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ENVIRONMENTAL CONCEPTUALIZATIONS AND HOUSING PREFERENCES:
A COMPARISON OF ARCHITECTS AND NON-ARCHITECTS

City University of New York

PH.D. 1984

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ENVIRONMENTAL CONCEPTUALIZATIONS AND HOUSING PREFERENCES:
A COMPARISON OF ARCHITECTS AND NON-ARCHITECTS

by

JOHN MADDOCKS

A dissertation submitted to the Graduate Faculty in
Psychology in partial fulfillment of the requirements
for the degree of Doctor of Philosophy, The City Uni-
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1984

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This manuscript has been read and accepted for the Graduate Faculty in Environmental Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

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OVERVIEW

The present research examines the relationship between peoples' type of environmental conceptualization and their housing preferences, and compares the environmental conceptualizations of architects and non-architects. Environmental conceptualizations are defined as sets of ideas for thinking about, describing, and acting upon the physical environment. It is proposed that differences in background and experience among people affect their type of environmental conceptualization; and that these differences in type of environmental conceptualization are the basis of differences in their housing preferences.

In previous studies of housing preferences, it has been argued that either environmental or population variables account for differences in housing preferences. The present study proposes that both environmental and population variables affect environmental conceptualizations which in turn influence variations in housing preferences.

Previous research comparing architects and non-architects has argued that differences in environmental conceptualizations of architects and non-architects contributes to a "gap" or mismatch between the design preferences of the architect and preferences of users. This past research suggests that architects tend to conceptualize environments in physical terms, while non-architects tend to conceptualize environments in social terms. Several studies have

found that differences in environmental conceptualizations between architects and non-architects are a function of differences in educational background.

The present study questions the assumption that all architects have substantially different environmental conceptualizations from all non-architects. Instead, this study predicts considerable overlap in the types of environmental conceptualizations found among architects and non-architects, and proposes that population variables in addition to occupation influence variation in environmental conceptualization.

In an effort to clarify the sources of variation in environmental conceptualization, the present study includes measures of individual differences such as age, sex, income, education, occupation (i.e., architect vs. non-architect), housing experience, general value orientation, and preference for visual complexity. The study investigates if, and in what way, each of these variables contributes to differences in environmental conceptualization. In addition, the relationship between variation in type of environmental conceptualization and variation in housing preferences is also evaluated.

1. INTRODUCTION

Housing Preferences

This study is based on the assumption that housing preferences involve a process of discriminating and matching qualities of people with qualities of environments. For example, it is assumed that when individuals choose particular houses, they discriminate and match their own ideas and expectations about living in a house with the ideas reflected in the physical characteristics of the chosen houses. For the purposes of this discussion, ideas and expectations about the people living in a house will be referred to as "qualities of people;" while ideas about the physical characteristics of the house will be referred to as "qualities of environment."¹

Presumably an individual's ideas and expectations about a house are in some part a result of previous experiences with housing environments, and will vary from one per-

¹Numerous studies have investigated how physical environments express or communicate people's ideas. For example, Zeisel (1971) has shown that the use of rooms in a home depends not only on the physical furnishings and arrangements of the room; but also on the symbolic meanings that people associate with the room and its furnishings. This expression of meanings through the physical environment has been demonstrated in a variety of housing environments such as: urban housing projects (Wallace, 1952); suburban settings (Seeley et al, 1956; Packard, 1959; Werthman et al, 1965; Vickery, 1972; Duncan, 1973); and Indian reservation housing (Denton, 1970). Other studies relevant to this issue have been conducted by Firey, 1947; Jonassen, 1949; Strauss, 1961; Fried & Gleicher, 1961; Schorr, 1966; and Michelson, 1970.

son to another. Similarly, the ideas, expectations and previous experiences of the designer and builder of the house will to some extent be reflected in the house itself, and will vary from one house to another. From this point of view, variation in housing preferences is affected by the nature of the individual (population variables), as well as the nature of the house (environmental variables).

This approach is substantially different from previous research on housing preferences which has focused on isolated social, psychological, or environmental variables as the basis for preferences. For example, it has been shown that housing preferences vary depending on an individual's attitudes or dispositions toward the environment (McKechnie, 1970); Clepperton, 1972); individual variation in the need for privacy, family solidarity, or neighboring (Roscoe, 1961; Hartman, 1963; Davis & Roizen, 1970; Sanoff, 1970; Yancy, 1970); preferences for visual complexity, novelty or aesthetic qualities in housing environments (Sanoff, 1969; Markman, 1970; Kaplan & Wendt, 1972); such physical characteristics of the environment as form and space, density, planned vs. unplanned, similarity to current housing type (Lansing et al, 1970; Craun 1970; Peterson et al, 1970; Michelson, 1970; Pyron, 1971; Diaso et al, 1971); and attitudes or values expressed through the environment (Sinton, 1969).

Since each of these studies has substantiated different variables which affect housing preferences, it must be asked whether all these variables are valid (Cronbach & Meehl,

1955; Proshansky, 1972); and if all are valid, how they interact with one another in determining preferences (Lowenthal, 1972). The present study proposes that these variables are interactive and argues that the variables which have been isolated in previous housing preference research do not act as single determinants of housing preferences, but are an interactive part of the housing preference process.

This interactive argument emphasizes two aspects of housing preference variation which are not characteristic of existing research. First, housing preferences are the result of environmental, social and psychological factors in some combination, not one or another alone.² Second, those factors which are major determinants of an individual's housing preferences can vary from one person to another, and from one environment to another. Thus, the same factors may not operate for every person in every situation.

In the present study, these interactions between environmental, social and psychological factors are assumed to be reflected in the ideas and expectations which are part of the discriminating-matching process introduced in the beginning of this section. Similarly, variations from one per-

²Buttimer's study of housing preferences in Glasgow (1972) confirms the suggestion that housing preferences are affected by social as well as physical factors. She uses the concept of "social space" to emphasize the interactions between objective space and subjective space. She argues that the subjective significance of meanings of environmental characteristics are a function of social dimensions such as: life style, social stratification, status, and role. Similar arguments have been presented by Fried & Gleicher (1961); Strauss (1961); Lee (1968); Michelson (1970); and Sonnenfeld (1972).

son to another, and from one environment to another, are reflected in this process. It is assumed that an approach to the study of housing preferences based on an interactive model of the discriminating-matching process is more likely to reflect the interactions and variations that affect housing preferences than approaches that focus on isolated variables.³

Environmental Conceptualizations

In this study, environmental conceptualizations are defined as sets of ideas for thinking about, describing, and acting upon the physical environment. It is assumed that environmental conceptualizations include the ideas and expectations that are part of the discriminating-matching process described above for housing preferences.

This definition of environmental conceptualizations is based on the transactional model of environmental perception. The transactional model emphasizes the role of individual experience in the process of perception and the effects of cultural, social and personal dispositions on an individual's perception of the environment. Ittelson et al.(1974) argue: "We literally change the environment by perceiving it; if for no other reason than that we attribute certain aspects of our own experience to the world around us," (p. 104).

³Lowenthal (1972) concurs: " - it is clear that the environment as experienced is a seamless web, that social and physical considerations form an interacting system, and that expectations and behavior relate to social and physical environments in combination, not in isolation," (p.335).

Ittelson proposes that environmental perception is affected not only by change in the environment, but also by differences in the background and experience of the individual.⁴

An important aspect of Ittelson's argument is that environmental conceptualizations are affected by our past interactions with the environment. In other words, how we think about, describe and act on the environment is affected by our past experiences with the environment. For example, an individual's housing preference is influenced by houses occupied in the past; experiences with houses of friends and relatives; pictures of houses in magazines, on television, in movies and advertising. These past experiences with housing contribute to the development of an individual's conceptualization of housing environments, and help provide a basis for deciding which type of house would be most appropriate for that individual.

In many respects, the process of developing environmental conceptualizations is a social learning process (Barker, 1968; Ruesch & Kees, 1969; Goffman, 1971; Buttimer, 1972; Melser, 1973). Barker for example, has shown that appropriate behavior for a particular setting depends on whether the individual has learned the complicated meanings

⁴The transactional approach to perception supports the position that all things are interpreted in the mind of the perceiver. From this point of view, the traditional distinction between ideas about people and ideas about the physical environment is invalid, since both people and environments are interpreted by the perceiver. This aspect of transactionalism is particularly important to the definition of housing preferences described in this paper where qualities of people are matched with qualities of the environment.

which the culture (or sub-culture) has developed for various buildings and spaces. For example, children usually learn (at least by emulation) different behaviors for different environments (home, school, church, playground, etc.).⁵

The process of learning culturally appropriate attitudes and behaviors for the environment also involves learning associations between qualities of environments and qualities of people. For example, through personal experience, advertising, television, movies, etc., we learn that style of clothing, automobile, and home environments are commonly associated with different levels of social status and life styles in this culture (Wallace, 1952; Seeley et al., 1956; Packard, 1959; Werthman et al., 1965; Denton, 1970; Vickery, 1972; Duncan, 1973). Furthermore, through formal education and contacts with the life styles of others, we learn about the environmental attitudes and behaviors which are characteristic of cultures and subcultures other than our own.

In this study, it is assumed that this process of associating qualities of people with qualities of environment is a significant aspect of housing preferences. In

⁵This argument should not be interpreted to imply that the environment determines behavior; or that cultural interpretations of the environment determine behavior. Barker's argument implies that there are culturally appropriate behaviors for particular environments. An individual will probably learn these culturally appropriate behaviors, but still has the choice of whether to behave in an appropriate manner or not. In most cases, a range of behaviors are considered appropriate in order to accommodate individual differences in relating to the environment.

choosing a particular house, individuals reflect their understanding of themselves in relation to their culture. For example, if an individual chooses a single-family, Colonial-style, suburban house, they may be choosing that house because it reflects many socially acceptable values in contemporary American culture (such as family-orientation, self-sufficiency, safety, cleanliness, closeness to nature and traditionalism). A person choosing this type of house may be thinking of these qualities as characteristic of themselves now, or as they want to be, or as they want others to think they are, and chooses a house that reflects these values.⁶

Similarly, these associations between qualities of people and qualities of environments provide a basis for an individual's understanding of other people's housing preferences. In other words, we have some ideas about what kinds of people live in different kinds of housing and are

⁶This connection between self-image and the physical environment emphasizes an aspect of housing preferences that is important to the concepts of this study. It should be noted, however, that housing preferences are also influenced by other factors that extend beyond the qualities of the house itself. In this respect, social qualities of neighborhood and community are likely to have a significant influence on an individual's perception and preference for a given house (see for example: Negroes in Cities by Karl & Alma Taeuber, Chicago, Aldine Publishing Co., 1965). While these other factors are necessarily implicit in the photographs and family descriptions used as measures in this study, the focus of the study has been limited to the qualities of the house itself, the qualities of the people assumed to live in the house, and the qualities of the people participating in the study. Future research could be designed to determine the interactive effects of neighborhood and community on housing preference variables as defined in this study.

likely to judge people on the basis of the type of housing they occupy. This process of understanding others' housing preferences can be described as a form of social communication that involves meanings of physical environments.⁷

It is assumed in this study that housing preferences as discussed above are a type of environmental behavior that is influenced by environmental conceptualizations. In other words, if variations in our background and experience affect our sets of ideas for thinking about, describing, and acting on the physical environment, then housing preferences are an example of how we act on these sets of ideas. The principal purposes of this study are to determine which differences in background and experience affect variation in environmental conceptualization and to investigate the effect of differences in environmental conceptualization on housing preferences.

Architects vs. Non-architects

A particularly relevant example of how environmental conceptualizations may vary depending on differences in

⁷It is assumed in this study that the process of understanding other people's housing preferences involves the use of meanings from the physical environment for communication of social qualities. If participants in the study are asked to judge the housing preferences of several other people (who differ on socio-economic and other demographic characteristics), it will provide more examples of this process, and perhaps reveal more information regarding how the environment is used as a form of social communication. In order to obtain as many examples of this process as possible, the study will focus on understanding of other people's housing preferences rather than housing preferences for one's self.

background and experience is provided by comparing architects and non-architects. It has been argued that architects as a group are distinctly different in their conceptualizations of the environment from non-architects (Jacobs, 1971; Alexander, 1966; Canter, 1969; Lansing & Marans, 1969; Sommer, 1969; Hershberger, 1970; Michelson, 1970; Perin, 1970; Campbell, 1974). Presumably, environmental conceptualizations which emphasize aesthetic or physical aspects of the environment are more likely to be typical of the architectural community. In architectural education, for example, students are taught to think of rooms, structural members, and materials in terms of their visual qualities (such as light, color, texture, form and space). Architectural students and professional architects are encouraged to demonstrate their creativity in this area of visual aesthetics more than in any other aspect of architecture.⁸

Jacobs (1961) argues that architects who emphasize the aesthetic or physical aspects of the environment produce environments that do not meet the social needs and expecta-

⁸This emphasis on physical aspects of the environment is reflected in theories of architecture which view people and their environments as separate entities connected through innate, formal or structural properties (Arnheim, 1967; Norberg-Schulz, 1971; Eisenman, 1973). These dualistic approaches assume that various aspects of the environment have inherent meanings which are constant and absolute. Inevitably, the abstraction in these theories leads to a separation between aesthetic principles and common experience (Peckham, 1965). The transactional approach (Ittelson et al., 1974) on the other hand, provides a more relativistic model where meanings associated with the environment result from social and cultural processes. For further discussion of these issues, see Maddocks (1972).

tions of people who use these environments. For example, a visually attractive high-rise housing tower in a park-like setting does not provide for the daily social interactions that are generated by many people using street level shops. Jacobs (1961) and Newman (1973) have argued that failure to consider social aspects of the designed environment may contribute to fewer social interactions, more vandalism, and higher crime rates.

Jacobs' argument suggests that environmental conceptualizations which emphasize social aspects of the environment may be more typical of the non-architectural community than of the architectural community. Social aspects of the environment include learned attitudes and associations for the environment (as discussed earlier in this paper), as well as aspects of the environment which facilitate social interaction.⁹

The distinction between people who emphasize physical aspects of the environment and people who emphasize social aspects of the environment is useful for investigating differences in type of environmental conceptualization from one person to another. For example, an individual who thinks of the environment primarily in physical terms (i.e., colors, shapes, materials, etc.) can be said to have a physical con-

⁹For example, seating arrangements can encourage or discourage social interactions (Sommer, 1969). Similarly, arrangements of buildings, walkways, trees, etc. can encourage a sense of territoriality (Newman, 1973); a sense of place (Relph, 1976); and/or a sense of community (Chermayeff & Alexander, 1965).

ceptualization of the environment. This conceptualization may evolve from environmental experiences which have emphasized physical aspects of the environment, such as construction or visual design education. It could be expected that this person would emphasize physical meanings in describing, using, or otherwise relating to the environment. Conversely, an individual who thinks of the environment primarily in social terms (i.e., family interactions, status, activities of the home, etc.) can be said to have a social conceptualization of the environment. This conceptualization may evolve from environmental experiences which have emphasized social aspects of the environment, such as family traditions, advertising media, social emphasis in education, etc. It could be expected that this person would emphasize social meanings in describing, using, or otherwise relating to the environment.

Since the present study argues that environmental conceptualizations are interactive rather than dichotomous, it is expected that most people will not have environmental conceptualizations which are exclusively either physical or social. For example, an architect (or a non-architect) may have had educational experiences that emphasized physical aspects of the environment (aesthetics), and childhood experiences that emphasized social aspects of the environment (family interactions in the home). This hypothetical architect may have personality dispositions (such as value orientations) that favor educational experiences (physical) over

childhood experiences (social) when he or she is interacting with some types of environments (such as office buildings), but favor childhood experiences over educational experiences when interacting with other types of environments (such as housing). Thus, it is most likely that environmental conceptualizations would include both physical and social meanings, but that the emphasis might vary depending on the individual and the environment involved.

In view of this argument, it cannot be assumed that physical conceptualizations of the environment would be more characteristic of architects as a group, nor that architects are necessarily different from non-architects in their environmental conceptualizations. While physical aspects of the environment are emphasized in architectural education and literature (Arnheim, 1967; Norberg-Schulz, 1971; Eisenman, 1973), an architect's environmental conceptualizations are not determined only by these educational and professional influences. According to the assumptions of the present study, an architect's environmental conceptualizations will be influenced by personal and social experiences (such as personality characteristics, family traditions, past housing experiences, advertising, etc.) as well as educational and professional experience.

MacKinnon (1962, 1970) has shown that there is considerable variation among architects in measures of creativity, value orientations and other personality in-

dices,¹⁰ Thus, it would be reasonable to expect that architects may also differ from one another in their environmental conceptualizations. Similarly, it is reasonable to expect that non-architects may have the same type of environmental conceptualizations as architects; and vice versa.

In addition, it cannot be assumed that architects as a group would be better able to discriminate qualities of the environment or that non-architects would be better able to discriminate qualities of people. It is expected that both architects and non-architects will differ in 1) their ability to discriminate qualities of the environment; 2) their ability to discriminate qualities of people; and 3) their

¹⁰ MacKinnon selected three groups of architects who represented a range of creativity as judged by a panel of architectural educators and publishers. Each architect was tested on several personality measures to determine which personality characteristics were most highly correlated with judged creativity. Using the Allport-Vernon-Lindsay "Study of Values", MacKinnon found that architects who had been judged high in creativity were more likely to score highly on theoretical and aesthetic value orientations, and score low on economic and social value orientations. On another measure of values (Myers-Briggs Type Indicator), MacKinnon found creativity in the sample of architects to be positively correlated with intuition and perception value typologies; and negatively correlated with sensory and judgmental value types. Using the California Psychological Inventory, MacKinnon found that creative architects are more likely to be introverted, independent, and non-communal. They are not likely to be interested in achievement via conformance, making a good impression, or self control. On another test (FIRO-B) creative architects demonstrated a strong desire to control others. MacKinnon describes the creative architect as one who is "relatively free from conventional restraints and inhibitions; not pre-occupied with the impression which they make on others; and less inclined to strive for achievement in settings where conformity behavior is expected or required." (1970, p. 309). This characterization confirms the commonly held belief that an architect's role in society is that of a creative artist who is relatively free of conventional social conformance.

ability to match the two. It is expected that these differences will be affected not by the architect/non-architect distinction, but rather will be affected by other factors that reflect differences in background and experience.

Background and Experience

It was argued earlier that housing preferences are affected by environmental conceptualizations and that environmental conceptualizations are affected by differences in background and experience. Thus, a principal interest of this study is to investigate specific measures of background and experience to determine their effect on variations in environmental conceptualizations and housing preferences.

A principal measure of background and experience in this study is the measure of general value orientations used by MacKinnon (1970) in his research on differences among architects. This measure of value orientations (the Allport-Vernon-Lindsay "Study of Values" or AVL) is a published test booklet with 45 questions relating to theoretical, economic, aesthetic, social, political, and religious issues.¹¹ It is argued by the authors of the AVL that a

¹¹The Allport-Vernon-Lindsay test has been replicated and validated in numerous studies (See Buros, 1960). The range of normal scores for the AVL have been tested throughout the United States with some variation found for various age, sex, and occupations groups. The results of the present study generally confirm the findings of these previous studies with 50% of scores falling within the normal range of scores for each part of the AVL test.

However, on the aesthetic part of the AVL, people included in the present study scored unusually high. This

high score in any of these areas indicates that the individual's values are oriented in that direction. For example, an individual's pattern of scores on the six areas of the AVL test may indicate that theoretical and aesthetic ideas and experiences are more highly valued by the individual than social or economic ideas and experiences. This particular pattern of value orientations is of interest because it has been shown to be correlated with creativity in architects (MacKinnon, 1970).

MacKinnon's research indicated relationships between judged creativity in architects and various personality variables (such as value orientations). In view of MacKinnon's findings, it is proposed in this study that aspects of creativity may also be related to differences in environmental conceptualization. However, since both architects and non-architects may be creative, the relationship between aspects of creativity and environmental conceptualization may be independent of the architect vs. non-architect distinction.¹²

difference may be due to the high percentage (58%) of architects and design-related people in the population included in this survey. The AVL test booklet as published by Houghton-Mifflin was included in the questionnaire used in this study, and AVL scores were calculated for each person participating in the survey.

¹²Although there is a large body of research in creativity, a widely accepted definition or measurement of creativity has not been developed either in the field of aesthetics or in the field of psychology. Some aspects of creativity which have been identified include preference for complexity (Barron, 1953); originality (Barron, 1955); non-conformance (Crutchfield, 1955); imagination (Gough, 1956); needs for order and disorder (Barron, 1958); talent (MacKinnon, 1960); enduring attention (Barron, 1963); ego

Housing experience is a variable which is also assumed to affect variation in environmental conceptualization. Bachelard (1969) and Cooper (1971) have discussed the possible effects of previous housing experiences on an individual's conceptualization of the environment. Earlier in this paper, it was argued that an individual's conceptualization of housing is influenced by houses previously occupied, experiences with houses of friends and relatives, pictures of houses in magazines, television, movies and advertising. While it is not the intent of this study to explore the influence of housing experience on environmental conceptualization in depth, the general influence of housing experience will be considered as part of a pattern of background and experience variables that are likely to affect variations in environmental conceptualization.

Background and experience variables that are likely to affect environmental conceptualizations may also include population variables (i.e., measures of individual differences in the people participating in the study). Several typical population variables are included in the

diffusion (Barron, 1964); sex differences (Helson, 1967); genetic inheritance (Barron, 1970); and intelligence (MacKinnon, 1972). The present study will focus on preference for visual complexity as an aspect of creativity that is most likely to be related to environmental conceptualizations, housing preferences and differences between architects and non-architects. The Barron-Welsh Art Scale is a widely accepted measure of preference for visual complexity that is easily incorporated into the questionnaire of this study. Preference for visual complexity is the only aspect of creativity considered in this study. The Barron-Welsh measure is described in the METHODS section of this paper.

study to investigate the possible effect of these variables on variation in environmental conceptualization.

