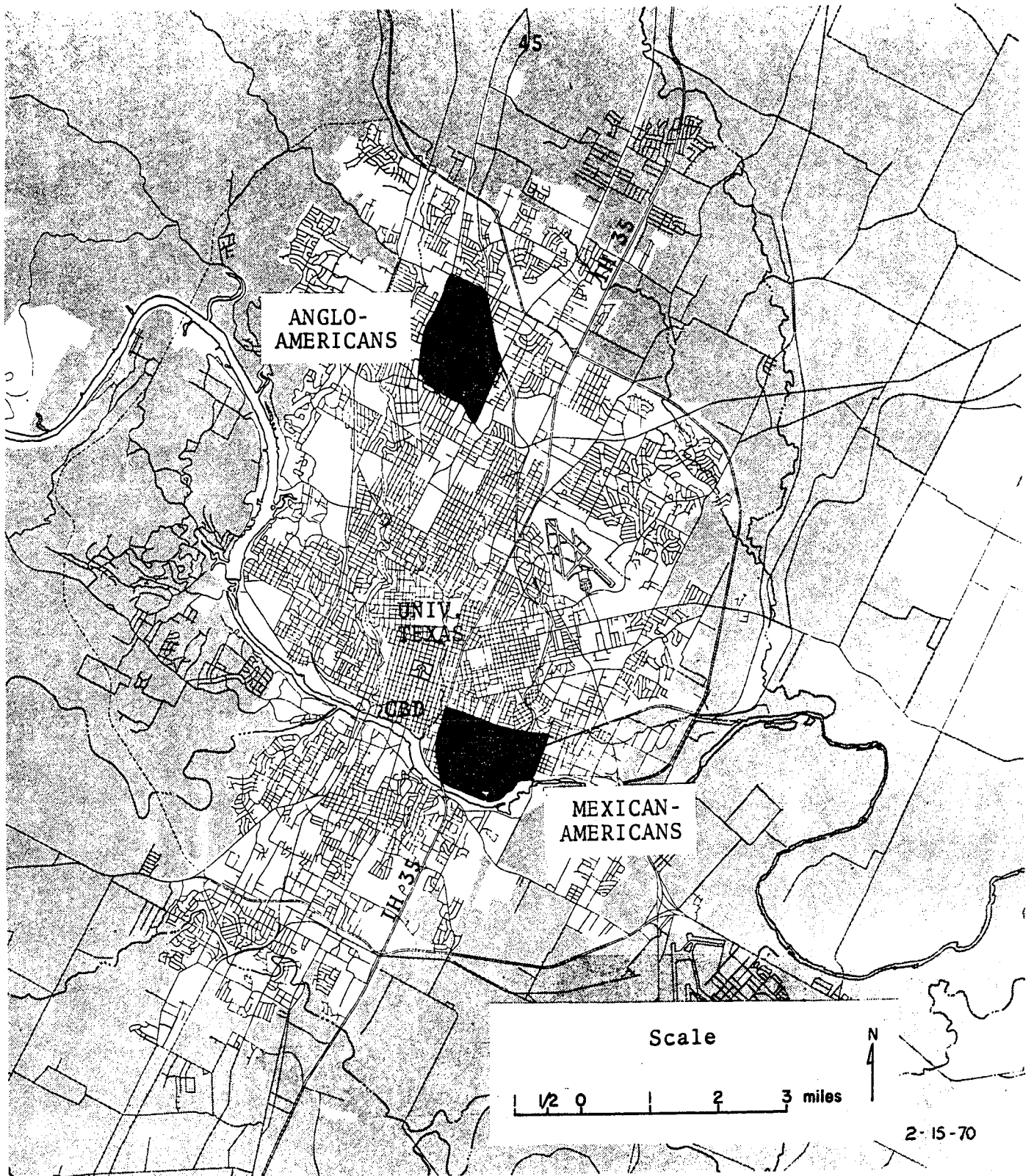
FIGURE 2

CITY OF AUSTIN

LOCATION OF SAMPLE NEIGHBORHOODS

both within and near the neighborhood. A small shopping center is located adjacent to its northeast boundary. The city's municipal hospital is within a mile of many neighborhood residents. The condition and value of the homes vary; a few must be regarded as dilapidated; others are standard. A few stately mansions dot the area, remnants from a more prosperous era. The Planning Department regards this neighborhood as a "landing area" for new Mexican-American (and Mexican) arrivals in Austin, although the great majority of the sample indicated that they had lived in the Austin area most, or all, of their life. The neighborhood is regarded as possessing considerable stability and internal organization.

Sampling Procedures

Each neighborhood was sampled using a modification of "cluster sampling" procedures.[18] Census data and aerial photographs showing dwelling units by blocks were updated through field reconnaissance. Both neighborhoods contained very limited areas of apartment dwellings. These were excluded from the sample. A relatively small public housing unit, housing about 155 families, was included among the dwelling unit inventory in the Mexican-American neighborhood.

The housing units in each sample neighborhood were given consecutive numbers. Multi-family units, such as the

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[18] Charles H. Backstrom and Gerald D. Hursh, Survey Research (Evanston: Northwestern University Press, 1963), pp. 23-66.

public housing, were given an appropriate set of numbers to ensure that each individual household had an equal chance of being sampled. Two major modifications were made from the techniques described in Survey Research. First, the "skip interval" to determine the selected cluster of dwelling units was replaced by a table of random numbers. Second, uniform geographic distribution was assured by dividing the neighborhoods into zones, each zone containing an equal number of housing units.

The sample size was set at fifty households for each neighborhood, or a total sample of one hundred. It was recognized that this small number was not likely sufficient to offset sampling error while attaining a high degree of reliability. Nevertheless, certain factors seemed to justify the small sample. First, the effort was largely experimental, designed to emphasize the application of techniques to a particular problem. Second, the research design was quite broad, which did not allow precise sample estimation. Finally, and most important, there were the usual constraints of time and money.[19]

Because the interview was quite long, a stipend of ten dollars was paid to each subject who completed the

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[19]The National Science Foundation provided necessary funding for the construction of the games and the field work under Grant GS-29693, Proposal No. P1S1023. Most of the funding went for surveyors and stipends. The field interviewing lasted about seven weeks.

Environmental Display Games. Despite this offer of compensation, numerous refusals occurred. The sampling refusal rate was estimated at over 35 percent by the surveyor in the Mexican-American neighborhood and around 15 percent in the Anglo-American neighborhood.[20]

Sample Profiles

Table 1, pages 49 through 51, provides a comparison of selected background variables between the two groups. Most of the variables relate to data which are relatively easy to secure, although Botka's listing of variables influencing social contacts was also utilized in developing the profile.[21]

The ethnic split achieved in the neighborhood selection should again be emphasized. In each case, 94 percent of the sample identified themselves as members of the defined neighborhood ethnic group.

Income and education were, unfortunately, quite diverse between the neighborhood groups. The mean income for the Anglo-American sample was $10,890, while that of the Mexican-American was under $5,000. Most of the Anglo-American

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[20]The Mexican-American neighborhood is included within the Austin Model Cities project, which has only recently been implemented. One result is that the neighborhood has been "swamped" with interviewing agencies.

[21]D. Botka, "A Descriptive Model of Social Contacts Within a Community," Ekistics, I (August, 1970), 110. Botka lists seventeen variables as "most relevant" to community behavior, including education, sex, income, mobility, numbers of relatives and friends living nearby, length of residence, neighborhood location, and density.

TABLE 1

SUBJECT PROFILES

Background Variable	Anglo-Americans	Mexican-Americans
Sample Size	50	50
Ethnicity		
Anglo-American	47	2
Mexican-American	1	47
Negro	0	1
Other (European)	2	0
Socio-Economic		
Income (mean dollars)	10,890	4,940
Education (mean years)	12.6	7.5
Occupation:		
Professional, Technical, and		
Managerial	10	3
Clerical and Sales	10	1
Craftsmen and Foremen (skilled) .	9	5
Service (skilled and semi-skilled)	5	8
Operatives (semi-skilled) and		
Laborers	0	13
Housewives	14	19
Students, Retired, and		
Unemployed	2	1
Religion:		
Catholic	12	45
Protestant	36	5
No Professed Religion	2	0
Demographic and Life Cycle		
Age (mean years)	34.1	39.2
Sex:		
Male	21	22
Female	29	28
Marital Status:		
Married	48	32
Single	1	6
Divorced, Separated, or Spouse		
Deceased	1	12
Household Size (mean)	3.80	4.72
Children Living at Home (mean		
number per subject)	1.76[a]	2.53[a]
Number of Families with Children in:		
Pre-School	18	19
Elementary School	22	15
Junior High School	9	12
High School	9	10
College	3[b]	0[b]
Not In School	3[b]	8[b]

TABLE 1--Continued

Background Variable	Anglo-Americans	Mexican-Americans
Residence and Relocation		
Childhood Residence:		
Local Area: All of Childhood . . .	23[c]	37[c]
Local Area: Part of Childhood . .	6[c]	5[c]
Texas: All of Childhood	33[d]	44[d]
Texas: Part of Childhood	10	5
Out-of-State: All of Childhood . .	10	0
Out-of-State: Part of Childhood .	5	5
Foreign: All of Childhood	1	3
Foreign: Part of Childhood	1	1
Urban-Rural Background:		
All of Childhood in:		
Rural, Small Town(to 50,000) . .	18	12
City(50,000 to 300,000)	12	25
Metropolitan(over 300,000) . . .	5	3
Part of Childhood in:		
Rural, Small Town(to 50,000) . .	11	8
City(50,000 to 300,000)	14	8
Metropolitan(over 300,000) . . .	4	4
Tenure(current):		
Own Home	39	32
Rent Home	11	18
Prefer To:		
Own Home	49	50
Rent Home	1	0
Type of Residence Living Within:		
Detached, Single-Family	47	44
Duplex(or Row House)	2	4
Multi-Family(including Public		
Housing)	1	2
Condition of Dwelling:		
Standard, No Repair	43	21
Standard, Minor Repair	7	22
Deteriorating, Major Repair . . .	0	7
Dilapidated, Beyond Repair	0	0
Length of Residence at Current		
Address(mean years)	7.6	10.8
Length of Residence within		
Austin(mean years)	16.0	30.0
Number of Moves in Last Five Years		
(mean number per subject) . . .	1.5	0.7
Moving Plans or Desires:		
No Move Planned or Desired . . .	28	31
Planning Move	14	9
Not Planning Move but Desire		
to Move	8	10

TABLE 1--Continued

Background Variable	Anglo-Americans	Mexican-Americans
Plan or Desire to Move to:		
Within Austin	10	16
Texas (remainder)	6	0
Out-of-State	4	1
Foreign	0	0
Location not given	2	2
Plan or Desire to Move to:		
Rural Area or Small Town	5	0
City	10	16
Metropolitan Area	2	0
Location not given	5	3
Mobility and Family Associations		
Cars Available for Family Use (mean number per family)	1.9	1.2
Number of Families without Daily Use of Car	0	12
Relatives within Walking Distance of Home (mean number per family) . .	0.6	1.6
Number of Families Without Relatives Within Walking Distance	36	18
Friends within Walking Distance of Home (mean number per family) . .	3.1	3.9
Number of Families without Friends Within Walking Distance	13	13
Time to Best Friend's House (mean minutes)	17	17
Time to Place of Work (mean minutes)	14	19

[a]Based on past or currently married subjects only.

[b]Includes only those children that are living at home.

[c]The "Local Area" is defined as within a 50 mile radius of Austin.

[d]Includes subjects who spent all of childhood in Local Area.

subjects had at least a high school education, whereas one-half of the Mexican-American sample had less than nine years of formal schooling. The occupational categories reflected, of course, on both differences in income and education. The religious background of the groups might have been expected; 90 percent of the Mexican-American neighborhood reported that they were Catholic, whereas 72 percent of the Anglo-American sample may be regarded as Protestant.

The large number of Mexican-American households headed by a person over fifty years of age is shown by the slightly older average age for that neighborhood group. In both neighborhoods, there were slightly more females interviewed, many of whom were housewives. Several (24 percent) of the Mexican-American subjects reported that they were either divorced, separated, or widowed. Also, six of the Mexican-American heads of household had never been married, although in two of these cases they had "inherited" a family of younger children.

Family size and composition also differed between the two groups. Family size, as might be expected from both a religious and cultural standpoint, was considerably larger for the Mexican-Americans. Both groups, however, were above the mean national household size for metropolitan areas of 3.1 (1970).[22] Many families in both groups had

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[22]U.S. Department of Commerce, Bureau of the Census, Census of Population and Housing: 1970, General Demographic Trends for Metropolitan Areas, 1960-1970, Final Report PHC(2)-1, United States, Table 16.

young children, either at the pre-school or elementary level. Nearly one-half of the Anglo-American households contained elementary school children. Several Mexican-American families had dependents who were not in school.

Most research concerning environmental perception has failed to consider the influence of the subject's childhood environment on his later adult attitudes and preferences. The teachings of child psychology indicate that many values and attitudes are "programmed" in the first few years of a person's life.[23] For this reason, each subject was asked where he had spent the first eighteen years of his life.

Perhaps most revealing is that both sample groups were made up predominantly of native Texans. This was particularly true for the Mexican-American group; 88 percent had lived all of their lives within Texas. Thirty-seven (74 percent) had never resided outside the immediate Austin area. About one-half of the Anglo-Americans had resided in the Austin area since birth and another ten were native Texans from other areas of the state. Only four of the Mexican-Americans had ever lived in Mexico. Although ten of the Anglo-American subjects spent all of their childhood outside of Texas, no one region of the country was dominant.

Over one-half of the Anglo-American subjects had spent at least a part of their childhood in a rural or small

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[23]George G. Thompson, _Child Psychology_ (2nd ed.; Boston: Houghton Mifflin, 1962), pp. 317-349.

town environment; most were in areas near Austin. One-half of the Mexican-American group spent their entire childhoods within a city environment; generally this was Austin. Few subjects in either group had much childhood experience in metropolitan environments.

Although approximately 90 percent of each sample group were currently living in detached single-family homes, a surprisingly large number were renters. In the Mexican-American neighborhood, particularly, there was also considerable evidence of housing deterioration. Nevertheless, the average length of residence at the same address was relatively long for both groups; over ten years in the case of the Mexican-American sample. The fact that the majority of the Mexican-American sample has resided in the local area since birth is vividly shown by a mean length of residence in Austin of thirty years. The average length of residence within Austin for the Anglo-American group was sixteen years. Therefore, despite the unexpected number of renters in both neighborhoods, there appeared to be little evidence of high migration, particularly among the Mexican-Americans.

Despite this rather long mean length of residence, nearly one-half of the subjects in both groups indicated that they were either planning a move in the near future or expressed the desire to move. All but one of the total sample preferred to own his home; a reason for moving which was particularly important among the Anglo-American. A few

of the Anglo-Americans planned or wanted to return to a
small town or rural environment such as they had lived in
as a child. All but one of the Mexican-Americans who
expressed a preference wanted to relocate within another
neighborhood in Austin. Ten of the twenty-two Anglo-
Americans desiring to move also wanted to move to a "nicer
neighborhood" within Austin.

Daily mobility in a city such as Austin, which has
only limited public transportation, is often a function of
the number of cars available for family use. As might be
expected from the income discrepancy between the two sample
groups, the Anglo-Americans were generally two-car families,
while the Mexican-Americans averaged slightly over one car
per family. However, twelve Mexican-American households
did not have daily use of an automobile.

Extended family ties among Mexican-American cultures
are often discussed. This is supported in Table 1. Only
eighteen Mexican-American families were without relatives
within walking distance of their home, whereas thirty-six
Anglo-American subjects were without relatives within the
vicinity. The presence of friends living close by was
also a bit more common among the Mexican-Americans.

Table 1 also reveals certain personal associations
and travel patterns. Due mainly to the peripheral location
of the Anglo-American neighborhood, the average distance
traveled in miles to work was greater for the Anglo-American
group. But because they either walked, rode the bus, or

traveled in car pools, the average travel time to work was greater for the Mexican-American.

The profiles presented in this section are designed both to describe the groups and to relate to the findings. In the latter case, the question may be raised as to which of these background variables, if any, are significantly correlated with differences in environmental preferences between the ethnic groups. This question is explored in Chapters IV and V. Chapter III reviews the preference priorities of the two groups.

CHAPTER III

PRESENTATION OF FINDINGS: A COMPARISON

OF PREFERENCE PRIORITIES

The results of the interviews, utilizing the
Environmental Display Games, follow as a series of tables
which compare the findings for the two neighborhood sample
groups. In most cases, the relationship between the group
preferences has been compared using rank-ordering techniques.
The objective of this chapter, then, is to examine the
overall patterns of similarity, or difference, between the
preference priorities of the two groups.[1]

Since the field methods requested each respondent
to order his preferences along pre-determined ordinal
scales of time (Accessibility Game) and desirability
(Neighborhood Quality Game), rank-ordering measurements
seemed most appropriate. The question of assuming either
ordinal or interval scaling is common in psychological

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[1]Davies maintains that this should be a necessary
first step before any factor analysis is attempted; see
W. K. D. Davies, "Varimax and the Destruction of Generality:
A Methodological Note," Area, III (1971), 112-118.

testing, which the methods here resemble.[2] It should be

noted that the derived "preference rankings" are the result

of averaging the response for each sample group.[3] Never-

theless, for the purposes of graphic comparison in this

chapter, the preference rankings are regarded as relative

indices which do not necessarily measure the magnitude of

difference between the ordered variables.

A related problem to this approach, common to any

comparison of means, concerns the variance of response

leading to the derivation of the preference rankings for

any variable. Where appropriate, the standard deviation

is included as a measurement of this variance. As used

here, standard deviation also may be considered a relative

index of variance, since it does not figure into the

calculations.

Accessibility

Preference Rankings

Table 2 compares the preference rankings, that is,

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[2]Labovitz suggests that ordinal scales may in many
cases be treated as if they conform to interval scaling,
since statistical comparisons will generally not be altered;
see Sanford Labovitz, "The Assignment of Numbers to Rank-
Order Categories," American Sociological Review, XXXV
(June, 1970), 515-24.

[3]While the majority of subjects in both sample groups
used all sixty of the tokens provided for each game, there
were a few respondents who achieved their environmental
goals without spending the entire amount. Nevertheless, an
equal number of tokens was available to each subject;
therefore, the decision to save would not alter any
individual's rank-ordering of the variables.

TABLE 2

PREFERENCE RANKINGS FOR ACCESSIBILITY GAME

Variable (Facility)	Anglo-American			Mexican-American		
	Preference Rankings[a]	Index of Variance[b]	Rank-Order	Preference Rankings[a]	Index of Variance[b]	Rank-Order
Access to Freeway . . .	2.44	1.23	15	1.18	1.81	21
Place to Work	2.72	1.26	10	2.10	2.18	11
Hospital	2.74	1.08	9	3.44	1.89	3
Physician's Office . .	2.88	1.19	4	2.42	2.07	9
Elementary School . . .	4.18	2.14	1	3.08	2.50	6
High School	2.54	1.83	13	1.78	2.17	14
Place of Worship . . .	2.78	1.58	7	4.08	2.00	1
Playground	2.66	2.16	12	1.46	2.13	18
City Park	2.16	1.77	17	2.32	2.41	10
Camping and Picnic . .	0.60	0.86	23	0.76	1.42	23
Best Friend's House . .	2.80	1.73	6	1.56	2.17	17
Library	2.16	1.50	17	1.66	2.10	16
Post Office	2.72	1.26	10	2.66	2.16	8
City Hall	0.92	1.10	22	1.08	1.66	22
Bus Stop	2.36	2.41	16	3.72	2.45	2
Night Club/Bar	0.50	1.02	24	0.26	1.19	24
Restaurant/Cafe	2.06	1.43	19	1.70	2.01	15
Movie Theater	1.58	1.33	20	1.40	1.83	19
Auto Service Station .	3.24	1.45	3	2.00	2.18	12
Drug Store/Pharmacy . .	2.76	1.57	8	3.28	2.20	4
Grocery Store-Minimarket	2.50	2.20	14	1.86	2.41	13
Grocery Store-Supermarket	3.34	1.51	2	3.20	2.43	5
Shopping Center	2.84	1.31	5	3.06	2.13	7
Downtown	1.18	0.98	21	1.40	1.75	19

$$\text{rho} = 1 - \frac{6 \sum D^2}{N(N^2 - 1)}$$

rho = .697 > .485   [critical r for .01 level (one-tailed test) with N = 24][c]

No Significant Difference of the Preference Rankings
Between the Two Groups at the .01 Significance Level

[a] In distance (closeness in time) from subject's home; measured in average "tokens spent".

[b] Standard Deviation, also measured in "tokens spent".

[c] Using "Table of Critical Values of r_s, The Spearman Rank Correlation Coefficient," (Table VIII), in Allen L. Bernstein, A Handbook of Statistics Solutions for the Behavioral Sciences (New York: Holt, Rinehart, and Winston, 1966), p. 133.

the mean number of tokens spent for each place shown on the Accessibility Game board, for the two sample groups.[4] Using the Spearman-rho method of rank correlation, it is shown that the similarity of ordering the variables between the two groups is significant at the .01 level. In short, the Anglo-American and Mexican-American subjects have a high correlation (.697) in their accessibility priorities. This finding is contrary to the basic hypothesis of the study; that is, that different ethnic groups will display different environmental preferences for accessibility.

Despite the overall similarity in the rank-order pattern of the twenty-four variables, there are some notable differences in ranking between the groups. Several important differences were in the higher ranks. This is better shown by restructuring the variable listing in Table 2 according to rank (Table 3, page 61).

The Anglo-American sample, as might be expected, placed more emphasis on the automobile, desiring freeway access and the auto service station nearer the home, and the bus stop farther away, than did the Mexican-Americans. The facility preferred nearest the home by the Anglo-Americans was the elementary school, whereas the Mexican-American sample ranked this variable sixth. Conversely, the

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[4]The mean number of tokens spent by each group on the Accessibility Game (out of a possible total of 60) was 56.6 for the Anglo-Americans and 51.9 for the Mexican-Americans.

TABLE 3

COMPARISON OF RANK-ORDERS: ACCESSIBILITY GAME

Rank Difference	Anglo-Americans	Rank-Order	Mexican-Americans	Rank Difference
+ 5	Elementary School	1	Place of Worship	+ 6
+ 3	Grocery Store-Supermarket	2	Bus Stop	+14
+ 9	Auto Service Station	3	Hospital	+ 6
+ 5	Physician's Office	4	Drug Store/Pharmacy	+ 4
+ 2	Shopping Center	5	Grocery Store-Supermarket	- 3
+11	Best Friend's House	6	Elementary School	- 5
- 6	Place of Worship	7	Shopping Center	- 2
- 4	Drug Store/Pharmacy	8	Post Office	+ 2
- 6	Hospital	9	Physician's Office	- 5
- 2	Post Office 　 (tie)	10	City Park	+ 7
+ 1	Place of Work	11	Place of Work	- 1
+ 6	Playground	12	Auto Service Station	- 9
+ 1	High School	13	Grocery Store-Minimarket	+ 1
- 1	Grocery Store-Minimarket	14	High School	- 1
+ 6	Access to Freeway	15	Restaurant/Cafe	+ 4
-14	Bus Stop	16	Library	+ 1
- 1	Library 　 (tie)	17	Best Friend's House	-11
- 7	City Park	18	Playground	- 6
- 4	Restaurant/Cafe	19	Movie Theater 　 (tie)	+ 1
- 1	Movie Theater	20	Downtown	+ 2
- 2	Downtown	21	Access to Freeway	- 6
0	City Hall	22	City Hall	0
0	Camping and Picnic	23	Camping and Picnic	0
0	Night Club/Bar	24	Night Club/Bar	0

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Mexican-Americans, over 90 percent Catholic, placed the church nearest the home, while a place of worship was ordered seventh among the predominantly Protestant Anglo-Americans.

As documented in Appendix I, studies of low income minority groups have suggested that these communities are often marked by a desire for propinquity and social inter-action. One indirect measurement of this quality on the Accessibility Game might be through the desired location of friends. Contrary to expectations, it was the Anglo-American group, and not the minority Mexican-American culture, who desired their best friend's house closer-by. The difference in the rank-order of this variable between groups was high (± 11).

Using a predominantly white working class sample, with a slightly lower income than the Anglo-American group surveyed here, Peterson and Worrall found that a local shopping center and emergency hospital ranked highest among the eight variables surveyed.[5] The findings here are generally in support of this work, although the hospital is ranked considerably higher by the Mexican-American group. Perhaps, then, preference for a hospital is related mainly to the subject's income; lower income groups seeking the hospital and not the physician's office when ill. Social

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[5]Peterson and Worrall, "Preferences for Accessibility," pp. 6-7.

workers, too, note that conditions among many poor are not conducive to home care and that low income groups often seek medical attention only after the situation is grave, often requiring hospitalization. Regardless, access to a hospital appears a very important consideration, particularly to the Mexican-American group.

Using only a five-unit time-distance scale with limited buying power, Wilson found that, while there were some differences in priorities between the two North Carolina cities, a religious building, elementary school, grocery store, and bus stop were ranked among the first five items by both groups.[6] Wilson's findings are similar to the Mexican-American response for place of worship and bus stop but more nearly resembled the Anglo-American with regard to the elementary school. Both the Anglo-American and Mexican-American groups ranked a grocery store (supermarket) quite high as did the North Carolina sample groups. Findings such as these suggest that there may be a set of accessibility priorities common to many individuals and groups.

The index of variance (standard deviation) shown in Table 2 indicates that, with only one exception, there was greater variance in response among the Mexican-American group, often above $\pm$ 2.00. The Anglo-American sample, on the other hand, was rather consistently below $\pm$ 2.00. This

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[6]Wilson, "Livability of the City," p. 391.

would indicate that there was relatively more agreement among the Anglo-Americans as to the location of the facilities away from the home. Perhaps this might also be regarded as a measure of the degree of homogeneity within each group. The higher variance in response among the Mexican-American group shows a relative lack of consensus, or "group preference." Also, of course, a high index of variance should recommend against using preference rankings as actual recommended distances (in time) for planning purposes.

Neighborhood Composition

The question of what constitutes the perceived neighborhood may be approached through the second part of the Accessibility Game, recorded in Table 4, page 65. The subjects were asked to sort the twenty-four variables into three groups according to their desired location for the facility. Again, the two sample groups were compared using rank-ordering of the variables based on the number who wanted the facility within the neighborhood. As shown below Table 4, the similarity of the rank-ordering between the two groups was significant at the .01 level. Overall, then, the two groups were quite alike in their ordering of facilities to be located within the neighborhood.

It was expected that the rank-orders for preference rankings, based on accessibility (Table 2) and neighborhood composition (Table 4) would also be correlated. Testing

TABLE 4

PREFERENCE FOR PLACES TO BE INCLUDED WITHIN NEIGHBORHOOD

Variable(Facility)	Anglo-Americans				Mexican-Americans			
	Want	Don't Want	Indif-ferent	Rank-Order[a]	Want	Don't Want	Indif-ferent	Rank-Order[a]
Access to Freeway	10	23	17	19	12	23	15	23
Place of Work	12	13	25	17	31	7	12	12
Hospital	15	10	25	16	41	2	7	2
Physician's Office . . .	26	3	21	9	37	3	10	5
Elementary School	42	2	6	1	36	4	10	6
High School	26	5	19	10	34	5	11	8
Place of Worship	33	6	11	6	46	0	4	1
Playground	36	5	9	2	22	14	14	17
City Park	16	16	18	15	25	8	17	15
Camping and Picnic . . .	2	34	14	22	14	22	14	22
Best Friend's House . . .	26	1	23	8	29	8	13	13
Library	16	4	30	14	24	11	15	16
Post Office	22	4	24	12	32	7	11	10
City Hall	2	32	16	21	19	18	13	19
Bus Stop	25	6	19	11	36	7	7	7
Night Club/Bar	1	39	10	23	4	42	4	24
Restaurant/Cafe	11	9	30	18	17	18	15	20
Movie Theater	3	16	31	20	17	22	11	21
Auto Service Station . .	34	4	12	3	27	10	13	14
Drug Store/Pharmacy . . .	33	4	13	5	41	2	7	2
Grocery Store-Minimarket	29	3	18	7	32	8	10	11
Grocery Store-Supermarket	34	4	12	3	39	1	10	4
Shopping Center	19	12	19	13	34	5	11	8
Downtown	0	44	6	24	21	15	14	18

Number of Facilities Wanted within Neighborhood by Over 80% of Sample: Mexican-Americans - 3, Anglo-Americans - 1.

Number of Facilities Wanted within Neighborhood by Over 50% of Sample: Mexican-Americans - 14, Anglo-Americans - 10.

$$rho = 1 - \frac{6 \sum D^2}{N(N^2 - 1)}$$

rho = .662 > .485   [critical r for .01 level (one-tailed test) with N = 24] [b]

No Significant Difference of the Rankings Between the Two Groups at the .01 Signigicance Level

[a]Ranks are based on number who "want" facility within neighborhood. In case of ties, the item with fewer who "don't want" facility is ranked higher.

[b]See note c, Table 2, page 59.

both groups found a rho of .813 for the Anglo-American preferences and .921 for the Mexican-Americans, both significant at the .01 level (calculations not shown). This might be regarded as a test for the reliability of the methodology. More important, it indicated that, at least in part, neighborhoods were measured in the minds of the residents in terms of spatial-temporal relationships; facilities desired nearer to the home were generally regarded as part of one's functional neighborhood, places farther away were not.

Certainly one of the most interesting features concerning Table 4 was the large number of variables that both groups wanted located within their neighborhood. Fourteen of the total twenty-four places were included as part of the neighborhood by the majority (over 50 percent) of the Mexican-American sample; ten by the majority of the Anglo-American sample. Although the Anglo-Americans were a bit more exclusive in their definition of neighborhood, they were also generally more indifferent to the facilities. The Mexican-Americans were more decisive, generally in favor of including the facility within the neighborhood. Defined in this way, the perceived "neighborhood" includes more than a concentrated complex of residential dwellings. Conventional neighborhood services and facilities, such as the elementary school and church, were desired as part of the functional neighborhood by both groups. Local shopping facilities, such as the drug store, were also generally

desired in the neighborhood. Bus service, noted on the game board by a bus stop, was desired as part of the functional neighborhood by 72 percent of the Mexican-American sample and, interestingly, 50 percent of the Anglo-American group.

More important, perhaps, was the finding that for most of the sample residents of either group, the neighborhood was ideally perceived to contain several types of land use in addition to conventional neighborhood facilities. Among the Anglo-Americans, particularly, an auto service station was desired as part of the neighborhood by 68 percent of the sample. Many facilities were included as part of the neighborhood by the Mexican-American, most notably the hospital, physician's office, post office, shopping center, and place of work. The desire to include such functional places within the neighborhood does not, of course, mean that any of these facilities may be located near the subject's home without resistance.

There was greater agreement among the sample groups concerning facilities not wanted within the neighborhood. Both groups were particularly adverse to a night club or bar, camping and picnic facilities, a movie theater, and a freeway access ramp. The Anglo-American group would be strongly against being located near the downtown and, interestingly, city hall.

Summary: Preferences for Accessibility

With regard to accessibility, the Anglo-American group ranked considerably higher the elementary school, auto service station, playground, and best friend's house. The Mexican-Americans gave higher priorities to a place of worship, hospital, and bus stop. Both groups, then, placed highest emphasis on variables related to education, religion, health, transportation, and shopping. Facilities related to cultural pursuits, such as the library, or recreational and leisure activities, such as city park and the movie theater, were ranked relatively low.

Accessibility Preference and Facility Use

Finally, both groups were asked to indicate approximately how often they traveled to each of the twenty-four facilities shown on the Accessibility Game. Again, an index was devised which allowed the variables to be ranked according to the frequency of subject use. As shown in the calculations below Table 5, the frequency of use was highly correlated between the two groups. Perhaps worth noting were differences in the use of place of work, elementary school, and auto service station, which the Anglo-American traveled to more often, and the hospital, place of worship, city park, bus stop, minimarket, and downtown, which the Mexican-American frequented more often.

TABLE 5

ACCESSIBILITY GAME: INDEX OF FACILITY USE

Variable (Place)	Anglo-Americans		Mexican-Americans	
	Index of Use[a]	Rank-Order	Index of Use[a]	Rank-Order
Access to Freeway	5.16	2	5.26	3
Place of Work	6.52	1	5.30	2
Hospital	1.64	22	2.30	20
Physician's Office . . .	2.24	18	2.66	18
Elementary School	3.34	12	2.92	17
High School	2.04	19	2.28	21
Place of Worship	3.90	8	4.58	5
Playground	3.38	11	3.74	12
City Park	2.78	14	3.54	13
Camping and Picnic . . .	2.00	20	1.96	22
Best Friend's House . . .	4.48	7	4.18	8
Library	2.30	17	2.38	19
Post Office	3.44	10	3.36	15
City Hall	1.46	23	1.20	24
Bus Stop	1.16	24	3.40	14
Night Club/Bar	1.84	21	1.74	23
Restaurant/Cafe	3.60	9	3.84	10
Movie Theater	2.68	15	3.04	16
Auto Service Station . .	5.14	3	4.40	6
Drug Store/Pharmacy . . .	3.26	13	3.98	9
Grocery Store-Minimarket	4.88	4	5.52	1
Grocery Store-Supermarket	4.82	5	5.02	4
Shopping Center	4.52	6	4.20	7
Downtown	2.40	16	3.78	11

$$rho = 1 - \frac{6 \sum D^2}{N(N^2 - 1)}$$

rho = .920 >.485   [critical r for .01 level (one-tailed test) with N = 24] [b]

No Significant Difference in the Rank-Ordering Between the Two Groups at the .01 Significance Level

[a]Index of Use calculated in following manner:

$$\frac{(Category) \ (Weight)}{50} = Index \ of \ Use$$

Category	Weight
Nearly Everyday	7
3-5 times each week	6
1-2 times each week	5
Every two weeks	4
Once/month	3
Once every few months	2
Practically Never	1

[b]See note c, Table 2, p. 59.

More interesting, perhaps, was the lack of correlation between facility use (Table 5) and preferences for accessibility (Table 2) or neighborhood composition (Table 4) for the Mexican-American. In both cases (calculations not shown) rho was below the .05 significance level. This differed from the Anglo-American group, where facility use was correlated with accessibility (.01 significance level) and neighborhood composition (.05 significance level). Therefore, among the Mexican-American sample the frequency of facility use did not serve to predict either preferences for accessibility or neighborhood composition, whereas use and preference were significantly related among the Anglo-American. Perhaps this is indicative that, to the Anglo-American, the neighborhood is viewed as a personal service mechanism, emphasizing convenience. This might serve to explain the high degree of relationship between facility use and preference for accessibility. If true, the Anglo-American's neighborhood may be regarded as predominantly a functional configuration, where its adequacy is measured in terms of physical distance, or time. Among the Mexican-American, on the other hand, the rankings for facility use and accessibility or neighborhood makeup were essentially independent. This, then, seems to represent an evaluation of neighborhood based on something other than physical distance. A place of worship and hospital, for example, were both ranked considerably higher in preference by the Mexican-American than their reported use of these facilities.

Perhaps this reflects a greater need for security which manipulation of the environment might be thought to bring. Regardless, the lack of a use-preference relationship should give pause to federal strategists, planners, and developers who seek to pattern the neighborhood needs of an expanding Mexican-American population after the service package developments aimed at the Anglo-American.

Neighborhood Quality

The Neighborhood Quality Game is divided into three sections. The first part had the subjects simply rank the five possibilities under each of the first ten variables on the game board. The second part had them complete a similar procedure for a series of eight photographs for each of the last eight variables shown on the game board. Finally, and most important, the third section requested that each subject "purchase" the neighborhood quality variables shown on the game board in a manner similar to the procedure for the Accessibility Game. The findings for each of the three parts are discussed below.