Age is included in the study to investigate the developmental nature of environmental conceptualizations. Respondent's sex is included to investigate the possible effects of sex roles on environmental conceptualizations.¹³ Income is included to investigate how ability to afford better housing environments may affect environmental conceptualization.

Education may be relevant to this study in several respects. First, variation in amount of formal education (regardless of specialization) may be related to differences in environmental conceptualization. Secondly, architectural vs. non-architectural specialization in formal education may be a source of variation in environmental conceptualizations when architects are compared with non-architects (as indicated by Canter, 1969; and Hershberger, 1970). Finally, when architects are compared with each other, there may be variations in environmental conceptualizations that are due to differences in architectural education. It could be argued that the different approaches to architectural education taken by different schools of architecture may produce different environmental conceptualizations.

The occupation variable is used in this study to dis-

¹³ Effects of sex roles on environmental conceptualization in this study are meant to be exploratory. Since sex roles are variable, a thorough study of gender related differences in environmental conceptualizations would require more extensive investigation in this area than is provided by the present study.

criminate between architects and non-architects in order to compare differences in environmental conceptualization between these two groups. Other aspects of occupation included in this study are: a distinction between occupations related or not related to architecture (such as real estate and building construction); a distinction between architects and those in related occupations who work with housing and those who do not; and a distinction between professionals and non-professionals.

As indicated earlier, it is not appropriate to investigate only the individual effects of these variables on environmental conceptualizations. Thus, it is the intent of this study to investigate what combinations of these variables are related to environmental conceptualizations. The specific hypotheses describing the relationships that are expected among these variables are discussed in the following section. The measures and methods for testing these relationships follow the hypotheses.

2. HYPOTHESES

The focus of this study is an investigation of the differences in peoples' background and experience that affect their environmental conceptualizations, with a particular interest in the differences between architects and non-architects. In addition, this study is an exploration of the relationships between environmental conceptualizations and housing preferences.

In the hypotheses that follow, it is suggested that variations in environmental conceptualizations will be related to value orientations as an exploration of the effects of background and experience; to preference for visual complexity as an aspect of creativity; and to "sensitivity to social meaning" as an exploration of the processes assumed to underlie housing preferences. Other variables included in this study will be discussed where they are relevant to the hypothesized relationships among these principal variables.

Hypothesis I

This study argues that variation in environmental conceptualizations is affected by differences in background and experience. In an effort to support this argument, and to explore which aspects of background and experience affect environmental conceptualizations, the study includes a number of population variables which have been selected to measure differences in background and experience. These variables

are: age, sex, income, education, occupation, housing experience, general value orientations and an aspect of creativity.

It is expected that some combinations of these variables will be related to variation in environmental conceptualization. It is not clear, however, from existing research which combinations of these variables will have the greatest effect. In order to develop a testable hypothesis that will show whether background and experience affect environmental conceptualizations, this first hypothesis will focus on value orientation as one aspect of background experience. Value orientation has been selected as the focus of Hypothesis I because it includes patterns of variables within one measure and because this measure of value orientations was a significant part of MacKinnon's research with architects.

Since previous research has not dealt directly with the direction of relationship that value orientations have with environmental conceptualization, Hypothesis I will be based on the assumption that there is no direction to the relationship. Hypothesis I tests the assumption that the population distribution curves for value orientations and environmental conceptualizations are similar. In other words, people who have "average" value orientations (i.e. not unusually high or unusually low scores on any part of the value orientation measure), will also be "average" in

their environmental conceptualizations.

In this study, environmental conceptualizations are assumed to range from a physical emphasis to a social emphasis in peoples' descriptions of a particular housing environment. (See METHODS section for a full description of the measure of environmental conceptualization used in this study). In view of this expected physical to social range for environmental conceptualizations, it can be argued that an "average" environmental conceptualization would include both physical and social components. This argument is supported by the results of a pre-test of the environmental conceptualization measure for this study where 50% of the people included in the pre-test described housing environments in both physical and social terms,¹⁴

Thus, as a first approximation of the relationship between value orientations and environmental conceptualizations, it can be hypothesized that: people who describe housing environments in both physical and social terms will have value orientation patterns similar to those which are normal for the general population (Hypothesis I).

¹⁴If 50% of the population of people surveyed in this study have "average" environmental conceptualizations as was indicated in the pre-test for this measure (to be discussed in the following METHODS section), then 50% of the population will have "non-average" environmental conceptualizations. These "non-average" environmental conceptualizations are divided among people who have only physical, only social, and "other" environmental conceptualizations. The relationships of these "non-average" environmental conceptualizations to other variables in this study is also of interest, and is included in statistical analysis. Results of relationships for both "average" and "non-average" environmental conceptualizations are included in the RESULTS and DISCUSSION sections.

Hypothesis II

A specific interest of this dissertation is whether there are significant differences in environmental conceptualizations between architects and non-architects and whether these differences (if any) are related to the occupational distinction between these two groups or to differences in background and experience other than occupation.

This study has suggested that the occupational distinction of architect versus non-architect is not sufficient to explain differences in background and experience that are assumed to affect environmental conceptualizations. Therefore, this hypothesis will take the position that differences in environmental conceptualizations are more likely to be related to variables that indicate differences in background and experience (such as value orientations), than to occupation as an isolated population variable.

Hypothesis II, following the argument of the first hypothesis, assumes that value orientation is a measure of background and experience that may be related to differences in environmental conceptualization. Hypothesis II, however, will be concerned with a particular pattern of value orientations that is not "average", but that is characteristic of creative architects. The question addressed by Hypothesis II is whether this particular pattern of value orientations is related to variation in environmental conceptualizations and whether this relationship is true for groups other than creative architects.

The pattern of value orientations that McKinnon (1962) found to be characteristic of creative architects included higher than average scores for theoretical and aesthetic values and lower than average scores for social and economic values. Since previous research has suggested that architects in general tend to emphasize physical aspects of the environment (see Jacobs, 1961, for example), it might be expected that creative architects would conceptualize the environment primarily in physical terms as well as show the pattern indicated by MacKinnon of high aesthetic and theoretical values, and low social and economic values.

However, it is not clear from MacKinnon's research whether his results would apply only to creative architects, or would include all creative people regardless of occupation. For the purpose of this study, it is assumed that the value orientation pattern demonstrated for creative architects may also be characteristic of other creative people. Similarly, it is not clear whether physical conceptualizations of the environment are characteristic only of architects, whether creative or not. As indicated earlier, it must be assumed that both architects and non-architects can have physical conceptualizations of the environment.

Since MacKinnon has demonstrated that a particular pattern of value orientations is characteristic of creative architects, Hypothesis II is based on the relationship of this pattern of value orientations to physical conceptualizations of the environment. However, in extending Mac-

Kinnon's findings, it will not be assumed that this pattern of value orientations will be characteristic only of creative architects; nor will it be assumed that only architects have physical conceptualizations of the environment.

Thus, the second hypothesis of this study is that people who score higher than normal in aesthetic and theoretical values, and lower than normal in social and economic values, are more likely to describe housing in physical terms (Hypothesis II). It is expected that people with this pattern of value orientations will score higher on the creativity measure than people with other patterns of value orientations, and will include non-architects as well as architects.

Hypothesis III

The second hypothesis of this study predicts a relationship between value orientations and environmental conceptualizations that involves the issue of creativity. Hypothesis III is concerned with relationship between an aspect of creativity and environmental conceptualizations that is independent of the effects of value orientations.

As indicated in the discussion in Hypothesis II, creative people (either architects or non-architects) may be more likely to have physical conceptualizations of the environment. This prediction was based on the body of research dealing with differences between architects and non-architects, combined with the findings of MacKinnon's research.

One implication of the Hypothesis II prediction is that people who are more creative than average will have environmental conceptualizations that are different from average. In the discussion of Hypothesis I it was argued that an average conceptualization of the environment would be comprised both of physical and social terms. Therefore, an emphasis on either social or physical aspects of the environment would comprise an environmental conceptualization that is different from average.

Thus, the third hypothesis of this study is that people who describe housing environments predominantly in either physical or social terms will differ in measures of creativity from those who describe housing using both physical and social terms (Hypothesis III). For the purpose of this study, preference for visual complexity will be measured as an aspect of creativity that is expected to have the relationship with environmental conceptualization described above.

Hypothesis IV

It is a principal interest of this study to investigate how environmental conceptualizations are related to housing preferences. It has been argued in this paper that housing preferences involve discriminations of variation in qualities of people, discrimination in variations in qualities of environments, and a matching of the two. It is assumed that this discriminating-matching process involves

an understanding of culturally and socially defined aspects of both people and environments, and that this understanding may vary from one person to another.

In this study, the ability to discriminate and match qualities of people with qualities of housing environments is called Sensitivity to Social Meanings (SSM). It is assumed that Sensitivity to Social Meaning is an underlying aspect of housing preferences that includes an understanding of other people's housing preferences.

It has been argued in this paper that variation in discriminating and matching qualities of people and qualities of environments may be related to variation in environmental conceptualization. In other words, the ability to discriminate and match qualities of a particular environment with the qualities of people that are culturally and socially associated with that environment may be related to how one thinks about, describes, and acts upon the environment.

Since this discriminating-matching process is assumed to involve social aspects of both people and environments, it is expected that people with social conceptualizations of the environment will be better able to discriminate and match qualities of people with qualities of environments. Since variation in this discriminating-matching ability is assumed to include an understanding of other people's housing preferences, Hypothesis IV predicts that social conceptualizations of the environment are related to understand-

ing of other people's housing preferences.

Thus, the fourth and final hypothesis of this study predicts that people whose descriptions of housing environments involve social terms will be different in their understanding of other people's housing preferences from people whose descriptions of housing environments do not include social terms (Hypothesis IV).

3. METHODS

Generally, the methods of this study involve testing whether differences in environmental conceptualization and housing preferences from one person to another are affected by differences in background and experience. In order to test this relationship, tests were developed for measuring variation in environmental conceptualization and housing preferences, and several population variables were selected to measure aspects of background and experience. In this study, the population variables are the independent variables, and the measures of environmental conceptualization and housing preference are the dependent variables. The effects of these population variables on variation in environmental conceptualization and housing preferences are tested by several different statistical tests described in the following discussion.

Environmental Conceptualization

One of the principal measures in this study is the measure of environmental conceptualization. In the previous section, environmental conceptualizations were defined as "sets of ideas for thinking about, describing, and acting on the physical environment." Thus it is assumed in this study that a person's description of a particular environment is an indication of their environmental conceptualization for that environment.

Previous research in this area has employed a predetermined list of words for describing environments and a measuring technique known as the "semantic differential"¹⁵ (Canter, 1969; Herschberger, 1970; Lowenthal & Riel, 1972). This technique may have a limiting effect on people's responses to the environment by pre-determining the range of words used to describe the environment and by focusing on evaluative judgments of environments. In the present study, the limits on an individual's description of the environment were minimized by asking people to write descriptions in their own words. This approach was used to facilitate a more complete expression of the cultural, social and personal dispositions which are assumed to underlie environmental conceptualizations.

A pre-test was conducted to determine whether people's descriptions of housing environments would vary in physical and social terms as expected. Several different formats were developed for the pre-test to explore the most effective means for eliciting responses. In the pre-test, two different questionnaires were tested. Both pre-test ques-

¹⁵"Semantic Differential" is a measuring technique developed by Osgood, Suci, and Tannenbaum (1967) to measure connotative meanings. The measuring technique is comprised of a series of seven step scales with polar adjectives (i.e. good-bad, strong-weak, etc.) at each end of the scale. People are presented with a word and asked to rate the word on each of several semantic scales; each scale with a different set of polar adjectives. The authors of the semantic differential argue that these several scales provide an indication of the various meanings that are associated with the presented word.

tionnaires also included descriptions of hypothetical families in order to determine whether people can make judgments regarding other people's housing preferences based on hypothetical descriptions of families and housing shown in photographic slides.

One pre-test questionnaire format started with a photographic color slide of a typical suburban house and requested descriptions of the house shown, descriptions of people likely to live in the house, descriptions of activities of the people likely to live in the house, and whether the respondents would like to live in the house themselves. The questionnaire then requested that respondents read three prepared descriptions of hypothetical families and judge how appropriate or inappropriate the slide shown would be for each of the families described.

The other pre-test questionnaire format started with a prepared description of a hypothetical family and requested descriptions of the type of house that would be most appropriate for the described family, as well as descriptions of the type of activities that would most likely be engaged in by the described family. Eight slides of different types of housing were then shown and respondents were asked to describe the houses shown, and to indicate which house type would be most appropriate for the described hypothetical family. The slides shown were systematically varied to reflect differences in location (urban vs. suburban), habitation (single family vs. mul-

tiple family), and style (traditional vs. modern).

A total of 97 people participated in the pre-test including architectural and non-architectural college students in classes at the University of Pennsylvania in Philadelphia, Pennsylvania, City College of New York in New York City, and C.W. Post College in Long Island, New York. After each session, an extended discussion was held with participants to determine their perceptions and opinions of the test. As a result of these discussions and analysis of the responses on both pre-test questionnaire formats it was clear that an open-ended description of a single photo would be less biased if presented before hypothetical family descriptions. The results also indicated that open-ended descriptions of a single photo elicited responses that included both physical and social terms.

Thus, the measure of environmental conceptualizations developed for this study is based on written descriptions of a typical suburban house shown in a projected photographic color slide. People participating in the study were asked to fill out a questionnaire which included the question: "How would you describe the place shown in Photo #1?" The photographic slide was shown (see Figure 9 in Appendix) without further instruction.

Responses to this question were analyzed by two independent judges. Each judge read all responses to the question and determined the total number of words or phrases in each response. The judges then categorized each word or

phrase as either physical, social or other. The judges also determined the number of words or phrases in each of these categories, and judged the evaluative connotation of each word or phrase as either positive, negative or neutral. In addition, the two judges categorized each person's overall description as either physical, or social, or combined physical and social and also evaluated each person's overall description as either positive, negative or neutral. A third judge categorized and evaluated the overall descriptions as described above, but did not categorize or evaluate the individual words and phrases. The third judge was involved in overall descriptions only as a general confirmation of the decisions made by the other two judges.

Words or phrases were categorized as physical if they referred to explicit physical aspects of the house and its surroundings which were visually present in the photograph (i.e., brick facade, two car garage, rustic fence, small windows, etc.). Words or phrases were categorized as social if they referred to implied characteristics or activities of the people living in the house shown (i.e., two children, junior executive, commuter, enjoys watching TV, etc.). Words or phrases were categorized as other if they could not be included in either the physical or social categories, but were important to the responses being analyzed.

For example, words or phrases categorized as "other" might refer to a larger context than is shown in the photograph such as ("suburban"), or might refer to the processes

involved in the design or construction of the house (such as "mass produced"). Words or phrases categorized as "other" might also refer to interactions between physical and social aspects of the house itself (such as "adequate size for a family"), or might refer to evaluative judgments regarding physical or social aspects of the house (such as "ugly" or "livable").

Words or phrases categorized as "other" were further categorized by judges to indicate whether they referred more to physical or to social aspects of the house shown. Thus, words or phrases categorized as physical-other refer to physical characteristics of the house that are not explicitly visible in the photograph shown (such as "two bedroom" or "part of a development project"). Similarly, words or phrases categorized as social-other refer to social characteristics of the house other than those related to the family implicitly living in the house shown (such as "middle class neighborhood"). Words or phrases categorized as other-other refer to interactions between physical and social (such as "suburban"), or to evaluative judgments that are not clearly physical or social (such as "regimented" or "pleasant"). A list of typical words used in each category, as well as samples of instructions, definitions, and analysis forms used by the judges for this analysis are included in the Appendix.

Table 1 shows the correlations between judges' decisions for all aspects of the environmental conceptualiza-

TABLE 1

CORRELATIONS OF JUDGES FOR MEASURE OF ENVIRONMENTAL CONCEPTUALIZATION

Aspect of Measure Tested	Correlations (Judge I vs. Judge II)
<u>Overall Impression of Entire Text</u>	
a. Physical, social or physical-social	0.46
b. Positive, negative or neutral	0.67
<u>Physical Descriptions</u>	
a. Number of words or phrases	0.83
b. Positive, negative or neutral	0.36
<u>Social Descriptors</u>	
a. Number of words or phrases	0.81
b. Positive, negative or neutral	0.50
<u>Other Descriptors</u>	
a. Number of words or phrases	0.73
b. Positive, negative or neutral	0.35
<u>Total</u>	
a. Number of words or phrases	0.88

Note: All correlations in this table are positive.

tion measure that were judged. As shown in the table, agreement between judges was greater for categorizing words and phrases as physical, social or other, than for evaluating whether words and phrases were positive, negative or neutral. For example, in determining the number of physical words and phrases agreement between the two judges correlated .83, while agreement regarding the positive, negative or neutral aspect of these physical words and phrases only correlated .36. Similarly, agreement as to the number of social descriptors was .81, while evaluation

of social descriptors correlated .50. The correlation for total number of words or phrases in each response was .88.¹⁶

Contrary to these correlations between categorizing and evaluating the physical, social and other components of the environmental conceptualization measure, correlations for overall impression of the entire text were .46 for categorization and .67 for evaluation.¹⁷ Apparently, an individual's overall response to this question more clearly expresses to others their evaluative feelings about the environment whereas individual words or phrases are more subject to interpretation and the personal biases of the judges. For example, the phrase: "a typical suburban house" could be interpreted as a neutral description or a negative description depending on the bias of the judge. However, if a later phrase in the same response were "I would like to live here," then the judges would have some evidence that the respondent's evaluation of this environment was posi-

¹⁶The total number of words and phrases counted in each response varied because of differences between judges when classifying words and phrases. For example, "a suburban house" may be classified one phrase or as two words.

¹⁷This judgment of overall categorization was an intuitive decision by judges after reading each response, but before counting the physical words or phrases in each response. Since the correlation on this intuitive judgment was less than that for counted words or phrases, this overall categorization was not used as a basis for measuring environmental conceptualizations. All measures of environmental conceptualization used in this study are based on the number of physical and social words or phrases where agreement among judges is more highly correlated.

tive.¹⁸

After all judgments were completed, individual responses which produced disagreement were further analyzed in discussions between judges and the investigator, and agreements reached as to how they should be categorized. These agreed upon categorizations were then tabulated along with all other responses for statistical analysis.

The judges' analysis of house descriptions as described above provided a basis for developing several different measures of environmental conceptualization for use in this study. These measures are based on the percentages of physical, social and other words and phrases in relation to the total number of words and phrases in the description. These percentage scores were devised to eliminate differences between people who used only a few words in their descriptions, and those who used many words in their descriptions.

It should be noted that these percentage scores of environmental conceptualizations are based only on the number of physical, social and other words and phrases in each description, and do not include the evaluative aspect of these

¹⁸This pattern of correlations for judgments on the environmental conceptualization measure indicates that context may amplify evaluative aspects of descriptions, while elimination of context may amplify more objective aspects of descriptions. It can be suggested that the inclusion or exclusion of context variables in a research study may have a significant effect on results. Thus, the role of context should be considered in terms of the research goals of the project. Note that this explanation is consistent with the arguments earlier in this paper regarding interactions of variables. In other words, interaction of variables is context.

descriptions. Due to the lower correlations between judges on evaluations of words and phrases in each description, it was decided to exclude these assessments.

The percentage scores for environmental conceptualizations are as follows:

1. Percent of physical words and phrases in relation to total number of words and phrases in the description;
2. Percent of social words and phrases in relation to total number of words and phrases in the description;
3. Percent of other words and phrases in relation to total number of words and phrases in the description.

These three percentage scores were computed for each participant in the study based on their descriptions of the house shown during the questionnaire session. The measures developed from these percentage scores are described later in this section under the heading "Preparation of Data for Analysis."

Housing Preferences

A principal interest of this study involves the measurement of variations in housing preferences. The measure of housing preferences devised for the present study employs ten 35mm projected photographic color slides which were viewed by people participating in the study. The photos

show ten different exterior housing environments which vary on three dimensions: location (suburban or urban); habitation (single-family or multi-family); and style (modern or traditional),¹⁹ These three dimensions are distributed among the ten photos as follows:

- photo 1: suburban, single-family, traditional
- photo 2: suburban, single-family, modern
- photo 3: suburban, single-family, modern
- photo 4: suburban, multi-family, traditional
- photo 5: suburban, multi-family, modern
- photo 6: urban, single-family, traditional
- photo 7: urban, single-family, modern
- photo 8: urban, multi-family, modern
- photo 9: urban, multi-family, traditional
- photo 10: urban, multi-family, modern

(See Figures 9-18 in Appendix for samples of the photos shown). The first of these ten photos was also used for the measure of environmental conceptualization described above.

The first measure of housing preferences devised for this study simply asks people participating in the study to view the ten photographic slides and indicate which of the ten housing environments shown in the slides they would most like to live in themselves. Responses to this question are

¹⁹The ten photos were selected by the author from a group of 30 photos. These 30 photos were rated on the three variable dimensions (location, habitation, and style) by a group of 15 architecture students from New York Institute of Technology. The ten photos selected for use in this study were those photos where there was a high level of agreement among students as to the location, habitation, and style of the housing shown in the photo.

compared with environmental conceptualization as a general indication of relationships between environmental conceptualization and housing preferences.

The second measure of housing preferences was devised specifically for this study in order to investigate the processes assumed to underlie housing preferences. This measure is based on the assumption that housing preferences involve associations between qualities of environments and qualities of people and that these associations are affected by cultural and social influences in an individual's background and experience. It is expected that people will vary in discriminating qualities of people, qualities of the environment, and in matching the two. It is of particular interest to this study to determine whether architects as a group are significantly different from non-architects in their discriminating and matching of people and environments.

This second measure of housing preferences is called Sensitivity to Social Meanings (SSM). This measure utilizes the ten photographic slides described above, as well as six descriptions of hypothetical families which were devised specifically for this study. These family descriptions depict families who are similar in economic capabilities, but varied in occupation, education, age, family size, activities and interests. (See Appendix for samples of these six descriptions of hypothetical families.) People participating in this study read a hypothetical family description, viewed the ten photographic slides of housing environments (which

were continuously shown during the questionnaire session), then indicated on a scale of 1 to 7 how appropriate or inappropriate each house was for that particular family (where 1 = very appropriate and 7 = very inappropriate).