Environmental Alternatives

Table 6 presents the average group rank and rank-order for the various environmental alternatives displayed below the first ten variables. Correlation of the rankings between the two groups was not very useful with so few factors but there appeared to be a significant relationship

TABLE 6

RANK-ORDERING FOR ENVIRONMENTAL ALTERNATIVES
NEIGHBORHOOD QUALITY GAME

	Anglo-Americans		Mexican-Americans	
Environmental Alternative	Group Rank	Rank-Order	Group Rank	Rank-Order
1. Size of City Want to Live In				
A. Metropolitan Area	4.48	5	4.10	5
B. Large City	3.36	4	3.26	4
C. City	1.96	1	1.74	1
D. Small Town	2.14	2	2.66	2
E. Rural Area	3.06	3	3.24	3
		rho = 1.00; $p < .01$		
2. Location of Neighborhood Within City				
A. Established Suburban Area	2.20	1	3.16	5
B. New Suburban Subdivision	2.48	3	2.98	2
C. Satellite Town	3.32	4	2.82	1
D. Downtown (or Near)	4.64	5	3.02	3
E. Rural Fringe	2.36	2	3.02	3
		rho = −.550; $p > .05$		
3. Density				
A. 2 Persons/Acre	1.56	1	2.32	2
B. 6 Persons/Acre	1.68	2	1.92	1
C. 30 Persons/Acre	2.78	3	2.61	3
D. 80 Persons/Acre	3.98	4	3.53	4
E. 300 Persons/Acre	5.00	5	4.59	5
		rho = .900; $p < .05$		
4. Neighborhood Design--Architecture, Land Use, etc.				
A. Traditional 1-Family Grid	1.94	2	2.80	2
B. Single-Family Clusters	1.14	1	1.26	1
C. Mixed Residential	3.58	4	3.14	3
D. Two-Family Duplex/Row Houses	3.44	3	3.26	4
E. High Rise Multi-Family	4.90	5	4.52	5
		rho = .900; $p < .05$		
5. Landforms--Degree of Slope				
A. Mountainous; Steep slopes	4.36	5	4.34	5
B. Hilly	2.64	3	2.86	4
C. Hilly with Lakeview	2.08	1	2.48	1
D. Gentle, Rolling Landscape	2.08	1	2.60	2
E. Level Plain	3.84	4	2.74	3
		rho = .850; $p > .05$		

TABLE 6--Continued

Environmental Alternative	Anglo-Americans		Mexican-Americans	
	Group Rank	Rank-Order	Group Rank	Rank-Order
6. Vegetation--Landscaping				
A. Open Yard and Lawn	3.26	4	2.92	3
B. Dense Trees and Shrub	2.60	3	2.50	2
C. Natural Woodland	2.52	2	2.98	4
D. Native Southwest	4.32	5	4.52	5
E. Flowers and Shrubs	2.30	1	2.08	1
		rho = .700; p > .05		
7. Income Level of Neighborhood				
A. Over $30,000/year	3.86	5	3.84	5
B. $20,000 - $30,000/year	2.58	2	2.92	4
C. $10,000 - $20,000/year	1.84	1	2.50	1
D. Less than $10,000/year	3.46	4	2.84	2
E. Mixed Incomes	3.26	3	2.90	3
		rho = .600; p > .05		
8. Kind of People Within Neighborhood				
A. All People From Similar Groups	3.06	3	2.86	1
B. Most From Similar Groups	1.94	1	3.06	2
C. Most From Different Groups	2.64	2	3.08	3
D. All From Different Groups	3.68	4	3.12	5
E. Groups are Not Important	3.68	4	3.08	3
		rho = .600; p > .05		
9. Home--Architecture and Design				
A. Modern	2.78	2	2.40	1
B. Colonial	3.28	4	3.36	4
C. Modern Spanish	3.18	3	2.54	2
D. Ranch Style	2.30	1	3.18	3
E. Traditional Spanish	3.46	5	3.52	5
		rho = .700; p > .05		
10. Home--Cost(Rent)				
A. Over $40,000/yr.($250/mo.)	3.74	4	4.36	5
B. $30,000 - $40,000($200-$250)	2.66	3	3.64	4
C. $20,000 - $30,000($150-$200)	1.90	1	2.50	3
D. $10,000 - $20,000($100-$150)	2.52	2	2.12	1
E. Under $10,000/yr.($100/mo.)	4.18	5	2.28	2
		rho = .200; p > .05		

between the two groups concerning preferences for city size, density, and neighborhood design.

Both groups expressed preferences for settlements the size of Austin or smaller. Metropolitan areas were least preferred. The Anglo-Americans were slightly in favor of an established suburban location for the neighborhood (perhaps similar to the one they were currently living within), although both a new subdivision and a rural fringe area were also ranked relatively high. The Mexican-Americans exhibited little "group preference" on this factor, with only 0.34 separating the group rankings for a satellite town (ranked first) and an established suburban area (ranked fifth).

Both groups expressed a preference for low density residential living environments, although only the Anglo-Americans ranked the alternatives in perfect order, from lowest density to highest density. High densities, pictured on the game board by multi-family and town-tower units, were unanimously turned down by both groups; in fact, every one of the Anglo-American subjects ranked the highest density (300 persons per acre) as least preferred. It appears, then, that despite the preference for physical propinquity and higher densities found by some researchers in larger eastern cities, the Texas Mexican-American shares an affinity for the "wide-open spaces" similar to his Anglo counterpart.

The two sample groups also had very similar rankings concerning neighborhood design, although again the Mexican-American showed more variability in response. Both groups

were most strongly oriented around single family clusters (represented on the game board as having large amounts of open space between dwellings) or the traditional single-family grid pattern.

Landform preferences may be related to the current prestige residential developments in Austin which are sprawling onto the "hill country" west of the Balconies escarpment. Ideally, these developments would also afford at least a view of one of the several existing lakes in the area. Both groups revealed similar preferences for landforms, although the Mexican-American ranked an open plain slightly higher. Vegetation preferences were also quite similar, with both groups desiring a yard of flowers and shrubs among the alternatives offered. The Anglo-Americans ranked natural woodland, generally associated with the "hill country" again, higher.

Although both groups selected the $10,000 to $20,000 class as the most desirable income level of the neighborhood, it was interesting to note that the Anglo-American's second choice moved to the next higher income class; the Mexican-American's to the next lower income level. The Anglo-American sample were nearer to living their preference in this regard (mean income: $10,890), whereas the Mexican-American group desired to move up considerably (mean income: $4,940). Both groups placed "mixed income" neighborhoods third and very high income areas (over $30,000) last. Again, however, the variability of response among the

Mexican-American sample cautions against accepting mean scores as representative of group preferences.

The income level of the neighborhood may be compared with preferences regarding the cost (or rent) of the subject's home (variable 10). Differences between the two groups were quite notable for this variable. The Anglo-Americans chose the classification of home cost which would generally fall just above their own homes ($20,000 to $30,000 class), although only slightly. The Mexican-Americans were also slightly above their actual housing level on their first choice, selecting the $10,000 to $20,000 category. Both groups, therefore, were fairly "realistic" in their housing preferences. The Anglo-Americans regarded homes under $10,000 as least desirable, whereas the Mexican-American sample considered homes over $40,000 least desirable and, likely, least probable.

Among the five alternatives presented regarding housing style or design, the Texan Anglo-Americans selected "ranch style" as most desirable. The Mexican-Americans selected "modern" over modern Spanish architecture by a narrow margin. Both groups generally rejected colonial and traditional Spanish ("hacienda") designs.

One of the more interesting of the rankings related to the 'kind of people' that each group preferred living within their neighborhood. In this era of planned integration, much has been written concerning the Anglo-American's (particularly the southern white's) resistance to minority

groups moving into the neighborhood. While both sample groups appeared to prefer to live within generally homogeneous neighborhoods, it was the Mexican-American sample which more nearly preferred total segregation ("all people from similar groups").[7] The Anglo-Americans expressed highest preference for neighborhoods which were at least somewhat mixed. While the reliability of such a conclusion is subject to discrepancies between action and thought innate to preference testing, the possible implications of such a finding should not be ignored.

Photo Ranking

The ordering of photographs according to preference has been tried on numerous occasions for various purposes. Because both the scenes depicted and the purposes for which the photographs are being used vary from study to study, comparisons were difficult to make. This study presented color 5 x 7 photographs of eight residential scenes, each intended to depict a certain type of living environment.[8]

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[7]The game board indicated that groups may be similar (or different) on economic, social, age, and ethnic variables.

[8]The major criteria in selecting the photographs were housing density and age. An effort was made to keep housing valuations similar between photos. The numerous problems which are associated with the presentation of environmental displays are particularly apparent when utilizing photographs. Most notable, perhaps, concerns the quality of the presentation. Peterson found, for example, that the quality of photography accounted for a small percentage of the variance in a similar rank-ordering of residential scenes; see Peterson, "A Model of Preference," pp. 28-29.

These photographs are presented in smaller black and white prints in Figure 3. The subjects were asked to rank the eight photographs for each of the last eight qualities (variables) on the game board.[9] The results are given in Table 7, pages 81-83.

On each of the variable scales, except prestige, there was significant rank-order correlation between the two groups. Regarding the prestige scale, the Anglo-American group selected the lakeview area (photo C) and the old home area (photo F), both of which were considered areas of prestige by the writer. The Mexican-Americans, however, selected the photo of an established suburban area (a type of environment which they had previously ranked least desirable in the first part of the Neighborhood Quality Game) as most prestigious (photo E), followed by that of a high-rise apartment building (photo D). Nevertheless, the two groups were in general agreement as to ordering the photographs on most of the scales.

Upon completing the photo-ranking, a time-consuming task, the subjects were requested to complete yet another ranking, this time with regard to their overall preference for residential living (see Table 7, page 83). While the prestigious lakeview area (photo C) and the established suburban area (photo E) were ranked highest by both groups,

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[9]The photographs were scrambled by the interviewer after each ranking.

A. Older, In-Town Area

B. Low Density, Multi-Family

C. Lakeview Area
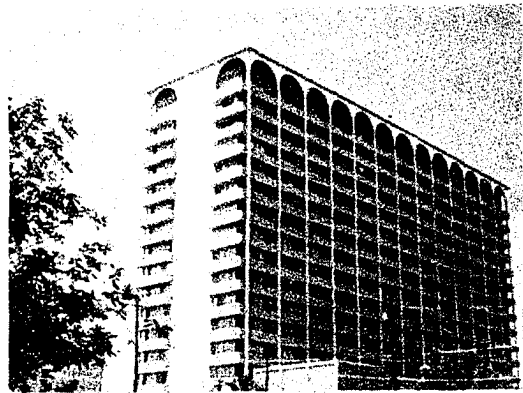
D. High-Rise, Multi-Family

FIGURE 3

NEIGHBORHOOD PHOTOGRAPHS:
PHOTO-RANKING PROCEDURE

E. Established Suburban Area

F. Old Home Area

G. New, Suburban Area

H. Rural Estates

FIGURE 3--Continued

TABLE 7

PHOTO RANK-ORDER: NEIGHBORHOOD QUALITY GAME

		Anglo-Americans		Mexican-Americans	
Photo Scale		Group Rank	Rank-Order	Group Rank	Rank-Order
23.	Privacy				
	A. Older, In-Town Area	4.28	4	4.40	4
	B. Low Density, Multi-Family	7.00	7	5.66	7
	C. Lakeview Area	2.28	2	3.30	2
	D. High-Rise, Multi-Family	7.66	8	6.24	8
	E. Established Suburban	5.24	5	4.64	5
	F. Old Home Area	3.02	3	3.94	3
	G. New, Suburban	5.36	6	4.80	6
	H. Rural Estates	1.16	1	2.98	1

rho = 1.00; $p < .01$

24.	Prestige				
	A. Older, In-Town Area	5.54	6	5.47	7
	B. Low Density, Multi-Family	6.12	7	4.06	3
	C. Lakeview Area	2.32	1	4.24	4
	D. High-Rise, Multi-Family	4.86	5	3.06	2
	E. Established Suburban	3.34	3	2.59	1
	F. Old Home Area	3.18	2	4.55	5
	G. New, Suburban	4.46	4	4.88	6
	H. Rural Estates	6.16	8	7.14	8

rho = .381; $p > .05$

25.	Homeyness				
	A. Older, In-Town Area	3.12	3	3.80	4
	B. Low Density, Multi-Family	6.98	7	5.96	7
	C. Lakeview Area	2.82	2	3.39	3
	D. High-Rise, Multi-Family	7.80	8	7.30	8
	E. Established Suburban	4.00	4	3.14	1
	F. Old Home Area	2.56	1	3.31	2
	G. New, Suburban	4.66	6	3.84	5
	H. Rural Estates	4.06	5	5.06	6

rho = .834; $p < .01$

TABLE 7--Continued

Photo Scale	Anglo-Americans		Mexican-Americans	
	Group Rank	Rank-Order	Group Rank	Rank-Order
26. Quietness				
A. Older, In-Town Area	3.96	4	3.94	4
B. Low Density, Multi-Family	7.22	7	6.32	7
C. Lakeview Area	2.64	2	3.16	2
D. High-Rise, Multi-Family	7.50	8	7.00	8
E. Established Suburban	5.06	5	4.26	5
F. Old Home Area	3.06	3	3.76	3
G. New, Suburban	5.16	6	5.08	6
H. Rural Estates	1.36	1	2.52	1

rho = 1.00; p < .01

Photo Scale	Anglo-Americans		Mexican-Americans	
27. Newness				
A. Older, In-Town Area	6.90	8	6.06	7
B. Low Density, Multi-Family	3.92	4	3.56	3
C. Lakeview Area	4.96	5	4.98	5
D. High-Rise, Multi-Family	3.06	3	3.60	4
E. Established Suburban	2.42	2	1.64	1
F. Old Home Area	6.46	6	5.44	6
G. New, Suburban	1.66	1	3.16	2
H. Rural Estates	6.56	7	7.52	8

rho = .929; p < .01

Photo Scale	Anglo-Americans		Mexican-Americans	
28. Cleanliness				
A. Older, In-Town Area	5.16	5	4.80	5
B. Low Density, Multi-Family	5.40	7	4.44	4
C. Lakeview Area	2.16	1	3.12	2
D. High-Rise, Multi-Family	5.06	4	4.94	6
E. Established Suburban	2.86	2	2.62	1
F. Old Home Area	3.66	3	3.64	3
G. New, Suburban	5.38	6	5.26	7
H. Rural Estates	6.32	8	7.18	8

rho = .810; p < .05

TABLE 7--<u>Continued</u>

Photo Scale	Anglo-Americans		Mexican-Americans	
	Group Rank	Rank-Order	Group Rank	Rank-Order
29. Beauty				
A. Older, In-Town Area	4.30	4	4.90	5
B. Low Density, Multi-Family	6.40	7	5.16	7
C. Lakeview Area	1.54	1	3.28	2
D. High-Rise, Multi-Family	6.66	8	4.90	5
E. Established Suburban	3.46	3	2.18	1
F. Old Home Area	2.34	2	3.84	3
G. New, Suburban	5.52	5	4.86	4
H. Rural Estates	5.78	6	6.88	8

rho = .750; p < .05

Photo Scale	Group Rank	Rank-Order	Group Rank	Rank-Order
30. Friendliness				
A. Older, In-Town Area	3.78	3	4.08	3
B. Low Density, Multi-Family	5.18	6	4.62	6
C. Lakeview Area	4.36	5	4.12	4
D. High-Rise, Multi-Family	6.70	8	5.68	7
E. Established Suburban	2.46	1	3.08	1
F. Old Home Area	4.34	4	4.20	5
G. New, Suburban	3.52	2	4.00	2
H. Rural Estates	5.66	7	6.22	8

rho = .953; p < .01

Photo Scale	Group Rank	Rank-Order	Group Rank	Rank-Order
Preference For Residential Living				
A. Older, In-Town Area	4.68	6	3.74	3
B. Low Density, Multi-Family	6.66	7	5.82	7
C. Lakeview Area	1.86	1	3.08	2
D. High-Rise, Multi-Family	7.56	8	7.06	8
E. Established Suburban	3.04	2	2.66	1
F. Old Home Area	3.28	3	3.84	4
G. New, Suburban	4.36	4	4.18	5
H. Rural Estates	4.56	5	5.62	6

rho = .834; p < .01

they were inverted in order, the Anglo-Americans most preferring the lakeview area and the Mexican-Americans the established suburban area. The Mexican-Americans ranked considerably higher the in-town neighborhood (photo A), which their own area probably most closely resembled, while both groups were generally adverse to any form of multi-family residential living (photos B and D). This supports the findings in the first part of the game concerning density and neighborhood design.

The question arises as to which of the neighborhood quality scales best predicts the overall preferences. This may be made more clear through Table 8 below.

TABLE 8

CORRELATION OF NEIGHBORHOOD QUALITY SCALES
WITH OVERALL PREFERENCE SCALE

Scale	Anglo-Americans		Mexican-Americans	
	rho	sign. level	rho	sign. level
Privacy	.596	None	.477	None
Prestige	.750	.05	.072	None
Homeyness	.739	.05	.929	.01*
Quietness	.596	None	.477	None
Newness	.096	None	.120	None
Cleanliness	.643	.05	.691	.05
Beauty	.905	.01*	.774	.05
Friendliness	.572	None	.762	.05

*Best Single Prediction Scale

Beauty appears the most useful of the scales used in this study to predict Anglo-American preferences for

residential living. Prestige, homeyness, and cleanliness were also significant. Somewhat surprising, the degree of privacy and newness attributed to a residential area were not related to the Anglo-American's overall neighborhood preference; in fact, there was virtually no correlation between newness and overall preference.

Among the Mexican-American, the quality of homeyness was the best single predictor of the group's overall preference. Again, cleanliness and beauty were important as was friendliness. Prestige, important to the Anglo-American, was least significant to the Mexican-American. Nevertheless, it is interesting to note that three of the five scales which are significantly related to overall preference are common to both groups.

Preference Rankings

The results of the final part of the Neighborhood Quality Game, the preference rankings, are shown in Table 9, page 86. Again, based on the mean number of tokens spent, the thirty variables were rank-ordered.[10] Unlike the findings for the Accessibility Game, the rank-order correlation between the two sample groups on the Neighborhood Quality Game proved insignificant at the .05 level. The two

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[10]The mean number of tokens spent by each group on the Neighborhood Quality Game (out of a possible total of 60) was 59.3 for the Anglo-Americans and 56.6 for the Mexican-Americans.

TABLE 9

PREFERENCE RANKINGS FOR NEIGHBORHOOD QUALITY GAME

Variable (Quality)	Anglo-American			Mexican-American			
	Preference Rankings[a]	Index of Variance[b]	Rank-Order	Preference Rankings[a]	Index of Variance[b]	Rank-Order	
1. Size of City	2.68	1.00	5	1.16	1.62	20	
2. Location of Neighborhood	2.78	0.95	3	1.40	1.68	19	
3. Density	2.42	0.95	9	0.84	1.38	25	
4. Neighborhood Design . .	2.38	0.81	11	0.66	1.26	29	Grouping A
5. Landforms	1.66	1.08	22	0.84	1.39	25	
6. Vegetation/Landscaping	1.76	1.12	21	1.10	1.63	22	
7. Income Level (Neighborhood)	1.86	0.78	19	0.78	1.39	27	
8. Kind of People	2.06	1.10	16	0.94	1.49	24	
9. Home: Architecture/Design	2.12	1.10	15	1.00	1.43	23	
10. Home: Cost/Rent	2.78	0.95	3	0.68	1.35	28	
11. Street Condition . . .	2.62	0.88	6	3.20	1.26	5	
12. Sidewalks (Neighborhood)	1.94	1.11	18	3.00	1.39	6	
13. Bus Service	1.08	1.12	26	2.64	1.51	9	
14. City Water Supply . . .	3.06	0.96	1	3.42	1.16	2	Grouping B
15. Street Lights	2.40	0.93	10	3.50	0.89	1	
16. Taxes	2.34	1.10	12	1.90	1.58	14	
17. Schools (Neighborhood) .	2.88	1.06	2	3.22	1.31	4	
18. Parks (Neighborhood) . .	1.82	0.98	20	1.92	1.50	13	
19. Shopping Facilities . .	2.16	1.02	13	2.56	1.47	10	
20. Job Opportunities . . .	1.10	1.05	25	2.38	1.59	11	
21. Police Station	0.84	0.89	27	1.68	1.50	17	
22. Personal Friends . . .	0.84	0.98	27	1.74	1.61	16	
23. Privacy	2.46	0.97	7	2.32	1.62	12	
24. Prestige	0.66	0.89	30	0.64	1.05	30	
25. Homeyness	1.64	1.08	23	1.60	1.65	18	Grouping C
26. Quietness	2.16	0.77	13	2.72	1.37	8	
27. Newness	0.82	0.92	29	1.16	1.38	20	
28. Cleanliness	2.46	0.97	7	3.42	0.99	2	
29. Beauty	1.54	1.11	24	1.84	1.62	15	
30. Friendliness	1.98	1.20	17	2.80	1.40	7	

$$rho = 1 - \frac{6 \sum D^2}{N(N^2-1)}$$

rho = .284 < .306   [critical r for .05 level (one-tailed test) with N = 30][c]

The Correlation of the Rank-Ordering Between the Two Groups is Not Significant at the .05 Level

[a]Measured in average "tokens spent" to attain Quality.
[b]Standard Deviation, also measured in "tokens spent".
[c]See note c, Table 2, p. 59.

groups, then, have essentially independent environmental priorities regarding preferences for neighborhood qualities. Again, there was greater within-group variance among the Mexican-American response, as shown by the indices of variance, than for the Anglo-American preference rankings.

Some important individual variable differences, which helped to account for this lack of a significant relationship, may be seen by reordering Table 9 according to rank (Table 10, page 88). While the variables were not grouped for the purpose of interviewing the subjects, Table 9 may be arbitrarily divided into three rather imprecise groupings. The first ten variables (Grouping A) generally pertain to factors of neighborhood location, housing, and amenities, including certain socio-economic considerations. Items numbered eleven through twenty-one may be viewed as a service and facility complex including taxes (Grouping B). The third general class (items 22 through 30) concerned rather abstract physical and social qualities of the neighborhood which were felt to be related to residential desirability (Grouping C).

The two samples varied markedly in their response to these variable groupings. Most significant was the much higher priority that the Mexican-Americans placed on the service and facility complex (Grouping B). In each case, except city water supply (which the Anglo-Americans ranked as their highest priority), taxes, and neighborhood schools (also ranked high by the Anglo-Americans on the Accessibility

TABLE 10

COMPARISON OF RANK-ORDERS: NEIGHBORHOOD QUALITY GAME

Rank Difference	Grouping	Anglo-Americans	Rank	Mexican-Americans	Grouping	Rank Difference
+ 1	B	City Water Supply	1	Street Lights	B	+ 9
+ 2	B	Schools	2	City Water Supply ⟶(tie)	B	- 1
+25	A	Home: Cost/Rent ⟶(tie)	3	Cleanliness	C	+ 5
+16	A	Location of Neighborhood	4	Schools	B	- 2
+15	A	Size of City	5	Street Condition	B	+ 1
- 1	B	Street Condition	6	Sidewalks	B	+12
+ 5	C	Privacy ⟶(tie)	7	Friendliness	C	+10
- 5	C	Cleanliness	8	Quietness	C	+ 5
+16	A	Density	9	Bus Service	B	+17
- 9	B	Street Lights	10	Shopping Facilities	B	+ 3
+18	A	Neighborhood Design	11	Job Opportunities	B	+14
+ 2	B	Taxes	12	Privacy	C	- 5
- 5	C	Quietness ⟶(tie)	13	Parks	B	+ 7
- 3	B	Shopping Facilities	14	Taxes	B	- 2
+ 8	A	Home: Architecture & Design	15	Beauty	C	+ 9
+ 8	A	Kind of People	16	Personal Friends	C	+11
-10	C	Friendliness	17	Police Station	B	+10
-12	B	Sidewalks	18	Homeyness	C	+ 5
+ 8	A	Income Level	19	Location of Neighborhood	A	-16
- 7	B	Parks	20	Newness ⟶(tie)	C	+ 9
+ 1	A	Vegetation/Landscaping	21	Size of City	A	-15
+ 3	A	Landforms	22	Vegetation/Landscaping	A	- 1
- 5	C	Homeyness	23	Home: Architecture & Design	A	- 8
- 9	C	Beauty	24	Kind of People	A	- 8
-14	B	Job Opportunities	25	Landforms ⟶ (tie)	A	- 3
-17	B	Bus Service	26	Density	A	-16
-10	B	Police Station ⟶(tie)	27	Income Level	A	- 8
-11	C	Personal Friends	28	Home: Cost/Rent	A	-25
- 9	C	Newness	29	Neighborhood Design	A	-18
0	C	Prestige	30	Prestige	C	0

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Game), the Mexican-Americans ranked the service variables
(Grouping B) higher. In some cases, the difference in rank-
order was considerable. Street lights, for example, were
given the highest priority by the Mexican-American sample,
whereas the Anglo-American placed this facility tenth in
importance. Sidewalks and bus service, again, were far
more important to the Mexican-American. The installation
of both street lights and sidewalks were current issues in
the Mexican-American neighborhood at the time of the
interviews. Police protection was wanted closer-by. Job
opportunities were also more frequently considered a quality
of neighborhood to this often unemployed group. Summing
the rank-differences for all variables in Grouping B
resulted in a net rank-difference of +68 for the Mexican-
American. The service and facility grouping, then, appeared
as a primary need which must first be satisfied before other
qualities of neighborhood were to receive much attention.
To the lower income Mexican-American living in Austin, many
of these basic services were considered priorities because
they had as yet not been adequately secured.

The Mexican-Americans spent more tokens on the
livability scales (Grouping C) as well, with a net rank-
difference of +49. The Anglo-Americans placed greater
emphasis on privacy which has previously been shown a poor
prediction scale for overall neighborhood preference.
Nevertheless, this emphasis on privacy by the Anglo-American
conforms to the importance attributed to this factor by many,

including developer and real estate interests. Several
Anglo-Americans also cited privacy as an important quality
in the open discussion sections of the interview. It should
be noted, however, that the Mexican-Americans also gave
privacy a relatively high priority.

Neighborhood friends, and friendliness, were given
more tokens by the Mexican-Americans than by the Anglo-
Americans, lending support to the notion that social inter-
action is highly valued by this ethnic minority. This
finding seems to conflict with the results for the Accessi-
bility Game where the best friend's house was preferred
nearest the home by the Anglo-Americans. Apparently, then,
the Mexican-Americans did not regard physical distance as a
serious barrier to strong friendship ties. Quietness was
also ranked relatively high, particularly by the Mexican-
American sample. Cleanliness was given a very high priority
by both groups, confirming the importance of "maintenance"
and upkeep to neighborhood satisfaction. In open discussion,
20 percent of the Mexican-American sample cited this as the
single most important attribute of neighborhood; among the
Anglo-American, 10 percent regarded cleanliness as most
important. Homeyness, the rather vague quality which best
predicted the Mexican-American's overall preference for the
neighborhood photos, was not a particularly important aspect
of neighborhood to either group.

Some preference priorities were inconsistent and, in the light of past investigations, must be left open to question. Prestige, a factor consistently cited as a motivating force behind Anglo-American intracity mobility and one which was found to correspond with the Anglo-American's overall photo-preference, was ranked <u>lowest</u> by both sample groups. Newness, a selling factor as well, was also ranked low, particularly again by the Anglo-American. Beauty, found to be very significant in predicting neighborhood preference among the Anglo-Americans in the second part of the Neighborhood Quality Game, was also regarded as a low priority item. One cannot help but suspect that at least in these cases the subject's actual desires were modified to conform to idealized values; perhaps to the extent of being unknown to the respondent himself.

The first ten variables (Grouping A) on the game board were given uniformly low rankings by the Mexican-American sample. In all cases, the Anglo-Americans spent more tokens on these aspects of neighborhood, although in some, such as landforms and vegetation, neither sample group showed much concern. Summing the rank-differences in this grouping resulted in a +118 for the Anglo-Americans.[11] Perhaps somewhat surprising, the income level of the neighborhood and the 'kind of people' within the neighborhood

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[11]The reason that the summation of rank-differences over all three Groupings does not total zero is due to ties in the rank-orders.

were also regarded as relatively unimportant, although
the Anglo-American placed these considerations a bit higher
than did the Mexican-American. Again, it was impossible
to detect if some subjects responded more conservatively
playing the game in front of the interviewer, a stranger.

The greatest difference in rank-ordering between
the two groups involved the importance placed on the pre-
ferred cost (or rent) of the subject's home. The Anglo-
American regarded this variable very important in attaining
a good neighborhood; the Mexican-American ranked it very
low. Also placed relatively high by the Anglo-American
group was the location and design of the neighborhood,
city size, and dwelling unit density. The generally higher
priorities placed on this group of variables by the Anglo-
Americans suggests that their preferences have progressed
beyond the conscious stage of basic services and are
centered more on social and economic aspirations, including
amenities.

Summary of Chapter

This chapter has presented both a graphic and
comparative description of the results of the Environmental
Display Game interviews conducted among Anglo-American and
Mexican-American neighborhood sample groups. Contrary to
the primary hypothesis of the study, the two groups have
some environmental priorities which are similar, particularly
with regard to accessibility. Yet some of the differences

exhibited between the groups are quite striking. Despite the fact that both groups were made equally "rich," that is, they were given the same number of tokens at the beginning of each game, both groups appeared to spend close to their actual living situations. In many instances, such as the service and facility grouping of the Neighborhood Quality Game, it seemed probable that differences in income between the groups might be important in explaining between-group variance. In other cases, such as regarding preferences for housing costs, architecture, neighborhood location, and friendliness, the ethnic factor might be regarded as an important consideration. Again, however, the problem of separating socio-economic factors from cultural differences should be noted. The problem of relating environmental preferences to the subject's background is discussed in the following two chapters.

CHAPTER IV

BETWEEN-GROUP VARIANCE: THE RELATIONSHIP OF ETHNIC

AFFILIATION TO NEIGHBORHOOD PREFERENCE DIMENSIONS

This chapter attempts to analyze the importance of

the diverse ethnic background of the two sample groups in

explaining major dimensions of neighborhood preference. The

analysis here, and in Chapter V, rests on two distinct

procedures: factor analysis, including factor interpreta-

tion, and factor score clustering; using techniques of

numerical taxonomy. These procedures are first explained

and then applied to the primary hypothesis; that is, the

question of between-group variance.

Procedures

Factor Analysis and Interpretation

The variables included on the Accessibility and

Neighborhood Quality Game boards were designed to measure

certain discrete factors at the macro-level. But the question

must be raised as to the extent which these variables repre-

sent independent preference scales. Intuitive observation

suggests that they are related. Peterson and Worrall, for

example, related the eight services of their accessibility

game to four categories: (1) local community focii, based on

regular local travel patterns in person, (2) informal
activity focii, or social and familial ties within the
neighborhood, (3) access points to the rest of the urban
area, and (4) local distribution centers for services deliv-
ered to the residents.[1]

It seems probable, then, that the responses to
several of the variables would be correlated; that is, by
knowing the group response to one quality, it would be
possible to predict the magnitude of response to another
quality. If the variable scales were not independent, then
it should also be possible to construct variable associations
which would reflect new preference dimensions. This approach
would also have the advantage of reducing the numerous
variable scales on the game boards to fewer independent
factors.

The class of techniques known as factor analysis has
gained considerable attention within geography over the
past few years. Basically, the major advantage of factor
analysis is to simplify relationships between complex vari-
able data sets (R-mode analysis). Because understanding of
these techniques is more widespread and several adequate

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[1]Peterson and Worrall, "Preferences for Accessibility,"
p. 2.

accounts are now available on the subject, the procedures

and rationale are not developed here.[2]

The basic data sets for each game, and for each

sample group, have been subjected to a factor analysis pro-

cedure, with unity in the principal diagonal (principal

components), using a varimax orthogonal solution. In each

case, at least nine factors were extracted with eigenvalues

greater then 1.0. For purposes of comparison, these first

nine factors are used to represent the preference dimensions.

In most cases, these nine factors accounted for about 70

percent of the total variance. This figure is indicative

of a considerable amount of co-linearity between the varia-

bles. Final communality values, too, were high over the

entire rotated matrices, often above 80 percent for each

variable, indicating a relatively high proportion of each

variable's total variation was represented by the loadings

on the factors.

In interpreting factor analysis dimensions, one

continuing problem is at what level does one ascribe signif-

icance to the loadings. An arbitrary decision was made to

use ± 0.300 as the level at which loadings would be deemed

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[2]Cf. Leslie J. King, Statistical Analysis in Geography
(Englewood Cliffs: Prentice-Hall, 1969), pp. 165-193;
R. J. Rummel, Applied Factor Analysis (Evanston: North-
western University Press, 1970); Edwin L. Crow, Frances A.
Davis, and Margaret W. Maxfield, Statistics Manual (New York:
Dover, 1960); John W. Harbaugh and Daniel F. Merriam,
Computer Applications in Stratographic Analysis (New York:
Wiley, 1968), pp. 174-192.

significant to that dimension. Since there is no accepted fixed level, the only justification for this particular value is the exploratory nature of the study, which suggests keeping the critical cut-off value relatively low, and the prior use of value levels in other perception studies.[3] Variables loading onto a factor at relatively high values were emphasized in the interpretation of the factor, for as Rummel notes, the relative importance of a variable for purposes of interpretation may be regarded as the square of the loading.[4] It should be emphasized, however, that interpretation of a factor should include not only the variables which load above the cut-off point but also those that are excluded.[5] Despite the relatively low critical value, several variables did not load on any of the first nine factors, indicating that, even with the limited data set for each environmental display, the preference dimensions for neighborhood are many and complex.[6]

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[3]In geography, ± 0.400 is generally regarded as the convention, although in studies involving environmental perception the figure is often lower. Roger M. Downs, for example, used ± 0.350 in his study of "The Cognitive Structure of an Urban Shopping Center," Environment and Behavior, II (June, 1970), 34.

[4]Rummel, Factor Analysis, p. 477.

[5]Ibid.

[6]For example, the variables which did not load on the first nine accessibility dimensions for the combined groups were the high school, bus stop, and restaurant. For dimensions of neighborhood quality, the variables were street lights, taxes, police station, and newness.

Factor interpretation proved difficult, as expected in an exploratory study. The lack of an a priori definition of factors, or the construction of a theoretical basis for association which could then be tested, would of course be regarded as one reason for this difficulty. King's initial discussion of this problem suggested that factor analysis should be reserved for research involving such theoretical testing.[7] But most recent work in factor analysis, particularly that based on principal components, indicates that the techniques are useful regardless of whether the factors are discerned before or after analysis.[8] This is particularly pertinent to this study, where the techniques are employed to gain some insight into preference associations at the neighborhood level, thereby possibly leading to the development of a theoretical structure, rather than to "prove" associations which either were not known or for which there exists no theoretical base.

Factor Score Clustering

The tokens that each sample subject spent to attain the items on the Environmental Display Games may be viewed as that particular subject's "score" on the variable. In the Accessibility Game, for example, there would be a set of twenty-four scores for each subject; that is, one for

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[7] King, *Statistical Analysis*, p. 185.

[8] Harbaugh and Merriam, *Computer Applications*, p. 179.

each of the specific locations listed. With factor analysis it is also possible to relate individuals to events, but in this case the individual's score (factor score) represents his contribution to an entire preference dimension. Factor scores are not represented in terms of tokens spent but, rather, are the standardized relationship of each subject to the particular variable association, or factor. Individuals with a high factor score are interpreted as having a strong association, or preference, for that dimension. As with correlation values, the sign $\pm$ of the factor score indicates the direction of the relationship; that is, positive or inverse.

Since factor scores are standardized to a mean of zero, comparisons are facilitated. One method of comparison would be to plot each score in taxonomic space, or what might be termed here as "preference space."[9] Since the technique here is confined to visual interpretation, factor scores of two dimensions are plotted. When only two dimensions are plotted, typically the first two are utilized for they explain the greatest amount of variance in the variable matrix. Such is the case here and these two dimensions are hereto referred to as the "primary dimensions" in the analysis.