Each questionnaire included three of the six hypothetical family descriptions, thus the process of reading the description, viewing the slides and judging the appropriateness of each house for the family described was repeated three times by each person.²⁰

The results of this measure produced 30 scores for each person participating in the study (three families times ten photos). Each of these scores represented a rating (from 1 to 7) of how appropriate or inappropriate a particular house was for a particular family. These scores were analyzed to determine how much variation in scores was demonstrated from family to family (i.e., across all three families) for each photo.

It was assumed that variation in ratings across families indicated variation in discriminating qualities of people and that variation in ratings across photos indicated variation in discriminating qualities of the environment.

²⁰Note that the pre-test described earlier for testing the measure of environmental conceptualization also included various formats for testing Sensitivity to Social Meaning. These format variations included number of photos and number of hypothetical families. A total of 97 architecture and non-architecture students from the University of Pennsylvania, City College of New York, and C.W. Post College participated in the study. After discussions with the participants and informal analysis of results by the author, the format described above was adopted for this study.

Variation in scores on this measure (SSM) were compared with all other variables in the study to determine what population variables were related to variation in understanding other people's housing preferences. A relationship of particular interest was between environmental conceptualization and this measure of housing preferences (SSM).

Population Variables

Other variables included in this study involved individual differences in the people participating in the study. These population variables were: age, sex, income, education, occupation (i.e., architect vs. non-architect), housing experience, general value orientations and creativity. These variables were selected to include aspects of people's background and experience which were expected to affect variation in environmental conceptualization.

Individuals participating in the study indicated their age, sex, income, amount of education, and housing experience by marking appropriate categories on the questionnaire used for this study. The categories indicated on the questionnaire for each variable were as follows:

AGE: under 20; 20-30; 30-40; 40-50;
 50-60; over 60,
SEX: male; female,
INCOME: under \$10,000; \$10,000-\$20,000;
 \$20,000-\$30,000; \$30,000-\$40,000;
 \$40,000-\$50,000; over \$50,000.

AMOUNT OF EDUCATION; none; elementary school; high school; some college; Bachelors degree; advanced degree.

Housing experience was measured through four separate questions. These four questions inquired about the respondent's childhood house, most lived in house (i.e., prior house), present house and ideal house. Each of these questions provided the following response categories:

HOUSING EXPERIENCE: single family detached; urban row housing; suburban garden apts.; urban high rise apts.; other.

Occupation was indicated by participants writing their occupation in their own words. These written descriptions were then categorized by the investigator as either architect, non-architect, unemployed, or design related non-architect. Each of these categories were further classified as professional, management, labor, domestic, student, non-architect working for architect (professional), non-architect working for architect (non-professional), architect working for non-architect, and teacher.

In addition, the questionnaire included questions regarding attendance at schools of architecture (whether a school of architecture was attended, what school was attended, and year of graduation). Also included were questions regarding housing experiences related to occupation (kind of work done in housing, how much work involved housing, and

type of housing most worked with),

Two other variables of particular importance to this study were value orientations and creativity. The measure of value orientations used in this study was the Allport-Vernon-Lindsay "Study of Values" (AVL) including measures of theoretical, economic, aesthetic, social, political, and religious values as described earlier in this paper. Each participant in the study was scored on each of the six value orientations separately. The scores for each value orientation indicated whether the participant was:

1. higher than 82% of the population;
2. within 82%, but higher than 50% of the population;
3. within 50% of the population;
4. lower than 50%, but within 82% of the population;
5. lower than 82% of the population.

For example, an individual might score very high in theoretical values (above 82% of the population); very low in economic values (below 82% of the population); high in aesthetic values (within 82% but above 50% of the population); low in social values (below 50% but within 82% of the population); and average on political and religious scores (within 50% of the population).

An aspect of creativity particularly relevant to this study is preference for visual complexity as measured by the Barron-Welsh Figure Preference Test Art Scale (BW). The

Barron-Welsh test is a published test booklet with 86 abstract figures which are scored according to the participant's preference for each figure (i.e., like or dislike).²¹

Generally, the figures included in the test vary in their visual complexity and scoring indicates the number of visually complex figures preferred by the individual. Thus a higher score indicates a greater preference for visual complexity. The authors of the test have determined that people who are likely to have higher than average levels of creativity (such as artists) score higher on the Barron-Welsh test. In other words, creative people may prefer visual complexity.

A copy of the questionnaire used in the study is included in the Appendix. The Allport-Vernon-Lindsay "Study of Values" booklet and the Barron-Welsh Figure Preference booklet are not included, however, due to copyright restrictions.

Preparation of Data for Analysis

The responses indicated on the questionnaire form by each individual participating in this study were coded and

²¹Previous research with the BW test has shown that architects, artists, and other presumably creative people prefer certain figures in the test over others (See Buros, 1960). These preferences are significantly different from the preferences of non-artistic (and presumably less creative) people. The test is scored so that an individual who prefers the same figures as those preferred by artistic people in previous research will receive a high score on the questionnaire used in this study.

punched on computer cards. For most items on the questionnaire (age, sex, income, amount of formal education, architectural school attendance, kind of work done in housing, percent of work done in housing, kind of housing worked with, childhood house, prior house, present house and ideal house) responses were categorized on the questionnaire form itself. These categories and the code assigned to each category are shown in the sample questionnaire in the Appendix.

However, some of these original categories on the questionnaire form produced frequency distributions that were not suitable for analysis. For example, categories with only a few responses produced a higher percentage of "0 cells" than is recommended for statistical analysis. In addition, questionnaire responses that were "skewed" (i.e., an unusual number of responses in one or two categories) could not be tested with hypotheses based on normal distributions.

In view of these conditions, it was decided to reorganize the categories of all questionnaire items in order to eliminate categories that included only a few people, and to approximate a normal distribution wherever possible. For example, the original categories indicated on the questionnaire for age are: 1 = under 20; 2 = 20-30; 3 = 30-40; 4 = 40-50; 5 = 50-60. For purposes of analysis, these categories were combined as follows: 1 = under 30; 2 = 30-40; 3 = 40-50; 4 = over 50. Similar reorganizations of categories were done for income and education. In the

case of income, the reorganized categories are: 1 = under \$10,000; 2 = \$10,000-\$20,000; 3 = \$20,000-\$30,000; 4 = over \$30,000. In the case of amount of education, the reorganized categories are: 1 = none, elementary school, high school, or some college; 2 = Bachelors degree; 3 = advanced degrees.

In the case of the housing experience variables (kind of housing worked with, childhood house, prior house, present house and ideal house) it was necessary to use a binary coding (i.e., two categories only) in order to eliminate categories with only a few people, and to eliminate skewness in the distribution. For example, the original five categories of the variable ideal house (question #14 on the questionnaire) are: 1 = single family detached; 2 = urban row house; 3 = suburban garden apartment; 4 = urban high rise apartment; 5 = other. These categories were reorganized to eliminate skew and to reflect conceptual interests of this study (i.e., the effects of urban vs. suburban housing experience). The binary reorganization of these categories is: 1 = single family detached and suburban garden apartment; 2 = urban row house, urban high rise apartment and other. Similar binary reorganizations of categories were done for the other questionnaire items dealing with housing experience (i.e., kind of housing worked with, childhood house, prior house, and present house).

A number of items on the questionnaire did not provide categorized responses and were coded differently from those described above. Occupation, for example, was indicated by filling in the blank on questionnaire item #7.

These responses were originally categorized as discussed earlier. However, in order to provide appropriate frequency distributions, and address the conceptual issues put forward in the introduction of this paper, these original categories were reorganized into two different binary codings. The first binary coding was 1 = architect; 2 = non-architect. The second binary coding was 1 = professional architect or non-architect and teachers (i.e., all professional); 2 = management, labor, domestic, student, non-professional architect or non-architect (i.e., all non-professional).

Housing preferences were measured through selection of preferred house from photographic color slides shown during the questionnaire session (questionnaire item #17). Each of the possible choices (photos 1-10) were given binary coding where 1 = preferred; 2 = not preferred.

In this study, the processes assumed to underlie housing preferences are referred to as Sensitivity to Social Meaning and are measured by responses to questionnaire item #19. The responses to this question are comprised of scales from 1-7 indicating appropriateness for each of three families when matched to each of the ten photos. Each individual participating in the study provided thirty scaled scores (3 families X 10 photos) which were used as raw data for statistical tests.

The measures of environmental conceptualization used in this study are based on the percentages of physical, social and other words and phrases in each participant's

description of the house shown in the questionnaire session (questionnaire item #15). For purposes of analysis, these percentages were transformed into three different measures for environmental conceptualization: the NEWCHERR measure; the NCHERR measure; and the NPERPD, NPERSD, NPEROD measures.

The first measure of environmental conceptualization to be discussed is NEWCHERR. This is a categorical coding of the percentages of physical and social words and phrases. The categories for NEWCHERR are as follows:

1. Percent of physical words and phrases = 0 and percent of social words and phrases = 0 ($P = 0, S = 0$) (i.e., all words and phrases are classified as "other");
2. Percent of physical words and phrases = 0 percent of social words and phrases is greater than 0 ($P = 0; S > 0$);
3. Percent of physical words and phrases is greater than 0 and percent of social words and phrases = 0 ($P > 0, S = 0$);
4. Percent of physical words and phrases equals percent of social words and phrases ($P = S$);
5. Percent of physical words and phrases is greater than percent of social words and phrases ($P > S$);
6. Percent of physical words and phrases

is less than percent of social words
and phrases ($P < S$).

The NEWCHERR measure illustrates the idea that environmental conceptualizations are comprised of physical and social words and phrases in various combinations. This measure is used for statistical analysis on several tests conducted for this study. However, this measure is not suitable for Canonical Correlation analysis used to test relationships among various patterns of variables. Therefore, a second measure of environmental conceptualization was developed for use with Canonical Correlations.

This second measure of environmental conceptualization is based on a binary coding of percentages of physical and social words and phrases, and is entitled NCHERR. The categories for this measure (NCHERR 1 - NCHERR 6) are based on various combinations of physical and social words and phrases similar to the categories for NEWCHERR. This similarity of categories between NCHERR and NEWCHERR permits comparisons among the various statistical tests conducted for this study.

Each of the NCHERR categories are coded 1 or 2. The categories and coding for NCHERR are as follows:

- NCHERR 1 = 1 if percent of physical words and phrases and percent of social words and phrases both = 0; or if percent of physical words and phrases is greater than or less than percent of social words and phrases,

- NCHERR 1 = 2 if percent of physical words and phrases = percent of social words and phrases ($P = S$).
- NCHERR 2 = 1 if percent of physical words and phrases is greater than 0 and percent of social words and phrases is equal to or less than percent of social words and phrases.
- NCHERR 2 = 2 if percent of physical words and phrases is greater than percent of social words and phrases ($P > S$).
- NCHERR 3 = 1 if percent of physical words and phrases is equal to, greater than or or less than percent of social words and phrases.
- NCHERR 3 = 2 if percent of physical words and phrases and percent of social words and phrases both equal 0 (i.e., all words and phrases are classified as "other") ($P = 0, S = 0$).
- NCHERR 4 = 1 if percentage of physical words and phrases is equal to, greater than or less than percent of social words and phrases.
- NCHERR 4 = 2 if percent of physical words phrases is greater than 0 and percent of social words and phrases equals 0 ($P > 0,$

S = 0).

- NCHERR 5 = 1 if percent of physical words and phrases is equal to, greater than or less than percent of social words and phrases.
- NCHERR 5 = 2 if percent of physical words and phrases equals 0 and percent of social words and phrases is greater than 0 (P = 0, S > 0).
- NCHERR 6 = 1 if percent of physical words and phrases equals 0 and percent of social words and phrases is greater than 0; or if percent of physical words and phrases is equal to or greater than percent of social words and phrases.
- NCHERR 6 = 2 if percent of physical words and phrases is less than percent of social words or phrases (P < S).

Note that the coding for NCHERR is assymetrical. For each category of NCHERR, Code 2 indicates the particular relationship between physical and social terms represented by that category; while Code 1 indicates all other physical-social relationships. For example, Code 2 of NCHERR 1 includes people who have used physical and social words and phrases equally in their descriptions of suburban housing (P = S). Code 1 of NCHERR 1 includes the other five types of relationships between physical and social words and

phrases included in this environmental conceptualization measure (i.e., $P > S$; $P = 0, S = 0$; $P > 0, S = 0$; $P = 0, S > 0$; $P < S$).

This asymmetrical characteristic of NCHERR may introduce inconsistency in statistical results using this measure. However, since NCHERR is used only in Canonical Correlations as an exploration of possible patterns of relationships among variables, the risk of inconsistencies in results can be tolerated.

The third measure of environmental conceptualization was developed to provide separate non-categorical measures for the physical, social and other components of environmental conceptualization. It was expected that these measures would provide more detailed information regarding relationships between these assumed components of environmental conceptualizations and the various independent (i.e., predictor) variables in this study.

These separate measures are entitled NPERPD for percentage of physical words and phrases; NPERSD for percentage of social words and phrases; NPEROD for percentage of other words and phrases. Each of these measures includes a range of percentages as shown in table 2.

The measure of value orientations in this study is the Allport-Vernon-Lindsay "Study of Values." Each person participating in the study received a score for each part of the Allport-Vernon-Lindsay test (i.e., a separate score for theoretical, economic, aesthetic, social, political and

TABLE 2

CATEGORIES FOR PHYSICAL, SOCIAL AND OTHER PERCENTAGES
AS A MEASURE OF ENVIRONMENTAL CONCEPTUALIZATION

Analysis Categories	Measures of Environmental Conceptualization		
	Percent of Physical (NPERPD)	Percent of Social (NPERSD)	Percent of Other (NPEROD)
1	0% - 18%	0%	0% - 19%
2	19% - 39%	1% - 18%	20% - 39%
3	40% - 58%	19% - 38%	40% - 58%
4	59% - 79%	39% - 100%	59% - 78%
5	80% - 100%	-	79% - 100%

religious values). These scores were then compared with national scores for each section of the test (provided in the AVL test booklet) and categorized according to their position relative to these national scores. Thus, all AVL results were converted into the following categories:

- 1 = all scores that are below 82% of national scores for that section of the test;
- 2 = all scores that are below 50% of national scores for that section of the test;
- 3 = all scores that are within 50% of national scores for that section of the test;
- 4 = all scores that are above 50% of national scores for that section of the test;
- 5 = all scores that are above 82% of national scores for that section of the test.

However, the frequency distributions of these categories were not suitable for analysis due to the low number of people in some categories. Thus, in order to eliminate categories with only a few people and to approximate a normal distribution, the AVL results were reorganized as follows:

AVL THEORETICAL, ECONOMIC, SOCIAL, POLITICAL & RELIGIOUS:

- 1 = all scores below 82% and all scores below 50% of national scores for this section of the test;
- 2 = all scores within 50% of national scores for this section of the test;
- 3 = all scores above 50% and all scores above 82% of national scores for this section of the test.

AVL AESTHETIC:

- 1 = all scores below 82%, all scores below 50%, and all scores within 50% of national scores for this part of the test;
- 2 = all scores above 50% of national scores for this part of the test;
- 3 = all scores above 82% of national scores for this part of the test.

An aspect of creativity included in this study is preference for visual complexity as measured by the Barron-Welsh Figure Preference Test Art Scale (BW). Scoring for this test is determined by the authors of the test and is based on preferences for visual complexity. Each individual

received a score on the Barron-Welsh test which indicated the number of visually complex figures they preferred. Thus, a higher score on this test indicates that more visually complex figures were preferred. The theoretical range for these scores is 0 - 86. For purposes of analysis, these BW scores were grouped in categories to approximate a normal distribution. The categories for BW scores are 1 = 0-28; 2 = 29-42; 3 = 43-86.

A listing of all the reorganized categories for all variables used in statistical analysis for this study is included in the Appendix. This list provides a summary of the description of reorganized categories above. It is recommended that this list be referred to if necessary when reading the following RESULTS and DISCUSSION sections.

Sample

The people who participated in this study were selected as representative of population characteristics that were of particular interest in the study. Thus, an effort was made to assure that both architects and non-architects were included among the participants. Since it was important for comparisons that some of the non-architects who participated in the study have the same amount of education as architects, efforts were made to include a range of education, age, and income levels among the non-architects. The selection of participants also involved differences in geographic location,

The study was conducted in seven cities throughout the

United States (Boston, New York, Washington, Atlanta, Houston, San Francisco and Chicago). These cities were selected as representative of regional differences in architecture and climate in the United States. The author of this study traveled to each of these cities to organize data collection procedures. In each city, contact was made with large architectural firms, neighborhood and housing organizations, fraternal organizations, church groups, etc, whose members represent the desired population characteristics (as described above). These contact efforts continued until a minimum of five different organizations agreed to include a questionnaire session as part of their regular meeting. At the same time, arrangements were made with local university research staff to meet with the organizations who agreed to participate in the study and conduct the questionnaire session. Thus, the author was able to train people who would be collecting data. Data for some organizations was collected in the author's presence as part of training. Data collected later was forwarded directly to the author for compilation and analysis.

The total number of people who participated in the study was 784. However, many questionnaires were incomplete on principal measures and were not included in the analysis. The total number of people with complete questionnaires who could be included in the analysis was 570. The distribution of this sample population of 570 is discussed in the following RESULTS section.

4. RESULTS

The results of this study will be discussed in terms of relationships among the following variables:

- Independent variables which include age, sex, income, amount of education, occupation, kind of house worked with, childhood house, prior house, present house, ideal house, housing preferences, Allport-Vernon-Lindsay (AVL) and Barron-Welsh (BW);
- Dependent variables which include environmental conceptualizations and sensitivity to social meanings (SSM).

Generally, the statistical procedure for analysis of these variables includes correlational, multivariate and univariate tests. The first step in this procedure is summary and correlational statistics to provide an overview of possible relationships among variables. These statistics are a guide for multivariate statistics (CANCORR and MANOVA) which are used to investigate the patterns of variables and interactions related to the hypotheses and conceptual issues of this study. Finally, univariate statistics (ANOVA) were used to confirm multivariate results and assure that significant single variables were not obscured by the multivariate analysis.

Summary statistics of these variables for the population of people who participated in the study (570) are shown

in table 3,²² It should be noted by inspection of table 3 that the sample of people who participated in this study is skewed toward young, male architects who are college educated; have low income; are low in religious values, high in aesthetic values, and low in preference for visual complexity; whose housing experience and preferences are for single family detached housing; and whose housing descriptions are "physical."²³

²²Note that the variables included in table 3 and in subsequent statistical analysis for the hypothesis of this study do not include all of the questionnaire items. College of architecture (item #6), description of inhabitants of photo 1 (item #16) and description of preferred house (item #18) were excluded because the data from these questions was not suitable for meaningful analysis. For example, responses to "college of architecture attended" included nearly 100 different colleges. It was not clear how these colleges could be grouped into meaningful categories that would consolidate the small numbers of people who represented each college. Other problems of analysis occurred with the other omitted questionnaire items. Questions regarding which family would be easiest and most difficult to design for (#20 and #21) were excluded from analysis because these questions were only answered by architects and their content was not essential to the principal issues of this study.

Geographic location (i.e., city) was recorded and tabulated for each person participating in this study. However, statistical analysis revealed no differences on any principal measures due to geographic location. Apparently, regionalism is not a factor in environmental conceptualizations or housing preferences as measured in this study.

²³This population profile is a description of architects that does not agree with MacKinnon's (1970) personality profile for creative architects. An apparent anomaly is that architects in the present sample are generally low in preference for visual complexity (a presumed aspect of creativity); yet are high in aesthetic values. However, a person may have high aesthetic values without being creative or artistic (i.e., those who appreciate art vs. those who create art). Results of this study discussed later support the independence of these two measures and suggest that different aspects of aesthetic values are related differently to preferences for visual complexity.

TABLE 3

SUMMARY STATISTICS FOR ALL VARIABLES SHOWING RANGE, MEAN
STANDARD DEVIATION, STANDARD ERROR OF MEAN AND
VARIANCE BEFORE REORGANIZATION OF CATEGORIES

Variable	Question Number	Range	Mean	Standard Deviation	Standard Error of Mean	Variance
Age	1	6	3.00	1.07	0.04	1.15
Sex	2	2	1.75	0.43	0.02	0.19
Income	3	6	2.34	1.08	0.05	1.17
Education	4	6	4.97	0.89	0.04	0.80
Architect Education	5	2	1.50	0.50	0.02	0.25
Occupation	7	4	1.58	0.79	0.03	0.63
Suboccupation	7	10	2.33	2.00	0.08	4.01
Work House	8	10	1.39	2.51	0.11	6.31
Percent House	9	4	0.78	1.08	0.05	1.16
House Kind	10	5	1.41	1.89	0.08	3.56
Childhood House	11	5	1.58	1.32	0.06	1.73
Prior House	12	5	1.56	1.24	0.05	1.54
Present House	13	5	2.16	1.59	0.07	2.53
Ideal House	14	5	1.74	1.42	0.06	2.00
NEWCHERR	15	6	3.04	1.18	0.05	1.40
Preferred House	17	10	3.18	2.02	0.08	4.09
Easy Design	20	6	3.52	1.32	0.08	1.75
Difficult Design	21	6	2.98	1.98	0.12	3.92
AVL Theoretical	-	5	3.18	0.95	0.04	0.91
AVL Economic	-	5	2.81	0.95	0.04	0.91
AVL Aesthetic	-	5	4.14	0.93	0.04	0.87
AVL Social	-	5	2.68	1.05	0.04	1.10
AVL Political	-	5	2.86	0.96	0.04	0.93
AVL Religious	-	5	2.33	1.08	0.05	1.17
Barron-Welsh	-	76	36.08	13.44	0.56	180.50

NOTE: Coding of all variables is shown in the Appendix and discussed in the "Preparation of Data" section of Methods.