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[9]Brian J. L. Berry and Philip H. Rees, "The Factorial Ecology of Calcutta," American Journal of Sociology, LXXIV (March, 1969), pp. 445-91; A similar approach was used in this study to define "community space" based on dimensions of household and housing characteristics.

Taxonomical procedures facilitate the grouping of observations that have a high degree of internal homogeneity. Thus, factor scores which are plotted close together may be assumed to reflect a similarity of environmental preference, as compared with scores which are located farther apart.[10] In a like manner, each factor score may be viewed as occupying a position in one of the four quadrants (except, of course, in the rare case of a complete absence of relationship on either axis). Since clustering of factor scores in preference space may be assumed to reflect a similarity in environmental priorities, the question becomes how to group the subjects into meaningful preference clusters. Obviously, in a study involving a limited number of subjects, the procedure should probably forego much detail in favor of more general groupings.

One method of grouping assumes an interval measurement of similarity based upon a precise technique of linking the taxonomic units, or factor scores in this case.[11] This linkage procedure was tried but was unsatisfactory for the type of analysis desired in the research. Since the study was concerned with relating preferences to personal attributes of the subject, an alternative approach which could associate

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[10]Robert R. Sokal and Peter H. Sneath, Principles of Numerical Taxonomy (San Francisco: W. H. Freeman, 1963), pp. 169-215.

[11]Ibid., pp. 182-207.

subject background variables to preference space was

devised.[12] When background attributes are distributed in

preference space according to the location of a respondent's

factor score, two divergent patterns may evolve. If the

background characteristics of the subjects are randomly

distributed over the preference space then no assumption of

association can be made. When clustering of particular

background attributes occurs there exists some degree of

correlation between preference dimensions and the clustered

attributes. While this method often relies at least some-

what on observational judgment, and was rather cumbersome

and time-consuming, the use of parametric tests to obtain

statistically valid associations would be suspect due to

the nature of the original data. Interpreted groupings of

factor scores were finally devised based upon associated

background attributes which, at least to some degree, the

majority of the clustered subjects had in common.

If background attributes are clustered in preference

space, it would be assumed that these attributes are rele-

vant to the factor's interpretation. Factors which have

previously defied meaningful interpretation may be made more

clear in the light of correlated subject data. More

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[12]This approach was also essentially followed by
George L. Peterson, Robert L. Bishop, and Edward S. Neumann,
"The Quality of Visual Residential Environments," in The
Quality of the Environment: Quantitative Analysis of Human
Response, ed. by Heinrich D. Selle, Jarir S. Dajani, and
George L. Peterson, Department of Civil Engineering (Evanston:
Northwestern University, 1969), pp. 7-30.

important, clustering should reveal the significant subject and household attributes which are related to the preference dimensions. This discussion does not necessarily imply, however, that the association of background attributes in preference space infers cause and effect. While this reflects on a problem common to much statistical research involving measurements of association, it does seem important to emphasize the problem here. Techniques of this type are, therefore, generally best used to test existing theory. The exploratory effort here, however, utilized the techniques in an attempt to uncover associations which might then be subjected to more rigorous testing.

The primary hypothesis is first examined; that is, the question of the importance of ethnicity in explaining environmental preferences is tested using the procedure outlined above. Factor analysis should result in a set of primary preference dimensions for both accessibility and neighborhood quality. These dimensions may then be established as principal coordinates on which each subject's factor score is plotted. If the ethnic factor is important, then the two groups should form distinct groups in preference space.

Accessibility

Factor Interpretation

Table 11, page 103, provides the rotated factor matrix for the combined subject groups on the Accessibility Game.

TABLE 11

ACCESSIBILITY GAME: COMBINED SUBJECT GROUPS
REPRESENTATION OF ROTATED FACTOR LOADINGS

Variables ↓	Percentage of Variance[b] →	Factors[a]								
		I	II	III	IV	V	VI	VII	VIII	IX
		12.2	9.0	7.4	6.7	6.4	6.3	5.6	5.1	4.7
Access to Freeway										.726
Place of Work						.879				
Hospital		.664								
Physician's Office					.823					
Elementary School			.826							
High School										
Place of Worship		.653								
Playground			.789							
City Park		.467			.594					
Camping and Picnic Area ...		.323							.556	
Best Friend's House							.887			
Library									.874	
Post Office					.322	.581				
City Hall						.529		.306		
Bus Stop										
Night Club/Bar		.331			.405	.323				
Restaurant/Cafe										
Movie Theater					.459					
Auto Service Station										.785
Drug Store/Pharmacy		.460						.556		
Grocery Store-Minimarket ..		.441			.342					
Grocery Store-Supermarket .		.740								
Shopping Center					.799					
Downtown								.828		

Negative loadings are underlined.

[a]Ten factors had an eigenvalue of 1.0 or greater; only the first nine are shown. Loadings algebraically greater than $\pm$ 0.300 are utilized to represent the factors. The complete rotated factor matrix (including final communalities) is included in Appendix III.

[b]Cumulative proportion of total variance loaded on first 9 factors: 63.4%.

An orthogonal solution was used with loadings of ± 0.300 or
greater represented for factor interpretation. Negative
loadings are underlined. Ten factors were extracted with
eigenvalues of 1.0 but only the first nine are shown in the
table. These nine accounted for 63.4 percent of the total
variance. (The complete rotated factor matrix, including
final communality values, is included in Appendix III.)

Primary Dimensions.--Most important for the purposes
of this study are the primary preference dimensions (factors
I and II), which in the case of accessibility accumulated
21.2 percent of the variance. Several variables loaded quite
high on factor I. Three of the positive loadings (hospital,
place of worship, and city park) were deemed more important
(that is, given a higher priority in the rank-order proce-
dures discussed in Chapter III) by the Mexican-Americans.
The positive loadings on component I seem to represent an
expanded "neighborhood concept" based on preferred function-
al nodes of neighborhood accessibility; that is, shopping
(drug store and supermarket), religious needs (place of
worship), recreation (city park), and health (hospital). The
negative loadings on component I were relatively low. With
the exception of the minimarket, the negative loadings were
also given very low preference rankings by both groups.

Factor II concerns a local neighborhood concept based
on an elementary school and playground complex. Both vari-
ables were given higher preference rankings by the

Anglo-Americans. There were no negative loadings algebraically greater than -0.300 on factor II. The loadings on the primary dimensions would tend to support the similarity in rank-order accessibility priorities between the groups found in Chapter III.

Other Dimensions.--As with the primary dimensions, each of the other factors represents an independent dimension of accessibility preference.[13] It is difficult to suggest interpretations for many of the factor associations, nor is it a purpose of the study to do so, but two components deserve mention. Factor VI, defined by the single high loading of a best friend's house, may suggest that this is a unique accessibility consideration in selecting a neighborhood location. Factor IX relates two variables (access to freeway and auto service station) which intimates the importance of the automobile to American concerns for accessibility.

Factor Score Clustering

Preference dimensions I and II of the Accessibility Game were placed as principal coordinates and the factor scores for each subject plotted in the resulting preference space. From these plottings it was possible to delineate

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[13]The independence of the factors is, of course, due to the orthogonal rotation system. In a study of this nature, involving interrelated data sets, an oblique rotation system would probably show some correlation between the components.

two preference clusters based on ethnic background (Figure 4, page 107). Each cluster was composed of fifty subjects; Cluster One contained 70 percent Anglo-American; Cluster Two included 70 percent Mexican-American. The division between the two groups appears to be primarily over factor II, with the Anglo-Americans showing a strong preference for the local neighborhood concept. This finding may be substantially a result of the recent controversy over neighborhood schools.

A form of the chi-square contingency test may be used to compare the two clusters:[14]

Contingency Table

	Anglo-Americans	Mexican-Americans	Total
Cluster 1	35	15	50
Cluster 2	15	35	50
	50	50	100

$$X^2 = \frac{N\left[(AD - BC) - \frac{N}{2}\right]^2}{(A+C)\ (B+D)\ (A+B)\ (C+D)}$$

Where: N = 100
        A = 35
        B = 15
        C = 15
        D = 35

X^2 = 14.44

14.44 > 6.64   [critical value of $X^2_{.01}$ with 1 df]

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[14]Formula is corrected for continuity, suggested by Yates, and reviewed in Allen L. Edwards, Statistical Methods for the Behavioral Sciences (New York: Holt, Rinehart, and Winston, 1963), pp. 383-84.
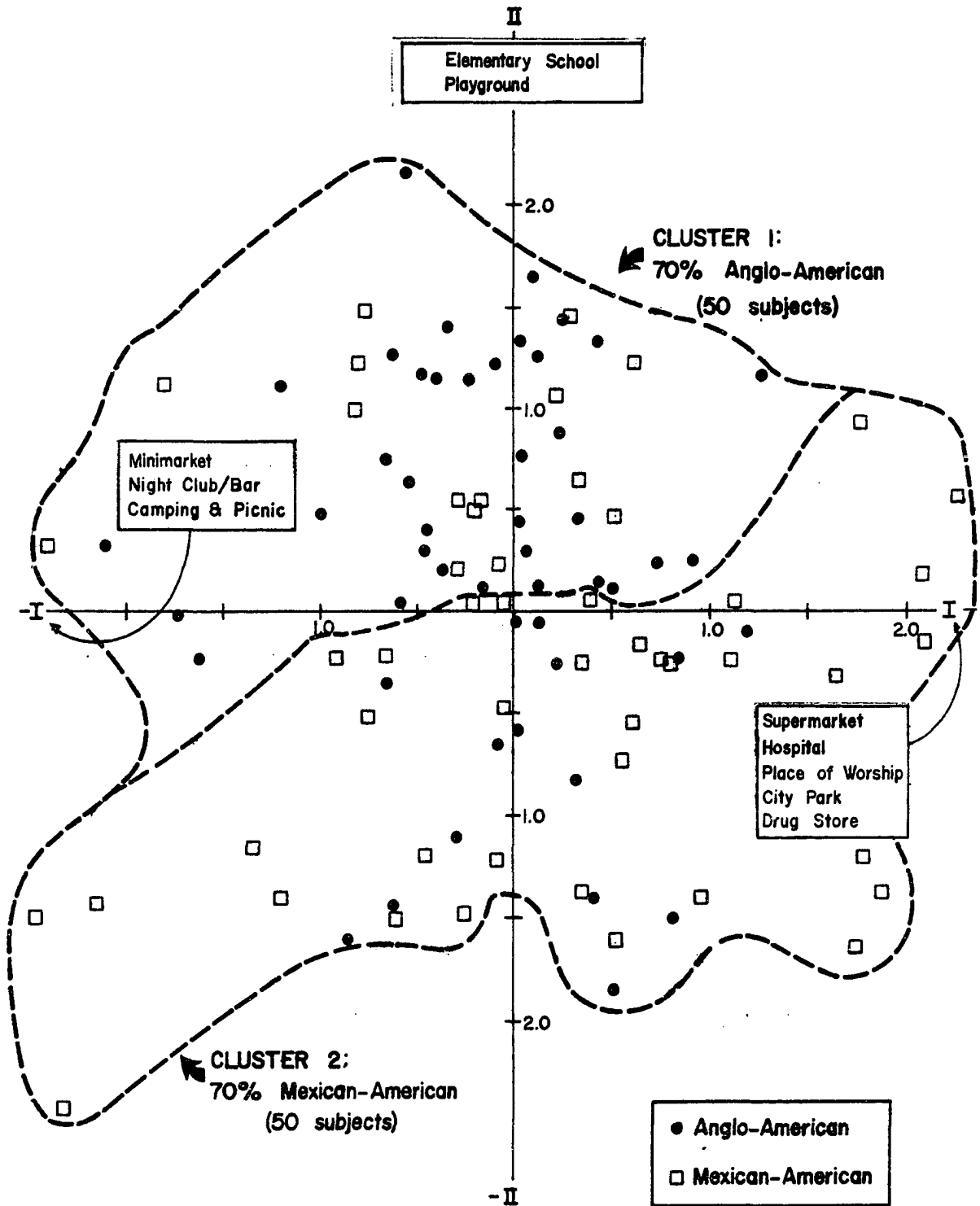
FIGURE 4

FACTOR SCORES WITH ETHNIC GROUPINGS
ACCESSIBILITY GAME--FACTORS I AND II
COMBINED SUBJECT GROUPS

Therefore, the two clusters are significantly differ-
ent in terms of ethnic composition at the .01 level. This
conclusion is, of course, contrary to the findings of
Chapter III where accessibility preferences were found
similar between-groups using rank-order correlation. This
discrepancy may be evaluated in two ways. First, the con-
clusion that accessibility priorities are similar between-
groups, found in Chapter III, is based on overall preference
patterns regarding each of the twenty-four variables. The
difference in preference groupings, shown in Figure 4, is
based on the primary preference dimensions only. Second,
there remains the question of the actual importance of the
ethnic factor in Figure 4.

One might suspect that, since factor II is related to
children (elementary school and playground), the division
over the preference dimension may be due more to parenthood
than ethnicity. This may again be examined in terms of the
subject background of the clusters:

Contingency Table

	Subjects With Young Children[15]	Subjects Without Young Children	Total
Cluster 1	39	11	50
Cluster 2	19	31	50
	58	42	100

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[15]Pre-school and elementary school only.

Again, using chi-square where:

$$N = 100$$
$$A = 39$$
$$B = 11$$
$$C = 19$$
$$D = 31$$

$$X^2 = 14.82$$

$$14.82 > 6.64 \quad \text{[critical value of } X^2_{.01}$$
$$\text{with 1 df]}$$

Therefore, the division of preference space into two clusters appears also to be highly related to the presence of young children in the subject's household. This conclusion, however, deserves closer examination. Of the total 58 subjects with young children in their households, 31 were Anglo-Americans and 27 were Mexican-Americans. The great majority (81 percent) of Anglo-American subjects with young children were oriented to a neighborhood focused on the elementary school and playground, whereas the Mexican-Americans, with young children, were divided rather evenly (52 percent in Cluster One) between the two preference clusters.

Conclusion

Therefore, the ethnic factor remains an important consideration in the interpretation of Figure 4. There is considerable more likelihood that Anglo-American families with young children will locate in Cluster One preference space than Mexican-Americans with young children. The presence of pre- and elementary-school level children in the Mexican-American family produced no strong orientation to the positive loadings of factor II.

Neighborhood Quality

Factor Interpretation

Representation of the rotated factor loadings for the Neighborhood Quality Game is given for the combined sample groups in Table 12. Again, loadings of $\pm$ 0.300 are utilized to represent each factor. The nine factors with eigenvalues exceeding 1.0 accounted for 66.5 percent of the total variance.

Primary Dimensions.--The most notable features of Table 12 are the very high proportion (26.8 percent) of the total variance which was accumulated by factor I and the bipolar nature of the factor loadings. Each of the positive loadings are from the location and design part (Grouping A, Table 9, page 86) of the Neighborhood Quality Game, shown in Chapter III to be a very important preference grouping of the Anglo-American. Apparently, then, the interrelated concerns of neighborhood location, density, income level, and social makeup, together with housing costs, forms a very important preference association. On the other hand, the negative loadings of factor I indicate a more abstract notion of neighborhood quality. The fact that the two are dichotomous seems to imply that the pragmatic and abstract rotations are inversely related in residential space preferences.

From the loadings alone, factor II appears as a common association of three social and physical neighborhood qualities which are often assumed important by most developers--privacy, prestige, and beauty. The interpretation of

TABLE 12

NEIGHBORHOOD QUALITY GAME: COMBINED SUBJECT GROUPS
REPRESENTATION OF ROTATED FACTOR LOADINGS

Variables↓	Percentage of Variance[b] →	I	II	III	IV	V	VI	VII	VIII	IX
		26.8	7.4	6.3	5.6	4.7	4.5	3.9	3.8	3.5
1. Size of City				.326				.313		
2. Location of Neighborhood		.575							.327	
3. Density		.501			.378					
4. Neighborhood Design								.305		
5. Landforms							.363	.582		
6. Vegetation				.588			.336	.305		.308
7. Income Level		.748								
8. Kind of People		.832								
9. Home: Architecture/Design				.679						
10. Home: Cost/Rent		.551		.315				.315		
11. Street Condition									.799	
12. Sidewalks							.803			
13. Bus Service		.436			.446					
14. City Water Supply										.871
15. Street Lights										
16. Taxes										
17. Schools					.695					
18. Parks						.882				
19. Shopping Facilities					.707					
20. Job Opportunities								.341		
21. Police Station										
22. Personal Friends					.831					
23. Privacy			.687							.341
24. Prestige			.744							
25. Homeyness		.404							.544	
26. Quietness							.477	.474		
27. Newness										
28. Cleanliness		.333						.678		
29. Beauty			.660	.340						
30. Friendliness								.818		

Negative loadings are underlined.

[a]Factors with an eigenvalue of +1.0 or greater are shown. Loadings algebraically greater than ± 0.300 are utilized to represent the factors. The complete rotated factor matrix (including final communalities) is included in Appendix III.

[b]Cumulative proportion of total variance loaded on first 9 factors: 66.5%.

the factor, however, is made difficult from knowledge of
the rank-order patterns for each in Chapter III (Table 9).
Prestige, it may be recalled, was ranked lowest by both
groups. Nevertheless, the token expenditure pattern for
these three variables was correlated, thereby lending
credence to the existing psychology of home sales.

Other Dimensions.--Each of the other factors shown in
Table 12 may be viewed as a dimension of neighborhood
preference for the combined groups. Factor III relates
various aspects of design (vegetation, beauty, and home
architecture) with city size and home cost. This preference
association is inversely related to concerns for services--
public transportation and schools. Factor VII is a lesser
(only 3.9 percent of the total variance) association simi-
lar to factor I, although in this case the signs of the
loadings are reversed. The remaining factors were not
interpreted.

Factor Score Clustering

Figure 5, page 113, plots the combined group factor
scores against the primary preference dimensions for the
Neighborhood Quality Game. The subjective division between
the two ethnic groups appears to almost perfectly parallel
the y-axis. The result was two fairly concentrated ethnic
groupings of approximately equal size. Again, using a form
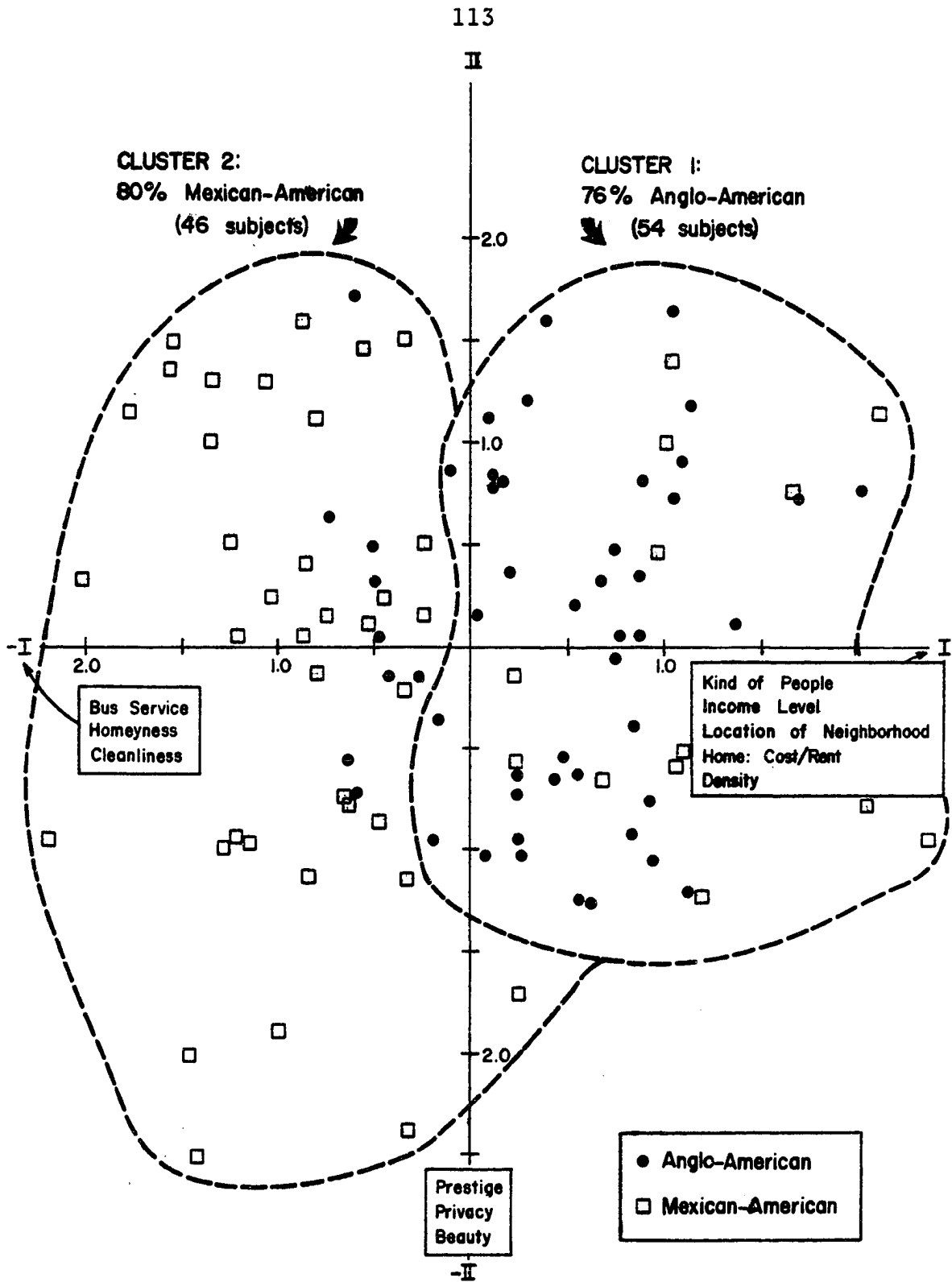
FIGURE 5

FACTOR SCORES WITH ETHNIC GROUPINGS
NEIGHBORHOOD QUALITY GAME--FACTORS I AND II
COMBINED SUBJECT GROUPS

of chi-square, the two preference groups were found to be

ethnically different at the .01 significance level:

Contingency Table

	Anglo-Americans	Mexican-Americans	Total
Cluster 1	41	13	54
Cluster 2	9	37	46
	50	50	100

$$X^2 = \frac{N \left[(AD - BC) - \frac{N}{2} \right]^2}{(A+C)\ (B+D)\ (A+B)\ (C+D)}$$

Where: N = 100
        A = 41
        B = 13
        C = 9
        D = 37

X^2 = 29.34

29.34 > 6.64   [critical value of $X^2_{.01}$ with 1 df]

There was, then, a distinct preference division over factor

I and little, if any, ethnic differentiation regarding factor

II.

It should be expected from the rank-order findings

in Chapter III that the factor scores for Anglo-Americans

will gravitate strongly to the positive loadings for factor I.

This is clearly the case in Figure 5. The Mexican-Americans

related most clearly to the negative loadings (bus service,

homeyness and cleanliness). This finding, then, is in

support of the conclusion made in Chapter III that there are

distinct between-group differences with regard to preferences

for neighborhood quality.

It might be argued, however, that since the two sample groups were also quite different in income, dimension I defined this attribute and not necessarily the ethnic factor. If this is the case, then it should prove true that Mexican-Americans scoring within Anglo-American preference space (Cluster One) would have relatively higher incomes compared with the Mexican-American mean income within the predominantly Mexican-American preference grouping (Cluster Two). In like fashion, Anglo-Americans scoring within the predominantly Mexican-American grouping (Cluster Two) should have a lower mean income when compared with the mean income for Anglo-Americans within the Anglo-American grouping (Cluster One).

In the first case, there were 13 Mexican-Americans among the 54 subjects comprising Cluster One. The mean income of these 13 Mexican-American subjects was $5350. The mean income of the remaining 37 Mexican-Americans within the Mexican-American grouping (Cluster Two) was $4800. Using the "t" statistic to compare the means:

$$t = \frac{(\bar{X} - \bar{Y})}{\sqrt{\dfrac{S_x^2}{N_x} + \dfrac{S_y^2}{N_y}}}$$

Where: $\bar{X}$ = 5350 (Mexican-Americans in Cluster 1)
$\bar{Y}$ = 4800 (Mexican-Americans in Cluster 2)
S_x^2 = 45,192,500
S_y^2 = 503,730,000
N_x = 13
N_y = 37

t = 0.13

0.13 < 1.96 [critical value of $t_{.05}$ with 48.8 df]

Therefore, the mean income of the two groups was found not to differ significantly.

In the case of the mean income of the Anglo-Americans within the two preference groupings, there was also very little apparent difference. The Anglo-Americans scoring in Cluster Two had an income of $10,830, while the mean income of the Anglo-Americans within Cluster One was $10,900. As would be expected, the "t" test again showed no significant difference between means at the .05 level:

$$t = .01$$

$$.01 < 1.96 \quad [\text{critical value of } t_{.05}]$$

Income, then, showed no apparent clustering within each of the groups in primary preference space.

Conclusion

Although income levels within each sample group did not show clustering in Figure 5, it remains true that income between groups is highly clustered; that is, the income level of Cluster One, dominated by the higher-income Anglo-Americans, is considerably higher than the income level for Cluster Two, made-up primarily of the lower-income Mexican-American. The problem of separating components of a poverty subculture, particularly ethnicity and income, is complicated here by the nature of the samples.[16] Nevertheless, there

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[16]See pp. 15-18 for a discussion of this problem.

was little indication that as Mexican-American incomes

become higher, or Anglo-American incomes become lower,

there would be any change in the location of a subject's

score in preference space.

In addition to income, the two preference groups were

found generally similar concerning the other background var-

iables; that is, none of the subject data was significantly

clustered. The possibility of an indeterminate factor

influencing the groupings must, of course, be considered.

Nothing may be said regarding these other personal measures.

It might be that Michelson's "value systems" or Sonnenfeld's

"environmental personalities," if measured, would also prove

relevant to the preference dimensions. The possibility of

a counter-culture value system might also be considered.

Nevertheless, from the available evidence here, it must be

concluded that the occupation of unique preference space in

Figure 5 is primarily the result of the ethnic factor.

CHAPTER V

WITHIN-GROUP VARIANCE: THE RELATIONSHIP

OF SELECTED BACKGROUND ATTRIBUTES TO

NEIGHBORHOOD PREFERENCE DIMENSIONS

The relationship of a subject's ethnic background to
the primary preference dimensions of the combined groups
was shown to be significant in Chapter IV. However, vari-
ations in ethnic clustering were great enough to justify
an examination of within-group variance. The secondary
hypothesis is designed to test the relationship between
certain socio-economic, demographic, as well as other back-
ground characteristics of each sample group and any differ-
ences found in that group regarding preferences for primary
dimensions of accessibility and neighborhood quality.

Procedures

The basic techniques of factor analysis and factor
score clustering, used in the previous chapter,[1] are also
utilized for testing the secondary hypothesis. While the
procedures are basically the same, the problem of within-group

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[1]See pp. 94-102 for a more complete discussion of the
techniques used.

variance necessitated some modifications in application and interpretation.

Factor Analysis

The two sample groups were separated and the response matrices for both games factored individually again using a varimax orthogonal solution. In each of the resulting four rotations, the first nine factors with eigenvalues above 1.0 are represented. These nine components accounted for at least 70 percent of the accumulated variance in each case, possibly indicating that fewer preference dimensions are needed to satisfy total within-group variance as opposed to between-group.[2]

Factor Score Clustering

The major modifications concerning procedures involves factor score clustering. As before, the primary dimensions of each factor matrix are utilized as the principal coordinates, and the standard factor scores for each sample group are plotted in the resulting preference space. The clusters, however, are developed from an analysis of socio-economic, demographic, and other background differences within each of the sample groups and not, of course, the ethnic factor. Although the rationale for this procedure is developed in Chapter IV, some notes concerning its use here should be made.

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[2]It may be recalled that the first nine dimensions for the combined groups accounted for less than 70 percent of the total variance for both accessibility and neighborhood quality; see p. 103 and p. 111.

In each of the cases to follow, an analysis was made of the background attributes and the location of the factor scores of subjects who held that attribute in common. In most cases, the attribute was found to be rather randomly distributed over preference space; that is, held in approximately the same pattern on the coordinates as the general distribution of factor scores. In these cases, the attribute was assumed to be unimportant in explaining the subject's factor score position.

In a few cases, however, a background attribute was found to cluster; that is, there would be a distinct pattern apart from the general distribution of the total sample. The clustering of background attributes is assumed to be significant in the interpretation of a factor score position on each of the dimensions. Again, cause and effect may only be inferred, since all that is measured here is the association of background attributes and factor score position. Nevertheless, if a particular income group, as an example, is found to consistently score positive on one of the factors, it would seem to follow that income is important in explaining the location of the factor scores on that dimension.

In the following discussion, the four background attributes which exhibited the greatest tendency to cluster are shown separately. The selection of four attributes was made primarily to facilitate a comparison of background attributes between the groups in explaining the primary dimensions of preference. Lesser attribute clusters are also

noted, however, and, together with the major attribute clusters, used to interpret preference space in terms of "preference groupings," which are based on the background of the subjects. This procedure is followed for each sample group, and for each game.

Accessibility

Anglo-American

Variable loadings on the nine new dimensions with an eigenvalue of 1.0 or greater are shown for the Anglo-American sample in Table 13. Variables which loaded above the $\pm$ 0.300 cut-off level are used to represent each factor. Negative loadings, again, are underlined. These nine factors accounted for 71.8 percent of the total variance.

Primary Dimensions.--Factor I, accounting for more variance than any other dimension (12.7 percent), reveals that the Anglo-American responses for freeway access, city hall, drug store, and downtown were positively related, and inversely associated to the group response for post office. This, of course, does not necessarily imply that the preferences (measured in tokens spent) for these facilities were the same. Rather, it discloses a pattern of response such that by knowing the group preference for one of the associated variables, something may be said concerning the expenditure of tokens for any of the other associated variables.

In the light of existing theory, factor I was difficult to interpret. In one way, this new dimension appeared

TABLE 13

ACCESSIBILITY GAME: ANGLO-AMERICANS
REPRESENTATION OF ROTATED FACTOR LOADINGS

Variables ↓	Percentage of Variance[b] →	Factors[a]								
		I	II	III	IV	V	VI	VII	VIII	IX
		12.7	11.6	9.2	8.2	7.5	6.7	6.1	5.4	4.4
Access to Freeway		.323				.811				
Place of Work				.364	.333					.311
Hospital			.358	.404	.538					
Physician's Office									.909	
Elementary School				.733	.341					
High School				.808						
Place of Worship										
Playground										
City Park							.759			
Camping and Picnic Area				.589			.427			
Best Friend's House				.336			.343			.556
Library							.774			
Post Office		.672								
City Hall		.605							.536	
Bus Stop					.878					
Night Club/Bar				.301						.787
Restaurant/Cafe								.805		
Movie Theater								.823		
Auto Service Station										
Drug Store Pharmacy		.440	.325		.415		.341			
Grocery Store-Minimarket				.339	.644					
Grocery Store-Supermarket					.824					
Shopping Center							.684			
Downtown		.699								

Negative loadings are underlined.

[a] Factors with an eigenvalue of +1.0 or greater are shown. Loadings algebraically greater than ± 0.300 are utilized to represent the factors. The complete rotated factor matrix (including final communalities) is included in Appendix III.

[b] Cumulative proportion of total variance loaded on first 9 factors: 71.8%.

to relate several focii which might be thought to represent
traditional nodes of the urban image (drug store, city hall,
and downtown). Interpretation of this factor might be made
more clear should certain subject groups cluster in factor I
preference space. (For example, if the interpretation is
valid, one might guess that older subjects who spent their
childhoods in a small town might score positive on this
factor.)

The interpretation of factor II was more obvious.
The elementary school and high school loaded very high on
this new dimension. Although there were several negative
loadings, they were generally low. Apparently, then, the
second most important accessibility preference dimension
for the Anglo-American group was primarily an association
of education facilities.

Other Dimensions.--The elementary school again loaded
on factor III, in positive association with place of work,
hospital, and mimimarket. The inverse relationship of this
component grouping with the bus stop suggested a facility
set strongly oriented to daily and emergency trips by auto-
mobile. Factor IV was a similar type of variable association
which also related place of work and hospital but now in
positive association with the supermarket, rather than the
mimimarket. Perhaps factors III and IV, taken together,
relate to two neighborhood or community accessibility dimen-
sions which are regarded by the Anglo-American as important

convenience components in the selection of a residential location.

Community and metropolitan area recreation facilities were positively related on factor VI, along with a regional shopping center (Is shopping a form of Anglo-American recreation?). A second interpretation might relate city park and the shopping center as important community nodes. A very strong association of response for the movie theater and restaurant was evident from the loadings on factor VII. This might be regarded as the major facility set for a middle-income Anglo-American's "night out." The remaining factors are not evaluated here.

Four Attribute Clusters.--Preference dimensions I and II of the Accessibility Game were placed as principal coordinates and the factor scores for each subject plotted in the resulting preference space. The four Anglo-American background attributes which exhibited the greatest tendency to cluster on factors I and II are shown in Figure 6, page 127.

Anglo-American subjects with incomes above $15,000 tended to cluster in quadrant I; that is, they had a positive association with both factors I and II (Figure 6a). The mean income for all subjects in this group was over $13,000, whereas the mean income of subjects having predominantly negative factor scores on the education dimension (factor II) was $7,550. Income, then, appears as a very significant

factor in predicting Anglo accessibility preferences, at least for the primary dimensions.

Since factor II defined accessibility to both an elementary and high school, it would be expected that subjects scoring positive on the dimension would have school-age children living at home. Figure 6b indicates that two groups may again be defined; one for subjects with several children and a second group which had very few children. Preference for factor II was also obviously related to this background variable.

Other interesting patterns of subject attributes may also be noted in Figure 6c. Each subject was asked to rank the importance of six different daily activities, including family activities, work, reading, hobbies, television, and social clubs. It may be noted that, although fourteen of the fifty Anglo-American subjects were plotted in quadrant I, none of them ranked family or work activities low. Each of the other quadrants contained relatively high percentages of subjects who ranked family and work activities relatively low. Further, in Figure 6d, only one of the fourteen subjects in quadrant I rented his home; the remainder were home-owners. Again, the other quadrants contained relatively high percentages of renters. Together with the other background attributes, quadrant I seems to portray the core of this white, middle-class suburban neighborhood.

Preference Groupings.--These subject attributes, as
well as other background variables which exhibited less
pronounced clustering, were combined into a generalized
set of preference groupings (Figure 7, page 128). Although
the interpretations are rather generalized, it was possible
to define four basic preference groups, with one very pro-
nounced subgroup. The differentiation between the background
of the subjects in preference space appears to relate mainly
to factor II, regarding education facilities.

High income home-owners, with children, scored
highest on factor II. Included within this group was a very
well-defined sub-cluster, termed "the Establishment." High
income subjects with few children, several of whom were
renters, scored along the x-axis, but tended to be positive
on factor I. As negative dimension I space was approached,
incomes become less but the number of children increase.
Low income renters, with few children, had little interest
in the education dimension but were divided over factor I.

"The Establishment" was a well-defined cluster in
positive preference space. This subgroup contained ten
subjects (20 percent of the sample) who had remarkably simi-
lar backgrounds. Immediately apparent was the relatively
high income of all ten-member subjects. The mean of this
sub-group was over $15,000; compared to a mean for all Anglo-
American subjects of $10,890. Each subject had children in
the public schools, each owned his home, and each ranked
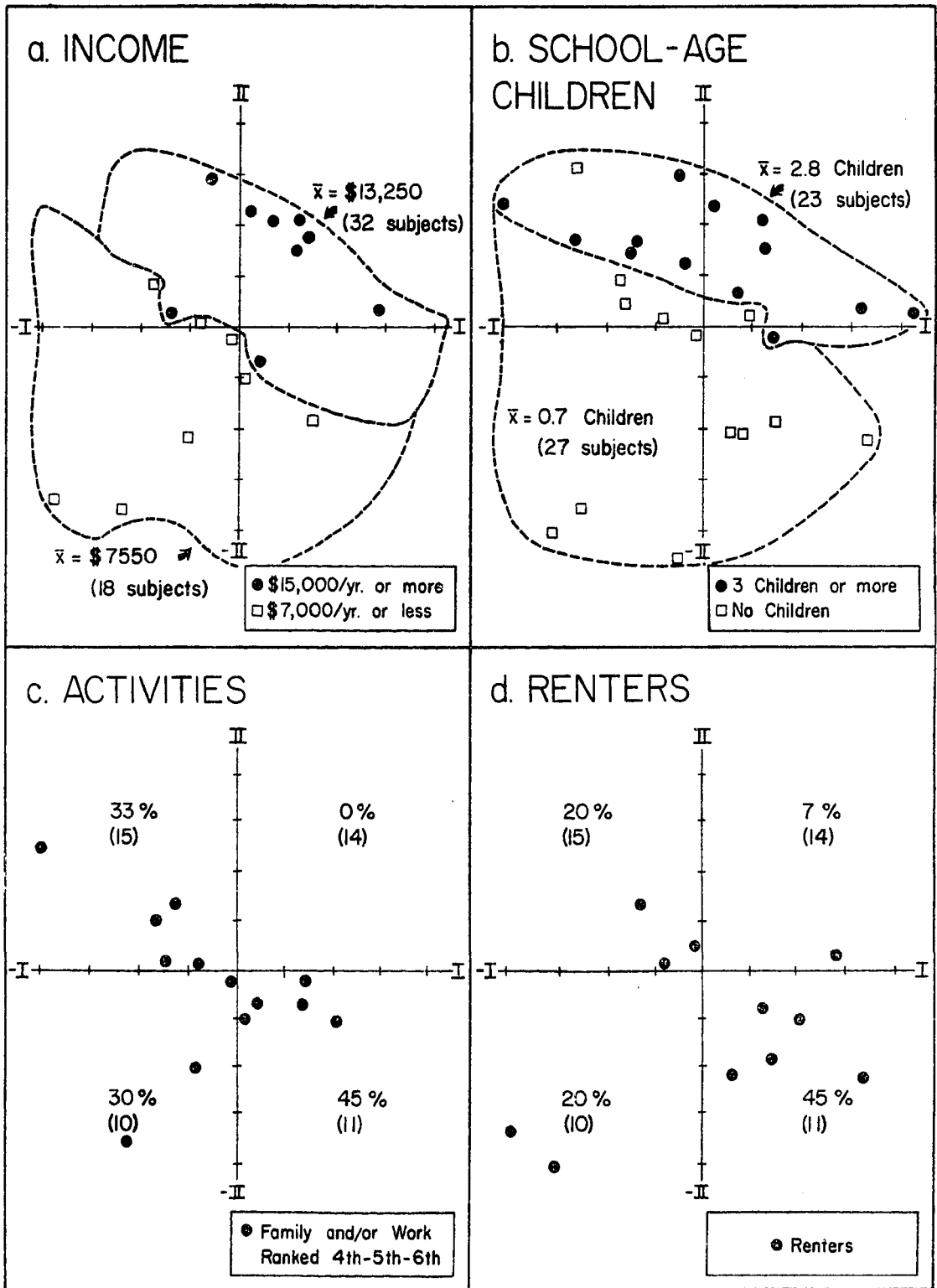family and work activities very high. Each of the ten

FIGURE 6

FACTOR SCORES FOR SELECTED SUBJECT DATA
ACCESSIBILITY GAME--FACTORS I AND II
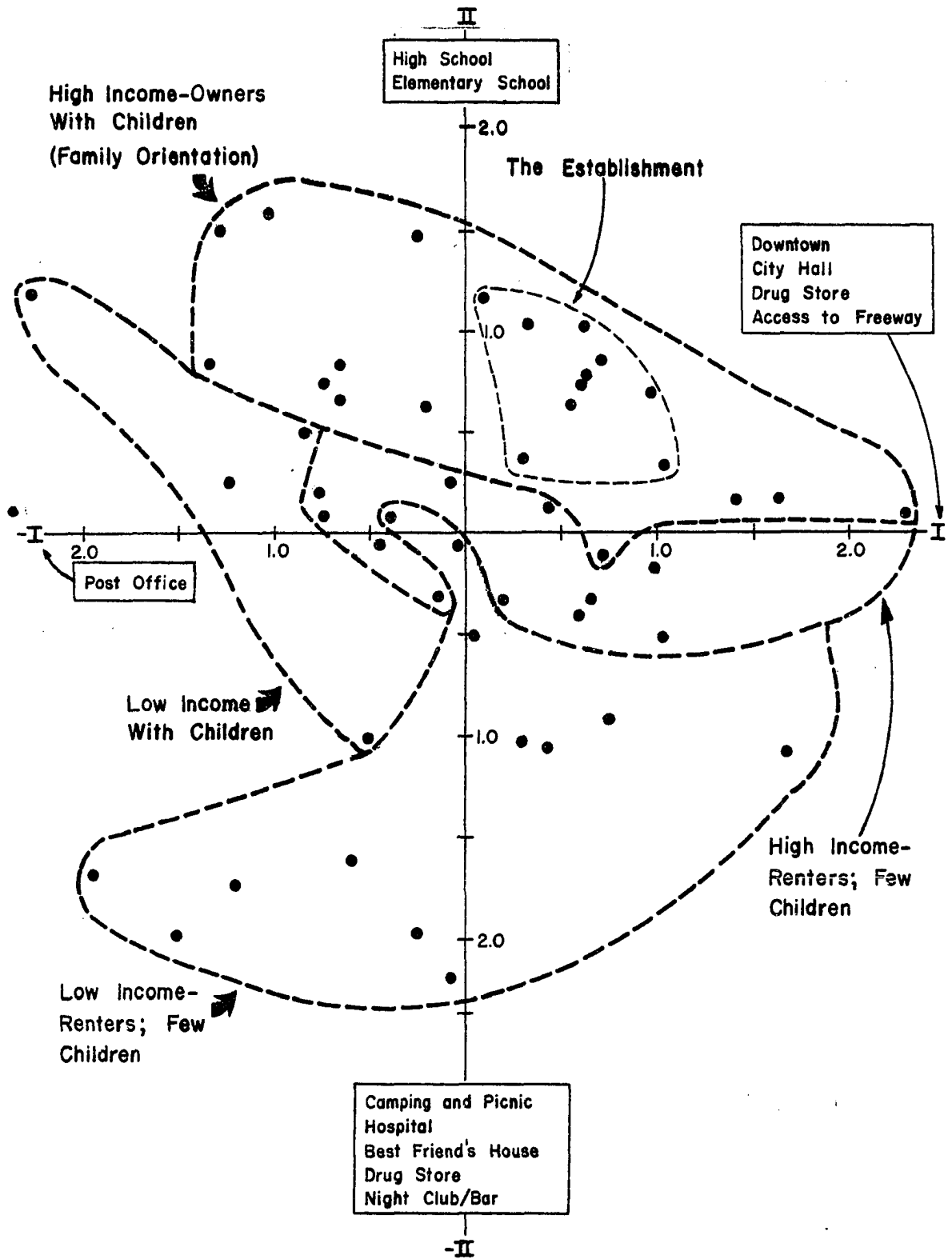ANGLO-AMERICAN SUBJECTS

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FIGURE 7

FACTOR SCORES WITH INTERPRETED GROUPINGS
ACCESSIBILITY GAME--FACTORS I AND II
ANGLO-AMERICAN SUBJECTS

subjects had not moved within the last five years and all had lived in Austin over seven years. Most subjects were about the same age, with a mean in the middle-thirties. Most said that their best friends were close-by, generally within the immediate neighborhood.

The picture which emerged of this group was one based on an image of American suburbia. Each had "made it" according to the simple measures used here. As a group, they were stable home-owners who placed work and family above all else. They were concerned with the education of their children in neighborhood schools. While such an orientation might be challenged by active subcultures in some parts of the country, in the conservative Anglo-American values of the "Texan culture," this sub-cluster seems to well-deserve the title of "the Establishment."

The interpretation of factor I, attempted in the previous section, might now be reexamined in light of what is known concerning the "the Establishment" sub-cluster. Since this group also scored positive on factor I, it appears that the original interpretation of the factor as a "traditional urban image" might be supported. It certainly seems possible that the Establishment might construct a generalized primary preference dimension which served to symbolize a system which had rewarded them.

Mexican-American

Table 14 is concerned with the representation of factor loadings for the Mexican-American on the Accessibility Game. Nine factors were again extracted which accounted for 70.7 percent of the variance.

Primary Dimensions.--Factor I for the Mexican-American accessibility matrix accumulated 13.9 percent of the total variance. Both a place of worship and supermarket loaded high on this dimension, along with positive response relationships with a hospital, elementary school, and city park. This variable set was inversely related to a night club and camping-picnic area. If it is recalled that the city park was given a higher priority than a playground by the Mexican-American group, this dimension appears as an association of those neighborhood and community nodes which were wanted nearest the home by the Mexican-American sample. Each of the five positively associated facilities might also be viewed to fill a particular activity orientation: health, education, religion, recreation, and shopping.

Factor II was an accessibility dimension based on the positive association of an elementary school, playground, and bus stop. The factor associates two variables which had previously been ranked as most important by the Anglo-American--the elementary school and playground--and relates them to the bus stop, which was given a high priority by the Mexican-American.

TABLE 14

ACCESSIBILITY GAME: MEXICAN-AMERICANS
REPRESENTATION OF ROTATED FACTOR LOADINGS

Variables ↓	Percentage of Variance[b] →	Factors[a]								
		I	II	III	IV	V	VI	VII	VIII	IX
		13.9	10.2	8.6	8.2	7.1	6.5	5.8	5.5	5.0
Access to Freeway								.887		
Place of Work						.839				
Hospital		.302								
Physician's Office				.351						
Elementary School		.348	.446	.639	.345					
High School					.772				.319	
Place of Worship		.880								
Playground			.919							
City Park		.358								
Camping and Picnic Area		.524					.470			
Best Friend's House				.819						
Library							.905			
Post Office										
City Hall						.652			.367	
Bus Stop			.406							.387
Night Club/Bar		.482						.304	.310	
Restaurant/Cafe				.690		.329				.409
Movie Theater									.918	
Auto Service Station						.311		.497		.576
Drug Store/Pharmacy					.779					
Grocery Store-Minimarket										
Grocery Store-Supermarket		.728								
Shopping Center										
Downtown										.815

Negative loadings are underlined.

[a]Factors with an eigenvalue of +1.0 or greater are shown. Loadings algebraically greater than ± 0.300 are utilized to represent the factors. The complete rotated factor matrix (including final communalities) is included in Appendix III.

[b]Cumulative proportion of total variance loaded on first 9 factors: 70.7%.

Other Dimensions.--The best friend's house and restau-
rant loaded very high on factor III, suggesting perhaps a
dimension involving physical points of social interaction.
At first glance, factor VIII appears similar to factor VII
for the Anglo; that is, a leisure dimension. In this case,
however, the dimension is apparently linked to variables for
which the large majority of Mexican-Americans uniformly gave
low preference rankings. The other factors were left
uninterpreted.

Four Attribute Clusters.--Figure 8, page 134, shows
four Mexican-American variables which exhibited the greatest
tendency to pattern in preference space. A tight cluster of
unmarrieds (generally widowed or separated) was centered in
quadrant IV (Figure 8a). Of the seventeen subjects who were
located within this enclosed preference space, thirteen (76
percent) were either currently unmarried or were not living
with their spouse. As shown in Figure 8b, many of these
were also older, and in 8c, less educated. A general pattern
emerged which suggests that a preference for accessibility
to the factor I facility complex was more likely if the sub-
ject was aged, widowed or otherwise separated, and had little
formal schooling; that is, a pattern of physical and social
dependence. This dependence was important with regard to
accessibility convenience (grocery store and school) and
security (church and hospital). On the other hand, if the
Mexican-American subject was married, younger, and more

educated, there was a greater probability that he or she would be more concerned with dimension II, involving facilities for children (elementary school and playground) and mobility (bus stop).

Mexican-American housewives, with children, almost all scored high on factor II (Figure 8d). The presence of children in households having few cars available for the housewife to carry out the daily chores, including taking the children to school, might explain this preference association. In fact, 86 percent of all subjects who scored within the dimension II preference group outlined in 8d had children, as opposed to only 29 percent in the other grouping.

Preference Groupings.--Figure 9, page 135, attempts to interpret the Mexican-American preference space for accessibility based on the background clusters noted. While only two of the groupings were particularly well-defined, there were suggestions that the variables of sex and income might also play a role in the other clusters. If the subject was older, with few children, there was little likelihood that he would score positive on factor II. If single ("Elderly and Alone"), there was a strong preference for the facility association of factor I. Younger subjects, often housewives with children, were strongly oriented to factor II, but divided over factor I. The importance of both factors appears to decline as age increased or if the subject was male.
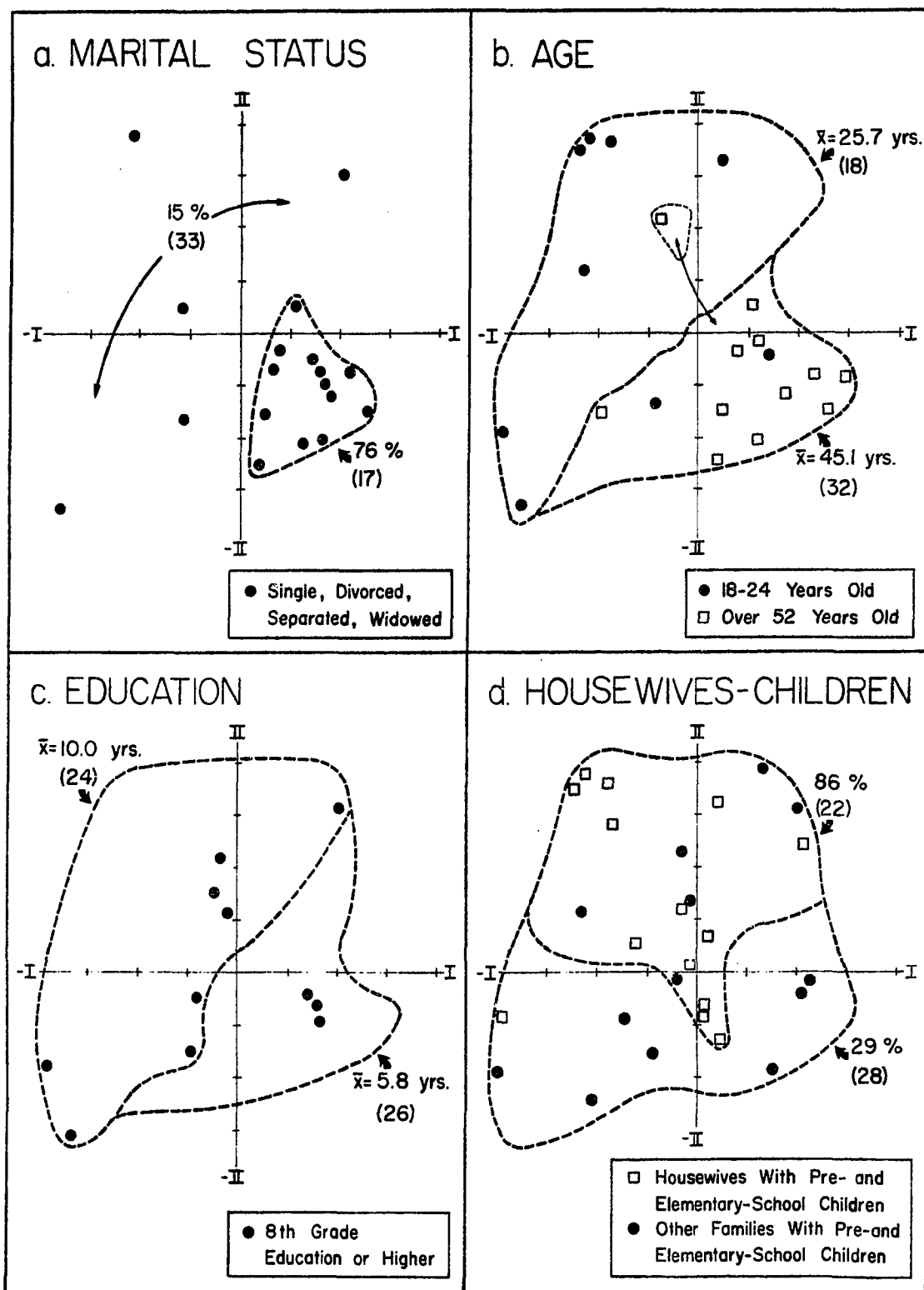
FIGURE 8

FACTOR SCORES FOR SELECTED SUBJECT DATA
ACCESSIBILITY GAME--FACTORS I AND II
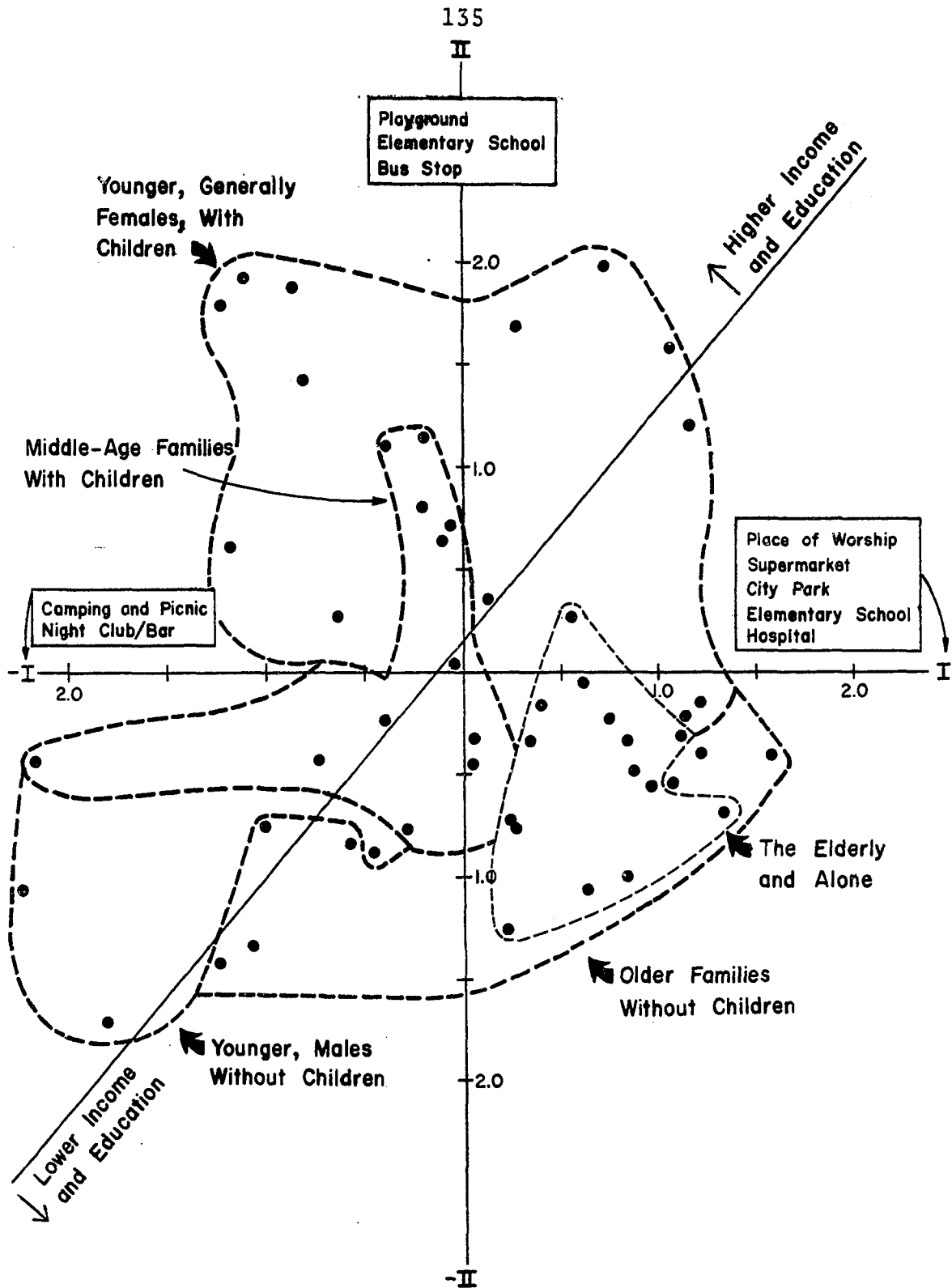MEXICAN-AMERICAN SUBJECTS

FIGURE 9

FACTOR SCORES WITH INTERPRETED GROUPINGS
ACCESSIBILITY GAME--FACTORS I AND II
MEXICAN-AMERICAN SUBJECTS

Income and education form a dividing line which
bisects the preference space through quadrants I and III.
Factor I, then, appears as a fundamental preference associ-
ation for those subjects least able to effectively compete
in a demanding society; members of an ethnic minority who
are aged, alone, and little educated. One problem of this
group might be that they cannot successfully acquire desired
accessibility through relocation. They are necessarily
dependent upon others to plan and develop their environmen-
tal needs. In the case of the particular Mexican-American
group studied here, most facilities included on the first
preference dimension actually existed in the area (except
city park). But this preference association might form a
basic accessibility dimension for the planning of residen-
tial settings for those least able to compete in acquiring
location.

Comparison of Groups

The major difficulty in comparing within-group pat-
terns of accessibility preference for the two groups, par-
ticularly with regard to the related background attributes,
is the uniqueness of the primary dimensions to each sample
group. The loadings on the primary dimensions for the
Anglo-American are not the same facilities that represent
the Mexican-American primary dimensions. It may be argued,
however, that the goal is to compare those dimensions which

accounted for the most variance, regardless of the loadings.
It is on this basis that certain comparisons are drawn.

Preference Dimensions.--Although the primary prefer-
ence dimensions for accessibility are generally unique to
each sample group, there are some similarities in the
loadings. Most important, perhaps, concerned the variance
accumulated by the primary dimensions; nearly 25 percent of
the total in both cases. In addition, the elementary school
was an important variable in the primary dimensions of both
groups; in fact, the factor II loadings for both groups
are vaguely comparable.

Group contrasts are perhaps more evident, however.
The first dimension for the Anglo-Americans seems related
more to an urban image than to an actual functional associa-
tion. Two of the facilities with relatively high loadings,
city hall and downtown, were in fact rarely visited by the
Anglo-Americans. Factor I for the Mexican-Americans, on the
other hand, appeared to be a basic association of functional
places, either because of use (supermarket, elementary
school) or need (church, hospital).

Background Attributes.--The background attributes
within each group which were found related to the primary
dimensions of accessibility preference were also rather
unique. Among the four attributes which were most clustered
for each group, only the presence of children in the family
was similar to both subject groups. This, of course, may

be considered in part a function of factor II, which in both cases included school facilities.

Accessibility priorities among the Anglo-American are related primarily to differences in income, land tenure, and a family-work activity orientation. Most important was probably income, a socio-economic factor. Land tenure and activity preferences might best be related in the Anglo-American case to stages in the life-cycle.

These background variables are generally in contrast to the importance of marital status, age, and education among the Mexican-American. In this case, major dimensions of accessibility preference may be related primarily to patterns of social dependence, particularly with regard to factor I. This pattern of social disorganization apparently resulted in accessibility priorities based strongly on the association of home and functional nodes.

<div align="center">Neighborhood Quality</div>

Anglo-American

Factor analysis was also performed on the response matrices for the Neighborhood Quality Game. The results for the Anglo-American group are shown in Table 15. Factoring resulted in eleven factors (instead of nine) extracted with eigenvalues greater than 1.0, of which only the first nine are represented in the table. Nevertheless, these nine factors extracted 70.2 percent of the variance.

TABLE 15

NEIGHBORHOOD QUALITY GAME: ANGLO-AMERICANS
REPRESENTATION OF ROTATED FACTOR LOADINGS

Variables ↓	Percentage of Variance[b] →	Factors[a]								
		I	II	III	IV	V	VI	VII	VIII	IX
		15.1	11.4	9.6	7.0	6.4	6.2	5.3	5.0	4.2
1. Size of City		.460						.466		.440
2. Location of Neighborhood										
3. Density		.469					.637			
4. Neighborhood Design							.524			.522
5. Landforms				.657	.475	.301				
6. Vegetation		.382			.341	.532				.349
7. Income Level										
8. Kind of People								.832		
9. Home: Architecture/Design		.678			.320					
10. Home: Cost/Rent		.818								
11. Street Condition										
12. Sidewalks					.340				.694	
13. Bus Service			.912							
14. City Water Supply		.396							.711	
15. Street Lights		.541								
16. Taxes					.397					
17. Schools		.306		.601						
18. Parks				.785						
19. Shopping Facilities						.894				
20. Job Opportunities							.793			
21. Police Station					.334		.397		.554	
22. Personal Friends										
23. Privacy									.303	.667
24. Prestige			.440							
25. Homeyness		.732						.408		
26. Quietness								.688		
27. Newness				.673						
28. Cleanliness					.835					
29. Beauty										.821
30. Friendliness					.784					

Negative loadings are underlined.

[a]Eleven factors with an eigenvalue of +1.0 were extracted; only the first nine are shown. Loadings algebraically greater than ± 0.300 are utilized to represent the factors. The complete rotated factor matrix (including final communalities) is included in Appendix III.

[b]Cumulative proportion of total variance loaded on first 9 factors: 70.2%.

Primary Dimensions.--Factor I for the Anglo-American
group portrayed a strong association between variables which
were given generally high preference rankings; that is,
variables from Grouping A (See Table 9, page 86). This
location and amenity complex was inversely related to prefer-
ence responses concerning services, including city water,
street lights, and schools, as well as to the quality of
homeyness. Factor I, then, appears to support the conclusion
that the major concern of Anglo-American families in select-
ing a place to live are attributes of housing, together with
the physical setting.

If for no other reason, factor II was curious for the
few variables that loaded upon it. Nevertheless, the inverse
association between the quality of prestige and bus service
seemed logical; bus service often being associated with the
lower income, and less prestigious, areas in Austin.

Other Dimensions.--Factor III represented a neighbor-
hood facility grouping of parks and schools. Factor IV was
a most intriguing enigma, with eight of the variables loading
above the critical cut-off level. Both cleanliness and
friendliness had high negative loadings, suggesting that
these variables might be most important in the interpretation
of the dimension.

Shopping facilities appear as a unique dimension of
Anglo-American neighborhood preference on factor V, inverse-
ly related to natural amenity considerations. Neighborhood

design and density were associated on factor VI, a component set which is strongly opposed to job opportunities within the neighborhood. Conjecture concerning the remaining factors need not be made here.

Four Attribute Clusters.--The four background characteristics which exhibited the greatest tendency to cluster or otherwise pattern are plotted in Figure 10, page 143. That young renters (10b) were also frequent movers (10a) is hardly surprising, but it is important to note that these background attributes were highly related to a preference for prestige (factor II). There was also some tendency for this group to dominate factor I space. This might indicate that both factors relate to prestige, one to a general neighborhood dimension, the other more specifically to housing.

Two other attribute associations are worth noting. Although the clustering was not very pronounced, there was a tendency, revealed in 10c by quadrants, for professional and managerial occupational groups, and housewives of these higher occupational classes (including salesmen) to score positive on factor II. A second, more complex association, is suggested in Figure 10d. The important variables were age, education, and income. Among the younger (under 31 years), education seemed a critical attribute leading to clustering, which was centered on the positive I quadrant. Among the older (over 39 years), income, and not education, became more critical to clustering, although only two small

groups were revealed, one concerned with housing and the other with neighborhood prestige.

Clustering of background attributes in preference space was not nearly as apparent for the Neighborhood Quality Game as was the case for the Accessibility Game. One reason for this might be that much of the recorded subject data relates to attributes which might best account for accessibility priorities; such as, for example, auto availability and children in school. Background data which might be thought to best relate to neighborhood preferences appears to be more complex, involving perhaps deeper social values.

Preference Groupings.--Despite this general lack of significant background clustering, it was possible to suggest several Anglo-American groupings for neighborhood quality preference space. These are depicted in Figure 11, page 144. The largest grouping was labeled "young achievers." It was a complex grouping which was oriented to positive primary preference space. Beyond age, occupation, and the associated high mobility of youth, education appeared as the critical variable. If a young Anglo-American's education was relatively high, it appeared to make little difference what his current income was, for his neighborhood and housing priorities, and probably expectations, were also high. Two small groups of "older achievers" were also defined, although here the critical factor was most likely income.
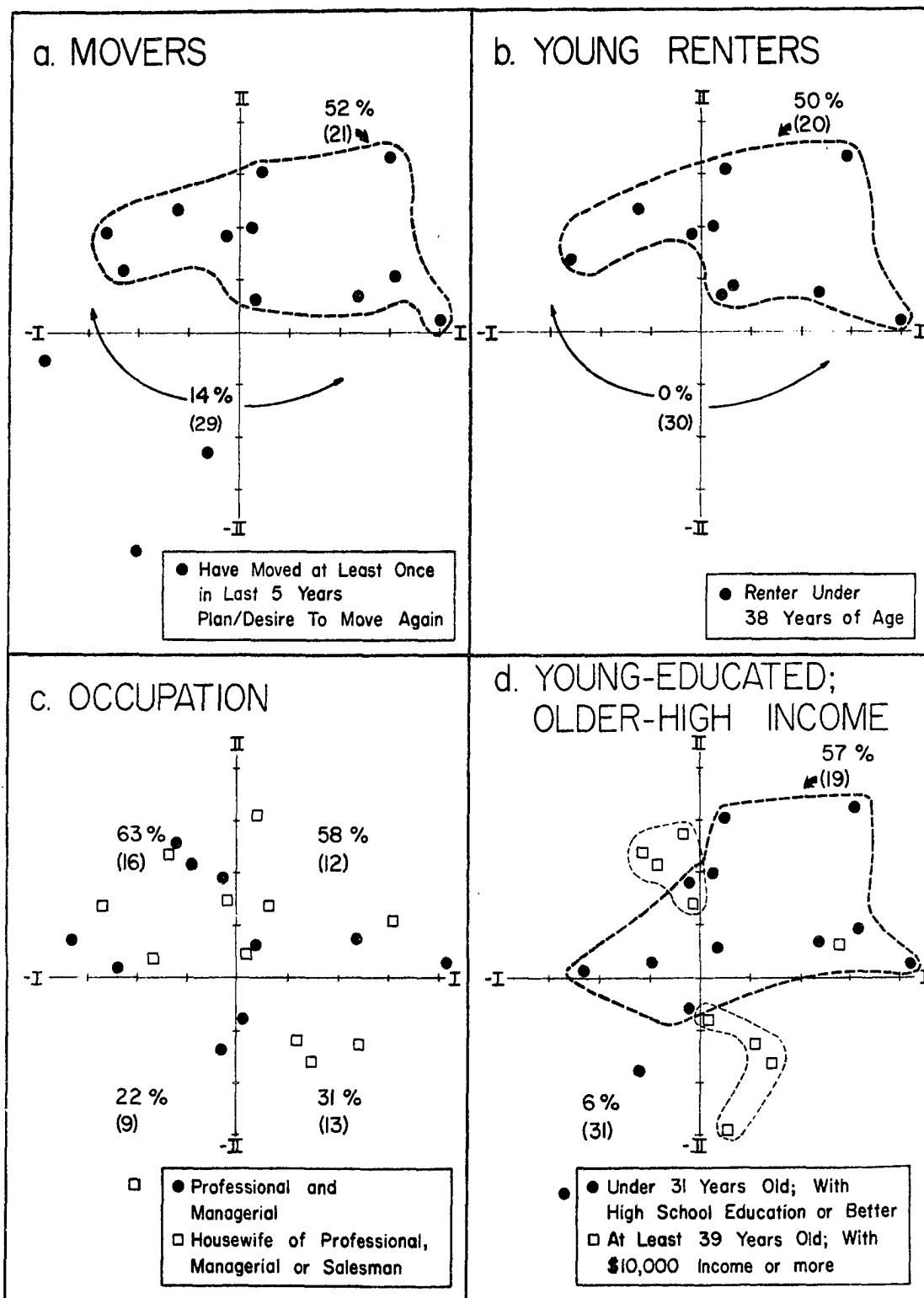
FIGURE 10

FACTOR SCORES FOR SELECTED SUBJECT DATA
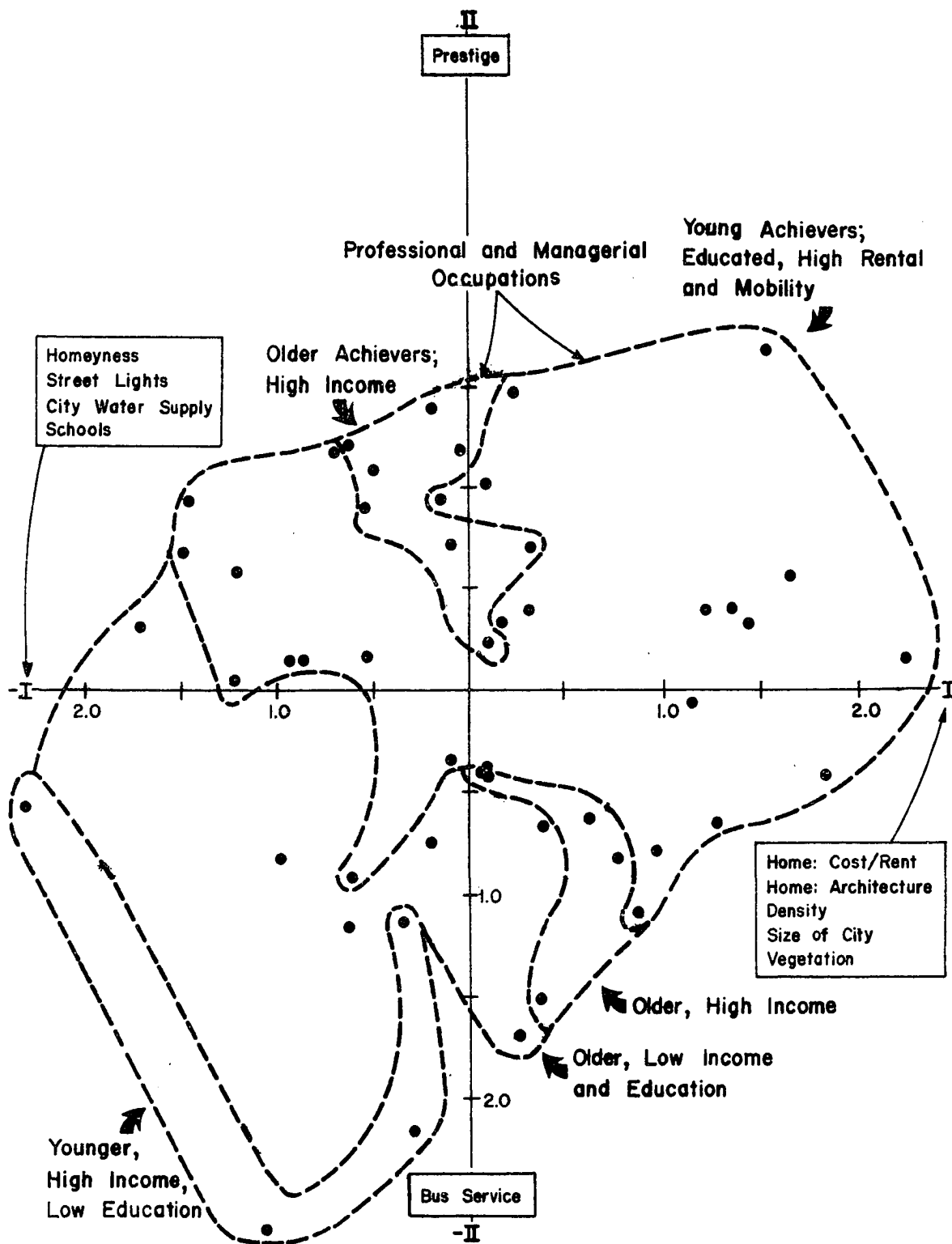NEIGHBORHOOD QUALITY GAME--FACTORS I AND II
ANGLO-AMERICAN SUBJECTS

FIGURE 11

FACTOR SCORES WITH INTERPRETED GROUPINGS
NEIGHBORHOOD QUALITY GAME--FACTORS I AND II
ANGLO-AMERICAN SUBJECTS

Although only a few Anglo-American subjects scored in the third quadrant, it was interesting to note that education and income remained most significant in defining the groups. A negative response to both dimensions seemed related mainly to low education. There was some evidence that younger, high income subjects, but with low education, scored negative on both factors. Among the more youthful subjects, then, education emerged as a critical factor to Anglo-American neighborhood preferences.