Several of these variables are skewed to an extent that would affect statistical tests and analysis of results, particularly since the hypotheses of this study are based on normal distributions. For this reason, the categories of the variables were reorganized (i.e., collapsed) to approximate statistically normal distributions for each variable. This process was discussed in the previous section (Preparation of Data for Analysis). These reorganized categories and frequency distributions are shown in the Appendix.

Tables 4 through 15 indicate the direction and level of significance for various correlations among the independent variables of this study. The intercorrelations among the demographic variables (i.e., age, sex, income, education, occupation) are generally as would be expected. For example, higher levels of age are correlated with higher education and higher income. Also, the positive and negative correlations among different sections of the AVL test are consistent with the ipsative nature of that test.

Other correlations in tables 4 through 15 indicate relationships among independent variables which may affect the results of this study. As a result of these correlations among independent variables, subsequent statistical analysis made use of the exact multiple regression model based on the general linear model for correlated independent variables (Cohen and Cohen, 1975; Searle, 1971).

Since this study involves a relatively large number of independent variables it was decided to organize these

TABLE 4

CROSS CORRELATIONS OF DEMOGRAPHIC VS. DEMOGRAPHIC VARIABLES

Variables	Significance Level of Correlations							
	Age	Sex	Income	Education	Occupation	Sub-Occupation	Work-house	House-kind
Age			+.0001	+.0006	+.0001	-.0001		
Sex					-.0001	-.0001		-.06
Income				+.0001	+.0006	-.0001	-.02	
Education					-.0001	-.0001		+.01
Occupation						+.006	+.0001	
Sub-Occupation							+.0007	
Workhouse								
Housekind								

TABLE 5

CROSS CORRELATIONS OF DEMOGRAPHIC VS. PERSONALITY VARIABLES

Variables	Significance Level of Correlations						Barron- Welsh
	AVL Theoretical	AVL Economic	AVL Aesthetic	AVL Social	AVL Religious	AVL Political	
Age		-.08		-.06	+.009		-.003
Sex	-.0001		+.0001		-.0001	-.0001	
Income		+.018		-.004			-.026
Education		-.001	+.004		-.097		
Occupation	+.08	+.08	-.0001	+.04	+.07	+.003	+.0003
Sub- Occupation			-.01			+.04	
Workhouse			-.02	+.05			
Housekind							

TABLE 6

CROSS CORRELATIONS OF DEMOGRAPHIC VS.
ENVIRONMENTAL EXPERIENCE VARIABLES

Variables	Significance Levels of Correlations												
	Child- hood House	Prior House	Present House	Ideal House	H O U S E P R E F E R E N C E								
					(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Age			-,002										
Sex		-.02	-.003	-,001								+0.099	+0.099
Income			-,0001	-.02				-.03			-.02		
Education			+0.09	+0.035	+0.005	+0.07	+0.0001			-,055	+0.05		
Occupation			+0.09	-.04	-,0001								
Sub- Occupation			+0.0008		-,06							-,005	
Workhouse				-,06	-,08								
Housekind		+0.0016	+0.0005	-,08							+0.066		

TABLE 7

CROSS CORRELATIONS OF PERSONALITY VS. PERSONALITY VARIABLES

Variables	Significance Levels of Correlations						
	AVL Theoretical	AVL Economic	AVL Aesthetic	AVL Social	AVL Religious	AVL Political	Barron Welsh
AVL Theoretical			+.08	-.0001	-.0001		
AVL Economic			-.0001	-.0001	-.0001	+.0001	-.0005
AVL Aesthetic				-.0001	-.0001	-.0001	+.03
AVL Social					+.08	-.0001	
AVL Religious						-.0001	
AVL Political							
Barron-Welsh							

TABLE 8

CROSS CORRELATIONS OF PERSONALITY VS.
ENVIRONMENTAL EXPERIENCE VARIABLES

Variables	Significance Levels of Correlations												
	Child- hood House	Prior House	Present House	Ideal House	H o u s e P r e f e r e n c e								
					(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
AVL Theoretical				+ .001	+ .002			+ .06		- .02			
AVL Economic	- .075		- .002	+ .002	- .004	- .0009	- .0006			+ .02			
AVL Aesthetic		+ .0001		+ .003	+ .0001	+ .09				- .0001			
AVL Social	+ .0009	+ .002			- .05	+ .096							
AVL Religious	+ .09	+ .03	- .05	- .0001						+ .007	- .07	- .04	
AVL Political			- .02							+ .04			
Barron-Welsh			+ .06	+ .05		- .02							- .009

TABLE 9

CROSS CORRELATIONS OF ENVIRONMENTAL EXPERIENCE
VS. ENVIRONMENTAL EXPERIENCE VARIABLES

Variables	Significance Levels of Correlations												
	Child- hood House	Prior House	Present House	Ideal House	H O U S E P R E F E R E N C E								
					(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Childhood House		+,0001	+.002	+.009	+,07						-.05		
Prior House			+,0001	+.0001		+,017		-,05			-.01		
Present House				+,0001	+,0002	+,0002			+,02		-.0001		
Ideal House					+,0001	+,0001					-.0001		-,0001
House Preference													
(1)						-,0001	-,0001				-,0001		
(2)							-,0001				-,0001		
(3)											-,0001		
(4)													
(5)													
(6)													
(7)													
(8)													
(9)													

TABLE 10

CROSS CORRELATIONS OF ENVIRONMENTAL
CONCEPTUALIZATION VS.
DEMOGRAPHIC VARIABLES

Variables	Significance Levels of Correlations							
	Age	Sex	Income	Education	Occupation	Sub-Occupation	Work-House	Housekind
NCHERR 1								
NCHERR 2								
NCHERR 3			-.07					
NCHERR 4	+.009		+.04					
NCHERR 5								
NCHERR 6						+.02		
NEWCHERR 1					+.0009			
NEWCHERR 2								
NEWCHERR 3					+.003			
NEWCHERR 4	+.05		+.04		+.03			
NEWCHERR 5								
NEWCHERR 6								
NPERPD					+.0001		+.08	
NPERSD	-.02		-.006					+.09
NPEROD			+.06		-.0001		-.007	-.08

TABLE 11

CROSS CORRELATIONS OF ENVIRONMENTAL
CONCEPTUALIZATION VS.
PERSONALITY VARIABLES

Variables	Significance Levels of Correlations						
	AVL Theoretical	AVL Economic	AVL Aesthetic	AVL Social	AVL Religious	AVL Political	Barron-Welsh
NCHERR 1	-.07	+.06					
NCHERR 2				-.05			
NCHERR 3	-.045	-.06					
NCHERR 4		+.09					
NCHERR 5							
NCHERR 6	+.075	+.07					
NEWCHERR 1			-.007				-.005
NEWCHERR 2							
NEWCHERR 3			-.06				
NEWCHERR 4							
NEWCHERR 5							
NEWCHERR 6							
NPERPD			-.01				-.01
NPERSD					+.09		
NPEROD			-.85		-.05		+.01

TABLE 12

CROSS CORRELATIONS OF ENVIRONMENTAL CONCEPTUALIZATION VS.
ENVIRONMENTAL EXPERIENCE VARIABLES

Variables	Significance Levels of Correlations													
	Child- hood House	Prior House	Present House	Ideal House	H O U S E P R E F E R E N C E									
					(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
NCHERR 1			+.02		+.09							-.04		-.08
NCHERR 2			-.05										-.04	
NCHERR 3														
NCHERR 4														
NCHERR 5			+.06											
NCHERR 6		+.004												
NEWCHERR 1					+.04						+.02			
NEWCHERR 2														
NEWCHERR 3			-.02		-.046						+.03			
NEWCHERR 4														
NEWCHERR 5														
NEWCHERR 6														
NPERPD			-.04		-.03						+.04			
NPERSD			+.009											
NPEROD						+.07				+.08				

TABLE 13

CROSS CORRELATIONS OF ENVIRONMENTAL CONCEPTUALIZATION
VS. ENVIRONMENTAL CONCEPTUALIZATION

Variables	Significance Levels of Correlations		
	NPERPD	NPERSD	NPEROD
NCHERR 1	-.0001	+.0001	-.005
NCHERR 2	+.003	+.0001	-.0001
NCHERR 3	-.0001	-.0001	+.0001
NCHERR 4	+.0001	-.0001	-.0001
NCHERR 5	-.0001	+.0001	+.005
NCHERR 6	-.0009	+.0001	-.0008
NPERPD		-.0001	-.0001
NPERSD			.0001
NPEROD			

TABLE 14

CROSS CORRELATION OF SENSITIVITY TO SOCIAL MEANING VS.
 DEMOGRAPHIC AND ENVIRONMENTAL EXPERIENCE VARIABLES

Variables	Significance Levels of Correlations								
	Age	Sex	Income	Education	Occupation	Childhood House	Prior House	Present House	Ideal House
Photo 1	+ .05	- .007		+ .08		- .09			+ .07
Photo 2	+ .06	- .099	+ .09		+ .006				
Photo 3					+ .03				
Photo 4		+ .02							
Photo 5									
Photo 6									- .06
Photo 7	- .02			- .08		+ .09			
Photo 8									
Photo 9									
Photo 10									- .03

TABLE 15

CROSS CORRELATIONS OF SENSITIVITY TO SOCIAL MEANING VS.
PERSONALITY AND ENVIRONMENTAL
CONCEPTUALIZATION VARIABLES

Variables	Significance Levels of Correlations									
	AVL Theoretical	AVL Economic	AVL Aesthetic	AVL Social	AVL Religious	AVL Political	Barron- Welsh	NPERPD	NPERSD	NPEROD
Photo 1	+ .07									
Photo 2			- .03							
Photo 3	- .01			+ .04						
Photo 4		+ .05	- .05					+ .008	- .06	
Photo 5		+ .05		- .01				+ .07		
Photo 6		+ .006	- .05				- .05			
Photo 7					+ .08					
Photo 8										
Photo 9										
Photo 10										

variables in groups that were congruent with the concepts discussed in the Introduction,

These groups of variables are as follows:

1. Demographic Variables: age, sex, income, education, occupation;
2. Environmental Experience Variables: childhood house, prior house, present house, ideal house;
3. Personality Variables: Allport-Vernon-Lindsay "Study of Values" with tests of theoretical, economic, aesthetic, social, political, religious values (AVL); and Barron-Welsh Figure Preference Test (BW).

The first major data analysis procedure involved the utilization of canonical correlation (CANCORR) to determine how major patterns of independent variables related to dependent variables (Morrison, 1967). Canonical correlation is useful when the investigator wishes to examine the relationships between two groups of variables (in this instance, the variables descriptive of environmental conceptualization and the sets of independent variables enumerated above). For any two groups of variables, canonical correlation procedures find linear combinations of variables from the two sets so that their patterned intercorrelation is maximized. For example, we might find that respondents whose environmental conceptualizations are primarily organized around physical words and phrases tend to be architects who have high theo-

retical and aesthetic values on the AVL test,

Once the first canonical vector is extracted from the data, a second variate is constructed which represents the linear combination of variables that possesses the next highest canonical correlation with the remaining variables. Thus the second canonical vector might contain those respondents whose environmental conceptualizations are organized around social words and phrases, and we might find that these people tend to be older, educated people who scored high in social values on the AVL. This process of finding linear combinations continues until the number of pairs of canonical variables equals the number of variables in the smaller group of the two groups that are to be interrelated. It is usually the case that only the first two or three canonical vectors are interpretable or statistically significant,

It should be noted that the interpretation of CANCECORR results are most useful where the conceptual nature of the data is clear (Harris, 1975). In view of the explanatory nature of this study (with respect to both environmental conceptualizations and housing preferences) interpretation of CANCECORR results in this study cannot be taken as conclusive. As indicated earlier in this paper, inconsistencies or confusion in CANCECORR results may occur due to several factors; including the asymmetrical nature of the measure of environmental conceptualization used for CANCECORR analysis (i.e., NCHERR). However, CANCECORR results are useful in this study as an exploration of patterns of relationships, and to in-

dicating the relationships among variables that are most likely to produce significant results on other statistical tests.

The canonical correlation analysis included comparisons of environmental conceptualization with all three groups of independent variables (demographic, environmental experience, personality) in all possible combinations. In order to analyze systematically all possible relationships, the groups of variables were organized into sets following a procedure recommended by Cohen and Cohen (1975: Chapter 4). The sets of variables analyzed by canonical correlations (CANCORR) are as follows:

1. Environmental Conceptualization vs. Demographic variables (group 1), Environmental Experience variables (group 2) and Personality variables (group 3).
2. Environmental Conceptualization vs. Demographic variables (group 1) and Environmental Experience variables (group 2).
3. Environmental Conceptualization vs. Demographic variables (group 1) and Personality variables (group 3)
4. Environmental Conceptualization vs. Environmental Experience variables (group 2) and Personality variables (group 3).
5. Environmental Conceptualization vs. Demographic variables only (group 1).
6. Environmental Conceptualization vs. Environ-

- mental Experience variables only (group 2),
7. Environmental Conceptualization vs. Personality variables only (group 3).

This analysis procedure made it possible to consider all groups of variables as sets of independent (i.e., predictor) variables which could be evaluated against each other. The statistical tests conducted for this study tested the relationships among these groups of variables and among the variables within each of the above groups,

The canonical correlation statistic produces results which indicate a) the statistical significance of the overall model (i.e., the groups of variables being tested as described above); b) the statistical significance for relationships of variables within the overall model. The following tables indicate these two types of statistical results for canonical correlations.

Table 16 indicates the statistical significance of the variance in the overall models (i.e., sets of variable groups) that were tested. For example, table 16 shows that when environmental conceptualizations are compared with demographic, environmental and personality variables (groups 1, 2 and 3 shown in the first row of table 16), there were two canonical variates that were statistically significant (vector 1, $PR > F = .0017$; vector 2, $PR > F = .03$). Other groups of variables that are statistically significant when testing the overall model can be identified by inspection of table 16.

TABLE 16

CANONICAL CORRELATIONS OF VARIABLE GROUPS SHOWING STATISTICAL SIGNIFICANCE OF OVERALL MODEL

Variable Groups (Name and Group Number)	F Statistic		Degree of Freedom (Numerator)		Degree of Freedom (Denominator)		Prob > F =	
	Vector 1	Vector 2	Vector 1	Vector 2	Vector 1	Vector 2	Vector 1	Vector 2
Environmental Conceptualization vs. Demographic (1), Environmental (2) and Personality (3)	1.5091	1.3569	90	68	2333.1	1889.9	0.0017	0.0296
Environmental Conceptualization vs. Demographic (1) and Environmental (2)	1.3689	-	60	-	2284.2	-	0.0327	-
Environmental Conceptualization vs. Demographic (1) and Personality (3)	1.4967	1.3426	50	36	2324.8	1912.9	0.0141	-
Environmental Conceptualization vs. Environmental (2) and Personality (3)	1.5368	1.2774	70	52	2332.2	1899.9	0.0031	0.0897
Environmental Conceptualization vs. Demographic (1)	1.4475	-	20	-	1712.	-	0.0906	-
Environmental Conceptualization vs. Environmental (2)	1.4887	-	40	-	2164.8	-	0.0254	-
Environmental Conceptualization vs. Personality (3)	1.4213	-	30	-	2074.	-	0.0649	-

Tables 17-23 provide summaries of the vector loading for each variable in the groups tested. These vector loadings are the basis for the statistical significance shown in table 16. Generally, numerically higher vector loadings (either positive or negative) contribute to higher statistical significance. Thus, if an overall model is statistically significant in table 16, tables 17-23 will indicate which pattern of variables contributes to that significance.

When interpreting tables 17-23, it should be kept in mind that when the vector loadings associated with two variables have the same sign (+ or -), then an increase in one variable is associated with an increase in the other variable. When variables have signs that are not the same, then an increase in one variable is associated with a decrease in the other variable.

For example, table 17 shows the results when environmental conceptualization is compared with demographic, environmental experience and personality variables (groups 1, 2 and 3). In the first column of this table environmental conceptualizations which include only physical terms (i.e., NCHERR category S = 0, P > 0 with a vector loading of -1.09) is associated with prior house (.35), present house (-.66), AVL Economic values (.38), AVL Religious values (.46) and Barron-Welsh (.38). These results indicate that people who have included only physical words and phrases in their descriptions of suburban housing are likely to have lived in a suburban house most of their lives,

TABLE 17

CANONICAL CORRELATION VECTOR LOADING FOR DEMOGRAPHIC, ENVIRONMENTAL EXPERIENCE
AND PERSONALITY VARIABLES VS. ENVIRONMENTAL CONCEPTUALIZATION (NCHERR)
(VARIABLE GROUPS 1, 2 AND 3 VS. GROUP 4)

Variables	Vector Loading for Categories of Environmental Conceptualization											
	V E C T O R 1						V E C T O R 2					
	S=0 P>0	P>S	P=S	P<S	P=0 S>0	P=0 S=0	S=0 P>0	P>S	P=S	P<S	P=0 S>0	P=0 S=0
NCHERR Loading	-1.09	-.59			-.40	-.81	-.66	-.55			-.67	.30
DEMOGRAPHIC VARIABLES												
Age							.51	.51			.51	.51
Income												
Occupation												
ENVIRONMENTAL EXPERIENCE VARIABLES												
Child House							-.44	-.44			-.44	-.44
Prior House	.35	.35			.35	.35						
Present House	-.66	-.66			-.66	-.66						
Ideal House												
PERSONALITY VARIABLES												
AVL Theoretical							.60	.60			.60	.60
AVL Economic	.38	.38			.38	.38						
AVL Aesthetic												
AVL Social												
AVL Political												
AVL Religious	.46	.46			.46	.46						
Barron-Welsh	.38	.38			.38	.38						

TABLE 18

CANONICAL CORRELATION VECTOR LOADINGS FOR DEMOGRAPHIC AND ENVIRONMENTAL
EXPERIENCE VARIABLES VS. ENVIRONMENTAL CONCEPTUALIZATION (NCHERR)
(VARIABLE GROUPS 1 AND 2 VS. GROUP 4)

Variables	Vector Loadings for Categories of Environmental Conceptualization											
	VECTOR 1						VECTOR 2					
	S=0 P>0	P>S	P=S	P<S	P=0 S>0	P=0 S=0	S=0 P>0	P>S	P=S	P<S	P=0 S>0	P=0 S=0
NCHERR Loading	.82	.48				1.04						
DEMOGRAPHIC VARIABLES												
Age Income Education Occupation	.38	.38				.38						
ENVIRONMENTAL EXPERIENCE VARIABLES												
Child House Prior House Present House Ideal House	.62	.62				.62						

TABLE 19

CANONICAL CORRELATION VECTOR LOADINGS FOR DEMOGRAPHIC AND PERSONALITY
 VARIABLES VS. ENVIRONMENTAL CONCEPTUALIZATION (NCHERR)
 (VARIABLE GROUPS 1 AND 3 VS. GROUP 4)

Variables	Vector Loading for Categories of Environmental Conceptualization											
	VECTOR 1						VECTOR 2					
	S=0 P>0	P>S	P=S	P<S	P=0 S>0	P=0 S=0	S=0 P>0	P>S	P=S	P<S	P=0 S>0	P=0 S=0
NCHERR Loading			.52			.84						
DEMOGRAPHIC VARIABLES												
Age Income Education Occupation			.45			.45						
PERSONALITY VARIABLES												
AVL Theoretical			-.53			-.53						
AVL Economic			.60			.60						
AVL Aesthetic												
AVL Social												
AVL Political												
AVL Religious												
Barron-Welsh			.51			.51						

TABLE 20

CANONICAL CORRELATION VECTOR LOADINGS FOR ENVIRONMENTAL EXPERIENCE AND
PERSONALITY VARIABLES VS. ENVIRONMENTAL CONCEPTUALIZATION (NCHERR)
(VARIABLE GROUPS 2 AND 3 VS. GROUP 4)

Variables	Vector Loadings for Categories of Environmental Conceptualization											
	VECTOR 1						VECTOR 2					
	S=0 P>0	P>S	P=S	P<S	P=0 S>0	P=0 S=0	S=0 P>0	P>S	P=S	P<S	P=0 S>0	P=0 S=0
NCHERR Loading	-1.06	-.59			-.39	-.64	1.64	1.02	1.32		1.27	
ENVIRONMENTAL EXPERIENCE VARIABLES												
Child House							.71	.71	.71		.71	
Prior House	.38	.38			.38	.38	-.36	-.36	-.36		-.36	
Present House	-.67	-.67			-.67	-.67						
Ideal House	.38	.38			.38	.38						
PERSONALITY VARIABLES												
AVL Theoretical							.61	.61	.61		.61	
AVL Economic	.45	.45			.45	.45						
AVL Aesthetic												
AVL Social												
AVL Political												
AVL Religious	.42	.42			.42	.42	.36	.36	.36		.36	
Barron-Welsh	.40	.40			.40	.40						

TABLE 21

CANONICAL CORRELATION VECTOR LOADINGS FOR DEMOGRAPHIC VARIABLES
 VS. ENVIRONMENTAL CONCEPTUALIZATION (NCHERR)
 (VARIABLE GROUP 1 VS. GROUP 4)

Variables	V E C T O R 1						V E C T O R 2					
	S=0 P>0	P>S	P=S	P<S	P=0 S>0	P=0 S=0	S=0 P>S	P>S	P S	P<S	P=0 S>0	P=0 S=0
NCHERR Loading	.40	.36				1.1						
Demographic Variables												
Age	.64	.64				.64						
Income	.45	.45				.45						
Education	.44	-.44				-.44						
Occupation	.43	-.43				-.43						

TABLE 22

CANONICAL CORRELATION VECTOR LOADINGS FOR ENVIRONMENTAL EXPERIENCE
 VARIABLES VS. ENVIRONMENTAL CONCEPTUALIZATION (NCHERR)
 (VARIABLE GROUP 2 VS. GROUP 4)

Variables	Vector Loadings for Categories of Environmental Conceptualization											
	VECTOR 1						VECTOR 2					
	S=0 P>0	P>S	P=S	P<S	P=0 S>0	P=0 S=0	S=0 P>0	P>S	P=S	P<S	P=0 S>0	P=0 S=0
NCHERR Loading	-.60	-.40				-.71						
Environmental Experience Variables												
Child House	.36	.36				.36						
Prior House												
Present House	-.75	-.75				-.75						
Ideal House												

TABLE 23

CANONICAL CORRELATION VECTOR LOADINGS FOR PERSONALITY
 VARIABLES VS. ENVIRONMENTAL CONCEPTUALIZATION (NCHERR)
 (VARIABLE GROUP 3 VS. GROUP 4)

Variables	Vector Loadings for Categories of Environmental Conceptualizations											
	V E C T O R 1						V E C T O R 2					
	S=0 P>0	P>0	P=S	P<S	P=0 P>0	P=0 S=0	S=0 P>0	P>S	P=S	P<S	P=0 S>0	P=0 S=0
NCHERR Loading	-.35		.64									
Personality Variables												
AVL Theoretical	.49		.49									
AVL Economic	.77		.77									
AVL Aesthetic												
AVL Social												
AVL Political												
AVL Religious												
Barron-Welsh	.53		.53									

presently live in urban housing, and are likely to have low economic values, low religious values and low creativity.