Mexican-American

The representation of the rotated matrix for the Mexican-American sample is given in Table 16. Nine factors were again extracted which amounted to 71.0 percent of the accumulated variance.

Primary Dimensions.--Factor I extracted a very high 23.5 percent of the total variance. The factor was in many ways similar to factor I for the Anglo-American group, although the positive loadings were more related to socio-economic concerns, rather than to housing architecture and neighborhood amenities. This association of positive loadings was not expected since all of the variables involved were ranked relatively low by the Mexican-American sample (See Table 9, page 86). It might be, then, that this association is due to the uniformly low rankings given to the variables by the subjects. If this is the case, then it should be expected that most subject factor scores will

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TABLE 16

NEIGHBORHOOD QUALITY GAME: MEXICAN-AMERICANS
REPRESENTATION OF ROTATED FACTOR LOADINGS

Variables ↓	Percentage of Variance[b] →	Factors[a]								
		I	II	III	IV	V	VI	VII	VIII	IX
		23.5	9.1	7.7	7.0	5.8	5.1	4.7	4.2	3.9
1. Size of City				.341		.596				
2. Location of Neighborhood			.493					.411		
3. Density		.557					.330	.349		
4. Neighborhood Design									.752	
5. Landforms		.443			.463				.361	
6. Vegetation			.624			.428				
7. Income Level		.858								
8. Kind of People		.767								
9. Home: Architecture/Design ...			.432		.700					
10. Home: Cost/Rent		.682	.315				.347			
11. Street Condition								.809		
12. Sidewalks					.720					
13. Bus Service			.785							
14. City Water Supply									.851	
15. Street Lights										
16. Taxes					.367					
17. Schools			.716							
18. Parks						.407	.499			
19. Shopping Facilities		.311					.789			
20. Job Opportunities										
21. Police Station										.792
22. Personal Friends							.767			
23. Privacy					.802					
24. Prestige					.688					
25. Homeyness		.340						.330		
26. Quietness						.842				
27. Newness										
28. Cleanliness		.576							.476	
29. Beauty			.483		.531		.328			
30. Friendliness					.308	.591				.354

Negative loadings are underlined.

[a]Factors with an eigenvalue of +1.0 or greater are shown. Loadings algebraically greater than ± 0.300 are utilized to represent the factors. The complete rotated factor matrix (including final communalities) is included in Appendix III.

[b]Cumulative proportion of total variance loaded on first 9 factors: 71.0%.

cluster in negative factor I space. Negative loadings on factor I included shopping facilities, homeyness, and cleanliness; each of which has been shown important to Mexican-American preferences.

Bus service and schools loaded high on factor II, indicating components which are critical to the "container" neighborhoods of low mobility groups. It may be recalled that the Mexican-Americans also linked the bus stop with an elementary school on factor II of the Accessibility Game. An association of Grouping A variables (items 1-10; see Table 9) may again be noted with regard to the negative loadings; also, perhaps, due to low ranking.

Other Dimensions.--The association of privacy and prestige, expected for the Anglo-American group, was found for the Mexican-American sample. Both variables loaded high on factor III, along with a positive relationship with the quality of beauty. It may be recalled that this same association was found as a primary dimension of neighborhood quality preference for the combined groups (Table 12, page 111).

Of the remaining factors, only three offer interest for comment here. Again, however, much relies on conjecture. Factor V seemed to relate variables which might represent a desire for physical and social harmony; that is, parks, quietness, and friendliness. The concern for better streets, which within the Mexican-American neighborhood were generally

in poor condition, may have resulted in street condition becoming a single dimension of preference, represented on factor VII. Factor IX curiously seems to imply that the desire for a friendly neighborhood is not commensurate with the location of a police station nearby.

Four Attribute Clusters.--Of the fifty Mexican-American subjects, thirty-two had standard scores in negative factor I space; twenty-one of these were in quadrant II. This indicates that approximately two-thirds of the total sample were not concerned with the positive loadings of factor I, supporting the suspicion that the loadings may be due mainly to uniform low token expenditures. The important variables on factor I for a majority of the Mexican-Americans were the negative loadings; that is, shopping facilities, homeyness, and cleanliness.

Since this dimension extracted a very high amount of variance, however, it may also be that dimension I accounts for two important preference associations. The negative loadings may be regarded as a primary dimension of preference for the majority of the Mexican-Americans, while a smaller sub-group of the sample is oriented more to the positive loadings. This would indicate a basic preference division within the Mexican-American sample group over neighborhood quality.[3]

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[3]This conclusion would generally be supported by the higher standard deviations from the mean token expenditures found for both accessibility and neighborhood quality on the Mexican-American preference rankings (see Table 2, page 59, and Table 9, page 86).

Many of the subjects who scored in quadrant II owned their home (Figure 12a, page 151), although many of these structures were in substandard condition (12b). These home-owners were not particularly concerned with housing costs or the social and economic attributes of neighborhood (positive factor I). Few home-owners either planned or desired to move (12c). It appears, then, that substandard dwelling conditions among the Mexican-American did not result in a desire to relocate. Rather, this group was more concerned with gaining schools, bus service (positive II loadings), shopping facilities, homeyness and cleanliness (negative I loadings).

Figure 12d is, at best, suggestive that both income and education were a bit higher in quadrant IV. Nevertheless, this finding, if valid, is extremely important. Factor scores in quadrant IV are oriented to Grouping A variables (positive factor I loadings; negative factor II loadings) which were found to be important to Anglo-Americans. Although there are only a few individuals comprising the higher income and education segment of quadrant IV, the implication is that as incomes and education are increased among the lower-income Mexican-American, the orientation of this group becomes more similar to that of the higher-income Anglo-American. This finding, based on very meager evidence here, would tend to indicate that preference differences between the two groups are primarily due to class rather than cultural differences, contrary to the findings in Chapter IV.

<u>Preference Groupings</u>.--Preference groupings are outlined in Figure 13, page 152. In the case of the Mexican-American, several overlapping clusters emerged. Few groupings were pronounced, except the group labeled "the Backbone." While this group was uniformly quite poor, many subjects owned their home, which was often in substandard condition. Most had lived in the neighborhood, often at the same address, for many years. Friends were nearby and only a few expressed a desire to move. One subgroup was made up of either quite young or old individuals who listed few relatives living nearby, but who had many friends. This sub-cluster scored highest on factor II, relating to schools and bus service.

Renters and movers, many who had lived in the neighborhood only a short while, were centered in quadrant III. Although this group was also oriented to the negative loadings on factor I, they were more concerned with location and amenity variables of neighborhood (negative II loadings) than were the home-owners. Contrary to expectations, however, the more extreme factor scores on negative factor II were associated with relatively low income and education. Only subjects who scored positive on factor I and tended toward positive factor II space (schools and bus service) possessed generally higher incomes and, in some cases, higher education.
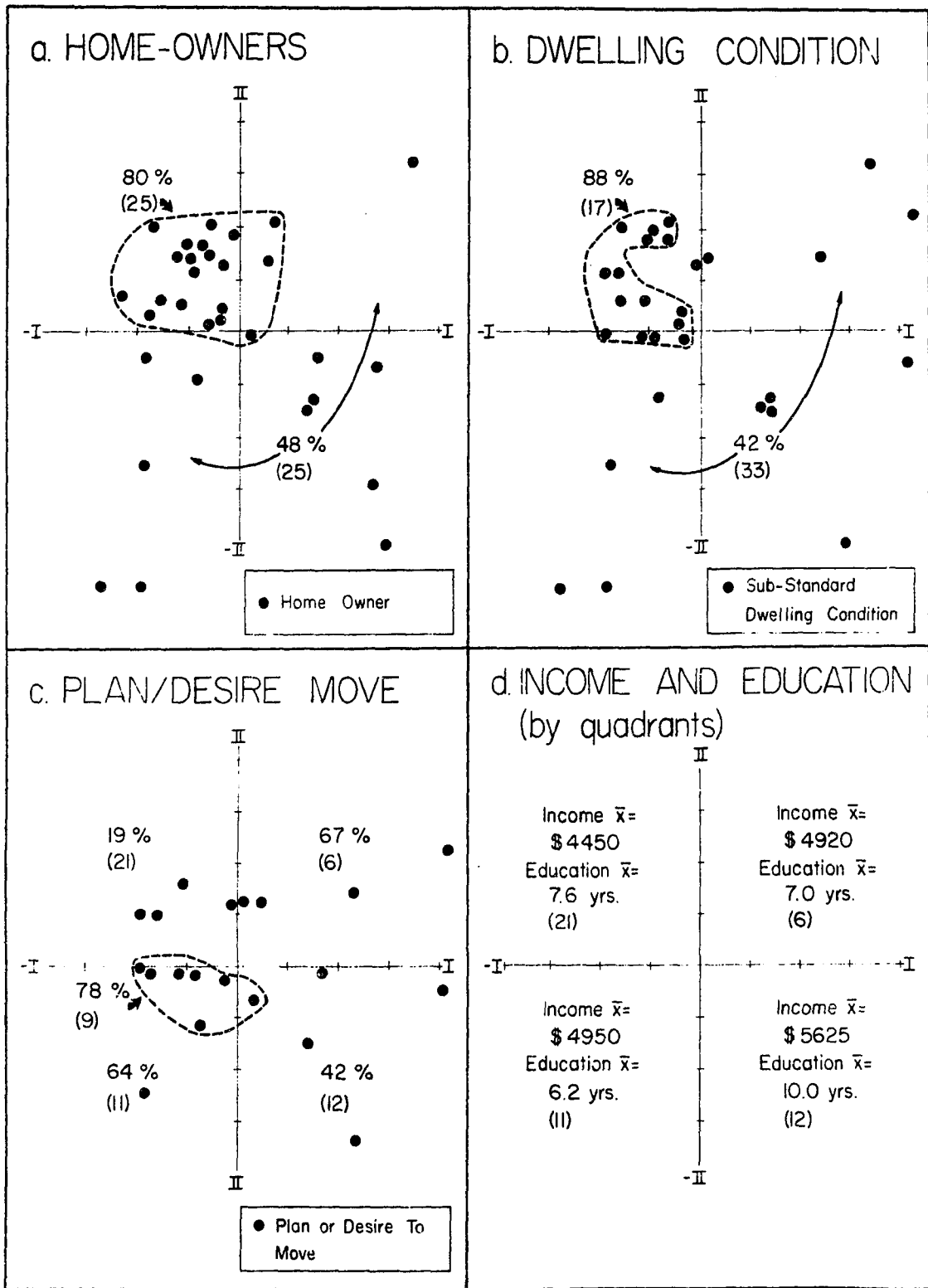
FIGURE 12

FACTOR SCORES FOR SELECTED SUBJECT DATA
NEIGHBORHOOD QUALITY GAME--FACTORS I AND II
MEXICAN-AMERICAN SUBJECTS
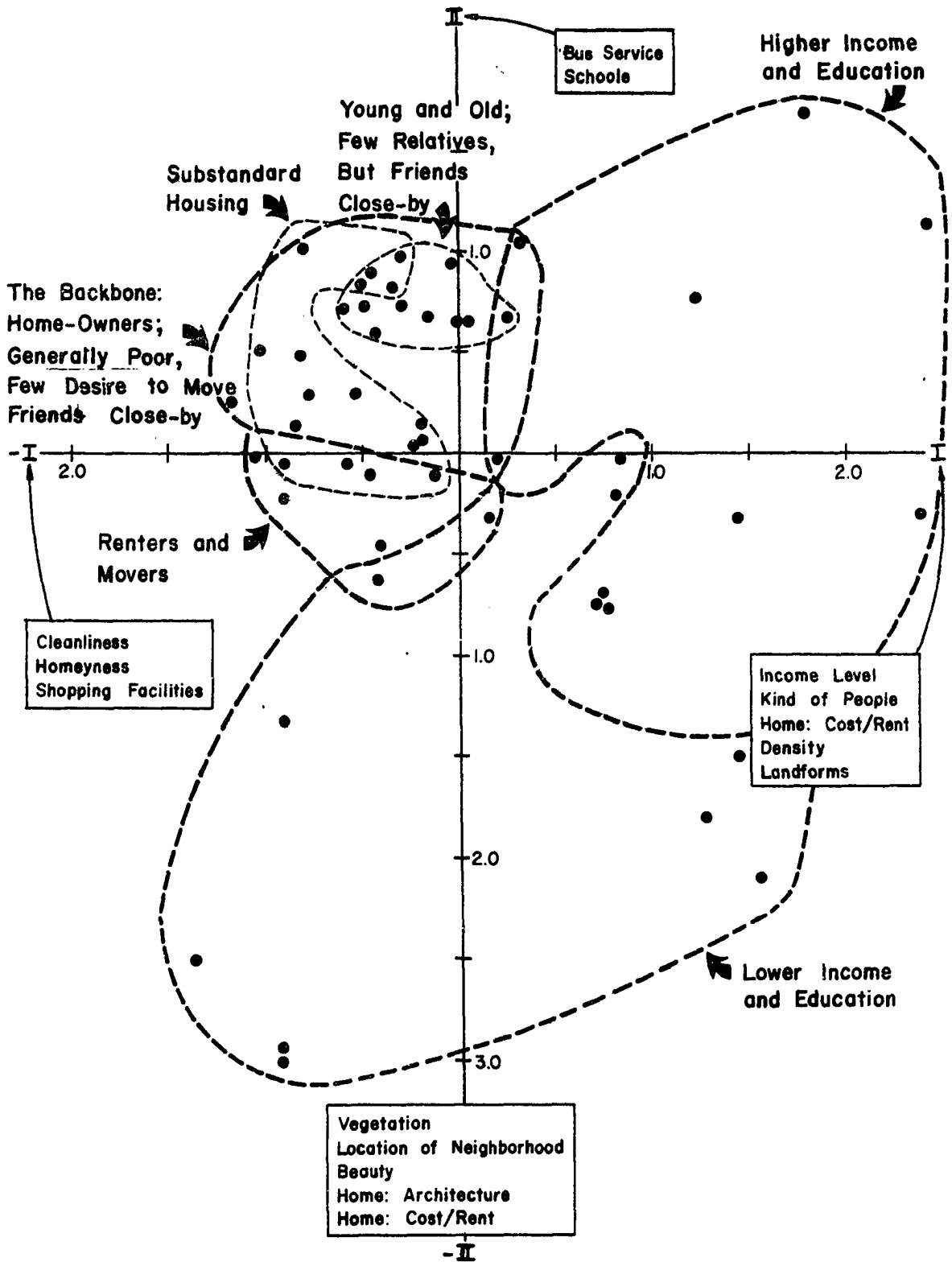
FIGURE 13

FACTOR SCORES WITH INTERPRETED GROUPINGS
NEIGHBORHOOD QUALITY GAME--FACTORS I AND II
MEXICAN-AMERICAN SUBJECTS

Comparison of Groups

Preference Dimensions.--In terms of neighborhood, the primary dimensions for the two groups were in several ways quite similar. In fact, the negative loadings of factor II for the Mexican-American are nearly identical to the positive factor I loadings for the Anglo-American. Schools, bus service, and the quality of homeyness are involved in the factor loadings of both groups.

Nevertheless, there are significant differences. The inverse association of prestige and bus service for the Anglo-American on factor II was not found for the Mexican-American. Neighborhood maintenance, shopping facilities and homeyness was a unique association among the Mexican-American (negative I loadings). The overall pattern of factor loadings, then, must again be regarded as unique to each sample group.

More important, however, was the pattern of factor scores with regard to the primary dimensions of neighborhood preference. The Anglo-Americans were rather uniformly distributed over preference space, indicating that about the same number of subjects scored on each combination of the preference associations. In the case of the Mexican-American, however, there was a rather extreme orientation to quadrant II space (21 of the total 50 subjects). Although the positive loadings dominated factor I, two-thirds of the Mexican-Americans scored on the negative loadings of this dimension.

There seem to be two possible explanations for this
pattern. The first suggests that the positive loadings
reflect a high degree of correlation because of the uniform-
ly low rankings given to each of the variables. Although
this explanation seems most plausible, a second possibility
exists. This is the existence of a counter-preference group.
From an analysis of background data for those subjects
scoring on the positive loadings of factor I, there is some
indication, only very tentative and incomplete, that these
subjects had higher incomes and, in some cases, education
than the remainder of the sample group. If this is true, it
would support the notion that preferences for neighborhood
quality are, at least in part, dependent on income, and as
incomes rise, regardless of ethnicity, preferences become
more oriented to variables of neighborhood location and
design, rather than to the basic services and functional nodes.

Background Attributes.--Again, the clustering of
background attributes was only suggestive. This was partic-
ularly true for the Neighborhood Quality Game. Few differ-
ences would prove statistically significant at a high confi-
dence level. The small size of most preference groupings,
together with the general lack of clustering, also limited
interpretation.

The background attributes which exhibited the greatest
tendency to cluster were also somewhat similar between the
two groups. Income and education, together with land tenure

and migration patterns, appeared important to the explanation of a subject's factor score among both groups. Among the Anglo-Americans, high status occupational backgrounds tended to also cluster in preference space. Among the Mexican-Americans, living in substandard dwelling conditions was linked to certain urban environmental preferences.

Most pronounced were clusters involving land tenure. Among the Anglo-Americans, migration and housing rental were associated with preferences for neighborhood prestige. Land tenure might be regarded as the independent variable in the Mexican-American case. The home-owner cluster was not over-ly concerned with either social or economic status of the neighborhood, or with housing costs. The prospect of moving to a better physical situation might mean leaving established friends and relatives and, in today's market, possibly giving up the opportunity to own. It appears, then, that this desire to own is extremely important to the majority of Mexican-Americans, and is related to their preferences for neighborhood quality.

A Final Consideration

The rotated factor matrices for both groups, and for each game, reveal patterns of within-group preference for each ethnic neighborhood. While many factors were largely uninterpretable with regard to causation, the associations of preference response were of interest. Few factors were more than vaguely comparable between the neighborhood groups.

The conclusion must be that dimensions of accessibility and neighborhood preference exist which are essentially unique to each ethnic group.

This conclusion should be evaluated with regard to at least two basic considerations. First, spurious correlation in an exploratory study such as this must always be considered. This problem is particularly important with regard to a second concern, the limited data set. Pre-designed environmental displays can probably never hope to completely simulate the real world. While the environmental displays developed here were relatively complete, they included, of course, merely a small sampling of real world variables. If additional variables were to be added to each of the games, and the interviews run a second time, it might (although not necessarily would) result in different factor loadings. These two considerations are particularly important with regard to factors which appear largely uninterpretable. Nevertheless, the lack of ready and in-depth interpretation does not necessarily indicate that the variable association is meaningless. In many cases, the mere association of response to particular variables is significant in itself. Also, "meaningless" correlation may signal the need for more intensive research designed to find why such variable associations do exist.

CHAPTER VI

SUMMARY AND CONCLUSIONS

This study was designed to (1) compare environmental preferences for accessibility and neighborhood quality between two distinct ethnic neighborhoods, (2) relate dimensions of preference to attributes of the sample groups, and (3) test the methodology. The findings may then be related to the question of a universal landscape goal for all groups.

Environmental Preferences

Accessibility

Using rank-order correlation, the overall preference rankings between the two groups proved similar for accessibility. The correlation between-groups was significant for each of three accessibility measures: distance of facilities from home, functional neighborhood makeup, and frequency of facility use. Other findings, however, were generally in opposition to this conclusion. Within-group preference dimensions, while exhibiting some comparisons between the groups, were generally unique associations for each sample. More important, plotting of combined group factor scores on the primary accessibility dimensions resulted in the ability to separate the ethnic groups in preference space. Therefore,

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while overall accessibility priorities may be similar between the two groups, there exist very important differences which should not be ignored.

The traditional focus of the Anglo-American on neighborhood schools was emphasized both in time-distance priorities and by an important dimension of preference which positively linked the elementary and high school facilities. Although the elementary school factored out on the primary accessibility dimensions for the Mexican-American as well, several other facilities were ranked relatively higher by this ethnic group. Particularly in contrast to the Anglo-Americans were a place of worship, hospital, and bus stop. These variables, together with city park, loaded onto a primary dimension, which might be viewed as a functional definition of Mexican-American accessibility preference.

The Accessibility Game was designed to determine a functional neighborhood; that is, neighborhood defined in terms of access to urban places. Anglo-American activity space predicted Anglo-American preference space in that frequency of facility use and accessibility priorities were similar. The Anglo-American's neighborhood, then, might be regarded as a functional geographic unit where an increase in distance was marked by a decrease in use (distance decay).

Among the Mexican-American, however, activity space did not define either accessibility preferences or functional neighborhood space. The importance of places being nearby was not gauged in terms of frequency of use. This suggested

more a social, rather than spatial, concept of neighborhood. One important aspect of this neighborhood appeared to be the need for security, measured by the high rankings given to the church, hospital, street lighting, and police. The church, of course, might also reflect on a community interaction node.

The Anglo-American's neighborhood might be regarded as one of practical convenience. Yet this type of neighborhood apparently was unsatisfactory even when met. Among the Anglo-Americans, only 38 percent regarded neighborhood as "very important" compared with 68 percent for the Mexican-American. The socio-functional neighborhood, conceived from the needs of a lower-income ethnic minority group, was apparently quite important compared to the spatial-convenience unit devised by the higher income Anglo-Americans.

The functional concept of neighborhood proved to be rather non-exclusive for both groups. Most dramatic was the insistence by nearly 70 percent of the Anglo-American sample to include an automotive service station within the neighborhood. Many facilities, however, were desired by both groups. Although the Anglo-American was slightly more exclusive in terms of neighborhood function, he also perceived a much larger physical unit than did the Mexican-American. Among the Anglo-American, particularly, there was a relationship between neighborhood size and importance; the larger the "neighborhood" was regarded by the subject, the less importance he attached to it.

Nevertheless, the desire for proximity to functional locations seems to be a slightly more important force in selecting neighborhood sites when compared to the desire for privacy and isolation, particularly among the Mexican-American. While it may be that some of the findings here do not generally reflect planning ideals, most preference priorities are generally consistent with current neighborhood design. In fact, the findings indicate that mixed land use planning, if properly done, might be supported.

Neighborhood Quality Game

The primary hypothesis was supported with regard to neighborhood quality. There was no significant rank-order similarity in preference between the two groups. Support for this conclusion was also gained from the ability to divide the ethnic groups in primary preference space. There were, to be sure, some similarities in the rank-ordering of individual variables; for example, water supply, taxes, and street maintenance. But the pattern of response over the thirty variables was generally different for the two groups.

Most notable among the differences was the much higher priorities given to neighborhood services by the Mexican-American. At the time of the interviews, the Mexican-American neighborhood was working through a Model Cities program to upgrade street conditions, including paving programs and the installation of street lights and sidewalks. These current

concerns were ranked quite high. The services were regarded by the Mexican-American as a primary set of needs which must first be satisfied before other neighborhood variables would be highly regarded.

Within-group preferences among the Mexican-American revealed a dimension based on the triad of shopping facilities, homeyness, and cleanliness. Nearly two-thirds (64 percent) of the Mexican-American sample loaded onto this preference factor. Variable loadings for the combined groups resulted in a similar neighborhood preference dimension (bus service, homeyness, and cleanliness). Of the grouping that scored on this factor, 80 percent were Mexican-American. While there appears to be a "minority" group within the Mexican-American sample who do not regard these variables as most important, the conclusion must be that for the majority the neighborhood association of homeyness, cleanliness, bus service, and shopping facilities is primary.[1]

These preference rankings and response associations were in contrast with the high priorities that the Anglo-American placed on qualities of neighborhood location and design. Most important were concerns centered on the subject's home. The importance attached to housing costs represented the greatest discrepancy between the two groups. Housing costs and architecture loaded high on the primary

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[1]Support for this conclusion is also gained in the high amount of variance which this factor association extracted.

preference dimension for the Anglo-American. Privacy was also ranked relatively high. When asked what changes would make the neighborhood more ideal, 26 percent of the Anglo-Americans advocated larger lot size. The same question to the Mexican-Americans resulted in suggested changes around neighborhood services and maintenance. Neighborhood location, design, and density, as well as city size, were all relatively more important to the Anglo-American. Recreation facilities, cultural areas, and aesthetics proved relatively unimportant to either group.

Many Mexican-Americans responded that friendliness and cooperation were the most important aspects of neighborhood. Although many Anglo-Americans also agreed that 'neighborhood' was fundamentally a social concept, a larger percentage responded that location was most important, particularly with regard to facility convenience, especially to schools. Yet response over the interviews was mixed. Anglo-Americans, for example, placed a best friend's house nearer on the Accessibility Game but ranked personal friends and neighborhood friendliness lower on the Neighborhood Quality Game. Nevertheless, the "neighboring" quality of neighborhood probably appealed most strongly to the Mexican-American.

Although both groups ranked prestige last among the thirty variables, the first two preference dimensions of the Anglo-American were at least somewhat related to the quality. While prestige variables also loaded onto a primary

neighborhood preference dimension for the Mexican-American, the large majority of this group scored negatively on it. Both groups tended to prefer neighborhood homogeneity, although the Mexican-American was more likely to select total segregation than was the Anglo-American. Both groups were also interested in moving to higher income housing, dominated by low density, single-family homes. The Anglo-Americans, however, generally gave each of these variables a higher overall ranking than did the Mexican-American.

The sample groups were also quite similar in their selection of neighborhood photographs along several different quality scales. Only the rankings for prestige were notably different. The best prediction for overall neighborhood preference was again homeyness for the Mexican-American, and beauty for the Anglo-American.

The Environmental Display Games were not devised to directly compare accessibility with neighborhood quality. But some measurements offered at least an insight into the relative importance attributed to these two factors. The emphasis among the Anglo-American on housing costs, lot size, and privacy suggest that Rossi's conclusions regarding the importance of house design remain valid (at least for the Anglo-American).[2] The service orientation of the Mexican-American, however, together with higher priorities around

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[2]Peter H. Rossi, Why Families Move (Glencoe: Free Press, 1955), p. 154. See Appendix I, p. 204 for a discussion of his findings.

factors of security, friendliness, and neighborhood mainte-
nance seemed to emphasize the importance of neighborhood as
an extension of the home.[3]

The high indices of variance for the Mexican-American
indicated a lack of group preference when compared with the
Anglo-American. In many cases, this was due to a bi-modal
response pattern among the Mexican-American on certain vari-
ables, suggesting the existence of two preference groupings.
In some cases, this was linked to the apparent tendency
among the Mexican-American to regard the variables in light
of either long-term social needs or immediate issues. The
Anglo-Americans, on the other hand, seemed to evaluate the
variables more with regard to daily activity functions
together with an idealized image of what the city "should be."

Background Attributes

The study attempted to relate environmental prefer-
ences to the background attributes of the subjects. The
primary hypothesis assumed that between-group differences
in preference could be based on the ethnic factor. The
secondary hypothesis assumed that within-group patterns of
preference could be related to certain relatively simple
measures of the subject's background. The following back-
ground attributes proved to be most significantly associated

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[3]Lee Rainwater, "Fear and the House-as-Haven in the
Lower Class," Journal of the American Institute of Planners,
XXXII (January, 1966), pp. 23-31; followed by comments by
Roger Montgomery, pp. 31-37.

with the primary preference dimensions for one, or both, sample groups.

Cultural Attributes

Ethnic Background.--The primary hypothesis is basically supported by the findings; ethnic background is an important factor with regard to the differentiation of environmental preferences. There were exceptions to this conclusion, however. Most important, the overall pattern of accessibility priorities was significantly the same for both groups. Nevertheless, factor score plottings in primary preference space resulted in the separation of two ethnically-different preference clusters. The presence of young children, however, in the subject's household was also significantly related to the clustering. Despite this, ethnic background served to predict a subject's factor score on the primary dimensions of accessibility.

The ethnic factor was more important with regard to distinct neighborhood quality preferences. Differences in neighborhood priorities (rank-ordering) suggest, particularly, that the two ethnic groups have very different neighborhood goals. Again, however, there were suggestions that neighborhood quality preferences among the Mexican-American are, at least in part, dependent upon differences in socioeconomic and demographic background. Therefore, while cultural considerations, reflected in differences in ethnic background, must be considered fundamental in explaining

differences in urban environmental priorities, such value
systems may not, in most instances, be evaluated apart from
other concerns.

Socio-Economic Attributes

Income.--Income was most important to clustering among
the Anglo-American sample, particularly regarding accessi-
bility. It was the single most important variable relating
to within-group Anglo-American preferences. Among older
Anglo-Americans, higher income was found important to prefer-
ences for either neighborhood or housing prestige. There
was limited evidence that higher incomes would also signifi-
cantly alter Mexican-American preference priorities.

Education.--Often linked with income, education was
found somewhat related to preferences for both groups. Among
younger Anglo-Americans, high education often resulted in
preferences for both neighborhood and housing prestige.
Limited education among the Mexican-Americans was one of
several background variables comprising a dependency associ-
ation, particularly concerning accessibility.

Occupation.--Only Mexican-American housewives, as an
"occupational" class, were clustered in accessibility prefer-
ence space. More important here, however, was the presence
of children, although housewives with children scored higher
overall on an educational dimension than did other occupation-
al classes with children. Anglo-American professional and

managerial classes, along with wives of higher occupational groups, tended to score a bit higher on dimensions of neighborhood prestige.

Religion.--Although not clustered on the primary preference dimensions, religion is included here because of the high accessibility ranking given to a place of worship by the Mexican-American group.

Demographic - Life Cycle Attributes

Age.--Older age influenced accessibility priorities among the Mexican-American and, coupled with income, neighborhood quality preferences among the Anglo-American. Older age was also linked with single status, low education, and few children among the Mexican-American, forming a dependency grouping which scored high on a functional dimension of accessibility preference.

Marital Status.--This was an important attribute among Mexican-American subjects relating to accessibility priorities. Single status among young and affluent Anglo-Americans is often regarded as an important aspect of independence. But if an individual is older, poor, with little education, and a member of a minority, living alone is one more measure of social and environmental dependence. This factor was related, then, to a Mexican-American accessibility dimension based on both convenience and security.

Children in Household.--Since a primary accessibility
dimension for both groups was related to schools, the number
of children in the household, particularly elementary and
pre-school, was significant to the subject's score on these
preference dimensions. This relationship was particularly
true for Anglo-American families with children.

Housing and Mobility Attributes

Land Tenure.--Land tenure proved a valuable attribute
for predicting both accessibility and neighborhood quality
preferences for both groups. Among the Mexican-American,
particularly, home-ownership emerged as a fundamental factor
relating to neighborhood quality preferences. Despite the
fact that many homes owned by Mexican-Americans were in
structurally substandard condition, few wished to move. In
this regard, home-ownership was regarded as a factor relat-
ing to both security and stability.

Dwelling Conditions.--Although substandard dwelling
structures were found only in large numbers for the Mexican-
American group, this factor was generally not an important
motivating force behind a desire to move. Since many of
these substandard units were owned, the poor conditions were
apparently tolerated as a necessary evil to maintain the
security of home ownership. Nevertheless, subjects living
in substandard dwelling conditions were clustered in primary
neighborhood preference space relating to qualities of homey-
ness, cleanliness, and shopping facilities.

Family and Community Interaction

Friendship and Family Ties.--These attributes were
associated with preferences for neighborhood quality among
the Mexican-Americans. Family and friendship ties appeared
important in enforcing preference associations for Mexican-
American home-owners.

Activity.--Anglo-Americans who placed highest priority
on work and family activities were associated with the pri-
mary accessibility dimensions.

Complex Attributes

This study was confined to examining possible relation-
ships between rather easily measured background attributes
and environmental preferences. Nevertheless, some rather
complex associations of these simple measures, together with
suggestions relating to deeper social values were found,
particularly regarding neighborhood quality preferences.
While both hypotheses of the study proved valid, at least in
part, it should be expected that any individual subject is
at once a member of many overlapping and multi-dimensional
preference groupings, each of which is likely related to
different background variables, some simple and some very
complex.

Methodology

The Environmental Display Games proved to be an effec-
tive device to measure environmental priorities. The limited

buying power given to the subjects at the beginning of each game provided a more realistic decision-making situation which forced the subject to make numerous tradeoffs to gain maximum overall satisfaction. For this, and other reasons, most subjects found the games both challenging and fun to play.

While the games proved valuable as a research technique, there were, however, several problems associated with both format and interpretation. The game boards provided visual enforcement of many variables, thereby aiding in the cross-cultural conceptualization of the display. However, the order of variable presentation was necessarily fixed by this method, which might have introduced a bias in token expenditure. Some aspects of the games proved too time-consuming, particularly the photo-ranking procedures. A few subjects, particularly a small number among the Mexican-American sample, were either confused over procedures, despite repeated attempts by the surveyor to clarify the ideas, or regarded the "games" as unimportant or irrelevant to their real-world problems.

The response matrices for the games were subjected to both nonparametric and parametric statistical manipulations. The procedures were designed to both compare group priorities and relate environmental preferences to subject background attributes. Most successful, perhaps, was the use of rank-order correlation to compare group preference rankings for each game. Least successful, in some ways,

was the interpretation of preference dimensions gained from factor analysis of the response matrices. This was traced to several problems, particularly to the independence of many variables and the lack of a priori theoretical structure.

Nevertheless, factor rotation afforded the opportunity to plot factor scores in two-dimensional taxonomic space. This procedure proved both interesting and valuable in relating background attributes to group preference dimensions. Formal linkage procedures proved impractical, however, since clustering of background attributes was often only generalized. For this reason, statistical testing for group differences was performed in only select cases.

Three basic suggestions might be made regarding future research using similar game techniques. First, variable selection should be predicated on existing works and, based on these findings, serve to develop a more restricted and refined theoretical base, which may then be subjected to more rigorous testing. Second, the playing time for the games should be reduced and the number of samples greatly increased. Third, other ethnic groups in other cities, and in other parts of the country, need to be tested using comparable methods.

The Universal Landscape Goal

The fundamental importance of this study relates to the basic question of a universal urban landscape goal for all groups. There is the suggestion, resulting from the

findings regarding accessibility, that a common ordering of environmental priorities among different groups exists. To be sure, certain findings from this, and other studies regarding both accessibility and neighborhood quality, are beginning to focus on common high priority facilities and qualities. The elementary school, grocery and drug stores, city water supply, street condition, and neighborhood maintenance are among such apparently "universal" items.

But differences between groups were perhaps most notable. Overall differences on the Neighborhood Quality Game were most significant but important differences were notable for accessibility as well. Urban preferences proved to be an extremely complex man-environment theme.

The lack of a generalized set of landscape priorities among all groups suggests important considerations for both geographer and planner. For the geographer, the lack of common environmental goals indicates that spatial theory must approach the organization of space not through the classical models based on rational economic man but, rather, through an understanding of dynamic behavioral orientations, based perhaps on such background differences as ethnicity and income. For the planner, the existence of multiple and complex environmental goals requires that each planning effort be undertaken only after due regard is given to the needs and desires of the inhabitants. Whether it be, then, in the understanding of man's organization of space or in

the planning of city development, the importance of urban

environmental preferences cannot be disregarded.