It should be noted that the pattern of independent variables described above is also associated with people who use more physical than social words and phrases in their descriptions ($P>S$; $-.59$), people who exclude physical words and phrases in their descriptions ($P=0, S>0$; $-.40$), and people who exclude both physical and social words and phrases in their descriptions ($P=0, S=0$; $-.81$). All of these associations are statistically significant ($PR>F = .002$) as shown in the first row of table 16. Tables 17-23 would all be interpreted as described above.

The canonical correlation results presented above indicate relationships among various patterns of variables. Generally, these patterns of relationships support the argument in the introduction of this paper that environmental conceptualizations are influenced by combinations of personal, social and environmental factors. In order to explore these relationships in more detail, and to provide a more thorough test of the hypotheses of this study, MANOVA tests were conducted for selected combinations of variables. These MANOVA tests provide statistical analysis of the interactions, as well as main effects, of relationships among the selected variables.

The combinations of variables selected for MANOVA testing are primarily based on the hypotheses of this study, which involved environmental conceptualizations, value ori-

entations and preference for visual complexity as an aspect of creativity (i.e., Hypotheses 1 through 3). In addition to these variables, occupation and education were included in the MANOVA tests due to the importance of these variables to the conceptual interests of this study. Also, the environmental variables (childhood house, prior house, present house and ideal house) were included in the MANOVA tests because they had significant effects on results of canonical correlations and it seemed at least plausible that past and present housing might have some bearing on environmental conceptualizations.

The results of these MANOVA tests are shown in tables 24 through 30. The first three of these tables (24-26) summarize MANOVA results where NEWCHERR is used as a measure of environmental conceptualization, NEWCHERR is a categorical measure similar to the measure used for environmental conceptualizations (NCHERR) in canonical correlations. The use of NEWCHERR with MANOVA tests helps to confirm that the MANOVA results are similar to the previous CANCORR results. Once this similarity is established, MANOVA tests are conducted again using NPERPD, NPERSD and NPEROD as measures of environmental conceptualization in place of NEWCHERR. These results are shown in tables 27-30. The use of NPERPD, NPERSD and NPEROD as measures of environmental conceptualization in MANOVA tests provides more detailed statistical analysis of interactions of variables for three separate aspects of environmental conceptualizations. The development of these

TABLE 24

MANOVA RESULTS SHOWING STATISTICAL SIGNIFICANCE WHEN
 VARIABLES ARE TESTED IN GROUPS
 (With NEWCHERR AS A MEASURE OF EN-
 VIRONMENTAL CONCEPTUALIZATION)

Variables	Levels of Significance					
	Hotelling-Lawley		Pillai's Trace		Wilk's Criterion	
	F Value	PR>F	F Value	PR>F	F Value	PR>F
NEWCHERR X Age, Education, Occupation, AVL Aesthetic, AVL Theoretical, AVL Social, AVL Religious, AVL Political, AVL Economic, Barron-Welsh	1.42	0,0282	1,42	0,0283	1.42	0.0282
NEWCHERR X AVL Theoretical, AVL Economic, AVL Aesthetic, AVL Social	1.45	0,0891	1,45	0,0886	1.45	0.0888
NEWCHERR X Occupation, AVL Aesthetic, AVL Theoretical, AVL Social, AVL Religious, AVL Political, AVL Economic	1.24	0,1562	1.25	0.1526	1.24	0,1544

TABLE 25

MANOVA RESULTS SHOWING INDIVIDUAL
EFFECTS OF DEPENDENT VARIABLES
(WITH NEWCHERR AS A MEASURE OF
ENVIRONMENTAL CONCEPTUALIZATIONS)

Dependent Variables	F Value	PR > F
Age	1,95	0,0833
Income	2,28	0,0448
Education	0,66	0,6559
Occupation	1,19	0,3127
AVL Aesthetic	0,45	0,8146
AVL Theoretical	2,50	0,0296
AVL Social	0,87	0,5037
AVL Religious	0,76	0,5814
AVL Political	0,21	0,9548
AVL Economic	2,10	0,0630
Barron-Welsh	1,20	0,3074

Note: F Values and Significance Values listed in this table are taken from a MANOVA test where all dependent variables were included. In other MANOVA tests where fewer dependent variables were included, the F values and significant levels were similar to those listed above.

TABLE 26

MANOVA RESULTS SHOWING MEAN DIFFERENCES FOR CATEGORIES OF NEWCHERR
(WITH NEWCHERR AS A MEASURE OF ENVIRONMENTAL CONCEPTUALIZATION)

Dependent Variables	Means of Dependent Variables						Significant Differences
	P=0, S=0 (1)	P=0, S>0 (2)	P>0, S=0 (3)	P=S (4)	P>S (5)	P<S (6)	
Age	2.26	1.80	1.97	1.81	1.92	1.85	1 > 2, 3, 4, 5, 6
Education	1.96	1.97	2.08	2.01	1.92	2.05	None
Occupation	1.36	1.39	1.44	1.48	1.30	1.30	None
AVL Aesthetic	2.17	2.15	2.17	2.18	2.35	2.35	None
AVL Theoretical	1.97	2.22	2.13	1.96	2.16	1.80	2 > 1, 3, 6; 2, 5 > 6
AVL Social	1.83	1.83	1.85	1.88	1.62	1.85	None
AVL Religious	1.51	1.56	1.57	1.68	1.65	1.70	None
AVL Political	1.83	1.88	1.92	1.89	1.86	1.190	4, 1 > 3, 6
AVL Economic	2.00	1.85	1.83	2.01	1.92	1.60	4 > 5
Barron-Welsh	2.08	1.95	2.00	2.16	1.86	2.10	

NOTE: Means of dependent variables for each category of environmental conceptualization are based on Duncan's Statistic Post-hoc Multiple Comparisons.

TABLE 27

MANOVA RESULTS SHOWING STATISTICAL SIGNIFICANCE WHEN VARIABLES ARE TESTED IN GROUPS
(WITH NPERPD, NPERSD AND NPEROD AS MEASURES OF ENVIRONMENTAL CONCEPTUALIZATION)

	Levels of Significance					
	Hotelling-Lawley		Pillai's Trace		Wilk's Criterion	
	F Value	PR>F	F Value	PR>F	F Value	PR>F
NPERPD, NPERSD, NPEROD vs. Occupation	1.33	0.2619	1.33	0.2619	1.33	0.2619
	0.95	0.4614	0.95	0.4612	0.95	0.4613
	1.93	0.0727	1.92	0.0739	1.93	0.0733
	1.57	0.1521	1.56	0.1543	1.57	0.1532
	0.85	0.5322	0.85	0.5296	0.85	0.5309
	1.17	0.3006	1.16	0.3079	1.16	0.3042
	1.30	0.2145	1.30	0.2104	1.30	0.2124
NPERPD, NPERSD, NPEROD vs. Education	2.39	0.0587	2.49	0.0597	2.49	0.0587
	2.06	0.0551	2.05	0.0561	2.06	0.0556
	1.21	0.2975	1.22	0.2955	1.21	0.2965
	1.01	0.4151	1.01	0.4146	1.01	0.4148
	1.17	0.3202	1.17	0.3179	1.17	0.3191
	1.39	0.1631	1.39	0.1628	1.39	0.1629
	0.92	0.5260	0.92	0.5243	0.92	0.5252
NPERPD, NPERSD, NPEROD vs. AVL Theoretical	2.85	0.0364	2.43	0.0364	2.85	0.0264
	2.43	0.0247	2.32	0.0244	2.43	0.5979
	0.76	0.5978	0.76	0.5981	0.76	0.5979
	2.70	0.0132	2.69	0.0134	2.70	0.0133
	1.08	0.3697	1.09	0.3676	1.09	0.3687
	1.66	0.0702	1.66	0.0704	1.66	0.0703
	1.78	0.0458	1.78	0.0467	1.78	0.0462
NPERPD, NPERSD, NPEROD vs. OCC x EDU	1.73	0.0424	2.73	0.0424	2.73	0.0424
	0.12	0.9937	0.12	0.9936	0.12	0.9937
	0.62	0.7168	0.62	0.7162	0.62	0.7165
	1.18	0.3140	1.19	0.3114	1.18	0.3127
	0.36	0.9049	0.36	0.9042	0.36	0.9046
	0.43	0.9513	0.64	0.8128	0.63	0.8138
	0.63	0.8148	0.64	0.8128	0.63	0.8138
NPERPD, NPERSD, NPEROD vs. OCC x AVLT	1.42	0.1281	1.42	0.1296	1.42	0.1288
	1.97	0.0141	1.96	0.0150	1.97	0.0145
	1.59	0.0680	1.59	0.0684	1.59	0.0682
	1.29	0.1969	1.29	0.1966	1.29	0.1968
NPERPD, NPERSD, NPEROD vs. OCC x AVLT x BW	1.42	0.1281	1.42	0.1296	1.42	0.1288
	1.97	0.0141	1.96	0.0150	1.97	0.0145
	1.59	0.0680	1.59	0.0684	1.59	0.0682
	1.29	0.1969	1.29	0.1966	1.29	0.1968
NPERPD, NPERSD, NPEROD vs. OCC x AVLA	1.42	0.1281	1.42	0.1296	1.42	0.1288
	1.97	0.0141	1.96	0.0150	1.97	0.0145
	1.59	0.0680	1.59	0.0684	1.59	0.0682
	1.29	0.1969	1.29	0.1966	1.29	0.1968
NPERPD, NPERSD, NPEROD vs. OCC x AVLA x BW	1.42	0.1281	1.42	0.1296	1.42	0.1288
	1.97	0.0141	1.96	0.0150	1.97	0.0145
	1.59	0.0680	1.59	0.0684	1.59	0.0682
	1.29	0.1969	1.29	0.1966	1.29	0.1968
NPERPD, NPERSD, NPEROD vs. Childhood House	1.42	0.1281	1.42	0.1296	1.42	0.1288
	1.97	0.0141	1.96	0.0150	1.97	0.0145
	1.59	0.0680	1.59	0.0684	1.59	0.0682
	1.29	0.1969	1.29	0.1966	1.29	0.1968
NPERPD, NPERSD, NPEROD vs. Prior House	1.42	0.1281	1.42	0.1296	1.42	0.1288
	1.97	0.0141	1.96	0.0150	1.97	0.0145
	1.59	0.0680	1.59	0.0684	1.59	0.0682
	1.29	0.1969	1.29	0.1966	1.29	0.1968
NPERPD, NPERSD, NPEROD vs. Present House	1.42	0.1281	1.42	0.1296	1.42	0.1288
	1.97	0.0141	1.96	0.0150	1.97	0.0145
	1.59	0.0680	1.59	0.0684	1.59	0.0682
	1.29	0.1969	1.29	0.1966	1.29	0.1968
NPERPD, NPERSD, NPEROD vs. Ideal House	1.42	0.1281	1.42	0.1296	1.42	0.1288
	1.97	0.0141	1.96	0.0150	1.97	0.0145
	1.59	0.0680	1.59	0.0684	1.59	0.0682
	1.29	0.1969	1.29	0.1966	1.29	0.1968

TABLE 28

MANOVA RESULTS SHOWING INDIVIDUAL EFFECTS OF DEPENDENT VARIABLES
(WITH NPERPD, NPERSD, AND NPEROD AS MEASURES OF
ENVIRONMENTAL CONCEPTUALIZATION)

Independent Variables	Levels of Significance					
	NPERPD		NPERSD		NPEROD	
	F Value	PR>F	F Value	PR>F	F Value	PR>F
Education	0,57	0.5659	1.29	0.2750	2.05	0.1299
Occupation	3,29	0.0705	0.07	0.7894	3,29	0,0703
Childhood House	0,68	0,6387	0.61	0.6935	0.92	0,4674
Prior House	1,77	0.1162	1.24	0.2880	1.37	0,2345
Present House	2,00	0.0768	2.78	0.0173	1.01	0.4101
Ideal House	1,91	0.0899	1,44	0.2079	1.76	0,1176
AVL Aesthetic	2,05	0.1303	1,79	0.1634	1.34	0,2617
AVL Theoretical	3,31	0.0372	2,58	0.0766	0,29	0,7491
AVL Social	0,01	0.9858	0,33	0.7171	0.07	0,9343
Barron-Welsh	1,83	0.1615	0.17	0.8445	1.19	0,3047
Education X Occupation	3,25	0.3940	0.00	0.9993	4.35	0,0133
Education X AVL Theoretical	0,66	0.6234	2,52	0.0406	0.23	0,9225
Occupation X AVL Aesthetic	0,51	0.5981	5,63	0.0038	1,53	0.2182
Occupation X AVL Theoretical	1,26	0.2855	0,47	0.6257	1,12	0,3280
Occupation X AVL Social	0,76	0.4705	1,75	0.1743	0,92	0,4004
Occupation X Barron-Welsh	0,44	0.6109	2,15	0.1173	0.06	0,9386
Barron-Welsh X AVL Aesthetic	1,60	0.1721	1,83	0.1226	0.88	0.4786
Barron-Welsh X AVL Theoretical	0,49	0.7466	1,31	0.2648	0.76	0,5541
Barron-Welsh X AVL Social	0,30	0.8747	0,97	0.4226	0.17	0,9519
Occupation X Education X AVL Theoretical	1,79	0.1291	1,25	0.2892	1,72	0,1441
Occupation X Barron-Welsh X AVL Theoretical	1,50	0.2022	0,32	0.8663	1,00	0,4086
Occupation X Barron-Welsh X AVL Aesthetic	1,59	0.1753	3,45	0.0085	1,47	0.2110
Occupation X Barron-Welsh X AVL Social	0,55	0.7004	0,68	0.6058	1,03	0.3903

TABLE 29

MANOVA RESULTS SHOWING MEAN DIFFERENCES FOR CATEGORIES OF
 SELECTED DEMOGRAPHIC AND PERSONALITY VARIABLES
 (WITH NPERPD, NPERSD AND NPEROD AS MEASURES
 OF ENVIRONMENTAL CONCEPTUALIZATION)

Independent Variables	Independent Variable Categories	Means of Dependent Variables		
		NPERPD	NPERSD	NPEROD
Education	No degree (1)	2.71	1.75	2.87
	Bach. degree (2)	2.35	1.66	3.28
	Adv. degree (3)	2.63	1.59	3.05
	Significant differences	1,3>2	None	2>3,1
Occupation	Architect (1)	2.31	1.66	3.32
	Non-Architect (2)	2.78	1.66	2.86
	Significant differences	2>1	None	1>2
AVL Theoretical	Below 50% (1)	2.23	1.79	3.26
	Within 50% (2)	2.57	1.62	3.09
	Above 50% (3)	2.56	1.67	3.12
	Significant differences	2,3>1	None	None
AVL Aesthetic	Within & Below 50% (1)	2.70	1.62	3.03
	Above 50% & Below 82% (2)	2.54	1.74	3.00
	Above 82% (3)	2.35	1.64	3.25
	Significant differences	1>3	None	None
AVL Social	Below 50% (1)	2.47	1.66	3.16
	Within 50% (2)	2.49	1.68	3.12
	Above 50% (3)	2.56	1.59	3.13
	Significant differences	None	None	None
Barron-Welsh	0 - 28 (1)	2.74	1.61	2.92
	29 - 42 (2)	2.48	1.65	3.14
	43 - 86 (3)	2.32	1.70	3.33
	Significant differences	1>2,3	None	3>1

TABLE 30

MANOVA RESULTS SHOWING MEAN DIFFERENCES FOR CATEGORIES OF ENVIRONMENTAL EXPERIENCE VARIABLES (WITH NPERPD, NPERSD, AND NPEROD AS MEASURES OF ENVIRONMENTAL CONCEPTUALIZATION)

Independent Variables	Independent Variables Categories	Means of Dependent Variables		
		NPERPD	NPERSD	NPEROD
Childhood House	Single Family (1)	2.50	1.68	3.17
	Urban Row (2)	2.66	1.74	2.77
	Sub. Apt. (3)	3.00	1.00	3.00
	Urb. Apt. (4)	2.53	1.58	2.95
	Other (5)	2.34	1.57	3.23
	Significant differences	None	None	None
Prior House	Single Family (1)	2.52	1.63	3.18
	Urban Row (2)	2.57	1.59	3.07
	Sub. Apt. (3)	3.10	1.86	2.60
	Urb. Apt. (4)	1.90	1.98	3.38
	Other (5)	2.33		2.86
	Significant differences	4>1,2,3	None	None
Present House	Single Family (1)	2.55	1.57	3.14
	Urban Row (2)	2.25	1.68	3.35
	Sub. Apt. (3)	2.85	1.54	2.94
	Urb. Apt. (4)	2.41	1.62	3.16
	Other (5)	2.34	2.03	3.04
	Significant differences	3>2	5>1,2,3,4	None
Ideal House	Single Family (1)	2.54	1.60	3.13
	Urban Row (2)	2.34	1.63	3.31
	Sub. Apt. (3)	3.30	1.80	2.30
	Urb. Apt. (4)	1.79	1.86	3.64
	Other (5)	2.47	1.85	3.01
	Significant differences	3>1,2,4,5	None	4,2,1>3

various measures of environmental conceptualization is described in the Methods section of this paper.

Table 24 shows MANOVA results where NEWCHERR is the measure of environmental conceptualization. This table indicates the F value and level of significance ($PR > F$) when variables are tested in groups. For example, the first row of table 24 indicates that when NEWCHERR (as an independent variable) is tested against age, education, occupation, AVL (all parts) and Barron-Welsh, the variation among these variables as a group is significant at .03 level with an F value of 1.42. Note that this variation is tested by three separate methods: Hotelling-Lawley Trace (see Pillai, 1960); Pillai's Trace (Pillai, 1960) and Wilks' Criterion (See Rao, 1965).²⁴

Table 25 shows another aspect of the MANOVA results where NEWCHERR is the measure of environmental conceptualizations. In this table, the individual effects of each of the dependent variables are shown. For example, when age is one of the group of variables tested against NEWCHERR (as an independent variable), the effect of age is significant at a .08 level with an F value of 1.95.

While table 24 shows the significance of the overall groups of variables, and table 25 shows the significance of effects of individual variables, neither of these tables show the direction of these effects. Table 26 is organized

²⁴It should be noted that since MANOVA does not accommodate nominal dependent variables, environmental conceptualization (NEWCHERR) was tested as an independent variable.

to show the statistical significance of differences in means for all dependent variables in each environmental conceptualization category. This table indicates which categories of environmental conceptualization have a significantly higher (or lower) mean for any dependent variable tested by MANOVA.

For example, AVL theoretical values show a relationship with NEWCHERR in table 25 that is statistically significant ($PR > F = .03$). Table 26 shows that people who have no physical terms in their descriptions of suburban housing (i.e., NEWCHERR category 2) have significantly higher scores on AVL theoretical than people in NEWCHERR categories 1, 3 and 6. In addition, people with no physical terms (i.e., NEWCHERR category 2) and people with more physical than social terms in their descriptions (i.e., NEWCHERR category 5) have significantly higher AVL theoretical scores than people in NEWCHERR category 6.

The results of MANOVA tests using NEWCHERR as a measure of environmental conceptualization are generally similar to CANCERR results and therefore provide a basis for further MANOVA testing using NPERPD, NPERSD and NPEROD as measures of environmental conceptualization. These further tests will provide more detailed analysis of interactions of variables with environmental conceptualizations, and help clarify contradictions in previous results.

The NPERPD, NPERSD and NPEROD measures provide separate numerical scales for the physical, social and "other"

components of environmental conceptualizations. These continuous scales are more sensitive to statistical measures of variation than the NCHERR and NEWCHERR measures for environmental conceptualization. As previously described in the Methods section of this paper, percentage of physical environmental conceptualizations are measured by NPERPD; percentage of social environmental conceptualizations are measured by NPERSD; and percentage of "other" environmental conceptualizations are measured by NPEROD.

Table 27 shows a summary of MANOVA results where NPERPD, NPERSD, and NPEROD are used collectively as a measure of environmental conceptualization. This table is similar to table 24 in that it shows the F values and significance levels (using Hotelling-Lawley Trace, Pillai's Trace and Wilks' Criterion) when variables are tested in various groupings. However, in this case, NPERPD, NPERSD and NPEROD are treated as dependent variables rather than as independent variables as was done with NEWCHERR.

For example, when the NPERPD, NPERSD and NPEROD measures of environmental conceptualization (as dependent variables) are tested collectively with occupation, education and AVL theoretical, the level of significance for occupation is .26 with an F value of 1.33. The level of significance for the interaction of occupation, education and AVL theoretical is .21 with an F value of 1.30,

Table 28 shows another aspect of MANOVA results where NPERPD, NPERSD and NPEROD are the measures of environmental

conceptualization. In this table, the effects of each independent variable (and their interactions) are shown for NPERPD, NPERSD and NPEROD separately. For example, the F value and level of significance ($PR > F$) for the effects of occupation on physical environmental conceptualizations (NPEROD) are 3.29 and 0.07 respectively. Similarly, the effects of the interaction of occupation, Barron-Welsh and AVL social on "other" environmental conceptualizations (NPEROD) has an F value of 1.03 and a level of significance of 0.39 (as shown on the last line of table 28).