APPENDIX I

THE MAN-ENVIRONMENT THEME

Within geography, the man-environment theme has
been traditionally organized to include man's use of his
physical earth and his adaptation to environmental in-
fluences. More recent works have also tended to emphasize
man's psychological relationship with the objective world.
Studies involving environmental preferences, of which
this dissertation is a part, are based on this behavioral
approach, which relies considerably on complementary work
from related fields, particularly psychology and sociology.
While it is possible to review here only a small portion
of the pertinent literature, it is necessary to place the
problem of this paper within the context of several inte-
grating themes, as well as individual works, which are
relevant to the behavioral approach within geography.

Environmental Influences

The recent revival of a behavioral approach to the
study of the environment is reflected by the large number
of new journals, schools, and research efforts which have

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been developed to explore this theme.[1] These efforts are often directed toward the effects of the man-made and natural environments on human attitudes and behavior. Research efforts to date have disclosed that the role of the physical environment on man's behavior is extremely complex.[2]

The complexity of this relationship has resulted in attempts to define environmental influences.[3] The concern over environmental systems, including ecological patterns, food supply, and pollution, generally conclude that man's relationship to his physical environment is in delicate balance. Aspects of environmental pollution are continually being uncovered which adversely affect man's health. The

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[1]Some of the new journals include: Environment; Environment and Behavior; Design and Environment; Environment and Planning; Man-Environment Studies; SER: Environmental Abstracts; and Journal of Leisure Research. For a recent list (architecturally oriented) see American Institute of Architects Journal, LI (May, 1969), p. 90.

[2]Amos Rapoport, "Observations Regarding Man-Environment Studies," Man-Environment Studies (January, 1970), Section P-1, p. 14; Hermann H. Field, "Effects of the Physical Environment on Human Behavior," Planning 1970 (Chicago: American Society of Planning Officials, 1970), pp. 251-54.

[3]Cf. Andrew F. Euston, "Toward a Socio-Physical Technology," Planning 1970 (Chicago: American Society of Planning Officials, 1970), 245-50. Daniel H. Carson, "The Interactions of Man and His Environment," in School Environments Research: Environmental Evaluations, ed. by C. T. Larson and H. Himes, College of Architecture and Design (Ann Arbor: University of Michigan, 1965); Michael Kuhn, "Researches in Human Space," Ekistics, XXV (June, 1968), 395-98.

success of technological treatment often seems to merely aggravate the problems.[4]

Many view the demands of an increasing population as the fundamental problem.[5] Calhoun's experiments with animals in high densities suggest gruesome possibilities if his findings can be generalized to human populations.[6] The position that high densities can lead to violence, mental disorganization, and anomie has led to attempts to define "absolute limits."[7] Most researchers conclude, however, that density is only one factor among many leading to such social maladies.[8] In addition, density thresholds appear to be a function of culturally defined notions of crowding.[9]

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[4]Barry Commoner, "Evaluating the Biosphere," Science Journal, (October, 1969), 67-72.

[5]Daniel H. Carson, "Population Concentration and Human Stress," in Explorations in the Psychology of Stress and Anxiety, ed. by Byron P. Rourke (Don Mills, Ontario: Longmans Canada, 1969), pp. 27-42.

[6]John B. Calhoun, "Population Density and Social Pathology," Scientific American, CCVI (February, 1962), 139-46.

[7]Rapoport, "Man-Environment Studies," p. 8.

[8]Daniel H. Carson, "Environmental Stress and the Urban Dweller," Michigan Mental Health Research Bulletin (State of Michigan Department of Mental Health), II (Fall, 1968), 9.

[9]Amos Rapoport, "Cultural Variability in Physical Standards," Transactions of the Bartlett Society (1969), pp. 63-83; Chester W. Hartman, "Social Values and Housing Orientations," Journal of Social Issues, XIX (April, 1963), 125.

Environmental influences apart from pollution and density are also viewed to induce stress on man's physical and mental health. Environmental stress has been defined by Wolpert as anything (in the environment) "which interferes with the satisfaction of basic needs or which disturbs or threatens to disturb the stable equilibrium."[10] Dubos maintains that sensory deprivation is a form of stress which retards both man's emotional and physical development, a position which has considerable support among those working with animal populations.[11] The American environment, structured in the rapid pace of an electronic era, has been cited as a source of stress leading to health maladies ranging from boredom to heart disease. Attempts to alleviate environmental stress through migration have been suggested,[12] although others feel that man's environmental adaptability is extremely great.[13] The problem of defining sources of stress, as Carson points out, is due in part to the apparent wide variation in responses across different

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[10]Julian Wolpert, "Migration as an Adjustment to Environmental Stress," Journal of Social Issues, XXII (October, 1966), 92.

[11]Rene Dubos, "The Crisis of Man and His Environment," Ekistics, XXVII (March, 1969), 151-54.

[12]Wolpert, "Migration," p. 92.

[13]Joseph Sonnenfeld, "Variable Values in Space and Landscape: An Inquiry into the Nature of Environmental Necessity," Journal of Social Issues, XXII (October, 1966), 71-82.

cultures, and individuals, at different times, for different combinations of variables.[14]

Much of the early concern over environmental influences was largely aesthetic. Programs for city beautification often have been developed with the hope that they would stimulate man's appreciation for his environment. The assumption was made that environments which were perceived as spacious and green were therapeutic for man, whereas darkness and dirt were pathological.[15] One conclusion from such arguments is that architectural design leading to visual satisfaction is an important aspect of urban life.

Environmental Manipulation

If the environment may be shown to have an adverse effect on man's happiness and well-being, then it should also be possible to control the environment as a therapeutic agent for man. Environmental manipulation to achieve behavioral goals has generated considerable attention at the

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[14]Carson, "Environmental Stress," pp. 9-10; also see Douglas H. K. Lee, "The Role of Attitude in Response to Environmental Stress," Journal of Social Issues, XXII (October, 1966), 83-91; Ellis P. Torrance, "Comparative Studies in Stress-Seeking in Thirteen Subcultures," in Why Men Take Chances: Studies in Stress-Seeking, ed. by S. Z. Klausner (Garden City: Anchor Books, 1968), pp. 195-236. Torrance concludes that cultures differ in their need for stress-seeking; America being a high stress-seeking culture.

[15]John B. Collins, "Perceptual Dimensions of Architectural Space Validated Against Behavioral Criteria," (Unpublished Ph.D. dissertation, Department of Psychology, University of Utah, August, 1969), p. 3.

neighborhood level. Some, for example, have emphasized

the importance of physical propinquity in promoting social

interaction, particularly in socially homogeneous commu-

nities.[16] In low-income neighborhoods, particular ties to

physical sites and designs have been found to be important

as social supports.[17]

The environment can inhibit the behavior of special

groups. The term "prosthetic environment" denotes the

relationship between the disadvantaged individual and his

structural environment.[18] Two particular prosthetic groups

are the disabled and the aged. Dwoskin has noted, for

example, that only six minor environmental modifications

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[16]Leon Festinger, Stanley Schachter, and Kurt Back,
Social Pressures in Informal Groups (Stanford: Stanford
University Press, 1963); Theodore Caplow and Robert Forman,
"Neighborhood Interaction in a Homogeneous Community,"
American Sociological Review, XV (June, 1950), 357-66;
Miles L. Patterson, "Spatial Factors in Social Interactions,"
Human Relations, XXI (November, 1968), 351-61; Irving Rosow,
"The Social Effects of the Physical Environment," Journal
of the American Institute of Planners, XXVII (May, 1961),
127-33; Herbert J. Gans, "Planning and Social Life,"
Journal of the American Institute of Planners, XXVII (May,
1961), 134-40.

[17]Rosow, "Social Effects," p. 131; Hartman, "Social
Values," pp. 126-131; Marc Fried, "Grieving for a Lost Home:
Psychological Costs of Relocation," in Urban Renewal: The
Record and the Controversy, ed. by James Q. Wilson
(Cambridge: M. I. T. Press, 1966), pp. 361-70; M. Paul
Friedberg, "Sharing the Spaces--Sharing the Yields,"
American Institute of Architects Journal, LI (March, 1969),
51-53; John R. Seeley, "The Slum: Its Nature, Use and
Users," Journal of the American Institute of Planners, XXV
(February, 1959), 7-14.

[18]Robert Kolodny and Jerome G. Rose, "Planning
Environments for Older People," Journal of the American
Institute of Planners, XXXVI (March, 1970), 125.

could greatly aid the man on crutches.[19] Architectural design, such as the sociopetal design, has been found to encourage social encounters in homes for the aged.[20] It has also been shown that social interaction could be stimulated in geriatric mental wards by providing seating arrangements around square tables instead of linearly along the walls.[21]

The use of physical arrangement and form to influence social behavior was also the principle behind Perry's "neighborhood unit."[22] In this scheme, the neighborhood was utilized as the basic building block for both the city's physical and social structure. Basic to the argument was the position that the planned neighborhood could be utilized to "regain" social interaction and cohesion. The neighborhood unit was seen as a physical framework for both the support and promotion of individual and family behavior.[23]

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[19]Stephen Dwoskin, "The Disabled's Encounter with the Environment," Design and Environment, I (Summer, 1970), 60-64.

[20]Kolodny and Rose, "Planning Environments," p. 127.

[21]Robert Sommer and H. Ross, "Social Interaction on a Geriatric Ward," International Journal of Social Psychiatry, IV (1958), 128-33.

[22]Clarence A. Perry, "The Neighborhood Unit," in Regional Survey of New York and Environs, Vol. III (Regional Plan of New York, New York City, 1929).

[23]Judith Tannenbaum, "Neighborhoods: A Socio-Psychological Analysis," Land Economics, XXIV (November, 1948), 358-69.

Since its introduction, the neighborhood unit theory has received numerous reviews and criticisms. Included among the criticisms, for example, were the views that it was an attempt to bring the country to the city and that the device might be utilized to promote racial and class segregation.[24] While it was also often argued that the concept would fail because local ties were based on shared interests and not on residential affiliations, subsequent studies have shown that a substantial proportion of behavior is still locally oriented.[25]

The manipulation of the environment to condition and control man's behavior has perhaps its most articulate spokesman in B. F. Skinner.[26] A behavioral psychologist, Skinner has proposed that social behavior can be guided through total environmental conditioning which rewards acceptable actions. Physical and social environments which fail society are evidenced by neurotic and alienated

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[24]Reginald R. Isaacs, "The Neighborhood Theory: An Analysis of its Adequacy," Journal of the American Institute of Planners, XIV (Spring, 1948), 15-23; Reginald R. Isaacs, "The Neighborhood Unit as an Instrument for Segregation," Journal of Housing, V (August, 1948), 215-19.

[25]Morris Axelrod, "Urban Structure and Social Participation," American Sociological Review, XXI (February, 1956), 13-18; Donald L. Foley, "The Use of Local Facilities in a Metropolis," American Journal of Sociology, LVI (November, 1950), 238-46; Joseph Zikmund, "Do Suburbanites Use the Central City?" Journal of the American Institute of Planners, XXXVII (May, 1971), 192-95.

[26]B. F. Skinner, Beyond Freedom and Dignity (New York: Knopf, 1971); B. F. Skinner, Science and Human Behavior (New York: Macmillan, 1953).

behavior patterns. Studer has adopted Skinner's position
with regard to environmental design:

> The manipulation of behavior is environmental design--
> its intended and final product. We speak of "require-
> ments" and "human need" when formulating design
> problems, but the net result of the product--the
> empirical reality--can only be measured in terms of
> its effect on the inhabitants' patterns of behavior.
> Indeed behavior is the only operationally definable
> and empirically verifiable link between the designer
> and the life process he is attempting to influence.
> Taking such a proposition to its logical conclusion,
> it follows that an appropriate system of human behavior
> is the goal; form, structure, and space are but means
> by which these behavioral goals can be accommodated.[27]

Given that a controlling influence is exerted by the
environment, what is the nature of this influence? Studer
suggests that there are two interdependent modes of control.
The first is the extent to which physiological preconditions
are met to allow or suppress behavior; for example, in
needed light to allow reading. The second mode concerns
"voluntary behavior" which Skinner would control through
"operant conditioning;" that is, through a system of negative
and positive rewards which reinforce the desired behavior.[28]

Carson arrived at much the same conclusion by first
examining man-machine systems.[29] Beginning in World War II,
human factors engineering has today produced many rational
models of man-machine interaction based on maximum efficiency

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[27]Raymond C. Studer, "Behavioral Manipulation,"
Ekistics, XXV (June, 1968), 409.

[28]Ibid., p. 410.

[29]Carson, "Human Factors," pp. 160-61.

through conditioned human response. While man-environment interaction is far more complex than man-machine task orientations, Carson suggests that, within limits, man's goal-direction can be made more efficient through better environmental design.

In contrast to those behaviorists who view the environment as the major conditioning force on man's behavior, there is a second loosely-defined group who see the environment as but a marginal determinant. The general theme of this latter position might be that the factors which most influence behavior are not those easily manipulated by the environmental engineer.[30] Such a position does not necessarily deny the importance of the environment; rather, it emphasizes the complexity of human variables. These humanists suggest, then, that the variance of attitudes and values between cultures and between individuals makes prediction from environmental manipulation nearly impossible. Different responses, for example, are often made to the same environmental stimuli. Clearly, the reasons for such differences in response must lie with the individual perceptual mechanism. White concludes:

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[30]Maynard Hufochmidt, "Environmental Planning," American Behavioral Scientist, X (September, 1966), 6-8.

"No close relation has been shown between physical setting and attitudes."[31]

Designers have a tradition of belief that the environment greatly affects, even determines, behavior. Many social scientists are taking a more skeptical view. That there are some effects of design on behavior, particularly at the micro-level, seems clear. Rosow feels that both environmental and human extremes are generally involved in such cases; that is, very poor or good environments and very sensitive or intellectual-aesthetic individuals.[32] Most empirical studies show the effects to be far less than deterministic.

> Man's response to his physical environment is a complex, multi-faceted and multi-layered affair, and not to be understood in terms of a restricted causal chain or functional relationship linking particular stimuli or variables of stimulation to particular responses.[33]

The complexity of this relationship seems to be leading to an ecological point of view where the environment is considered more catalyst, than master, of human behavior.

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[31]Gilbert F. White, "Formation and Role of Public Attitudes," in Environmental Quality in a Growing Economy, ed. by Henry Jarrett (Baltimore: Johns Hopkins Press, 1966), p. 120.

[32]Rosow, "Social Effects," p. 127.

[33]Robert W. Kates and Joachim F. Wohlwill, "Man's Response to the Physical Environment," Journal of Social Issues, XXII (October, 1966), 18.

<u>The Behavioral Emphasis in Geography:</u>
<u>Some Themes</u>

<u>Environmental Perception</u>

The man-environment theme implies a concern with

man's behavior in space. While geography has traditionally

been most occupied with the "tangible landscape," there

have been numerous suggestions to incorporate the psycho-

logical.[34] Emphasis on behavior infers a strong relationship

with the behavioral sciences, particularly psychology. In

geography, studies which have emphasized the behavioral

approach have been generally labeled "environmental per-

ception." Apart from a concern over the misuse,[35] and

perhaps overuse, of the term "perception" in many efforts,

it is important that geography first give attention to the

two rather distinct psychological theories on which most

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[34]Cf. Edward A. Ackerman, "Where is a Research
Frontier?" <u>Annals of the Association of American Geographers</u>,
LIII (December, 1963), 429-39; Robert D. Campbell, "Per-
sonality as an Element of Regional Geography," <u>Annals of
the Association of American Geographers</u>, LVIII (November,
1968), 748-59; William Kirk, "Problems in Geography,"
<u>Geography</u>, XLVIII (November, 1963), 357-71; David Lowenthal,
"Geography, Experience and Imagination: Toward A Geograph-
ical Epistemology," <u>Annals of the Association of American
Geographers</u>, LI (September, 1961), 241-60; Allan Pred,
"Behavior and Location," in <u>Lund Studies in Geography</u>:
<u>Human Geography</u>, Series B, Part I (Lund, Sweden: Gleerup,
1967); Julian Wolpert, "The Decision Process in a Spatial
Context," <u>Annals of the Association of American Geographers</u>,
LIV (December, 1964), 537-58; John K. Wright, "Terrae In-
cognitae: The Place of Imagination in Geography," <u>Annals of
the Association of American Geographers</u>, XXXVII (January,
1947), 1-15.

[35]Perception may be approached both philosophically
and psychologically. One definition of perception given in
Webster refers to perception as "the meaningful impression
of any object(s) obtained by use of the senses." Man

studies involving environmental perception rest: Gestalt

and Stimulus-Response (or Behaviorism).[36]

Gestalt Psychology.--Gestalt theory is based on the

philosophical notion of phenomenology; that is, the science

of phenomena as opposed to ontology or the science of being.

As such, Gestalt Psychology was originally conceived as a

theory of perception. Man's perception of his surroundings

is viewed as an organizing action of the nervous system.

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comprehends reality through perception; it is therefore the
concrete base for all knowledge. A "concept," on the other
hand, is an abstraction or condensation of knowledge. Per-
ception is limited to immediate happenings; cognition can
extend man's range in both time and space. For example, a
man can perceive one foot directly; he can only conceive
of ten miles through the mathematical abstraction of feet
to miles. Therefore, many studies in "environmental per-
ception obviously extend into environmental cognition as
well.
     Further, while perception may be valuable as an
umbrella-term, care should be taken to recognize that it
can be divided into several categories of awareness. Ac-
knowledgement of the senses, for example in seeing a land-
scape, is perception. If one derives any meaning from that
landscape scene, the action of the consciousness is evalua-
tion. Any action of feeling is emotion; of intellect,
thought. If the same scene is later recalled it is remi-
niscence (or memory), or fantasize returning to the area
someday is imagination. Perception has most often been
utilized in geography to refer to the "subjective" only but,
to the extent that certain perceptions may be based on the
best available "objective" evidence of the time, all that is
perceived is not necessarily subjective. (The author is
grateful for use of the following in clarifying the above
terminology: Chris L. Farmer, "Environmental Evaluation in
Spatial Perception: Problems and Suggested Solutions,"
[Unpublished graduate paper, Department of Geography,
University of Texas, May, 1967]).

[36]Much of the discussion here follows Paul M.
Koroscil, "The Behavioral Environmental Approach," Area, III
(1971), 96-99.

The structure of form is studied by concentrating on the
pure experience of the individual. A subject's description
of how things appear is regarded as his perception, rejecting
the thesis that unconscious processes may have a major
influence on his actual behavior. As an example, Gestalt
has related man's ability to organize visual inputs (such
as words, drawings, lines, etc.) to the preconceived image
he holds of those things.[37]

Despite the many criticisms within psychology
directed against Gestalt theory, it has had a significant
impact on social psychology and human geography. Lewin's
"life space" was the core of his field theory, which was
based on the individual in his psychological environment.[38]
Kirk divided all geography into Phenomenal (physical facts)
and Behavioral (psycho-physical environment).[39] Geographers
have since advocated that Gestalt provides a useful basis
for geographical inquiry because it emphasizes the uniqueness

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[37]Cf. David Katz, Gestalt Psychology: Its Nature
and Significance, trans. by Robert Tyson (London: Methuen,
1951); Robert Beck, "Spatial Meaning and the Properties of
the Environment," in Environmental Perception and Behavior,
ed. by David Lowenthal, Department of Geography Research
Paper No. 109 (Chicago: University of Chicago Press, 1967),
pp. 18-41; Derk de Jonge, "Images of Urban Areas: Their
Structure of Psychological Foundations," Journal of the
American Institute of Planners, XXVIII (November, 1962),
266-76.

[38]Kurt Lewin, Field Theory in Social Science (New
York: McGraw-Hill, 1951).

[39]William Kirk, "Historical Geography and the Concept
of the Behavioural Environment," Indian Geographical Journal
(Silver Jubilee Issue, 1952), 152-60.

of each individual's perceptual education in assessing the environment.[40]

Behavioral Psychology.--Behavioral psychology, or the Stimulus-Response theory, rejects phenomenology and accepts only performed behavior, or responses, to different environmental stimuli. The inner experience, or perception, of the individual is of no consequence. "The reaction is the perception."[41] The view that there is an "inner man" is predicated, according to Skinner, on superstition, not objective evidence.[42] Stimulus-Response, then, attempts to study behavior through the rigorous experimental methods of physical science.

While experimental psychology has attempted to integrate Behaviorism and Gestalt, many "perception" studies in geography have employed the Stimulus-Response theory. Most apparent, perhaps, have been those efforts which concentrate on problems of human adjustment to environmental stress or natural hazards.[43]

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[40]Lowenthal, "Geography, Experience and Imagination," p. 249; Pred, "Behavior and Location."

[41]Floyd H. Allport, Theories of Perception and the Concept of Structure (New York: Wiley, 1955), p. 53.

[42]Skinner, Beyond Freedom and Dignity, pp. 3-25.

[43]Cf. Robert W. Kates, Hazard and Choice Perception in Flood Plain Management, Department of Geography Research Paper No. 78 (Chicago: University of Chicago Press, 1964); Ian Burton and Robert W. Kates, "The Perception of Natural Hazard in Resource Management," Natural Resources Journal, III (January, 1964), 412-441.

Obviously, man must be aware of his environmental situation before he is able to take action. The mediating element between man and his environment is here termed perception. This agrees with the use of the term by Lowenthal.[44] While perception must be regarded as extremely variable and complex, it appears highly related to both the attitude and image that an individual has toward the total milieu in which he exists.

Environmental Attitudes

Environmental attitudes, related most clearly perhaps to cultural beliefs and values, have been proposed as the fundamental link in understanding the man-environment relationship.[45] Lee defines "attitude" as a state of readiness to act which may be activated by an appropriate stimulus.[46] In this framework, environmental attitudes may be deemed a conditon resulting, in part, from the processes of environmental perception and cognition. Attitudes which retard both needed modifications in self and in the environment may be present. The ability of an individual to be aware of environmental complexity and to respond to

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[44]Lowenthal, "Geography, Experience, and Imagination," pp. 250-51.

[45]Kates and Wohlwill, "Man's Response," p. 17.

[46]Douglas H. K. Lee, "Role of Attitude," p. 83.

modification in a non-defensive way has been termed

"affective complexity."[47] Empirical studies in environmental

stress and natural hazard perception have made particular

use of attitude investigation ideas and techniques.

The subjectivity and culture-bound tendencies of both

time and space perception have received considerable atten-

tion. Man's attitude toward his environment has certainly

evolved through time. Glacken has provided an extremely

scholarly survey of ideas about the habitable earth held by

western thinkers over the last twenty-three centuries.[48]

Webb's treatment of the North American woodmen's negative

reaction to the Great Plains is a classic in the historical

geographer's attempt to capture the environment through the

eyes of its former inhabitants.[49]

Social Space

Hall's studies again, based on the notion of

"proxemics," are definitive treatments of contemporary

cultural and group attitudes to micro-spaces.[50] The concept

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[47]G. White, "Public Attitudes," p. 123.

[48]Clarence J. Glacken, Traces on the Rhodian Shore: Nature and Culture in Western Thought from Ancient Times to the End of the Eighteenth Century (Berkeley: University of California Press, 1967).

[49]Walter P. Webb, The Great Plains (Boston: Ginn, 1931).

[50]Hall, The Hidden Dimension, and The Silent Language.

of "personal space," developed most completely by Sommer,[51]

has led to a reawakened interest in the territoriality of

man. While the concept is fundamentally based in studies on

animal populations, some themes might prove significant to

the study of man-environment relationships at the local

level.[52] Comparative attitudes toward spatial organization

and the emotional attachment to space are examples of

research efforts which might aid in planning life spaces.

Urban environmental perception is an attempt to

emphasize the subjective meaning of urban space. In

geography, the term "social space" has often been applied to

link aspects of social morphology to the physical space of

the city.[53] Buttimer argues that the geographical study of

social space involves three major factors: (1) formal areas,

based on socio-economic characteristics; (2) functional

areas, based on social activity; and (3) circulatory lines,

including flows of goods, services, people and ideas.[54]

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[51]A summary appears in Robert R. Sommer, "Man's Proximate Environment," Journal of Social Issues, XXII (October, 1966), 59-69.

[52]Peter G. Flachsbart, "Urban Territorial Behavior," Journal of the American Institute of Planners, XXXV (November, 1969), 412-16.

[53]Robert A. Murdie, "The Social Geography of the City: Theoretical and Empirical Background," in Internal Structure of the City, ed. by Larry S. Bourne (New York: Oxford University Press, 1971), p. 279.

[54]Anne Buttimer, "Social Geography," International Encyclopedia of the Social Sciences, ed. by David L. Sills, VI (1968), 134-45.

Social space emphasizes the dynamics of social areas within the urban system. The knowledge that an individual's perception of social space evolves from birth to maturity seems clear.[55] The notion, however, that an individual's perception of spatial organization and environmental landscape varies according to different patterns of social space must yet be regarded as an hypothesis.

Social space may be thought of as consisting of several levels; for example, behavioral, knowledge, and aspirational.[56] Behavioral space is where and how people live and move. The knowledge level refers to known and available opportunities; the aspirational level to the preferred opportunities. Haynes uses the term "behavior space" to mean the less efficient space available for behavior when contrasted with "euclidean space," or the perfect terrestrial system in terms of distance.[57]

Behavioral space might be divided into "action space" and "activity space."[58] Action space refers to total

[55]Jean Piaget and Barbel Inhelder, The Child's Conception of Space (London: Routledge and Kegan Paul, 1956).

[56]Anne Buttimer, "Social Space in Interdisciplinary Perspective," Geographical Review, LIX (July, 1969), 423.

[57]Robin M. Haynes, "Behavior Space and Perception Space: A Reconnaissance," (Department of Geography Papers No. 3, Pennsylvania State University, June, 1969), pp. 1-2. (Mimeographed.)

[58]Frank E. Horton and David R. Reynolds, "An Investigation of Individual Action Spaces: A Progress Report," Proceedings of the Association of American Geographers, I (1969), 70-75.

awareness space, either through primary perceptual experience or through secondary learning, whereas activity space is constrained by both direct experience and time. Daily activity space, for example, would generally be confined to routine patterns in a local area. Spatial organization of the physical environment would both shape and be shaped by these activity patterns. Departures from a daily pattern would occur at longer mean intervals of time. Obviously, then, generalized activity models should be possible to construct at any space-time scale.[59]

Mental Image

The stimuli which man perceives in his environment involves the mental image that he holds of his surroundings. This process results in conclusions which order the structure and meaning of an individual's physical environment. Therefore, the perception and apprehension of space is physical only in its beginning. The resulting personal image of space begins as a complex sensory process and evolves into a cognitive process. An individual's image of physical space, then, is an active, social effort designed to continually probe his surroundings.

Generally, environmental imagery studies are made around what an individual remembers about a portion of his

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[59]F. Stuart Chapin, Jr., and Richard K. Brail, "Human Activity Systems in the Metropolitan United States," Environment and Behavior, I (December, 1969), 107-30.

environment. Memory retrieval processes are believed to reveal something about information selectivity and organization; that is, about the "black box" of the mind.[60] The selection and organization of environmental stimuli into some meaningful framework by man's perceptual systems have led to notions around information breakdown[61] and symbolization to stimulate attention or retard perceptual confusion.[62]

The genesis for most studies involving "imageability" was Kevin Lynch's The Image of the City.[63] Lynch had residents of three large American cities draw sketch maps from memory of the downtown area from which he constructed

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[60]David Stea and Roger M. Downs, "From the Outside Looking In at the Inside Looking Out," Environment and Behavior, II (June, 1970), 3-12; Charles M. Eastman, "Explorations in the Cognitive Processes in Design," (Department of Computer Science, Carnegie-Mellon University, February, 1968). (Mimeographed.)

[61]James J. Gibson, "Pictures, Perspectives, and Perception," Daedalus, LXXXIX (Winter, 1960), 216-222; George A. Miller, "The Magical Number Seven, Plus or Minus Two," Psychological Review, LXIII (March, 1956), 81-97.

[62]Amos Rapoport and Ron Hawkes, "The Perception of Urban Complexity," Journal of the American Institute of Planners, XXXVI (March, 1970), 106-111; Gyorgy Kepes, "Notes on Expression and Communication in the Cityscape," in The Future Metropolis, ed. by Lloyd Rodwin (New York: George Braziller, 1961), pp. 190-213; Joachim F. Wohlwill, "The Physical Environment: A Problem for a Psychology of Stimulation," Journal of Social Issues, XXII (October, 1966), 29-34; Richard Wohl and Anselm L. Strauss, "Symbolic Representation of the Urban Milieu," American Journal of Sociology, LXIII (March, 1958), 523-532.

[63]Kevin Lynch, The Image of the City (Cambridge: M. I. T. Press, 1960).

group "image maps." While the concern of many studies in imagery has been directed at the urban environment, they may obviously be conducted at any scale, from neighborhood to world.[64] Some geographers have argued, for example, that the perception of "regions" is an enforcement of "regionalism" and the regional concept.[65]

Subsequent to Lynch, several attempts to determine significant components of different environmental images have been made. Experimental psychology has defined a primary set of conditions for human sensory stimulation within the visual environment, including continuity, variety, and pattern.[66] Activity and form have been found meaningful to the image of persons moving through the city.[67] Physical attributes of design have been noted in the imageability of buildings.[68] Visual dominance and uniqueness have also been

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[64]Thomas F. Saarinen, Perception of Environment, Resource Paper No. 5, Commission on College Geography (Washington: Association of American Geographers, 1969).

[65]Jan O. M. Broek, "National Character in the Perspective of Cultural Geography," Annals of the Academy of Political and Social Sciences, CCCLXX (March, 1967), 8-15; E. W. Gilbert, "The Idea of Region," Geography, XLV (July, 1960), 157-75; Campbell, "Personality," pp. 748-59.

[66]Sanoff, "Visual Attributes," p. 9

[67]Stephen Carr and Dale Schissler, "The City as a Trip," Environment and Behavior, I (June, 1969), 7-35; Donald Appleyard, Kevin Lynch, and John R. Meyer, The View from the Road (Cambridge: M. I. T. Press, 1964); Kevin Lynch and Malcolm Rivkin, "A Walk Around the Block," Landscape, VIII (Spring, 1957), 24-34.

[68]Donald Appleyard, "Why Buildings are Known," Environment and Behavior, I (December, 1969), 131-56.

advanced as important components of image.[69] While most

efforts to determine components of image have concentrated

on the sense of vision, other sensory devices have been

examined.[70] Studies in urban imagery have proved useful

in the planning of several cities.[71]

Cognitive components were developed for the image

of an urban downtown shopping center by Downs.[72] Two types

of factors were found, one relating to the physical

structure and design of the shopping center; the other to

the price and quality of services and goods of the retail

establishments.

Other problems in the study of the environmental

image have been noted. One of the most interesting, as

well as studied, has to do with image distortion. Perhaps

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[69]Ernest Dichter, "The Strategy of Human Desires," in
Planning 1961 (Chicago: American Society of Planning
Officials, 1961), pp. 46-51.

[70]As an example, see Michael Southworth, "The Sonic
Environment of Cities," Environment and Behavior, I (June,
1969), 49-70.

[71]Cf. Kevin Lynch, "An Analysis of the Visual Form of
Brookline," (Community Renewal Program, Brookline,
Massachusetts, 1965); City Planning Department, "Measuring
the Visual Environment" (Community Renewal Program Report
No. 11, Kansas City, Missouri, June, 1967); City Planning
Commission, Oakland: Central District Plan (Oakland,
California: Fontes Abbey Press, 1966).

[72]Roger M. Downs, "The Cognitive Structure of an
Urban Shopping Center," Environment and Behavior, II (June,
1970), 13-39.

the most famous is "Brennan's Law."[73] Essentially, Brennan felt that suburban residents have their view fixed on the town center; that they know relatively little of the territory to the back of them. Empirical testing found that distance judgments were rather consistently biased in favor of locations toward town, lending support to the notion.[74] On the other hand, relative distance judgments by urban residents to select urban facilities was found quite accurate, except when the subjects considered the facilities in pairs.[75] Judgments made under stress and preconceived attitudes about facilities are other conditions which likely cause perceptual distortion.

While most urban imagery studies have emphasized the importance of physical form and design, several works have indicated that socio-cultural associations, including personalization of the environment and social interaction, are most significant. In Great Britain, Lee has demonstrated that the image of neighborhood is primarily a socio-spatial schema.[76] Three types of neighborhoods were found, each

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[73] Based on T. Brennan, Midland City (London: Dennis Dobson, 1948), p. 56; cited and discussed in Haynes, "Behavior Space," pp. 11-12.

[74] Terence Lee, "Perceived Distance as a Function of Direction in the City," Environment and Behavior, II (June, 1970), 40-51.

[75] Robert A. Lowrey, "Distance Concepts of Urban Residents," Environment and Behavior, II (June, 1970), 52-73.

[76] Terence Lee, "Urban Neighborhood as a Socio-Spatial Schema," Human Relations, XXI (August, 1968), 241-67.

possessing an areal component which was often overlapping with the other neighborhood types. The first neighborhood image depended on lines and boundaries of social acquaintance and interaction. The second neighborhood depended on homogeneous attributes of both people and house types. The third neighborhood conformed most closely with the planner's neighborhood unit; that is, a functional area based on accessibility to shops and other facilities.

Lee's findings, however, may have to be modified with regard to the image of neighborhood in the United States. Sanoff, for example, has found that neighborhood boundaries were extremely variable in a section of Raleigh, North Carolina.[77] While local physical space provided an important framework for social interaction, particularly around interrelated friendship and kinship networks in lower income neighborhoods, the neighborhood image was spatially disjointed and non-centered. In addition, the higher mobility of higher income Americans is felt by many to have reduced the importance of the local neighborhood among urban dwellers.

Environmental Preferences

The attitude and image that an individual has toward a particular place is believed to be related to his

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[77]Henry Sanoff, "Social Perception of the Ecological Neighborhood," Ekistics, I (August, 1970), 130-32.

preference for that place. Places are often ascribed

values, for example a region is "nice to visit" or

"beautiful," a neighborhood is "good to bring children up,"

or a city is "exciting." Verbal expressions such as these

are measures of environmental satisfaction; that is, the

preference for place.

Perhaps the best-known studies concerning environ-

mental preferences are Gould's "mental maps" of American

states.[78] In this scheme, subjects from over the United

States were asked to rank the states in the order of their

residential desirability. The results revealed an image of

preferred geographic space. Similar efforts conducted at

European and African universities are beginning to reveal

considerable order and regularity in student preferences

for world places.[79] Obviously, such ranking procedures

could be conducted at larger scales if the subjects were

able to differentiate between the spatial units.[80]

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[78]Peter R. Gould, "On Mental Maps" (Michigan Inter-University Community of Mathematical Geographers, Department of Geography Discussion Paper No. 9, University of Michigan, 1966).

[79]Peter R. Gould and Rodney R. White, "The Mental Maps of British School Leavers," General Systems, XIV (1969), 51-65; Rodney R. White, "Spatial Components of Residential Preference" (paper presented before British Association for the Advancement of Science, University of Dundee, August, 1968). (Mimeographed.)

[80]Peter R. Gould, "Structuring Information on Spacio-Temporal Preferences," Journal of Regional Science, VII (Winter, 1967), 260.

Spatial behavior implies a search among available alternatives. This idea rests on the assumption that certain environments are more preferred than others. There are essentially two approaches to empirical research involving environmental preference. Michelson terms these "experimental congruence" and "mental congruence."[81] Experimental congruence is a measure of how well the environment actually accommodates individual behavior. Observed travel patterns to determine most preferred routeways might serve as an example of the experimental approach. Mental congruence, on the other hand, is what an individual thinks he wants or likes. Most opinion polls which request the individual to indicate preferences are a popular form of this approach. To the degree that a particular physical environment fulfills a behavioral goal, the relationship is "congruent." Obviously, certain environments may be regarded as "non-congruent" to behavioral objectives.