Tables 29 and 30 indicate another aspect of MANOVA results where NPERPD, NPERSD and NPEROD are measures of environmental conceptualization. These tables show the statistical significance of differences in means for NPERPD, NPERSD and NPEROD separately for each category of the independent variables tested. For example, AVL theoretical was statistically significant in table 28 ($PR > F = .04$) with relation to physical aspects of environmental conceptualization (NPERPD), but not significantly related to social or "other" aspects of environmental conceptualizations (NPERSD and NPEROD). Table 29 indicates the direction of this relationship between AVL theoretical and physical aspects of environmental conceptualization (NPERPD). Table 29 shows that people who have AVL theoretical scores within 50% of the national population (AVL theoretical category 2) and people who have AVL theoretical scores above 82% of the national population (AVL theoretical category 3) have higher

mean percentage of physical terms in their descriptions of suburban housing (NPERPD) than people in category 1 of AVL theoretical.

Note that these MANOVA results for AVL theoretical using NPERPD, NPERSD and NPEROD as measures of environmental conceptualization appear to contradict the MANOVA results for AVL theoretical using NEWCHERR as a measure of environmental conceptualization discussed above. While the NPERPD, NPERSD, NPEROD is a more accurate measure and more likely to indicate true relationships, these results should be further tested in order to resolve such contradictions. In order to provide further investigation of relationships between variables, ANOVA tests were conducted with NPERPD, NPERSD and NPEROD as measures of environmental conceptualization against all independent (i.e., predictor) variables that indicated significant effects in either canonical correlations or MANOVA tests. A summary of the results of these ANOVA tests is shown in tables 31-43.

Tables 31-43 are organized to show the F value and level of significance for all variables tested with ANOVA. The left hand columns of the tables indicate the group of independent variables included in each test, then list the variables and their interactions. Each of these variables and interactions has an F value and level of significance for each of the measures of environmental conceptualization (NPERPD, NPERSD, NPEROD). For example, when occupation, education, and AVL theoretical are tested with NPERPD, NPERSD

TABLE 31

ANOVA RESULTS FOR OCCUPATION, EDUCATION AND AVL
THEORETICAL VS. ENVIRONMENTAL CONCEPTUALIZATION
(WITH NPERPD, NPERSD AND NPEROD AS MEASURES OF
ENVIRONMENTAL CONCEPTUALIZATION)

Independent Variables	Levels of Significance					
	NPERPD		NPERSD		NPEROD	
	F Value	PR > F	F Value	PR > F	F Value	PR > F
Occupation	3.29	0.0705	0.07	0.7844	3.29	0.0703
Education	0.57	0.5659	1.29	0.2750	2.05	0.1299
AVL Theoretical	3.31	0.0372	2.58	0.766	0.29	0.7491
Occupation x Education	3.25	0.0344	0.00	0.9993	4.35	0.0133
Occupation x AVL Theoretical	1.26	0.2855	0.47	0.6257	1.12	0.3280
Education x AVL Theoretical	0.66	0.6234	2.52	0.0406	0.23	0.9225
Occupation x Education x AVL Theoretical	1.79	0.1291	1.25	0.2892	1.72	0.1441

TABLE 32

ANOVA RESULTS FOR OCCUPATION, AVL THEORETICAL AND
BARRON-WELSH VS. ENVIRONMENTAL CONCEPTUALIZATION
(WITH NPERPD, NPERSD AND NPEROD AS MEASURES
OF ENVIRONMENTAL CONCEPTUALIZATION)

Independent Variables	Levels of Significance					
	NPERPD		NPERSD		NPEROD	
	F Value	PR > F	F Value	PR > F	F Value	PR > F
Occupation	5.73	0.0170	0.03	0.8614	7.20	0.0075
AVL Theoretical	2.88	0.0573	2.12	0.1216	0.25	0.7774
Barron-Welsh	1.83	0.1615	0.17	0.8445	1.19	0.6559
Occupation x AVL Theoretical	1.36	0.2578	0.41	0.6630	0.42	0.6559
Occupation x Barron-Welsh	0.49	0.6109	2.15	0.1173	0.06	0.9386
AVL Theoretical x Barron-Welsh	0.49	0.7466	1.31	0.2648	0.76	0.5541
Occupation x AVL Theoretical x Barron-Welsh	1.50	0.2022	0.32	0.8663	1.00	0.4086

TABLE 33

ANOVA RESULTS FOR OCCUPATION, AVL SOCIAL AND BARRON-WELSH
 VS. ENVIRONMENTAL CONCEPTUALIZATION
 (WITH NPERPD, NPERSD AND NPEROD AS MEAS-
 URES OF ENVIRONMENTAL CONCEPTUALIZATION)

Independent Variables	Levels of Significance					
	NPERPD		NPERSD		NPEROD	
	F Value	PR > F	F Value	PR > F	F Value	PR > F
Occupation	6.25	0.0127	0.35	0.5556	6.59	0.0106
AVL Social	0.01	0.9858	0.33	0.7171	0.07	0.9343
Barron-Welsh	1.24	0.2905	0.05	0.9539	1.68	0.1885
Occupation x AVL Social	0.76	0.4705	1.75	0.1743	0.92	0.4004
Occupation x Barron-Welsh	0.27	0.7604	0.80	0.4507	0.25	0.7808
AVL Social x Barron-Welsh	0.30	0.8747	0.97	0.4226	0.17	0.9519
Occupation x AVL Social x Barron-Welsh	0.55	0.7004	0.68	0.6058	1.03	0.8903

TABLE 34

ANOVA RESULTS FOR OCCUPATION, AVL AESTHETIC AND BARRON-
WELSH VS. ENVIRONMENTAL CONCEPTUALIZATION
(WITH NPERPD, NPERSD AND NPEROD AS MEASURES
OF ENVIRONMENTAL CONCEPTUALIZATION)

Independent Variables	Levels of Significance					
	NPERPD		NPERSD		NPEROD	
	F Value	PR > F	F Value	PR > F	F Value	PR > F
Occupation	6.86	0.0091	0.06	0.9011	7.73	0.0056
AVL Aesthetic	2.04	0.1311	1.74	0.1758	1.34	0.2617
Barron-Welsh	1.91	0.1497	0.34	0.7148	1.46	0.2667
Occupation x AVL Aesthetic	0.60	0.5471	5.73	0.0085	1.53	0.2182
Occupation x Barron-Welsh	0.80	0.4491	2.11	0.1223	0.05	0.4486
AVL Aesthetic x Barron- Welsh	1.64	0.1620	1.88	0.1126	0.88	0.4786
Occupation x AVL Aesthetic x Barron- Welsh	1.59	0.1766	3.32	0.0088	1.47	0.2110

TABLE 35

ANOVA RESULTS FOR OCCUPATION, AVL ECONOMIC AND BARRON-
WELSH VS. ENVIRONMENTAL CONCEPTUALIZATION (WITH NPERPD,
NPERSD AND NPEROD AS MEASURES OF
ENVIRONMENTAL CONCEPTUALIZATION)

Independent Variables	Levels of Significance					
	NPERPD		NPERSD		NPEROD	
	F Value	PR > F	F Value	PR > F	F Value	PR > F
Occupation	8.58	0.0036	0.23	0.6286	7.50	0.0064
AVL Economic	0.55	0.5745	0.94	0.3928	1.08	0.8411
Barron-Welsh	2.65	0.0716	0.22	0.7993	1.71	0.1814
Occupation x AVL Economic	0.11	0.8972	1.38	0.2535	0.07	0.9295
Occupation x Barron-Welsh	0.08	0.9190	1.29	0.2764	0.06	0.9457
AVL Economic x Barron- Welsh	0.62	0.6495	1.64	0.1622	1.61	0.1698
Occupation x AVL Economic x Barron- Welsh	1.17	0.3219	1.46	0.2133	0.86	0.4859

TABLE 36

ANOVA RESULTS FOR AGE, AVL THEORETICAL AND CHILDHOOD
HOUSE VS. ENVIRONMENTAL CONCEPTUALIZATION
(WITH NPERPD, NPERSD AND NPEROD AS MEASURES
OF ENVIRONMENTAL CONCEPTUALIZATION)

Independent Variables	Levels of Significance					
	NPERPD		NPERSD		NPEROD	
	F Value	PR > F	F Value	PR > F	F Value	PR > F
Age	0.05	0.9785	0.69	0.5645	0.27	0.8473
AVL Theoretical	2.26	0.1054	1.94	0.1455	0.40	0.6699
Childhood House	0.32	0.5719	0.17	0.6784	2.16	0.1420
Age x AVL Theoretical	1.50	0.1750	1.13	0.3459	0.60	0.7326
Age x Childhood House	0.37	0.7784	0.65	0.5883	0.22	0.8804
AVL Theoretical x Childhood House	0.43	0.6500	0.38	0.6819	1.10	0.3352
Age x AVL Theoretical x Childhood House	0.87	0.5193	0.81	0.5648	0.55	0.7686

TABLE 37

ANOVA RESULTS FOR AGE, AVL RELIGIOUS AND PRESENT
HOUSE VS. ENVIRONMENTAL CONCEPTUALIZATIONS
(WITH NPERPD, NPERSD AND NPEROD AS MEASURES
OF ENVIRONMENTAL CONCEPTUALIZATION)

Independent Variables	Levels of Significance					
	NPERPD		NPERSD		NPEROD	
	F Value	PR > F	F Value	PR > F	F Value	PR > F
Age	0.47	0.7050	2.19	0.0872	1.25	0.2909
AVL Religious	0.22	0.8042	2.64	0.0722	2.45	0.0872
Present House	0.10	0.7525	3.17	0.0756	1.10	0.2947
Age x AVL Religious	0.41	0.8737	0.85	0.5297	0.85	0.5376
Age x Present House	3.98	0.0082	0.88	0.7678	5.02	0.002
AVL Religious x Present House	0.14	0.8707	0.02	0.9809	0.45	0.6371
Age x AVL Religious x Present House	1.83	0.0917	0.40	0.8805	1.98	0.0664

TABLE 38

ANOVA RESULTS FOR BARRON - WELSH, AVL ECONOMIC AND
PRESENT HOUSE VS. ENVIRONMENTAL CONCEPTUALIZATION
(WITH NPERPD, NPERSD AND NPEROD AS MEASURES
OF ENVIRONMENTAL CONCEPTUALIZATION)

Independent Variables	Levels of Significance					
	NPERPD		NPERSD		NPEROD	
	F Value	PR > F	F Value	PR > F	F Value	PR > F
Barron-Welsh	2.16	0.1170	0.20	0.8198	1.95	0.1427
AVL Economic	0.73	0.4826	0.98	0.3761	1.61	0.2010
Present House	3.25	0.0719	2.73	0.0989	0.87	0.3522
Barron-Welsh x AVL Economic	0.34	0.8520	1.39	0.2368	1.68	0.1532
Barron-Welsh x Present House	1.44	0.2385	0.95	0.3871	1.78	0.1701
AVL Economic x Present House	0.31	0.7357	0.34	0.7133	0.34	0.7126
Barron-Welsh x AVL Economic x Present House	0.73	0.5693	0.85	0.4964	0.51	0.7261

TABLE 39

ANOVA RESULTS FOR BARRON-WELSH, AVL RELIGIOUS AND
PRESENT HOUSE VS. ENVIRONMENTAL CONCEPTUALIZATION
(WITH NPERPD, NPERSD AND NPEROD AS MEASURES
OF ENVIRONMENTAL CONCEPTUALIZATION)

Independent Variables	Levels of Significance					
	NPERPD		NPERSD		NPEROD	
	F Value	PR > F	F Value	PR > F	F Value	PR > F
Barron-Welsh	2.53	0.0803	0.40	0.6710	2.35	0.0960
AVL Religious	0.99	0.3733	2.46	0.0863	3.00	0.0505
Present House	7.70	0.0057	3.98	0.0467	1.63	0.2022
Barron-Welsh x AVL Religious	0.41	0.8026	0.73	0.7300	0.16	0.9567
Barron-Welsh x Present House	1.26	0.2850	2.12	0.1206	1.28	0.2863
AVL Religious x Present House	0.73	0.3806	0.20	0.8199	0.18	0.8389
Barron-Welsh x AVL Religious x Present House	0.38	0.8246	2.05	0.0863	1.18	0.3191

TABLE 40

ANOVA RESULTS FOR BARRON-WELSH, AVL RELIGIOUS AND
 PRIOR HOUSE VS. ENVIRONMENTAL CONCEPTUALIZATION
 (WITH NPERPD, NPERSD AND NPEROD AS MEASURES
 OF ENVIRONMENTAL CONCEPTUALIZATION)

Independent Variables	Levels of Significance					
	NPERPD		NPERSD		NPEROD	
	F Value	PR > F	F Value	PR > F	F Value	PR > F
Barron-Welsh	1.86	0.1561	0.47	0.6265	3.08	0.0468
AVL Religious	0.63	0.5354	2.11	0.1218	2.01	0.1347
Prior House	1.76	0.1852	0.79	0.3756	0.00	0.9815
Barron-Welsh x AVL Religious	0.45	0.7729	1.10	0.2571	0.70	0.5933
Barron-Welsh x Prior House	0.36	0.6993	1.40	0.2475	0.76	0.4696
AVL Religious x Prior House	0.86	0.4217	0.68	0.5055	0.06	0.9431
Barron-Welsh x AVL Religious x Prior House	0.18	0.4077	1.52	0.2068	1.28	0.2794

TABLE 41

ANOVA RESULTS FOR AVL ECONOMIC, BARRON-WELSH AND
 PRIOR HOUSE VS. ENVIRONMENTAL CONCEPTUALIZATION
 (WITH NPERPD, NPERSD AND NPEROD AS MEASURES
 OF ENVIRONMENTAL CONCEPTUALIZATION)

Independent Variables	Levels of Significance					
	NPERPD		NPERSD		NPEROD	
	F Value	PR > F	F Value	PR > F	F Value	PR > F
AVL Economic	0.94	0.3921	1.21	0.2994	2.17	0.1158
Barron-Welsh	2.01	0.1346	0.07	0.9310	2.19	0.1133
Prior House	2.38	0.1238	2.01	0.1569	0.01	0.9428
AVL Economic x Barron-Welsh	0.26	0.9021	0.31	0.8738	0.35	0.8424
AVL Economic x Prior House	1.05	0.3517	0.39	0.6800	0.62	0.5363
Barron-Welsh x Prior House	0.75	0.4721	0.67	0.5137	0.84	0.4306
AVL Economic x Barron-Welsh x Prior House	1.29	0.2731	0.85	0.4443	1.03	0.3895

TABLE 42

ANOVA RESULTS FOR AVL ECONOMIC, BARRON-WELSH AND
IDEAL HOUSE VS. ENVIRONMENTAL CONCEPTUALIZATION
(WITH NPERPD, NPERSD AND NPEROD AS MEASURES
OF ENVIRONMENTAL CONCEPTUALIZATION)

Independent Variables	Levels of Significance					
	NPERPD		NPERSD		NPEROD	
	F Value	PR > F	F Value	PR > F	F Value	PR > F
AVL Economic	1.92	0.1481	0.87	0.4187	3.74	0.0245
Barron-Welsh	2.07	0.1275	0.06	0.9462	1.85	0.1586
Ideal House	2.79	0.0954	2.08	0.1499	1.24	0.2666
AVL Economic x Barron-Welsh	0.44	0.7882	1.25	0.2869	1.69	0.1516
AVL Economic x Ideal House	0.47	0.6238	0.08	0.9248	1.93	0.1465
Barron-Welsh x Ideal House	1.40	0.2476	0.60	0.5475	0.02	0.9789
AVL Economic x Barron-Welsh x Ideal House	0.44	0.7764	0.86	0.4883	0.67	0.6123

TABLE 43

ANOVA RESULTS FOR AVL THEORETICAL WITH AVL ECONOMIC; AVL THEORETICAL WITH AVL AESTHETIC; AND AVL ECONOMIC WITH AVL SOCIAL: ALL VS. ENVIRONMENTAL CONCEPTUALIZATION (WITH NPERPD, NPERSD AND NPEROD AS MEASURES OF ENVIRONMENTAL CONCEPTUALIZATION)

Independent Variables	Levels of Significance					
	NPERPD		NPERSD		NPEROD	
	F Value	PR > F	F Value	PR > F	F Value	PR > F
AVL Theoretical with AVL Economic						
AVL Theoretical	2.53	0.0808	0.38	0.6865	1.11	0.3312
AVL Economic	0.37	0.6932	1.10	0.3349	1.61	0.1999
AVL Theoretical x Economic	0.71	0.5835	0.78	0.5389	0.72	0.5791
AVL Theoretical with AVL Aesthetic						
AVL Theoretical	2.71	0.0676	0.67	0.5116	1.09	0.3386
AVL Aesthetic	2.01	0.1350	0.34	0.7126	0.60	0.5478
AVL Theoretical x Aesthetic	0.42	0.7944	0.75	0.5543	1.41	0.2282
AVL Economic with AVL Social						
AVL Economic	0.48	0.6214	1.96	0.1421	0.82	0.4430
AVL Social	0.09	0.9108	0.14	0.8660	0.08	0.9277
AVL Economic x AVL Social	0.41	0.8034	1.21	0.3047	0.16	0.9587

and NPEROD as measures of environmental conceptualization (table 31), the effect of AVL theoretical on physical environmental conceptualizations is statistically significant with an F value of 3.31 and $PR F = .04$. AVL theoretical is not significantly related to social or "other" aspects of environmental conceptualizations (NPERSD and NPEROD). This pattern of results for AVL theoretical and NPERPD is repeated in table 32 which shows results of comparing NPERPD, NPERSD and NPEROD with occupation, AVL theoretical and Barron-Welsh. Note that these results are consistent with MANOVA results using NPERPD, NPERSD and NPEROD as measures of environmental conceptualizations and indicates that these results are more likely to be valid than the contradictory MANOVA results using NEWCHERR as a measure of environmental conceptualization.

Sensitivity to Social Meaning

The discussion above has indicated the results of statistical analysis when environmental conceptualizations are compared with demographic, environmental experience and personality variables. The following descriptions will focus on the relationship between environmental conceptualizations and housing preferences. It will be recalled that housing preferences in this study are measured by a group of questions entitled Sensitivity to Social Meaning which involves judgments regarding the appropriateness of ten different housing types (as shown in photos) for six different

hypothetical families. Facsimilies of the ten photos and six different hypothetical family descriptions are included in the Appendix.

This Sensitivity to Social Meaning measure is based on the assumption that people are capable of discriminating and matching qualities of people with qualities of the environment. The validity of this assumption is confirmed by Canonical Correlation tests of variations in matching families with photos.²⁵ These tests indicate three different relationships (i.e., three vectors) between families and photos that are statistically significant. These relation-

²⁵It should be noted that since the data for this study were collected in the field, precise controls of variables were not possible. Such variables as distribution of family types among the various population groups could not be controlled and produced unbalanced data. The resulting missing cells created problems for Repeated Measures ANOVA analysis and it was necessary to develop a nested design for analysis of data. Further, the amount of data generated by six families, ten photos and several population variables exceeded core capacity of the CUNY computer and no program could be found to accommodate the number of the calculations necessary for analysis of these relationships.

In order to resolve these problems, it was decided to base all analysis of the Sensitivity to Social Meaning measure on data from the first family description in each questionnaire. Data from the second and third family descriptions in each questionnaire were omitted from analysis. It was determined that the data from the first family description from all questionnaires in this study includes all six family types. Thus, the omission of the second and third family description affects the quantity of data (i.e., less repeated measures) but does not affect the content of the data nor the opportunity to analyze variation across families.

It was also determined that order of family descriptions in the questionnaire does not affect results. Thus, reliance on the first family description for analysis is not likely to be biased by order effects.

ships are as follows:

1. Vector 1 ($PR > F = .001$): Photo 1 (suburban, single family, traditional house type) is considered inappropriate for Family B (white collar, some college, young, married, no children, travel and sports activities, saves for housing); and also inappropriate for Family C (professional, college educated, older, children grown, cultural and community activities, spends on family)
2. Vector 2 ($PR > F = .0001$): Photo 6 (urban, single family, traditional house type) is considered appropriate for Family E (professional, college educated, young married, young children, home and family activities, saves for housing)
3. Vector 3 ($PR > F = .006$): Photo 6 (urban, single family, traditional house type) is considered appropriate for Family C (professional, college educated, older, children grown, cultural and community activities, spends on family)

These results indicate that all people participating in this study consider certain family types appropriate (or inappropriate) for certain housing types. In general, these results confirm the assumption that people are capable of discriminating and matching qualities of people with qualities of the environment. In order to explore these results in more detail, and to determine the effects of population variables on the Sensitivity to Social Meaning measure, several MANOVA tests were computed.

A summary of the MANOVA tests and their statistical results are shown in table 44. It can be seen that several population variables, family type, and several interactions between population variables and family type affect the Sensitivity to Social Meaning measure (SSM). The results indicate the effects of these variables on the appropriateness ratings across all ten photos.

Table 44 indicates that several population variables have an effect on the appropriateness ratings that comprise the SSM measure (i.e., sex, ideal house, theoretical values, and economic values). Since the effect of these variables are independent of family type, these results indicate that the effect of these population variables is related to the photos. A further analysis of these results on a photo by photo basis would reveal how photos are rated for each of these population groups. However, since these affects are not the focus of this study, further analysis will not be pursued.