Experimental Congruence

The two methods require different research techniques. The direct experience of persons living in specific environments is required for studies of experimental congruence.[82]

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[81]William Michelson, "Urban Sociology as an Aid to Urban Physical Development: Some Research Strategies," Journal of the American Institute of Planners, XXXIV (March, 1968), 106.

[82]Kenneth H. Craik, "The Comprehension of the Everyday Physical Environment," Journal of the American Institute of Planners, XXXIV (March, 1968), 31.

Efforts might be made to control direct experience for testing purposes; for example, by taking the subjects on a site visit to the particular environment being studied. Direct experience studies generally have epistemological priority despite problems of cost and variable control. Adherants generally lean toward behavioral psychology which asserts that responses must be observed if any objective measurement can be made.

Several types of direct experience research efforts have been tried. Rushton, for example, based much of his work on observed shopping behavior of Iowa householders.[83] Origin and destination studies, leading to gravity models used in highway planning, are generally based on existing traffic movements. Studies of actual travel patterns reveal preferences among available location opportunities. Density and distance factors have been found important to the urban housing market, although the steep rise of the rent gradient near the high density core is an indication that there remains a group willing to pay for accessible locations to the downtown.[84]

Studies in experimental congruence may rely on participant-observation techniques. Gans incorporated such

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[83]Rushton, "Locational Preferences."

[84]Bernard Frieden, "Locational Preferences in the Urban Housing Market," Journal of the American Institute of Planners, XXVII (November, 1961), 316-24.

a method by taking up residence among the Italian-American
inhabitants on Boston's West Side, resulting in his well-
known account of this distinct working-class subculture.[85]
The appraisal of different national attitudes toward their
environment has resulted in refreshing pieces of "mere
description."[86] Other examples of direct experience include
observation techniques for users of parks, museums, and
behavior in small spaces.[87]

Mental Congruence

Studies which utilize aspects of mental congruence
rely on the accuracy and consistency of the stated prefer-
ences. Discrepancy between stated levels of satisfaction
or preference and actual behavior must certainly be con-
sidered, particularly in poorly constructed research designs
where the subjects might feel certain pressures to respond
in a particular manner. Nevertheless, most empirical work

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[85]Herbert J. Gans, The Urban Villagers (New York:
Free Press of Glencoe, 1962).

[86]David Lowenthal and Hugh C. Prince, "English Land-
scape Tastes," Geographical Review, LV (April, 1965), 188-
222; David Lowenthal, "The American Scene," Geographical
Review, LVIII (January, 1968), 61-88.

[87]Cf. Herbert P. Bangs, Jr., and Stuart Mahler,
"Users of Local Parks," Journal of the American Institute of
Planners, XXXVI (September, 1970), 330-34; Derk de Jonge,
"Applied Hodology," Landscape, XVII (Winter, 1967-68), 10-11;
Robert B. Bechtel, "Human Movement and Architecture,"
Trans-Action, IV (May, 1967), 53-56; Edward T. Hall, "A
System for the Notation of Proxemic Behavior," American
Anthropologist, LXV (October, 1963), 1003-1026.

must rely on cognitive levels of response; a research position which favors elements of Gestalt psychology.

Mental congruence studies often request users of particular environments to appraise the adequacy of their surroundings. Studies in wilderness perception, for example, are revealing distinct preference groups. Some of the work by Lucas in the Boundary Waters Canoe Area of northeastern Minnesota suggest that motorboaters have a different, and less demanding, view of what constitutes wilderness than the image held by canoeists.[88] Two dissimilar groups of beach users were also found in a study at Northwestern University.[89] One group, the majority, expressed high preferences for natural scenic beaches which were open within attractive settings of greenery. A second group was more interested in city swimming beaches, paying more attention to the quality of sand together with the associated recreational opportunities. Findings such as these should prove beneficial to resource and recreational planning.

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[88]Robert C. Lucas, "Wilderness Perception and Use: The Example of the Boundary Waters Canoe Area," Natural Resources Journal, III (1963), 394-441.

[89]George L. Peterson and Edward S. Neumann, "Evaluating Subjective Response to the Recreational Environment: A Quantitative Analysis of Dissimilar Preferences for the Visual Characteristics of Beaches" (Technical Report No. 1, Department of Civil Engineering, Northwestern University, February, 1970).

Similar efforts have been conducted within urban neighborhoods. Crothers, for example, has attempted to find what variables were most directly related to what he termed a "community index of satisfactoriness."[90] While he deemed his findings inconclusive, he felt that friendship ties tended to increase an individual's preference for his community. Follow-up studies among the first inhabitants of new towns have shown that length of residence is an important variable to the level of satisfaction.[91] While the nature of the responses was more complex, a similar effort found that community satisfaction was most clearly related to physical accessibility arrangements.[92] Neighborhood satisfaction has also been linked to the maintenance level of the housing.[93]

When families move it might be assumed that they exercise location priorities in choosing a new site. Rossi's well-known study of urban movers found that the

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[90]R. J. Crothers, "Factors Related to the Community Index of Satisfactoriness," Ekistics, I (August, 1970), 107-109.

[91]Peter Willmott, "Social Research and New Communities," Journal of the American Institute of Planners, XXXIII (November, 1967), 391.

[92]John B. Lansing, Robert W. Marans, and Robert B. Zehner, Planned Residential Environments, Institute of Social Research (Ann Arbor: University of Michigan Press, 1970), p. ix.

[93]Lansing and Marans, "Evaluation of Neighborhood Quality," pp. 195-99.

major specification sought by about one-half of the

respondents pertained to the particular space and dimensions

of the dwelling unit.[94] The location of the neighborhood,

partly a reference to accessibility of the site, was

mentioned by only 26 percent of the sample. Housing costs

and outside appearance seemed to be most important when the

buyer was choosing between two or more possibilities.[95]

Rossi's study was conducted over fifteen years ago.

One would have to ask if Americans today are seeking the

same attributes of residential location. Chapin, in a more

recent effort, suggests that moving behavior is the result

of two lines of rationalization: (1) accessibility

opportunities and (2) livability opportunities.[96] Accessi-

bility was divided into social factors (security, status,

social distance), time, and physical distance. Livability

referred primarily to amenities of housing and neighborhood.

The relative importance of each of these considerations

was related to the individual mover's economic, social, and

psychological character. Boyce, in a review of intracity

residential mobility, considered that both "pull" factors,

such as rising income, housing status, and changing family

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[94]Peter H. Rossi, Why Families Move (Glencoe: Free Press, 1955), p. 154.

[95]Ibid., p. 164.

[96]Chapin, "Activity Systems and Urban Structure," p. 16.

needs, and "push" factors, such as dissatisfaction with house or neighborhood, were involved in the choice to seek a new home.[97]

The actual experience of individuals living in particular environments, or the experience of moving to new ones, might be contrasted with studies requesting the subject's impressions of a simulated real-world situation. The advantage of utilizing environmental displays, beyond cost and variable control, is that different environments may be presented to the subject; that is, the respondent is able simultaneously to judge contrasting environmental alternatives, some of which might not be opportunities within his actual living environment. The most obvious disadvantage is that while the subject might be familiar with most, or all, of the environmental alternatives displayed, he might at best have only limited actual living experience in most of them, thereby providing a poor basis for selection.

Craik has reviewed several possible methods for presenting environmental displays, including models, sketches, and cinematic or photographic representations.[98] Many environmental displays rely on assessment techniques developed mainly for psychological testing; for example,

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[97]Ronald R. Boyce, "Residential Mobility and Its Implications for Urban Spatial Change," Proceedings of the Association of American Geographers, I (1969), 22-26.

[98]Craik, "Comprehension," p. 31.

semantic-differential, adjective and activity checklists,
Q-sort descriptions, and the Thematic Apperception Test.
Sonnenfeld, for example, has utilized a photo-slide presen-
tation with a semantic-differential test to gauge differ-
ences in environmental perception between two student groups
from distinct environments: The Alaskan artic and urban
Delaware.[99] The Thematic Apperception Test, essentially a
method by which the subject is asked to relate his thoughts,
feelings, and actions to a series of ambiguous pictures,
was utilized by Sims and Saarinen in studying hazard per-
ception on the Great Plains.[100]

This dissertation utilized a mental congruence
approach. The subjects were assumed to be familiar with at
least most of the environmental types presented, although
few, if any, of the subjects likely have actually lived in
all of the situations presented. The approach attempted
to simulate certain aspects of real-world decision-making
through a series of game situations. The findings are
presented as the main body of the study.

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[99]Joseph Sonnenfeld, "Equivalence and Distortion of
the Perceptual Fnvironment," Environment and Behavior, I
(June, 1969), 8b.

[100]John Sims and Thomas F. Saarinen, "Coping with
Environmental Threat: Great Plains Farmers and the Sudden
Storms," Annals of the Association of American Geographers,
LIX (December, 1969), 677-86.

APPENDIX II

ENVIRONMENTAL DISPLAY GAMES: FIELD INTERVIEW

Most people find this interview interesting since
it concerns things about which we all know something about--
our city environment. The interview is a series of what we
call "environmental display games" from which you select
those things that you most prefer about cities, through a
rather unique method that might remind you a bit of a parlor
game such as monopoly. These games are very simple and easy
to learn and, remember, they have no right or wrong answers--
only your opinion counts.

Accessibility Game
Preference Rankings

The idea of the first game is to find out how far
from your home you would like to have some of the stores,
services, and facilities that you may use. Remember, this
is only what you personally would like; there are no "right"
or "wrong" answers, or "best" way to play the game.

Imagine that the sketch of the house in the center
of the game board is where your home is located, and that
each of the rings around your house represent certain dis-
tances away from your home. These distances are not shown

in blocks or miles, but rather in the "time" that it would

take you to get from your home to a point within each ring.

For example, from your house to a point within the third

ring would take 3-5 minutes. The first ring is within walk-

ing distance from your home (probably not more than 4-6

blocks); the second ring within 3 minutes driving time (or

bus); the third ring 3-5 minutes driving time; the fourth

ring 5-15 minutes driving time; the fifth ring 15-30 minutes

driving time; the sixth ring 30-60 minutes driving time; and

the last ring over 1 hour.

Now note that the board is divided into twenty-four

segments, each segment corresponding to some store, service,

or facility that would likely be found within a city such

as Austin. Of course, not everything found in a city is

shown on the board, but note such facilities as a place of

worship of your choice, schools, a hospital, shopping and

entertainment areas are shown.

The game is played in the following way: You have

sixty tokens in which to locate each of the facilities at

the distance (in time) you would like to have them from your

home. This is done by placing the correct number of tokens,

shown by the numbers, in the square corresponding to the

distance you desire each facility to be located away from

your home. For example, if you would like to have a super-

market within walking distance of your home, this would cost

you six tokens and you would place six of your sixty tokens

in that square. Notice that the rings closer to your home cost you more tokens than the rings farther away from your home. Because you only have a limited number of tokens, you obviously cannot place all of the facilities or stores near your home--even if you would so desire--since this would cost you more tokens than you have. Therefore, you must decide which of these facilities shown you want nearest to your home; which next nearest, and so on. Your goal in this game, then, is to get each facility shown on the game board at the distance you would most like to have it away from your home, spending no more than the total number of sixty tokens that you have. You may not be able to locate each one exactly where you would like it, but try to get each as nearly where you would like it as possible.

You may re-arrange the tokens at any time. You need not use all of the tokens if you don't want to, and there is no time limit to the game.

Neighborhood Composition

Using the same group of facilities as in the first game, each of which is shown on a separate card, divide them into three groups: (1) one group representing those facilities which you definitely would want located within the neighborhood in which you live, (2) a second group should comprise any of the places which you definitely would not want within your neighborhood, and (3) a third group, if you wish, of facilities which you feel may or may not be located

within the neighborhood in which you live.

<u>Questions</u>

1. Are there any other facilities, services, or stores, such as these, but which were not shown on the game, that you would definitely want within your neighborhood?

2. How often do you use or visit each of the places shown on the game board? Please answer by the letter of the category which most accurately states how often you generally use each.

(a) Nearly Everyday
(b) 3-5 times each week
(c) 1-2 times each week
(d) About every 2 weeks
(e) About once each month
(f) Once every few months
(g) Practically never

<p align="center">Neighborhood Quality Game</p>

<u>Environmental Alternatives</u>

The Neighborhood Quality Game is played in a similar way to the Accessibility Game and is also very easy to learn. The game involves three separate steps. First, using the markers provided, which are numbered "1" through "5," and are color-coded so you can easily determine each number, will you please rank your preferences for the various alternatives listed under each of the first ten items on the left-hand side of the game board. For example, item Number One concerns the "Size of the City You Would Want to Live Within." Under this are shown five possibilities. Suppose that you would most prefer to live within a "Metropolitan Area," that is, a city of over 1,000,000 people, then you would

take a marker showing a "1" on it, meaning your first choice, and place it on the square under "Metropolitan Area." Then suppose your second choice was a "Small Town"--that is, less than 50,000 persons--then place a "2" marker on that square and so on, until you have "ranked" all of the possibilities according to your preference. In this case, perhaps you would least like to live in a "Rural" setting, then you would place a "5" marker under "Rural."

Do this for each of the first ten items listed on the board. Remember, rank them in the order that you think you would like--from your most preferred, shown by a "1" marker, to your least preferred, shown by a "5" marker.

Photo Ranking

The second step of the Neighborhood Quality Game concerns certain personal and social factors that you may consider important to a good neighborhood.

The last eight items (Numbers 23-30) involve eight photographs of different neighborhoods. For each of these items shown on the game board, indicate the neighborhood shown in the photographs which you consider best exhibits the quality described. For example, perhaps you feel that this [any] neighborhood photo shows the quality of "Privacy" the most. Then select the photo of the neighborhood which next best exhibits Privacy, and so on. Do this for all the photos--that is, rank them in order from those that you consider display "Privacy" the most, to those that are, to

you, the "least private." You will end up with the photos ranked from "1" through "8".

Do the same thing for each of the last eight items listed using the same eight photographs. The important thing to keep in mind is the quality being considered--such as "Privacy," "Prestige," etc.--when selecting the neighborhoods that you feel display that particular quality the "most" or the "least."

Although it is not shown on the game board, please make one final ranking--from the neighborhoods that you would most prefer to live within to those that you would least want to reside within.

Preference Rankings

The final step is similar to the "Accessibility Game." Notice that along the right-hand side of the game board, across from each of the thirty items listed, there are five squares containing numbers from "0" to "4". This time you are again given sixty tokens. Again, you can spend these tokens to express the degree of importance that you attach to each of the thirty items shown on the game board. The more important the item is to you, the more tokens you must spend.

Please note carefully the following two questions as you complete this final step:

1. How important is this quality of neighborhood to you?

2. How strongly would you consider this quality of neighborhood in moving to a new location?

Try to consider how important each of these thirty items are
to you for a good neighborhood. One way that may help you
to do this is to consider how strongly you would consider
each item in moving to a new neighborhood; that is, of those
items listed, which ones mean the most to you to ensure that
you will be happy with your move and that you will want to
stay in the new neighborhood.

Consider the following "Guideline to Response" chart
in spending your tokens:

Tokens	Response
4	Extremely important to me for a good neighborhood. Would definitely consider in moving.
3	Important to me for a good neighborhood. Would likely consider in moving.
2	Could be important to me for a good neighborhood. Might consider in moving.
1	Seldom important to me for a good neighborhood. Not likely to consider in moving.
0	Not important to me for a good neighborhood. Would not consider in moving.

How much importance do you place on each of the items listed?
If it is "Extremely Important" to you, then you would indi-
cate this by placing four tokens on the appropriate square
marked "4" on the game board in accordance with the Chart. If
slightly less important, but you would likely consider it in
moving, three tokens are needed, and so on. If an item is
not important to you at all, you need not spend any of your
sixty tokens for it.

Again, because you only have a limited number of tokens, you may not attain all that you might want, but try to attain the living environment you would best like given the number of tokens that you have. However, you may find that you have too many tokens; if so, you need not use them all. You may re-arrange the tokens anytime.

Questions

1. Are there any other items about a neighborhood, such as those included in the game, which you would consider in selecting a neighborhood in which to live?

2. Do you consider the neighborhood you now live in ideal? If not, what are some of the things you would most like to see changed?

3. What do you consider the single most important thing about a neighborhood?

4. How well do you feel you know your way around your neighborhood? About how many people live in this neighborhood?

5. How important is neighborhood to you?

6. Do you feel that a neighborhood, such as the one you live in now, should have the right to have its own local governing council, with the power to make its own laws and regulations?

Personal Data

1. How long have you lived at this address?

2. How long have you lived in Austin?

3. How often have you moved in the last five years?

4. What cities, towns, or areas of the country did you live in as a child (to 18 years old)?

5. Do you plan to move, or would you like to move, in the near future?

6. Please tell me the letter of the age group which you would fit within:

   (a) 18 to 24 Years Old
   (b) 25 to 31
   (c) 32 to 38
   (d) 39 to 45
   (e) 46 to 52
   (f) Over 52

7. Indicate the group which best describes your total family income on a yearly basis:

   (a) Under $3000 per year
   (b) $3000 to $4999
   (c) $5000 to $6999
   (d) $7000 to $9999
   (e) $10,000 to $14,999
   (f) $15,000 to $19,999
   (g) $20,000 and Over

8. Which of the following groups would you best fall within regarding the highest grade of school that you have completed?

   (a) 0 to 8 years
   (b) 1 to 2 years of high school
   (c) 3 to 4 years of high school
   (d) 1 to 2 years of college
   (e) 3 to 4 years of college
   (f) More than 4 years of college
   (g) Other kinds of schooling (specify)

9. Are you married (single, divorced, separated, spouse deceased)?

10. What do you do for a living?

11. What is the address of where you work?

12. How long does it take for you to get to work from here (minutes)?

13. (If Married) What does your spouse do for a living?

14. How many children live at home with you?

15. What grade level in school are each of there children (who live at home)?

    (a) Pre-school
    (b) Elementary School (Grades 1-6)
    (c) Junior High School (Grades 7-9)

(d) High School (Grades 10-12)
(e) College
(f) Not in School

16. How many people, including yourself, live in this household?

17. Do you own your own home, or are you renting?

18. Would you prefer to own or rent your home?

19. Whether or not you go to a place of worship regularly, what is your religious preference? (Optional)

20. Would you rank the items on this card in their order of importance to you?

(a) Arts, Hobbies, and Sports
(b) Reading
(c) Work
(d) Television/Radio
(e) Children and Family
(f) Service and Social Clubs

21. How many cars are available for you and your family's use?

22. How many relatives, with whom you have regular contact, live within walking distance from here?

23. How many friends of yours, with whom you have regular contact, live within walking distance from here?

24. How long does it take for you to get to your best friend's house from here?

Thank you very much for your time and cooperation.

Interviewer Record

1. Cluster Number.

2. Case Code (Block/House).

3. Name of Subject Interviewed (Required for NSF Records).

4. Address of Interview (Subject's Home).

5. Quality of Interview (Ability to understand games, seriousness of play, cooperation, etc.).

6. Time of Interview.

   (a) Hour of Day (approximate)
   (b) Length of Interview

7. Language of Interview.

   (a) English
   (b) Spanish
   (c) Other

8. Sex of Subject.

9. Ethnic Background of Subject.

   (a) Anglo-American
   (b) Mexican-American
   (c) Negro
   (d) Other (Specify)

10. Subject lives in:

    (a) Detached, single-family house
    (b) Duplex (or Row House)
    (c) Multi-family Apartments (Condominium)
    (d) Other (Specify)

    If more than one story to building, specify level subject lives on.

11. Evaluation of condition of dwelling unit structure:

    (a) Standard, Good (No repair needed)
    (b) Standard, Fair (Needs minor repair)
    (c) Deteriorating (Needs major repair)
    (d) Dilapidated (Unsound, beyond repair)

12. Interviewer's name.

APPENDIX III

ROTATED FACTOR MATRICES

TABLE 17

ACCESSIBILITY GAME: COMBINED SUBJECT GROUPS
ROTATED FACTOR MATRIX

Variables ↓	Percentage of Variance →	Factors									Final Communality
		I	II	III	IV	V	VI	VII	VIII	IX	
		12.2	9.0	7.4	6.7	6.4	6.3	5.6	5.1	4.7	
Access to Freeway		-.148	-.014	.017	.225	.237	.114	.252	-.071	.726	.799
Place of Work		.070	.111	-.018	.106	.879	.010	.147	.113	-.015	.841
Hospital		.664	-.164	.002	-.008	-.086	.001	-.069	.101	-.194	.748
Physician's Office		.085	-.012	-.027	.823	.041	.200	-.017	-.054	.084	.738
Elementary School		.041	.826	-.068	-.113	.132	-.270	-.061	-.018	.138	.823
High School		.027	.097	.117	.111	.035	-.124	-.113	.030	.148	.755
Place of Worship		.653	-.010	.058	-.034	-.107	-.279	.070	.173	-.106	.705
Playground		-.172	.789	-.020	.130	-.029	.238	.090	.096	-.149	.781
City Park		.467	-.090	.595	-.164	.147	-.137	-.190	.023	.116	.704
Camping and Picnic Area		-.323	-.225	.162	.190	-.114	.116	.063	.556	-.278	.777
Best Friend's House		.013	-.023	-.005	.048	-.014	.887	-.005	.084	.061	.836
Library		.039	.127	-.086	-.084	.150	.055	.011	.874	.128	.866
Post Office		.290	-.080	.322	-.581	.009	.224	.045	-.023	-.045	.635
City Hall		.229	.041	.221	.201	-.529	.050	.306	.040	.211	.698
Bus Stop		-.033	-.038	-.141	.058	-.049	.002	.133	-.082	-.122	.840
Night Club/Bar		-.331	-.253	.192	.405	.323	-.083	-.048	.148	.034	.726
Restaurant/Cafe		-.001	-.236	.140	.175	.078	.261	-.066	.059	.002	.752
Movie Theater		.030	-.041	.267	.459	.045	-.097	-.112	-.001	-.003	.622
Auto Service Station		-.062	-.001	-.008	-.022	-.283	-.002	-.193	.119	.785	.777
Drug Store/Pharmacy		.460	-.240	-.166	.040	-.083	-.255	.556	.146	-.112	.746
Grocery Store-Minimarket		-.441	.051	.142	.342	-.205	-.158	.212	.081	-.021	.695
Grocery Store-Supermarket		.740	.021	.006	.022	.071	.189	.100	-.249	-.009	.686
Shopping Center		-.131	-.033	.799	.000	-.142	.053	.086	-.046	-.048	.740
Downtown		-.034	.079	.043	-.085	.102	.052	.828	-.017	.013	.749

TABLE 18

NEIGHBORHOOD QUALITY GAME: COMBINED SUBJECT GROUPS -- ROTATED FACTOR MATRIX

| Variables ↓ | Percentage of Variance → | Factors | | | | | | | | | Final Communality |
| | | I | II | III | IV | V | VI | VII | VIII | IX | |
		26.8	7.4	6.3	5.6	4.7	4.5	3.9	3.8	3.5	
1. Size of City		.218	.170	-.326	.127	-.275	-.117	-.313	.056	-.184	.708
2. Location of Neighborhood		.575	.053	-.224	.005	-.019	-.164	-.136	.327	-.177	.726
3. Density		.501	.145	-.155	.378	-.069	.137	-.272	.218	-.126	.725
4. Neighborhood Design		.299	.185	-.026	.298	.096	.093	-.305	.206	-.293	.668
5. Landforms		.291	.137	-.179	.153	-.243	.363	-.582	-.063	-.187	.794
6. Vegetation		.251	.129	-.588	.196	-.126	-.336	-.305	.083	-.308	.816
7. Income Level		.748	.016	-.164	.124	-.113	.260	-.261	.028	-.133	.823
8. Kind of People		.832	-.038	-.020	.134	-.093	.022	-.089	-.007	-.003	.797
9. Home: Architecture/Design		.082	.191	-.679	-.014	.093	.297	-.291	-.010	-.028	.783
10. Home: Cost/Rent		.551	.037	-.315	.294	.003	.066	-.315	.073	-.096	.781
11. Street Condition		-.214	-.013	.217	-.015	.105	-.096	-.020	-.799	.126	.803
12. Sidewalks		-.131	.060	.086	-.147	.117	-.803	-.002	-.129	.098	.812
13. Bus Service		-.436	.180	.446	-.071	.013	-.065	-.030	-.029	-.100	.762
14. City Water Supply		-.133	.059	.129	-.039	.050	-.092	.149	-.065	.871	.889
15. Street Lights		-.110	-.015	.118	-.065	.194	-.203	.147	-.089	.197	.753
16. Taxes		-.039	-.051	.117	-.075	.023	-.055	.028	-.043	-.047	.791
17. Schools		-.199	.170	.695	-.071	.089	-.048	-.032	-.180	.071	.713
18. Parks		-.087	.017	.036	-.138	.882	-.113	-.002	-.041	.019	.850
19. Shopping Facilities		-.143	.090	.152	-.707	.280	.089	.046	-.044	.113	.715
20. Job Opportunities		-.162	.078	-.053	-.246	-.090	-.088	.341	-.050	.085	.655
21. Police Station		-.155	.007	.117	.011	-.098	-.146	-.048	.023	-.064	.825
22. Personal Friends		-.153	-.007	-.007	-.831	-.024	-.209	.119	.004	-.041	.818
23. Privacy		.058	-.687	.240	.070	.152	.211	-.030	.092	-.341	.842
24. Prestige		.022	-.744	.071	-.163	-.103	-.136	-.204	.029	.107	.795
25. Homeyness		-.404	-.275	.231	.102	.091	.078	-.130	.544	.159	.768
26. Quietness		-.246	-.194	-.024	.027	.477	.042	.474	-.122	.052	.837
27. Newness		-.048	-.150	-.017	-.124	.018	-.021	.115	.068	-.059	.852
28. Cleanliness		-.333	-.087	.066	-.126	-.064	.101	.678	.016	.150	.720
29. Beauty		-.121	-.660	-.340	.209	.031	.069	.252	-.027	.019	.728
30. Friendliness		-.035	.154	.090	-.046	.014	-.003	.818	-.043	.014	.747

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TABLE 19

ACCESSIBILITY GAME: ANGLO-AMERICANS
ROTATED FACTOR MATRIX

Variables↓	Percentage of Variance→	Factors									Final Communality
		I	II	III	IV	V	VI	VII	VIII	IX	
		12.7	11.6	9.2	8.2	7.5	6.7	6.1	5.4	4.4	
Access to Freeway		.323	.121	.093	.068	-.811	-.003	-.080	-.100	.052	.815
Place of Work		-.150	.207	.364	.333	-.026	.086	-.079	.279	-.311	.736
Hospital		-.067	-.358	.404	.538	.189	.167	-.223	-.186	-.276	.832
Physician's Office		.024	-.053	.176	.056	-.051	.027	-.053	.909	.006	.882
Elementary School		-.087	.733	.341	-.180	-.019	-.096	-.163	.112	-.011	.796
High School		-.084	.808	-.140	-.026	-.065	.096	-.025	-.297	.129	.800
Place of Worship		-.053	-.020	.035	.118	.191	.061	.029	.067	.025	.758
Playground		.120	.244	.042	-.269	.052	.007	-.206	.097	.075	.824
City Park		-.187	.042	-.006	.170	.205	.759	.097	-.126	-.061	.733
Camping and Picnic Area ...		-.217	-.589	.081	-.148	.089	.427	-.035	-.117	-.185	.723
Best Friend's House		-.043	-.336	-.019	.035	.343	.125	.140	-.039	.556	.862
Library		.156	-.003	.285	.030	.774	.075	-.171	-.178	.121	.834
Post Office		-.672	-.035	-.097	.225	.014	.206	-.018	.045	.176	.759
City Hall		.605	-.146	-.248	.165	.073	-.029	-.012	.536	-.150	.861
Bus Stop		-.104	-.004	-.878	.026	-.090	.002	-.130	-.136	.057	.834
Night Club/Bar		.004	-.301	.080	-.014	.018	.133	.089	.020	-.787	.779
Restaurant/Cafe		.287	-.094	-.029	-.082	.050	.001	.805	-.124	-.102	.803
Movie Theater		-.115	-.022	.125	.067	-.081	.076	.823	.044	.049	.742
Auto Service Station		.142	.113	.099	-.186	-.051	.135	-.100	.018	.161	.776
Drug Store/Pharmacy		.440	-.325	.233	.415	.006	-.342	.015	-.139	.271	.805
Grocery Store-Minimarket ..		.277	.058	.339	-.644	-.209	-.019	.111	.062	.035	.700
Grocery Store-Supermarket .		-.045	.015	.062	.824	-.188	-.008	.117	.198	.077	.791
Shopping Center		.289	-.202	.030	-.165	-.241	.684	.010	.297	-.017	.778
Downtown		.699	.002	.135	-.233	-.258	.118	.142	.070	.179	.729

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TABLE 20

ACCESSIBILITY GAME: MEXICAN-AMERICANS
ROTATED FACTOR MATRIX

| Variables ↓ | Percentage of Variance → | Factors | | | | | | | | | Final Communality |
| | | I | II | III | IV | V | VI | VII | VIII | IX | |
		13.9	10.2	8.6	8.2	7.1	6.5	5.8	5.5	5.0	
Access to Freeway		-.115	-.090	.044	-.051	.038	.100	.887	-.037	-.089	.842
Place of Work		.062	.031	.038	-.102	.839	.199	.108	.144	-.272	.894
Hospital		.302	.036	-.049	-.278	-.095	-.072	-.038	-.141	.035	.731
Physician's Office		.125	-.076	.351	-.059	.078	-.159	.218	.248	.008	.848
Elementary School		.348	.446	-.639	.345	.044	.129	.017	-.122	-.002	.887
High School		.007	-.035	-.096	-.772	-.004	-.031	.125	-.319	.199	.855
Place of Worship		.880	-.073	-.042	-.242	-.048	.133	-.025	.004	.004	.865
Playground		-.149	.919	-.050	.009	-.045	-.007	-.080	.015	-.106	.890
City Park		.358	-.141	-.137	-.076	.115	-.176	.199	.244	.126	.743
Camping and Picnic Area ...		-.524	.030	.126	-.101	-.219	.470	-.174	.179	-.272	.819
Best Friend's House		.086	-.018	.819	.283	-.211	-.027	.102	-.041	-.179	.850
Library		.031	-.009	-.027	-.019	.146	.905	.158	-.075	.029	.876
Post Office		-.001	-.028	.125	.108	-.058	.109	-.138	-.089	-.190	.786
City Hall		.217	.157	.176	-.126	-.652	.065	.166	.367	-.114	.786
Bus Stop		.151	.406	-.025	-.082	-.013	-.061	.083	-.059	-.387	.752
Night Club/Bar		-.482	-.263	-.130	.014	.169	.062	.304	.310	-.147	.736
Restaurant/Cafe		.171	.097	.690	.020	.329	.149	-.079	.128	.409	.872
Movie Theater		-.006	-.009	.055	.076	-.018	-.054	-.037	.918	.075	.879
Auto Service Station		-.019	.138	.043	.090	-.311	.140	.497	.042	.576	.758
Drug Store/Pharmacy		.213	.006	-.070	-.779	.040	.085	.052	.143	-.229	.814
Grocery Store-Minimarket ..		-.280	.049	-.109	-.046	-.082	.175	-.040	-.020	.060	.755
Grocery Store-Supermarket .		.728	-.077	.141	.039	-.012	-.084	-.138	.090	-.177	.687
Shopping Center		-.001	.032	.057	-.016	-.100	.001	.018	.051	.006	.894
Downtown		.047	.117	.028	.013	.078	.064	.127	-.034	-.815	.750

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TABLE 21

NEIGHBORHOOD QUALITY GAME: ANGLO-AMERICANS -- ROTATED FACTOR MATRIX

Variables ↓	Percentage of Variance →	Factors									Final Communaltiy
		I	II	III	IV	V	VI	VII	VIII	IX	
		15.1	11.4	9.6	7.0	6.4	6.2	5.3	5.0	4.2	
1. Size of City		.460	.044	.052	.152	.121	-.157	.466	.196	-.440	.821
2. Location of Neighborhood ..		.195	-.136	.146	.265	-.061	.162	.073	.010	.062	.895
3. Density		.469	.106	.065	-.019	-.179	.637	-.200	.189	.047	.849
4. Neighborhood Design		.005	-.135	.008	-.031	-.079	.523	.168	.087	.522	.915
5. Landforms		.153	-.158	-.657	.475	-.301	.072	.057	.100	.042	.898
6. Vegetation		.382	.116	.153	.341	-.532	-.089	-.015	.079	.349	.721
7. Income Level		.135	.072	-.126	.030	.050	.128	.181	.101	-.068	.825
8. Kind of People		-.023	.177	-.126	.066	-.039	.135	.832	-.015	.128	.853
9. Home: Architecture/Design .		.678	-.097	-.120	.320	-.224	-.018	-.191	.063	.091	.787
10. Home: Cost/Rent		.818	.076	.047	.078	.045	.129	-.101	-.002	.008	.791
11. Street Condition		-.155	.017	-.012	.064	.093	-.066	.087	-.121	.076	.871
12. Sidewalks		.234	-.053	.251	.340	-.075	-.111	.154	-.694	.151	.847
13. Bus Service		-.092	-.912	-.016	.152	.045	-.016	-.045	-.053	.094	.896
14. City Water Supply		-.396	.077	.052	-.110	.096	-.158	-.121	-.711	.031	.816
15. Street Lights		-.541	.076	.271	-.001	.196	-.277	-.095	-.232	.035	.672
16. Taxes		-.090	-.168	.164	-.397	-.265	-.228	.064	.255	.282	.824
17. Schools		-.306	-.115	.601	.032	.050	.055	.141	-.003	.107	.752
18. Parks		.096	-.038	.785	.067	.037	.065	-.110	-.134	.147	.749
19. Shopping Facilities		-.037	-.042	.074	.014	.894	-.046	.063	.054	-.018	.830
20. Job Opportunities		-.070	-.026	-.047	-.146	-.091	-.793	-.053	-.004	.151	.822
21. Police Station		.029	.285	.205	.334	.247	-.397	-.228	.554	.088	.840
22. Personal Friends		.055	.022	-.165	.086	.088	-.030	.051	.056	-.007	.799
23. Privacy		-.205	.199	-.159	.025	-.166	-.015	-.110	.303	-.667	.876
24. Prestige		-.242	.440	-.273	.115	-.230	.015	-.118	-.197	-.139	.836
25. Homeyness		-.732	-.110	-.087	.064	-.029	-.040	-.408	.150	-.168	.903
26. Quietness		.044	.280	.081	-.061	-.187	.132	-.688	.097	-.118	.768
27. Newness		-.084	-.040	-.673	-.242	.260	.020	.177	-.122	.191	.825
28. Cleanliness		-.131	.129	.006	-.835	-.126	.027	.022	.143	-.219	.848
29. Beauty		-.044	.031	-.005	-.242	.169	.161	-.135	-.036	-.821	.866
30. Friendliness		-.024	.036	-.091	-.784	.169	-.112	-.149	-.106	.036	.738

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TABLE 22

NEIGHBORHOOD QUALITY GAME: MEXICAN-AMERICANS -- ROTATED FACTOR MATRIX

| Variables | Percentage of Variance | Factors | | | | | | | | | Final Communality |
| | | I | II | III | IV | V | VI | VII | VIII | IX | |
		23.5	9.1	7.7	7.0	5.8	5.1	4.7	4.2	3.9	
1. Size of City		.096	-.276	-.341	.158	-.596	-.224	.072	-.236	.292	.858
2. Location of Neighborhood		.258	-.493	.020	.161	-.177	.088	-.411	-.221	.288	.797
3. Density		.557	-.136	-.073	-.027	-.272	-.330	-.349	-.154	-.008	.801
4. Neighborhood Design		.128	-.163	-.021	.032	-.035	-.111	-.065	-.752	-.216	.775
5. Landforms		.443	-.020	-.078	-.463	-.287	-.068	.018	-.361	-.127	.837
6. Vegetation		.227	-.624	-.152	.020	-.428	-.140	-.065	-.284	-.034	.799
7. Income Level		.858	-.110	-.008	-.204	-.142	-.056	-.119	-.214	-.052	.894
8. Kind of People		.767	-.246	.121	-.001	.071	-.130	-.191	.133	.275	.863
9. Home: Architecture/Design		.043	-.432	-.206	-.700	-.145	.044	.079	.042	.203	.813
10. Home: Cost/Rent		.682	-.315	-.009	.008	-.165	-.348	.086	-.185	-.164	.784
11. Street Condition		-.099	.122	.078	.071	.114	.074	.809	.085	-.011	.746
12. Sidewalks		-.135	-.102	-.065	.720	-.047	.233	.159	.021	-.212	.833
13. Bus Service		-.220	.785	.048	.022	-.082	-.027	.000	.116	.072	.824
14. City Water Supply		-.155	.074	-.147	.055	.082	.095	.131	.851	-.141	.872
15. Street Lights		.007	.036	-.005	.114	.056	.143	.099	.081	-.037	.855
16. Taxes		-.267	.180	.280	.367	-.238	.186	.094	.051	-.206	.732
17. Schools		-.179	.716	.040	.179	-.033	.167	.141	.015	-.185	.672
18. Parks		-.130	.037	.122	-.051	.407	.499	.149	.048	.106	.769
19. Shopping Facilities		-.311	.144	-.003	.012	.088	.789	.071	.062	-.136	.796
20. Job Opportunities		-.146	.002	.025	.124	.154	.236	-.139	.182	-.253	.697
21. Police Station		.040	.116	-.050	.282	-.037	-.118	.017	-.062	-.792	.764
22. Personal Friends		-.097	.036	-.058	.175	-.068	.767	.003	.180	.299	.826
23. Privacy		.049	.197	.802	.067	.167	-.018	-.055	-.233	.067	.825
24. Prestige		.061	-.014	.688	.131	-.152	.053	.180	.076	.002	.744
25. Homeyness		-.340	.148	.234	.218	-.042	-.027	-.330	.024	-.207	.721
26. Quietness		-.212	-.090	.034	.064	.842	-.000	.219	.040	.001	.844
27. Newness		-.006	-.031	.070	.025	-.007	.108	-.098	-.025	-.015	.810
28. Cleanliness		-.576	.036	-.009	-.006	.226	.109	-.186	.476	.103	.697
29. Beauty		-.149	-.483	.531	-.155	.115	-.328	.055	.095	-.039	.861
30. Friendliness		-.050	.087	-.308	.202	.591	-.028	-.083	.079	.354	.815

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Lillie, Richard. Director of City Planning Department,
        Austin, Texas. Public Address at Southwest Texas
        State University, San Marcos, Texas, October 14, 1971.