The effects of family type on the SSM measure are of interest to this study. Table 44 indicates that variations in appropriateness ratings across family types is consistently significant on all MANOVA tests. These results support Canonical Correlation results and indicate that all people participating in this study (regardless of population differences) can discriminate differences in family descriptions and photos when matching families to housing types. These results provide further support for the validity of

TABLE 44

SUMMARY OF MANOVA RESULTS SHOWING EFFECTS OF POPULATION VARIABLES,
FAMILY TYPE, AND INTERACTIONS ON THE SENSITIVITY
TO SOCIAL MEANING MEASURE FOR ALL PHOTOS

Variables Tested	Statistical Significance for all Photos		
	Population Variables	Family Type	Interactions Between Population Variable & Family Type
Age/Family Type/ Photos 1-10	.0866	.0001	.0976
Sex/Family Type/ Photos 1-10	.0053	.0001	.3861
Income/Family Type/ Photos 1-10	.9413	.0001	.0409
Education/Family Type/ Photos 1-10	.0966	.0001	.0269
Occupation/Family Type/ Photos 1-10	.1025	.0001	.0215
Child House/Family Type/ Photos 1-10	.7157	.0001	.7169
Ideal House/Family Type/ Photos 1-10	.0477	.0001	.1202
AVL Theoretical/Family Type/ Photos 1-10	.0170	.0001	.0213
AVL Aesthetic/Family Type/ Photos 1-10	.1986	.0001	.1921
AVL Economic/Family Type/ Photos 1-10	.0098	.0001	.1648
AVL Social/Family Type/ Photos 1-10	.3041	.0001	.6785
Barron-Welsh/Family Type/ Photos 1-10	.4347	.0001	.1387
NCHERR/Family Type/ Photos 1-10	.8108	.0001	.1400
NPERPD/Family Type/ Photos 1-10	.4000	.0001	.2354
NPERSD/Family Type/ Photos 1-10	.9696	.0001	.0341
NPEROD/Family Type/ Photos 1-10	.4737	.0001	.0007

the assumptions on which the SSM measure is based.

The aspect of table 44 which is of greatest interest to this study involves the statistically significant interactions between various population variables and family type. These interactions indicate that the discrimination and matching of family types to housing types is affected by various population variables. For example, the next to last item on table 44 indicates that the percentage of social descriptors (NPERSD) has a statistically significant effect on the discrimination and matching of family types with housing types ($PR > F = .03$). These results are relevant to the prediction of Hypothesis IV that environmental conceptualizations are related to housing preferences.

In order to analyze these interactions in more detail, the MANOVA results will be discussed on a photo by photo basis. Table 45 provides a summary of MANOVA results showing the effects of interactions between population variables and family type for each photo. In this table only statistically significant ($PR > F = .10$) or nearly significant results are shown.

The interactions of greatest interest to this study are those that involve measures of environmental conceptualization. It can be seen in table 45 that the significant effect on environmental conceptualization of SSM shown in table 44 (i.e., $PR > F = .03$ for NPERSD and $PR > F = .0007$ for NPEROD) is related to a limited number of photos.²⁶

²⁶ Note that table 45 indicates a significant effect on

TABLE 45

SUMMARY OF MANOVA RESULTS SHOWING STATISTICALLY SIGNIFICANT INTERACTIONS
OF POPULATION VARIABLES WITH FAMILY TYPE FOR EACH PHOTO

Variables	Photo 1	Photo 2	Photo 3	Photo 4	Photo 5	Photo 6	Photo 7	Photo 8	Photo 9	Photo 10
Age/Family Type									.1684	.0550
Sex/Family Type	.1770									
Income/Family Type					.0416	.0432				
Education/Family Type			.0038			.0967				.0589
Occupation/Family Type	.0282		.0797	.0969				.0282	.0039	.0980
Childhouse/Family Type						.0820				
Ideal House/ Family Type	.1282					.0720				
AVL Theoretical/ Family Type						.0061		.1131	.0633	
AVL Aesthetic/ Family Type			.1956	.0286		.0556		.0733		
AVL Economic/ Family Type				.0731		.0019			.0495	.0398
AVL Social/ Family Type		.1631				.1730				
Barron-Welsh/ Family Type	.0365		.1067	.1875					.1300	
NCHERR/Family Type			.1337	.0097				.1612		
NPERPD/Family Type				.1793						.1679
NPERSD/Family Type			.0102					.0651		.0794
NPEROD/Family Type					.0150	.1219	.1019			.0532

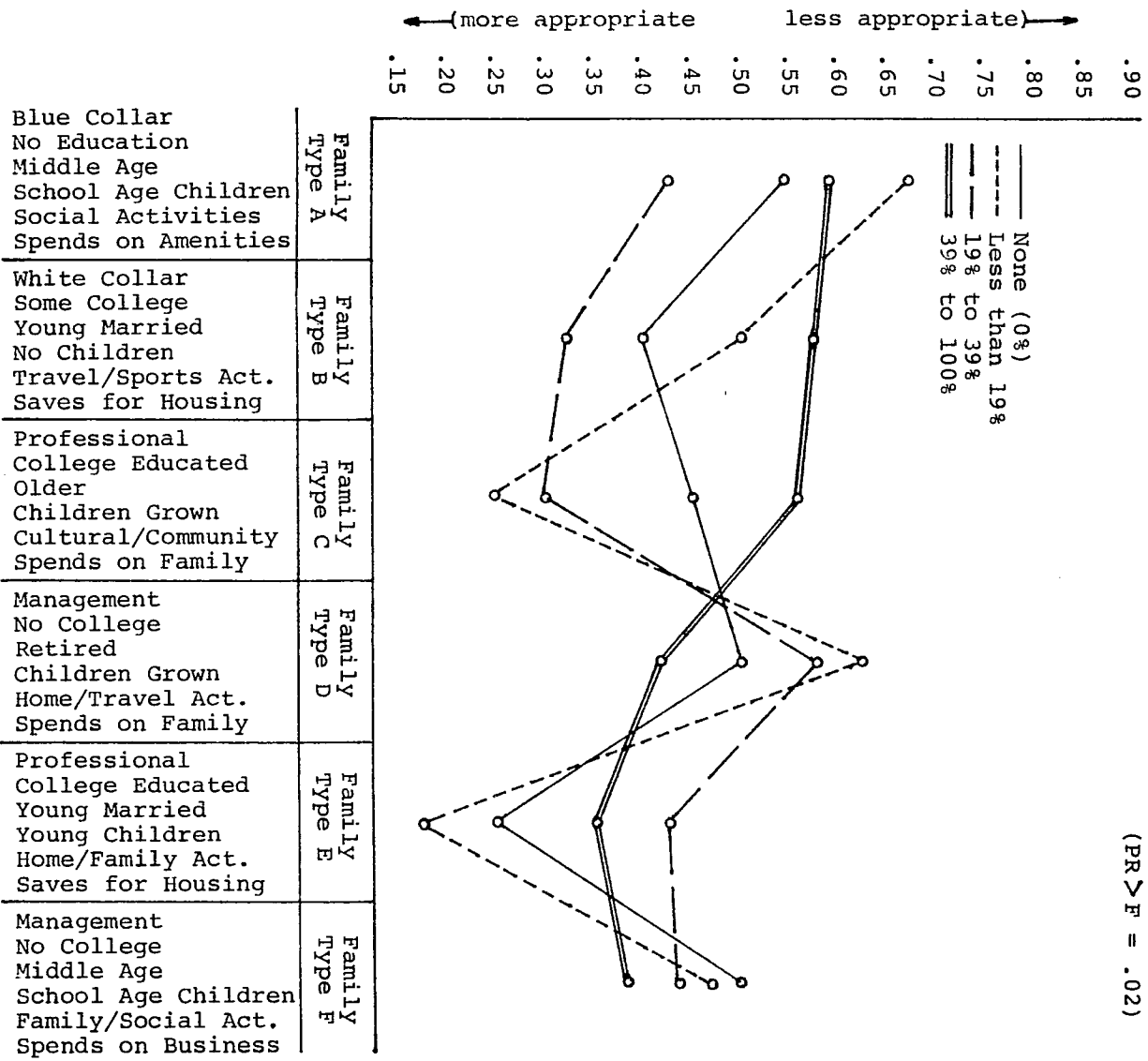
For example, table 45 indicates that NPERSD (i.e., percentage of social words and phrases in housing descriptions) affects the SSM measure significantly on the following photos:

1. Photo 2: suburban, single-family, modern housing type (PR>F = .02)
2. Photo 3: suburban, single-family, modern housing type (PR>F = .01)
3. Photo 8: urban, multiple-family, modern housing type (PR>F = .065)
4. Photo 10: urban, multiple-family, modern housing type (PR>F = .08).

Further details of these effects are shown in figures 1 through 4. These figures are constructed to show the variations for appropriateness ratings for each family type and for each category of the NPERSD variable for the photos listed above. For example in figure 1, which is based on results for photo 2, it can be seen that people in NPERSD category 1 (i.e., no social words or phrases in their housing descriptions) consider photo 2 (suburban, single-family, modern housing type) most appropriate for Family E (a professional, college educated family comprised of a young couple and young children with interests centered around home and family), and least appropriate for family A (blue

photo 4 for NCHERR (i.e., the overall measure of environmental conceptualization); and no significant effects on any photos for NPERPD (i.e., percentage of physical words and phrases in housing descriptions). However, neither of these measures of environmental conceptualization demonstrates a significant interaction with family type as can be seen in table 44.

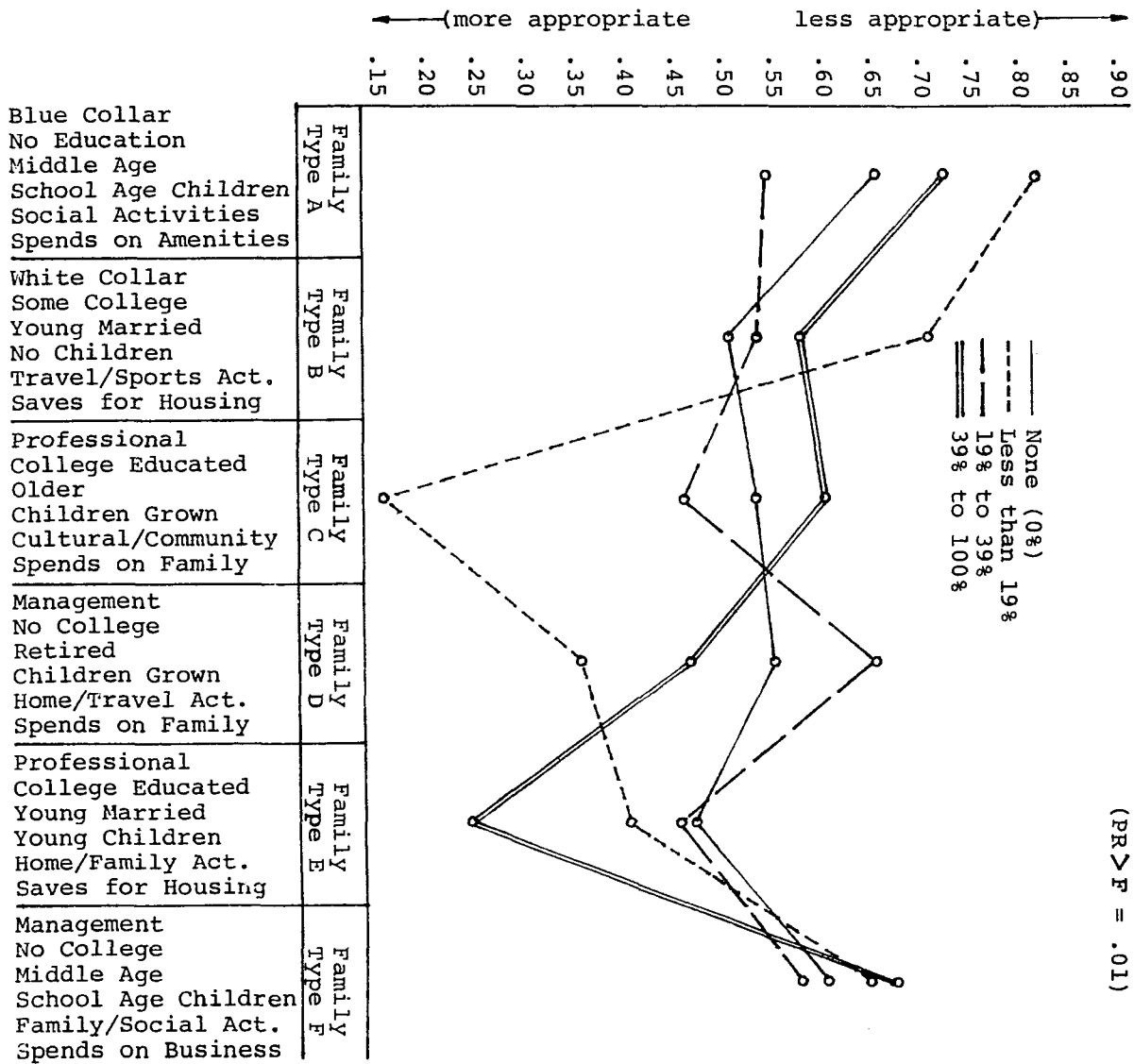
Least Square Means for Photo 2



(PR > F = .02)

Figure 1: Variations in appropriateness of photo 2 for different family types by people with different percent of social terms in housing descriptions (NPERSD measure of environmental conceptualizations).

Least Square Means for Photo 3



(PR > F = .01)

Figure 2: Variations in appropriateness of photo 3 for different family types by people with different percent of social terms in their housing description (NPERSD Measure of Environmental Conceptualizations).

Least Square Means for Photo 8

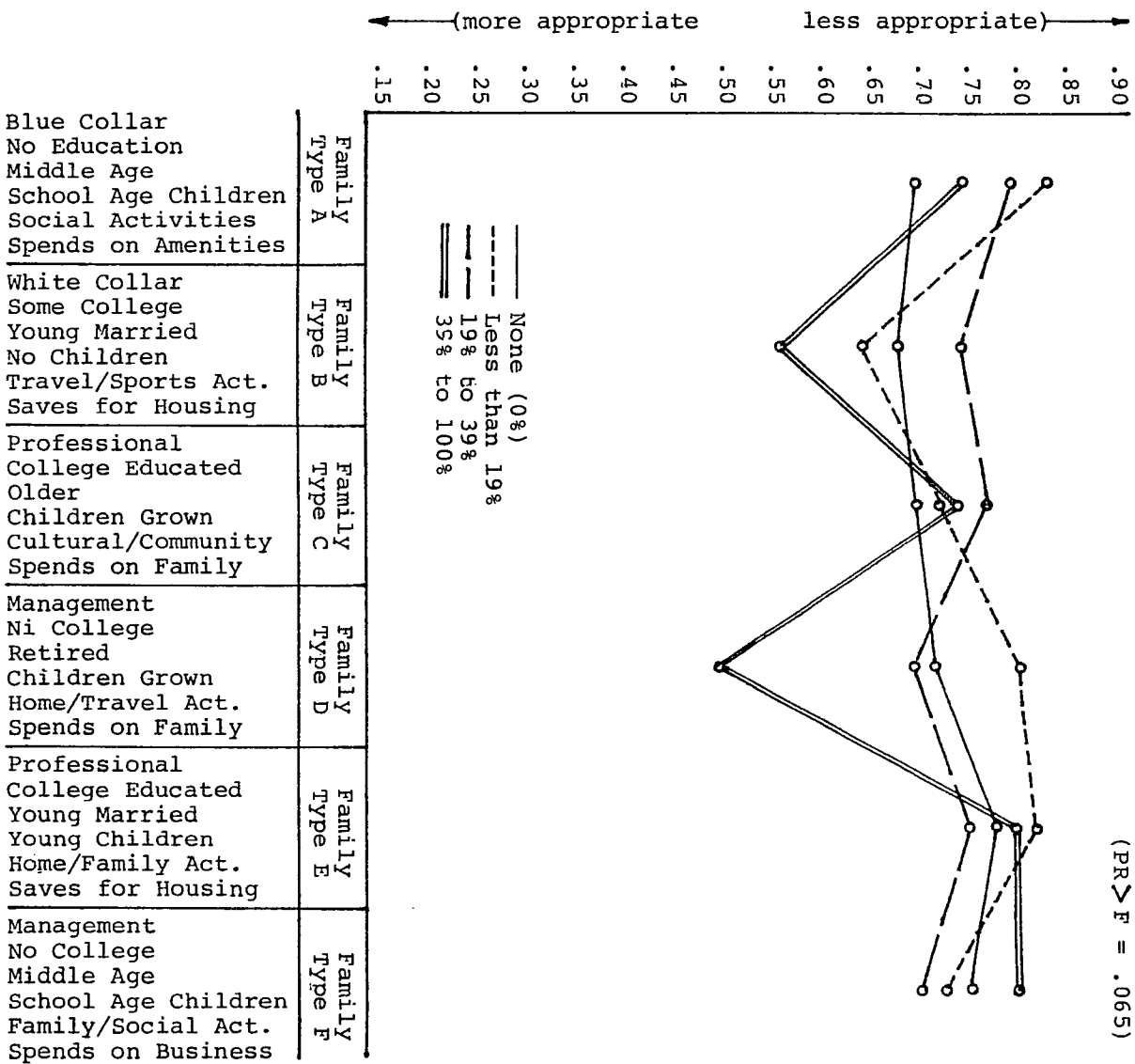


Figure 3: Variations in appropriateness of photo 8 for different family types by people with different percent of social terms in their housing description (NPERSD Measure of Environmental Conceptualizations).

Least Square Means for Photo 10)

← (more appropriate) less appropriate) →

.15 .20 .25 .30 .35 .40 .45 .50 .55 .60 .65 .70 .75 .80 .85 .90

Family Type A	Family Type B	Family Type C	Family Type D	Family Type E	Family Type F
Blue Collar No Education Middle Age School Age Children Social Activities Spends on Amenities	White Collar Some College Young Married No Children Travel/Sports Act. Saves for Housing	Professional College Educated Older Children Grown Cultural/Community Spends on Family	Management No College Retired Children Grown Home/Travel Act. Spends on Family	Professional College Educated Young Married Young Children Home/Family Act. Saves for Housing	Management No College Middle Age School Age Children Family/Social Act. Spends on Business

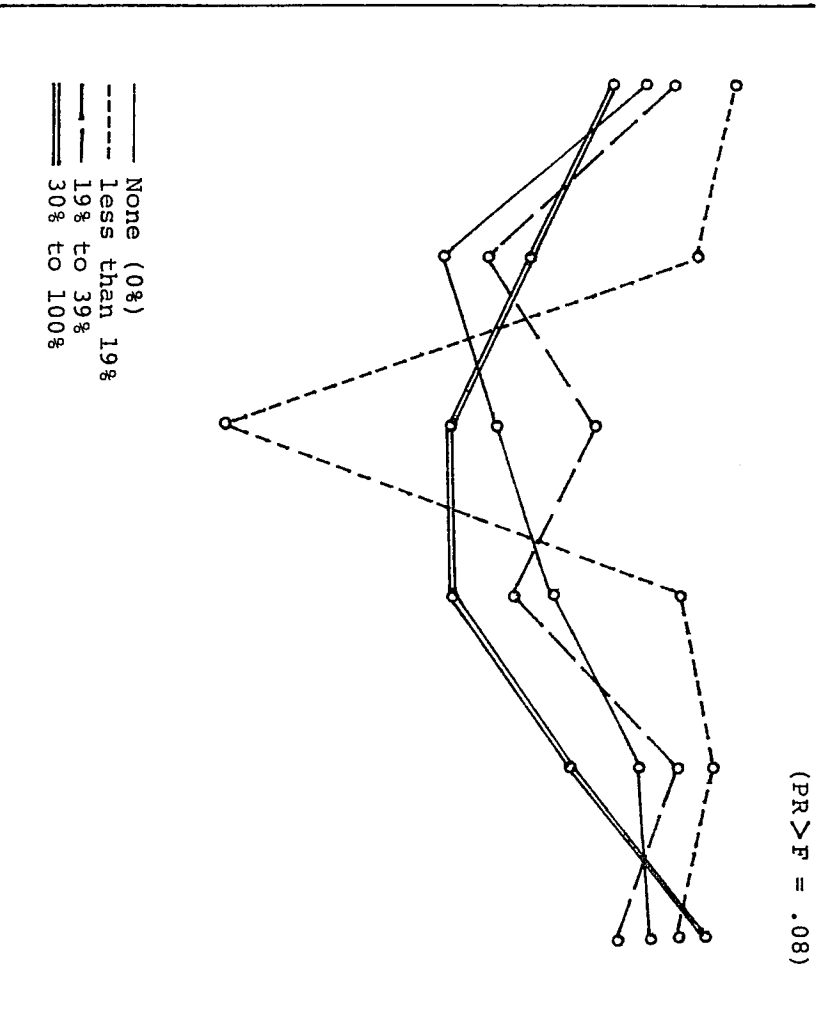


Figure 4: Variations in appropriateness of photo 10 for different family types by people with different percent of social terms in their housing description (NPERSD Measure of Environmental Conceptualizations)

collar, no education, middle age, school age children, social activities, spends on amenities). People in category 1 also consider photo 2 inappropriate for family D (employed in management, no college, retired, children grown, home and travel activities, spends on family) and family F (employed in management, no college, middle age, school age children, family and social activities, spends on business).

On the other hand, figure 1 shows that people in NPERSD category 4 (i.e., percentage of social words and phrases in their housing descriptions is above 39) consider photo 2 most appropriate for family E (as described above) and least appropriate for families A, B and C. (Family A is described above; family B is white collar, some college, young married, no children, travel and sport activities, saves for housing; and family C is professional, college educated, older, children grown, cultural and community activities, spends on family.)

Thus, it can be seen from figure 1 that the level of appropriateness for each family type varies for each category of NPERSD. These results can be interpreted to mean that variation in peoples' emphasis on social aspects of the environment is related to variations in Sensitivity to Social Meaning as predicted in Hypothesis IV. Similar results can be seen for photos 3, 8 and 10 in figures 2, 3 and 4 respectively.