FIGURE 1a

ACCESSIBILITY GAME BOARD
(Anglo-American Neighborhood)

(Actual Size: 30 x 28)

SHOPPING
CENTER

GROCERY STORE-
supermarket

MINI-MARKET

ICE

GROCERY STORE-
minimarket

DRUGS

DRUG STORE
PHARMACY

AUTOMOTIVE
SERVICE STATION

MOVIE

MOVIE THEATER

OVER 1 HOUR

1 HOUR

30 MINUTES

15 MINUTES

5 MINUTES

0

1

2

3

0

1

2

3

0

1

2

3

0

1

2

3

0

1

2

3

3

2

ACCESSIBILITY GAME

SHOPPING CENTER

DOWNTOWN

ACCESS TO FREEWAY or INTERSTATE

PLACE OF WORK

HOSPITAL

OVER I HOUR

I HOUR

30 MINUTES

15 MINUTES

5 MINUTES

3 MINUTES

WALK

WALK

5 MINUTES

3 MINUTES

3 MINUTES

5 MINUTES

15 MINUTES

30 MINUTES

PLACE OF
WORK

HOSPITAL

0

1

2

0

PHYSICIAN'S
OFFICE

3

2

1

0

4.

3

2

1

ELEMENTARY
SCHOOL

4

3

2

0

4

3

2

1

HIGH SCHOOL

OVER 1 HOUR

5 MINUTES

15 MINUTES

30 MINUTES

1 HOUR

4

3

2

1

0

4

3

2

1

0

PLACE OF WORSHIP
(your denomination)

2

1
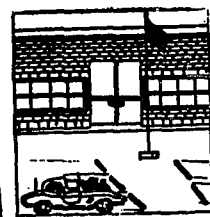
DRUG STORE
PHARMACY

AUTOMOTIVE
SERVICE STATION

MOVIE

MOVIE THEATER

RESTAURANT
or CAFE

NIGHT CLUB
or BAR

BUS STOP

CITY HALL

OVER 1 HOUR

1 HOUR

30 MINUTES

15 MINUTES

5 MINUTES

0   1   2   3

0   1   2   3   4

0   1   2   3   4

0   1   2   3   4

0   1   2   3

0   1   2

0
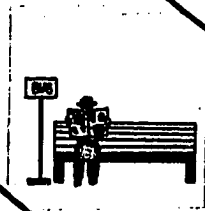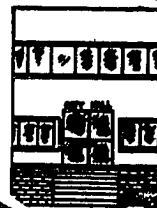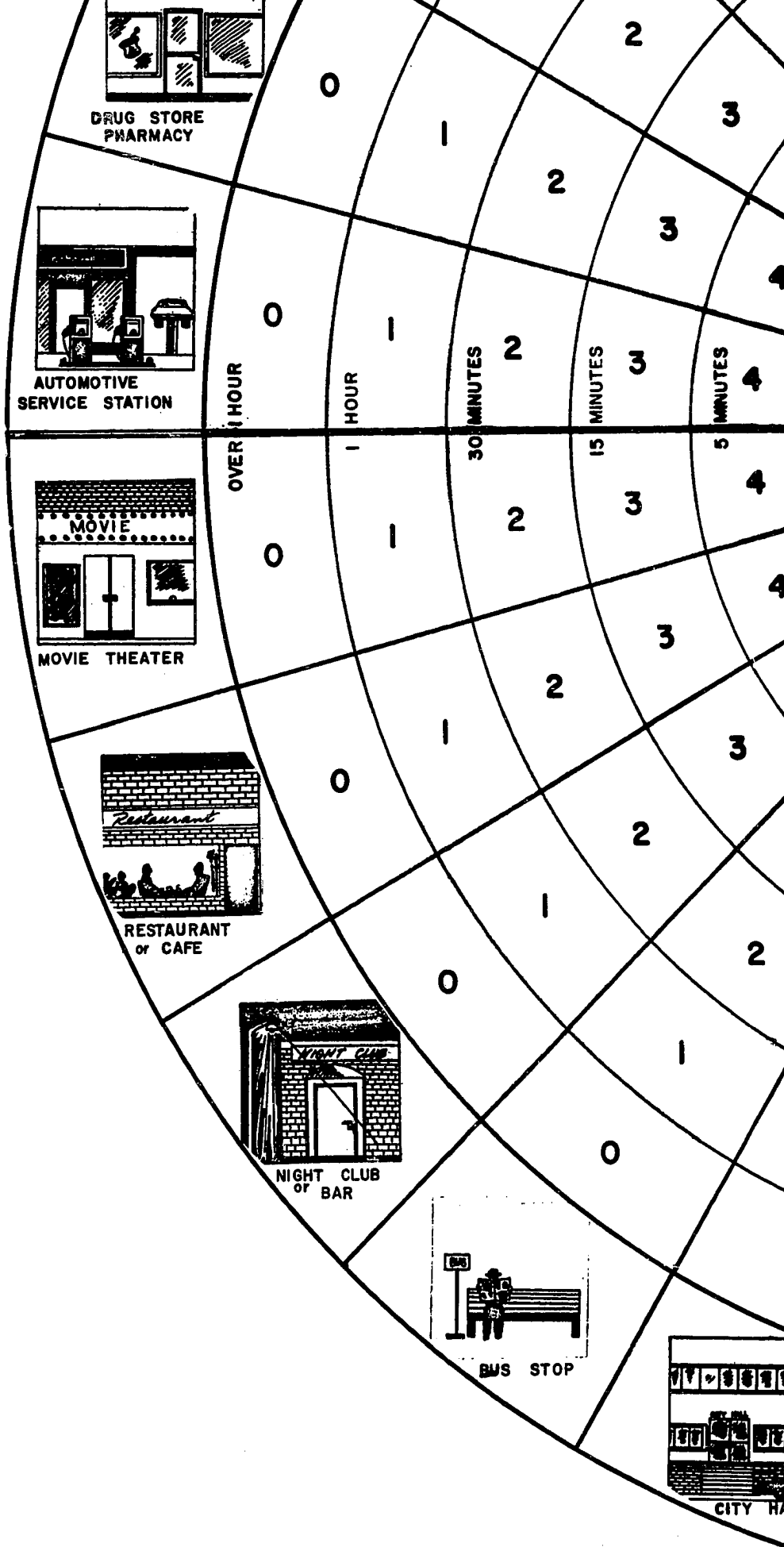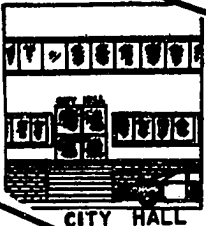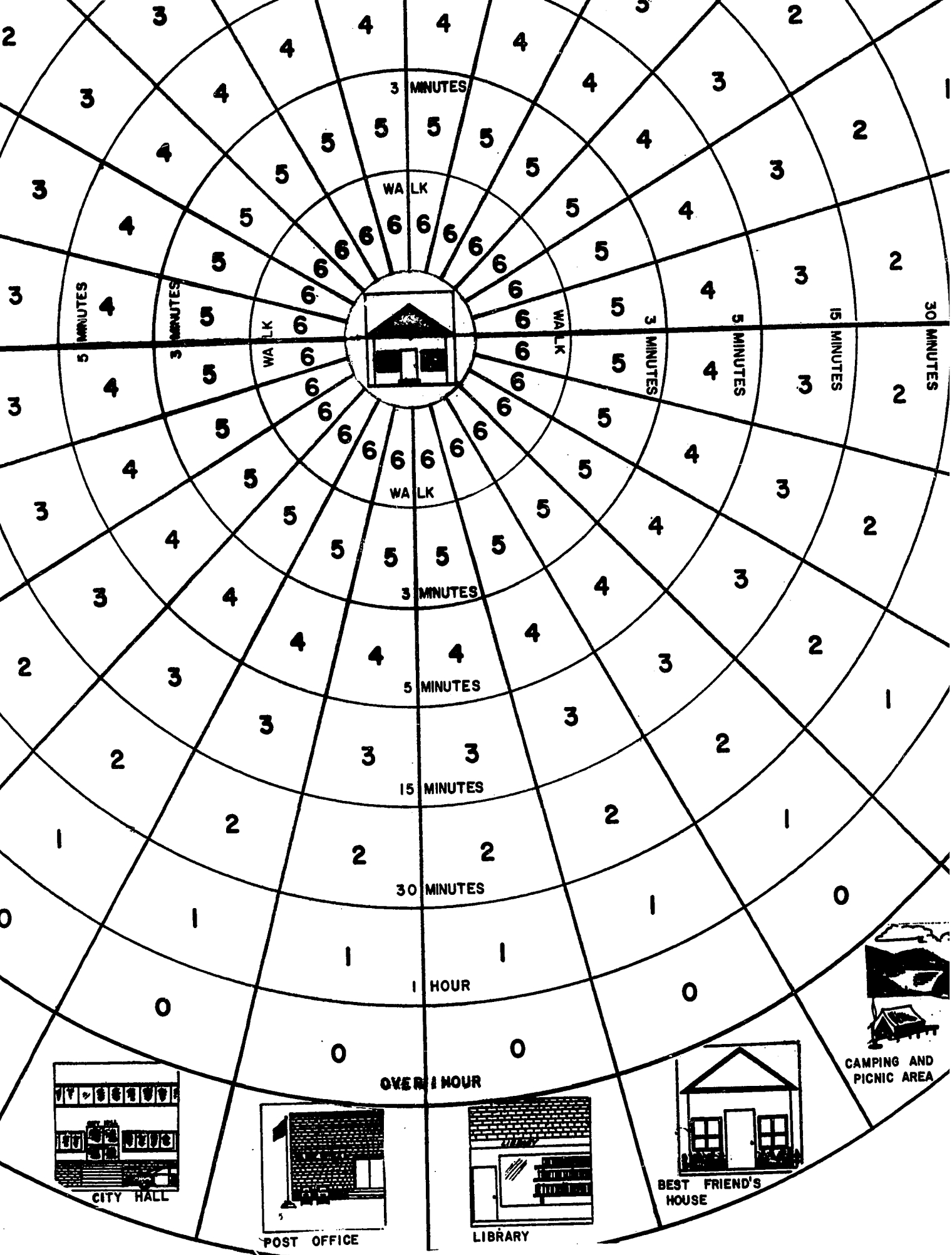
CITY HALL
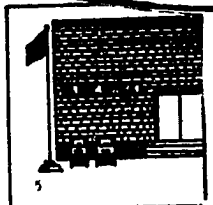
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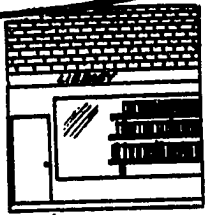
LIBRARY
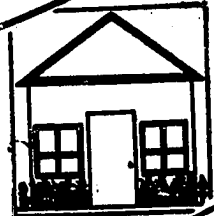
BEST FRIEND'S
HOUSE

CAMPING AND
PICNIC AREA

3 MINUTES

WALK

5 MINUTES

3 MINUTES

WALK

WALK

3 MINUTES

5 MINUTES

15 MINUTES

30 MINUTES

WALK

3 MINUTES

5 MINUTES

15 MINUTES

30 MINUTES

1 HOUR

OVER 1 HOUR

ELEMENTARY
SCHOOL

HIGH SCHOOL

PLACE OF WORSHIP
(your denomination)

PLAYGROUND

CITY PARK

CAMPING AND
PICNIC AREA

FRIEND'S
SE

5 MINUTES

15 MINUTES

30 MINUTES

1 HOUR

OVER 1 HOUR

2

3

3

2

3

3

2

4

4

3

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FIGURE 1b

NEIGHBORHOOD QUALITY GAME BOARD
(Mexican-American Neighborhood)

(Actual Size: 36 x 34)
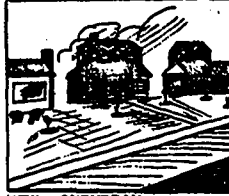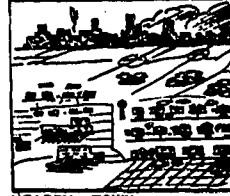
NEIGHBORHOOD QUALITY GAME

JUEGO DE LA QUALIDAD DE LA VECIN...
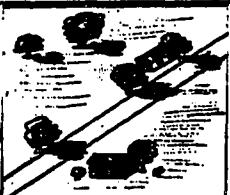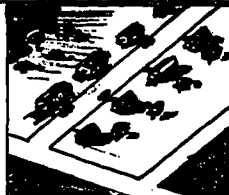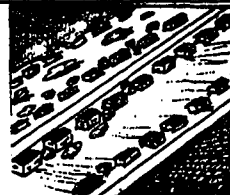
1 SIZE OF CITY WANT TO LIVE WITHIN

TAMAÑO DE LA CIUDAD EN QUE QUIERE VIVIR

A ☐ | B ☐ | C ☐ | D ☐

METROPOLITAN AREA
Over 1,000,000 Population
ÁREA METROPOLITANO
Más de 1,000,000 Población

LARGE CITY
300,000 – 1,000,000 Population
CIUDAD GRANDE
300,000 a 1,000,000 Población

CITY
50,000 – 300,000 Population
CIUDAD
50,000 a 300,000 Población

SMALL TOWN
Less Than 50,00...
PUEBLO CHICO
Menos de 50,000 Pobla...
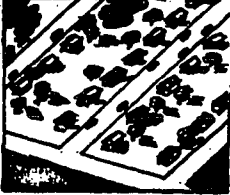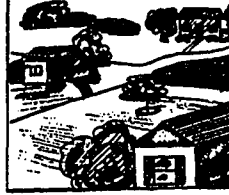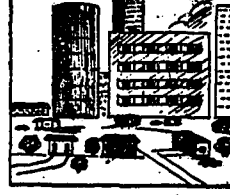
2 LOCATION OF NEIGHBORHOOD WITHIN CITY

SITIO DE LA VECINDAD DENTRO DE LA CIUDAD

A ☐ | B ☐ | C ☐ | D ☐

ESTABLISHED SUBURBAN AREA
ESTABLECIDO ÁREA SUBURBANO

NEW SUBURBAN SUBDIVISION
NUEVA SUBDIVISIÓN SUBURBANO

NEARBY TOWN
(Within 50 miles of Larger City)
PUEBLO CERCA
(Dentro de 50 miles de Una Ciudad Grande)

NEAR DOWNTO...
EL CENTRO O CERC...

3 DENSITY — LOT SIZE and BUILDING HEIGHT

DENSIDAD – TAMAÑO DE SU SOLAR Y ALTURA DE LOS EDIF...

A ☐ | B ☐ | C ☐ | D ☐

2 PERSONS PER ACRE
2 PERSONAS POR ACRE

6 PERSONS PER ACRE
6 PERSONAS POR ACRE

30 PERSONS PER ACRE
30 PERSONAS POR ACRE

80 PERSONS ...
80 PERSONAS POR ...

4 NEIGHBORHOOD DESIGN — ARCHITECTURE, LAND USE MIXTURE, & STREET PATTERNS

EL DISEÑO DE LA VECIN...
DEL USO DE LOS SOL...

A ☐ | B ☐ | C ☐ | D ☐

TRADITIONAL SINGLE-FAMILY HOMES IN GRID PATTERN
CASAS TRADICIONALES DE UNA SOLA FAMILIA
EN UN PATRÓN DE CUADRAS

SINGLE-FAMILY HOMES IN PLANNED UNITS
PLANES UNIDADES DE UNA CASA
DE UNA SOLA FAMILIA

MIXED LAND USES (Single-family, Duplexes, Apartments, etc.)
MESCLA DEL USO DE LA TIERRA (Casa de Una
Sola Familia, Apartamentos, Casa Duplex, etc.)

DUPLEXES AND ...
CASA DUPLEX Y AP...

5 LANDFORMS — DEGREE OF SLOPE

GRADO DE INCLINACIÓN (Montañas, cerros, lomas, valles o llanos)

A ☐ | B ☐ | C ☐ | D ☐

MOUNTAINOUS, STEEP SLOPES
MONTAÑOSO, INCLINACIÓN MUY ALTO

HILLY, MODERATE SLOPES
MONTUOSO, INCLINACIÓN MODERADO

HILLY, LAKEVIEW
MONTUOSO, VISTA DE LAGO

ROLLING, GENT...
ONDULACIÓN, SUAVE

6 VEGETATION — LANDSCAPING WITHIN NEIGHBORHOOD

VEGETACIÓN – PAISAJE DENTRO LA VECINDAD

A ☐ | B ☐ | C ☐ | D ☐

OPEN YARD AND LAWN
PATIO Y CÉSPED AL AIRE LIBRE

DENSE TREES AND SHRUBS
DENSIDAD DE ÁRBOLES Y ARBUSTOS

NATURAL WOODLAND
BOSQUE NATURAL

NATIVE SOUTH...
VEGETACIÓN NATAL...

7 INCOME LEVEL OF NEIGHBORHOOD

EL NIVEL DEL SUELDO DE LA VECINDAD

A ☐ OVER $50,000 PER YEAR | B ☐ $20,000 to $30,000 | C ☐ $10,000 to $20,000 | D ☐ LESS THAN $...

DE LA VECINDAD

RESPONSE RESPUESTA

VIVIR
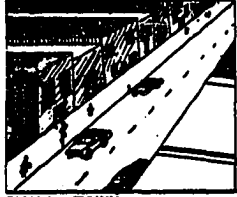
SMALL TOWN.
Less Than 50,000 Population
PUEBLO CHICO
Menos de 50,000 Población

E

RURAL AREA
ÁREA CAMPESTRE

| 4 | 3 | 2 | 1 | 0 | 11 CONDITION OF STREETS CONDICIÓN DE LAS C |

12 SIDEWALKS WITHIN NEIGHBORHOOD BANQUET/

CIUDAD

NEAR DOWNTOWN
EL CENTRO O CERCA

E

RURAL AREA NEAR CITY
ÁREA RURAL CERCA DE LA CIUDAD

| 4 | 3 | 2 | 1 | 0 | 13 BUS SERVICE TO NEIGHBORHOOD SERVICIO A SU VE |

14 CITY WATER SUPPLY PROVISIÓN DEL AGUA DE L/

TURA DE LOS EDIFICIOS
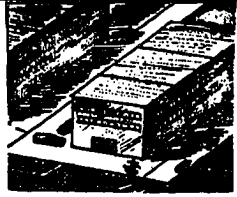
80 PERSONS PER ACRE
80 PERSONAS POR ACRE

E

300 PERSONS PER ACRE
300 PERSONAS POR ACRE

| 4 | 3 | 2 | 1 | 0 | 15 STREET LIGHTS IN NEIGHBORHOOD LUCES I EN SU |

16 TAXES TASACIONES

DISEÑO DE LA VECINDAD – ARQUITECTURA, MEZCLA
USO DE LOS SOLARES Y PATRÓN DE LAS CALLES
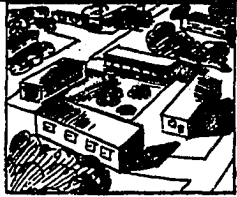
DUPLEXES AND APARTMENTS
CASA DUPLEX Y APARTAMENTOS

E
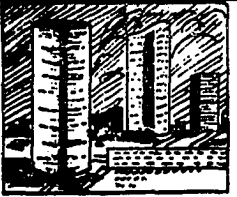
HIGH-RISE APARTMENTS
(Condominiums)
EL ALTO ELEVACIÓN DE APARTAMENTOS

| 4 | 3 | 2 | 1 | 0 | 17 SCHOOLS WITHIN NEIGHBORHOOD ESCUELAS EN |

18 PARKS WITHIN NEIGHBORHOOD PARQUES EN

ROLLING, GENTLE SLOPES
ONDULACIÓN, SUAVE INCLINACIÓN

E

PLAIN, LITTLE SLOPE
LLANOS, POCO INCLINACIÓN

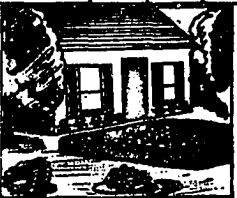| 4 | 3 | 2 | 1 | 0 | 19 SHOPPING FACILITIES IN NEIGHBORHOOD CEI EN |

20 JOB OPPORTUNITIES IN NEIGHBORHOOD OP(EN

RO LA VECINDAD

NATIVE SOUTHWEST
VEGETACIÓN NATAL DEL SUDOESTE

E

FLOWERS AND SHRUBS
FLORES Y ARBUSTOS

| 4 | 3 | 2 | 1 | 0 | 21 POLICE STATION IN NEIGHBORHOOD ESTAC EN S(|

22 PERSONAL FRIENDS IN NEIGHBORHOOD AMI EN

| 4 | 3 | 2 | 1 | 0 | 23 PRIVACY PRIVADO PERSONAL |

PHOTO RANKING
ORDEN DE FOTOGRAFÍAS

E

LESS THAN $10,000
PER YEAR

MIXED INCOMES
MEZCLA DE SUELDOS

			RESPONSE					

| 11 | CONDITION OF STREETS | CONDICIÓN DE LAS CALLES | 4 | 3 | 2 | 1 | 0 |

| 12 | SIDEWALKS WITHIN NEIGHBORHOOD | BANQUETAS EN SU VECINDAD | 4 | 3 | 2 | 1 | 0 |

| 13 | BUS SERVICE TO NEIGHBORHOOD | SERVICIO DEL AUTOBÚS A SU VECINDAD | 4 | 3 | 2 | 1 | 0 |

| 14 | CITY WATER SUPPLY | PROVISIÓN DEL AGUA DE LA CIUDAD | 4 | 3 | 2 | 1 | 0 |

| 15 | STREET LIGHTS IN NEIGHBORHOOD | LUCES EN LAS CALLES EN SU VECINDAD | 4 | 3 | 2 | 1 | 0 |

| 16 | TAXES | TASACIONES | 4 | 3 | 2 | 1 | 0 |

| 17 | SCHOOLS WITHIN NEIGHBORHOOD | ESCUELAS EN SU VECINDAD | 4 | 3 | 2 | 1 | 0 |

| 18 | PARKS WITHIN NEIGHBORHOOD | PARQUES EN SU VECINDAD | 4 | 3 | 2 | 1 | 0 |

| 19 | SHOPPING FACILITIES IN NEIGHBORHOOD | CENTROS DE COMPRAS EN SU VECINDAD | 4 | 3 | 2 | 1 | 0 |

| 20 | JOB OPPORTUNITIES IN NEIGHBORHOOD | OPORTUNIDAD DE TRABAJOS EN SU VECINDAD | 4 | 3 | 2 | 1 | 0 |

| 21 | POLICE STATION IN NEIGHBORHOOD | ESTACIÓN DE POLICÍA EN SU VECINDAD | 4 | 3 | 2 | 1 | 0 |

| 22 | PERSONAL FRIENDS IN NEIGHBORHOOD | AMIGOS PERSONALES EN SU VECINDAD | 4 | 3 | 2 | 1 | 0 |

| 23 | PRIVACY | PRIVADO PERSONAL | 4 | 3 | 2 | 1 | 0 |

PHOTO RANKING
ORDEN DE FOTOGRAFÍAS
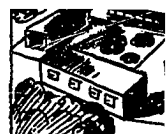
TRADITIONAL SINGLE-FAMILY HOMES IN GRID PATTERN CASAS TRADICIONALES DE UNA SOLA FAMILIA EN UN PATRÓN DE CUADRAS	SINGLE-FAMILY HOMES IN PLANNED UNITS PLANES UNIDADES DE UNA CASA DE UNA SOLA FAMILIA	MIXED LAND USES(Single-family, Duplexes, Apartments, etc.) MESCLA DEL USO DE LA TIERRA(Casa de Una Sola Familia, Apartamentos, Casa Duplex, etc.)	DUPLEXES AND A CASA DUPLEX Y APARTA

5 LANDFORMS – DEGREE OF SLOPE GRADO DE INCLINACIÓN (Montañas, cerros, lomas, valles o llanos)

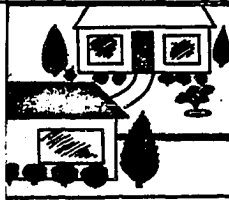| A	B	C	D
MOUNTAINOUS, STEEP SLOPES MONTAÑOSO, INCLINACIÓN MUY ALTO	HILLY, MODERATE SLOPES MONTUOSO, INCLINACIÓN MODERADO	HILLY, LAKEVIEW MONTUOSO, VISTA DE LAGO	ROLLING, GENTLE ONDULACIÓN, SUAVE IN

6 VEGETATION – LANDSCAPING WITHIN NEIGHBORHOOD VEGETACIÓN – PAISAJE DENTRO LA VECINDAD

A	B	C	D
OPEN YARD AND LAWN PATIO Y CÉSPED AL AIRE LIBRE	DENSE TREES AND SHRUBS DENSIDAD DE ÁRBOLES Y ARBUSTOS	NATURAL WOODLAND BOSQUE NATURAL	NATIVE SOUTHWE VEGETACIÓN NATAL OEL

7 INCOME LEVEL OF NEIGHBORHOOD EL NIVEL DEL SUELDO DE LA VECINDAD

A	B	C	D
OVER $30,000 PER YEAR MÁS DE $30,000 AL AÑO	$20,000 to $30,000 PER YEAR $20,000 to $30,000 AL AÑO	$10,000 to $20,000 PER YEAR $10,000 to $20,000 AL AÑO	LESS THAN $10,6 PER YEAR MENOS DE $10,000 AL

8 KIND OF PEOPLE WITHIN NEIGHBORHOOD CLASE DE GENTE EN LA VECINDAD

| A	B	C	D
ALL PEOPLE FROM SIMILAR ECONOMIC, SOCIAL, AGE, AND ETHNIC GROUPS TODA GENTE DE UN GRUPO ECONÓMICO, ÉTICA, EDAD, Y SOCIAL SEMEJANTE	MOST PEOPLE FROM SIMILAR ECONOMIC, SOCIAL, AGE, AND ETHNIC GROUPS CASI TODA GENTE DE UN GRUPO ECONÓMICO, ÉTICA, EDAD, Y SOCIAL SEMEJANTE	MOST PEOPLE FROM DIFFERENT ECONOMIC, SOCIAL AGE, AND ETHNIC GROUPS CASI TODA GENTE DE UN DIFERENTE GRUPO DE ECONÓMICO, ÉTICA, EDAD, Y SOCIAL SEMEJANTE	ALL PEOPLE FR DIFFERENT ECON AGE, AND ETHNI TODA GENTE DE UN DI GRUPO DE ECONÓMICO, SOCIAL SEMEJANTE

9 MY HOME – ARCHITECTURE and DESIGN MÍ CASA – ARQUITECTURA Y DISEÑO
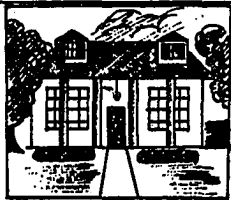
A	B	C	D
MODERN MODERNO	COLONIAL COLONIAL	MODERN SPANISH ESPAÑOL MODERNO	RANCH STYLE ESTILO DE RANCHO

10 MY HOME – COST or RENT MÍ CASA – RENTA O EL COSTE DE SU CASA

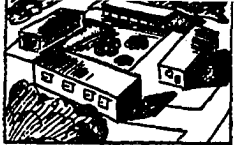| A	B	C	D
COST OVER $40,000 RENT OVER $250 PER MONTH COSTE MÁS DE $40,000 RENTA MÁS DE $250 AL MES	COST $30,000 to $40,000 RENT $200 to $250/MONTH COSTE $30,000 to $40,000 RENTA $200 to $250 AL MES	COST $20,000 to $30,000 RENT $150 to $200/MONTH COSTE $20,000 to $30,000 RENTA $150 to $200 AL MES	COST $10,000 t RENT $100 to COSTE $10,000 to $2 RENTA $100 to $150

DUPLEXES AND APARTMENTS
CASA DUPLEX Y APARTAMENTOS

HIGH-RISE APARTMENTS
(Condominiums)
EL ALTO ELEVACIÓN DE APARTAMENTOS

	4	3	2	I	O	18	**PARKS WITHIN NEIGHBORHOOD** PARQUES EN
	4	3	2	I	O	19	**SHOPPING FACILITIES IN NEIGHBORHOOD** CI EI

IOS)

D ☐ E ☐

ROLLING, GENTLE SLOPES
ONDULACIÓN, SUAVE INCLINACIÓN
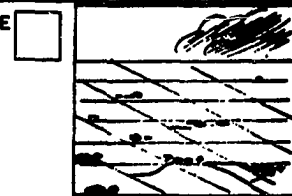
PLAIN, LITTLE SLOPE
LLANOS, POCO INCLINACIÓN

4	3	2	I	O	20	**JOB OPPORTUNITIES IN NEIGHBORHOOD** OI EI

ITRO LA VECINDAD

4	3	2	I	O	21	**POLICE STATION IN NEIGHBORHOOD** ESTA EN S

D ☐ E ☐

NATIVE SOUTHWEST
VEGETACIÓN NATAL DEL SUDOESTE

FLOWERS AND SHRUBS
FLORES Y ARBUSTOS

4	3	2	I	O	22	**PERSONAL FRIENDS IN NEIGHBORHOOD** AM EN

4	3	2	I	O	23	**PRIVACY** PRIVADO PERSONAL

PHOTO RANKING
ORDEN DE FOTOGRAFÍAS

☐ **LESS THAN $10,000 PER YEAR**
MENOS DE $10,000 AL AÑO

E ☐ **MIXED INCOMES**
MEZCLA DE SUELDOS

24 PRESTIGE PRESTIGIO

PHOTO RANKING
ORDEN DE FOTOGRAFÍAS

4	3	2	I	O	25	**HOMEYNESS** LUGAR DOMÉSTICO

PHOTO RANKING
ORDEN DE FOTOGRAFÍAS

D ☐ **ALL PEOPLE FROM DIFFERENT ECONOMIC, SOCIAL, AGE, AND ETHNIC GROUPS**
TODA GENTE DE UN DIFERENTE GRUPO DE ECONÓMICO, ÉTICA, EDAD, Y SOCIAL SEMEJANTE

E ☐ **ECONOMIC, SOCIAL, AGE, AND ETHNIC FACTORS NOT IMPORTANT**
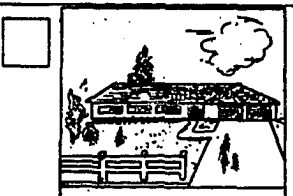FACTOR DE EDAD, ECONÓMICO, ÉTICA, Y SOCIAL DE NO IMPORTANCIA

26 QUIETNESS EL SILENCIO

PHOTO RANKING
ORDEN DE FOTOGRAFÍAS

4	3	2	I	O	27	**NEWNESS** NOVEDAD, CALIDAD DE NUEVO

PHOTO RANKING
ORDEN DE FOTOGRAFÍAS

D ☐ E ☐

28 CLEANLINESS LIMPIEZA

PHOTO RANKING
ORDEN DE FOTOGRAFÍAS

RANCH STYLE
ESTILO DE RANCHO

TRADITIONAL SPANISH
ESPAÑOL TRADICIONAL

4	3	2	I	O	29	**BEAUTY** HERMOSURA

PHOTO RANKING
ORDEN DE FOTOGRAFÍAS

D ☐ **COST $10,000 to $20,000 RENT $100 to $150/MONTH**
COSTE $10,000 to $20,000
RENTA $100 to $150 AL MES

E ☐ **COST UNDER $10,000 RENT UNDER $100/MONTH**
COSTE MENOS DE $10,000
RENTA MENOS DE $100 AL MES

30 FRIENDLINESS AMISTAD

PHOTO RANKING
ORDEN DE FOTOGRAFÍAS

18 PARKS WITHIN NEIGHBORHOOD	PARQUES EN SU VECINDAD	4	3	2	I	0

19 SHOPPING FACILITIES IN NEIGHBORHOOD	CENTROS DE COMPRAS EN SU VECINDAD	4	3	2	I	0

20 JOB OPPORTUNITIES IN NEIGHBORHOOD	OPORTUNIDAD DE TRABAJOS EN SU VECINDAD	4	3	2	I	0

21 POLICE STATION IN NEIGHBORHOOD	ESTACIÓN DE POLICÍA EN SU VECINDAD	4	3	2	I	0

22 PERSONAL FRIENDS IN NEIGHBORHOOD	AMIGOS PERSONALES EN SU VECINDAD	4	3	2	I	0

23 PRIVACY	PRIVADO PERSONAL	4	3	2	I	0

PHOTO RANKING
ORDEN DE FOTOGRAFÍAS

24 PRESTIGE	PRESTIGIO	4	3	2	I	0

PHOTO RANKING
ORDEN DE FOTOGRAFÍAS

25 HOMEYNESS	LUGAR DOMÉSTICO	4	3	2	I	0

PHOTO RANKING
ORDEN DE FOTOGRAFÍAS

26 QUIETNESS	EL SILENCIO	4	3	2	I	0

PHOTO RANKING
ORDEN DE FOTOGRAFÍAS

27 NEWNESS	NOVEDAD, CALIDAD DE NUEVO	4	3	2	I	0

PHOTO RANKING
ORDEN DE FOTOGRAFÍAS

28 CLEANLINESS	LIMPIEZA	4	3	2	I	0

PHOTO RANKING
ORDEN DE FOTOGRAFÍAS

29 BEAUTY	HERMOSURA	4	3	2	I	0

PHOTO RANKING
ORDEN DE FOTOGRAFÍAS

30 FRIENDLINESS	AMISTAD	4	3	2	I	0

PHOTO RANKING
ORDEN DE FOTOGRAFÍAS