MANOVA results summarized in table 45 also indicate that NPEROD (i.e., percentage of "other" words and phrases in

housing descriptions) affects the SSM measure significantly on the following photos:

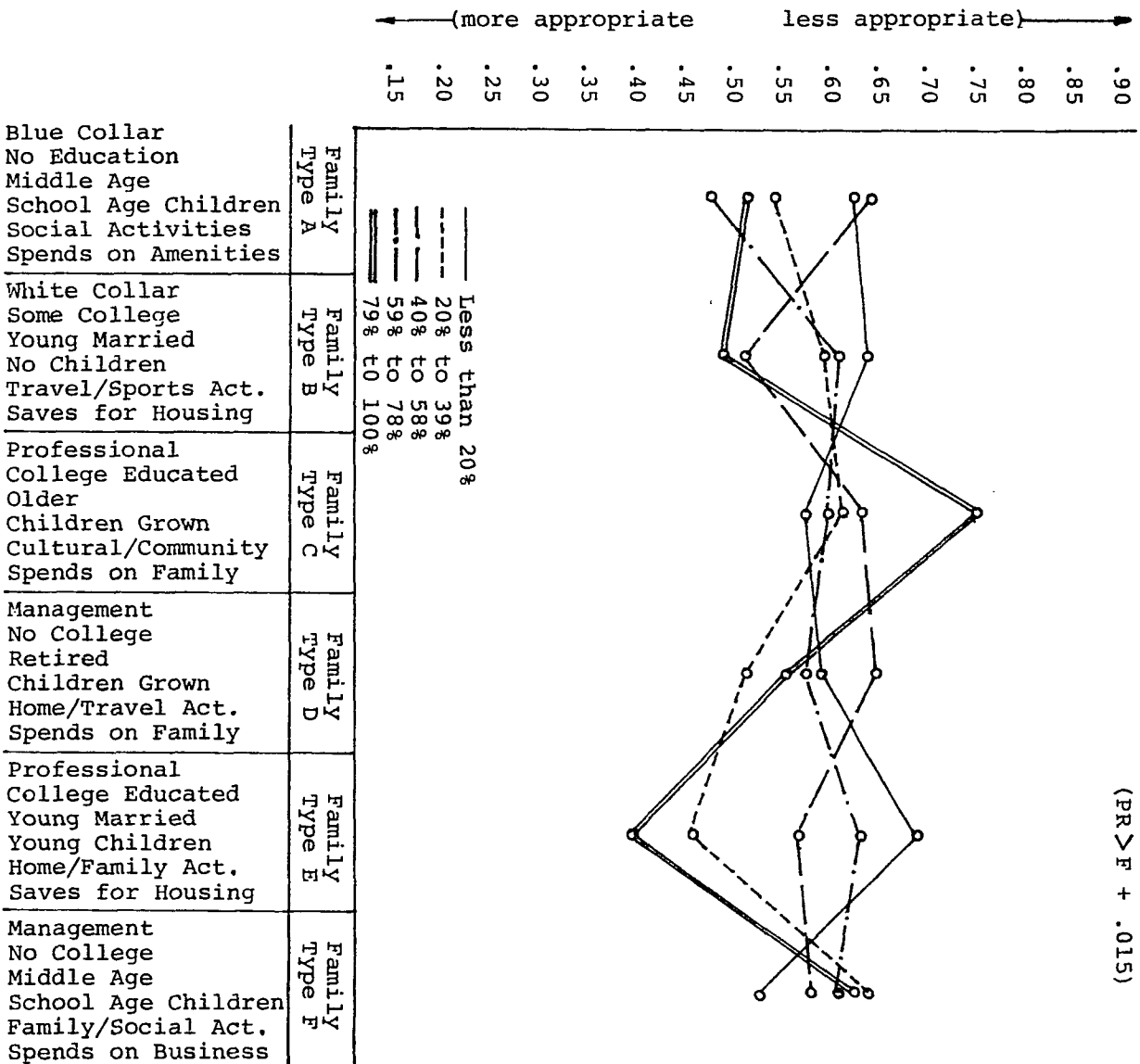
1. Photo 5: suburban, multiple family, modern housing type ($PR > F = .015$)
2. Photo 10: urban, multiple family, modern housing type ($PR > F = .05$).

Further details of these effects are shown in figures 5 and 6.

Figure 5 indicates that people in NPEROD category 1 (i.e., percentage of "other" words and phrases less than 20) consider photo 5 (a suburban, multi-family, modern housing type) most appropriate for family F (employed in management, no college, middle age, school age children, family and social activities, spends on business), and least appropriate for family E (professional, college educated, young married, young children, home and family activities, saving for housing).

By comparison, figure 5 also indicates that people in NPEROD category 5 (i.e., percentage of "other" words and phrases more than 79) consider photo 5 most appropriate for family E (as described above). People in NPEROD category 5 consider photo 5 least appropriate for family C (professional, college educated, older, children grown, cultural and community activities, spends on family) and for family F (as described above). In other words, when people with more "other" terms in their housing descriptions are compared to people with less "other" terms in their housing descriptions,

Least Square Means for Photo 5



(PR > F + .015)

Figure 5: Variations in appropriateness of photo 5 for different family types by people with different percent of other terms in their housing description (NPEROD Measure of Environmental Conceptualizations).

Least Square Means for Photo 10

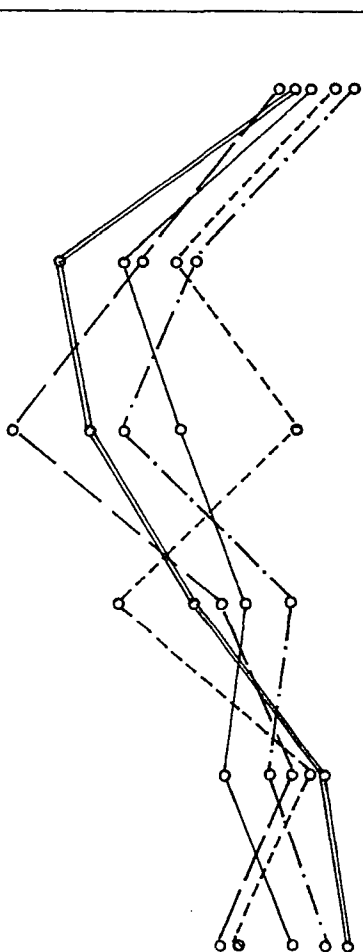
(more appropriate ← → less appropriate)

.15 .20 .25 .30 .35 .40 .45 .50 .55 .60 .65 .70 .75 .80 .85 .90

Blue Collar No Education Middle Age School Age Children Social Activities Spends on Amenities	White Collar Some College Young Married No Children Travel/Sports Act. Saves for Housing	Professional College Educated Older Children Grown Cultural/Community Spends on Family	Management No College Retired Children Grown Home/Travel Act. Spends on Family	Professional College Educated Young Married Young Children Home/Family Act. Saves for Housing	Management No College Middle Age School Age Children Family/Social Act. Spends on Business
--	---	---	---	--	---

Legend for Percent of Other Terms:

- Less than 20%
- - - 20% to 39%
- 40% to 58%
- · - 59% to 78%
- ≡ 79% to 100%



(PR > F = .05)

Figure 6: Variations in appropriateness of photo 10 for different family types by people with different percent of other terms in their housing description (NPEROD Measure of Environmental Conceptualizations).

they are generally opposite in their judgments of appropriateness for families with photo 5.

These results indicate that people who emphasize a larger context, a process, an interaction between physical and social, and/or evaluative judgments in their housing descriptions (i.e., words and phrases categorized as "other") discriminate and match family types with housing types differently from people who do not emphasize these aspects of the environment. Thus, variations in people's emphasis on "other" aspects of housing environments is related to variations in Sensitivity to Social Meaning. In this respect, people who use more "other" terms in their housing descriptions are similar to people who use more social terms, and also fulfill the prediction of Hypothesis IV.

The analysis of the relationship between environmental conceptualizations and Sensitivity to Social Meaning as discussed above has provided a general indication that such a relationship does exist as predicted. However, it is evident from this analysis that this relationship involves an intricate network of environmental, social and psychological variables that are beyond the hypotheses of this study. For this reason, many evident relationships in the tables and figures of this section will not be discussed. Some of these relationships will be included in the following discussions as recommended directions for future research.

This section has included a description of the results from statistical analyses conducted for this study. The

tables and examples discussed in this RESULTS section are intended to provide sufficient information and understanding for the reader to explore alternative interpretations of these results. The following DISCUSSION section will show how these statistical results are related to the conceptual issues of the study as defined by this investigator.

This RESULTS section has provided discussions of the various tests used to investigate relationships among background and experience variables, environmental experience and housing preferences. Relationships between background and experience variables (demographic, personality and environmental experience) and environmental conceptualization were tested by Canonical Correlations, MANOVA and ANOVA statistics. Relationships between background and experience variables, environmental conceptualization and housing preferences were tested by Canonical Correlations and MANOVA statistics.

Numerous relationships among variables were indicated by these tests. The relationships that are of relevance to the hypotheses and conceptual issues of this study are discussed in the following section. Patterns of variables indicated by CANCELL and interactions of variables indicated by MANOVA are particularly pertinent to this study since these interactions are considered a realistic indication of the complexities of people's relationship to the environment.

However, not all relationships indicated in these tests are relevant to the focus of this study and these are not

discussed in the following section. Some of these relationships are of considerable interest and could be the basis for future research. While these relationships will not be enumerated here, the interested reader will find these relationships included in the preceding tables of this section.

5. DISCUSSION

In the Introduction to this paper, several arguments regarding environmental conceptualizations and housing preferences were presented. In the following discussion these arguments will be reviewed in terms of the results of this study. However, this discussion does not attempt to include all statistical results presented in the RESULTS section. It should be recalled that the exploratory nature of this study required several different measures of environmental conceptualization and the use of several different types of statistical tests that produced a variety of results. Those results that are most consistent in all statistical tests and that are most pertinent to the conceptual issues of this study were selected as the basis for the following discussion.

The format for this discussion is organized around the two principal concepts of this study: environmental conceptualization and housing preferences.

Environmental Conceptualization

In the introductory arguments of this paper, environmental conceptualizations were defined as sets of ideas for thinking about, describing and acting on the environment. It was argued that physical and social terms in an individual's description of housing shown in a projected photograph indicated some aspect of that individual's environ-

mental conceptualization. It was further argued that variation in environmental conceptualizations from one person to another would be related to differences in background and experience.

Value orientation was assumed to be a measure of background and experience related to variation in environmental conceptualization. Preference for visual complexity as an aspect of creativity, housing experience and other population variables were also expected to be related to variation in environmental conceptualizations. Differences in environmental conceptualizations between architects and non-architects were a particularly important example of the arguments presented in the Introduction. The following discussion will focus on the effects of these various measures of background and experience on environmental conceptualization.

Value Orientations

At the beginning of this study, it was expected that value orientation, as a measure of background and experience, would be related to variation in environmental conceptualization; but it was not clear what the details or direction of that relationship might be. Thus, as a first approximation it was expected that average (i.e., statistically normal) value orientations would be related to environmental conceptualizations that include both physical and social descriptions. (Hypothesis I)

The relationship between value orientation and environmental conceptualization predicted in Hypothesis I was sub-

stantiated in this study when all demographic, environmental experience and personality variables were analyzed together. When fewer variables were considered, different relationships emerged between value orientations and environmental conceptualizations. These different relationships are of particular interest to this study because they provide further understanding of environmental conceptualizations.

For example, results of this study have shown that people who emphasize both physical and social aspects of the environment are likely to have lower than average theoretical values. Further, people who emphasize "other" aspects of the environment (i.e., references to a larger context, a process, an interaction between physical and social, or an evaluative judgment) are also likely to have lower than average theoretical values. On the other hand, people with higher than average theoretical values are likely to emphasize physical or social aspects of the environment.

A possible interpretation of these results is that people with higher theoretical values may have a more unidimensional way of conceptualizing the environment; while people with lower theoretical values have more diverse conceptualization of the environment. This interpretation is based on the assumption that housing descriptions categorized as "other" as well as housing descriptions that include both physical and social terms can be considered more diverse than housing descriptions that include only physical or social terms.

This interpretation gains some credibility from the description of theoretical values provided with the Allport-Vernon-Lindsay test. According to the authors of the AVL, people who are high in theoretical values are likely to be intellectuals whose "chief aim is to order and systemize knowledge." The primary interests of a person with high theoretical values are "empirical, critical and rational;" and they are therefore more likely to "observe and reason without judgments regarding the beauty or utility of objects" (Allport, Vernon, Lindsay, 1969, p.4).²⁷

Thus, it can be argued that people who are intellectual, rational and objective are more likely to emphasize physical or social aspects of the environment in their housing descriptions, and that people with intellectual approaches toward the environment tend to focus on specific rather than diverse aspects of the environment. This argument suggests that the concept of diversity may be an important aspect of variation in environmental conceptualization.²⁸

²⁷ These excerpts, as well as following excerpts for other parts of the AVL test, are taken from the Allport-Vernon-Lindsay "Study of Values" Test Manual published by Houghton-Mifflin Co., Boston, 1960. The publisher would not permit inclusion of this booklet in this paper due to infringement of copyright.

²⁸ It is the investigator's observation that diversity as a human and environmental quality is highly valued in contemporary society, and I suspect that this has not always been the case. In architecture, diversity in design has only recently been acclaimed by the professional journals and critics, and may lose favor again at some time in the future. This investigator provides an example of a contemporary architect who prefers diversity in people, environments and research projects. The point is that a bias in

It should also be noted that people with high theoretical values and an emphasis on physical terms in their housing descriptions are not emphasizing aesthetic aspects of the environment (i.e., words or phrases categorized as "other") in their housing descriptions. These results are consistent with the AVL definition which indicates that people with intellectual interests are not likely to make "judgments regarding the beauty or utility of objects."

The relationship between aesthetic value orientations and environmental conceptualizations is particularly interesting to the conceptual issues of this study because it involves an interaction with occupation (i.e., architects vs. non-architects) and preference for visual complexity. For example, the results of this study indicate that the interaction between aesthetic values and occupation has a significant relationship with variation in number of social terms used in housing descriptions (i.e., social environmental conceptualizations). These results indicate that architects and non-architects are different in social environmental conceptualizations when their aesthetic values are in the low to medium and high range, but are similar in social environmental conceptualizations when their aesthetic values are in the very high range.²⁹

favor of diversity may have affected the people who participated in this study including the investigator who interpreted the results.

²⁹It will be recalled that the population of people who participated in this study demonstrated unusually high scores on the aesthetic portion of the Allport-Vernon-Lindsay

These results are illustrated in figure 7 which shows the effects of interaction between aesthetic values and occupation (i.e., architect vs. non-architect) on social aspects of environmental conceptualization. Figure 7 shows that an increase in aesthetic values for architects is likely to be associated with a decrease in social terms used in their description of housing; while an increase in aesthetic values for non-architects is likely to be associated with an increase in social terms. This increase in social words and phrases is greatest for non-architects with high aesthetic scores (category 2). When aesthetic scores are very high (category 3), differences between architects and non-architects in percentage of social words and phrases is not significant.

The results shown in figure 7 suggest that, at some levels, aesthetic values may have different meanings for architects than for non-architects. A clue as to what these meanings might be is provided by the definition of aesthetic values from Allport-Vernon-Lindsay. According to the authors of the AVL "Study of Values" people who have higher aesthetic values are more interested in "the artistic aspects of life" and place high value on "form and harmony." Analysis of the questions that measure aesthetic values in the AVL suggests that the aspect of aesthetic values that

"Study of Values." Thus, it should be noted that the categories of aesthetic values used in this study have been redistributed as described in the METHODS section of this paper. These redistributed categories are listed in the Appendix and are used as parameters for figure 7.

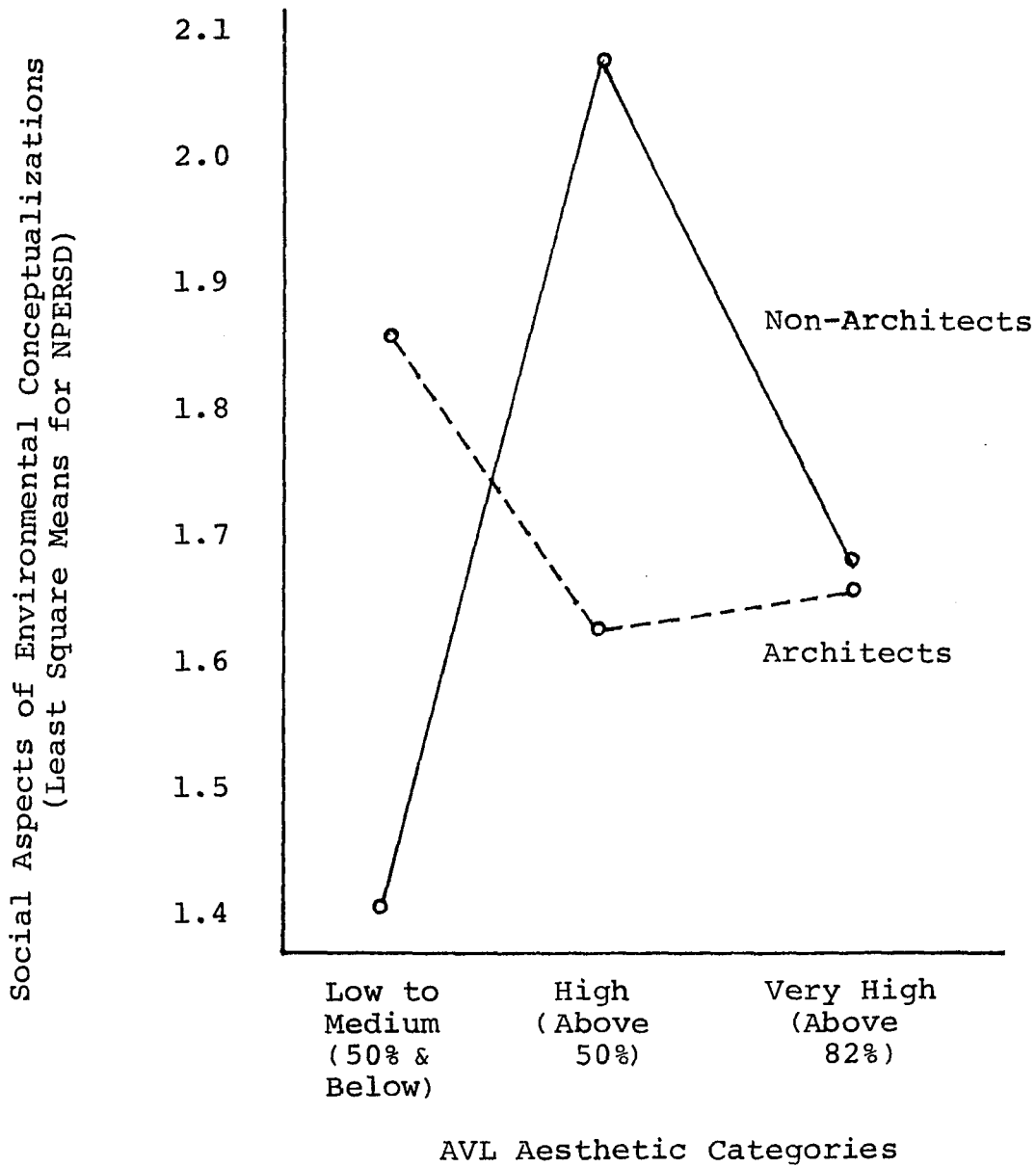


Figure 7: Effects of interaction between AVL Aesthetic scores and occupation on social aspects of environmental conceptualizations (based on least square means for percent of social terms in housing descriptions: NPERSD)

refers to "the artistic aspects of life" may be comprised of general cultural interests, while the aspect of aesthetic values that refers to "form and harmony" may be comprised of formalistic interests.

From this point of view, the results shown in figure 7 could be interpreted to mean that the emphasis on the inhabitants of housing (i.e., social environmental conceptualizations) by non-architects with high aesthetic values may be based on their cultural interests. As aesthetic values increase to the very high level non-architects may tend to become involved in the more formalistic (i.e., the "form and harmony") aspect of aesthetic values and are not distinguishable from architects in their social environmental conceptualizations. Some support for this argument is provided by the positive correlation between aesthetic values and theoretical values found in this study. These results suggest that aesthetic values may become more intellectual as they increase.

Architects, on the other hand, demonstrate less emphasis on the inhabitants of housing as their aesthetic values increase. It would be reasonable to expect that "form and harmony" aspects of aesthetic values might be more pervasive for architects than for non-architects. If so, this could be a result of architectural education that emphasizes the formalistic and intellectual aspects of artistic endeavors rather than the cultural and social aspects. It should also be noted that architects with average or lower

aesthetic values are likely to demonstrate more emphasis on the inhabitants of housing than architects with higher aesthetic values. Thus, it appears that an increased interest in form, harmony and intellectual aspects of aesthetic values by architects is inconsistent with an emphasis on the inhabitants of housing; or at least inconsistent with the life style represented by the house shown for the environmental conceptualization test.

This discussion of the relationships between aesthetic values, occupation and social environmental conceptualizations suggests that differences in the cultural and formalistic components of aesthetic values provides a more satisfactory explanation of the results shown in figure 7 than does the architect vs. non-architect distinction alone. In other words, differences in environmental conceptualization between architects and non-architects does not depend on occupation alone, but involves other measures of background and experience. These issues will be discussed further in the section below on creativity.

Another example of the effects of value orientations on environmental conceptualizations is provided by economic values. The results of this study indicate that people with environmental conceptualizations which emphasize only physical aspects of the environment are likely to have low economic values; while people who have environmental conceptualizations that emphasize more diverse aspects of the environment (i.e., physical and social or "other") are likely to

have higher economic values. People with higher economic values are also likely to have lower theoretical values.

The authors of the AVL test describe a person with high economic values as "characteristically interested in what is useful." A person with high economic values is likely to be "thoroughly practical and conforms well to the prevailing stereotype of the average American businessman." People with high economic values are also likely to "regard unapplied knowledge as a waste," and to "confuse luxury with beauty." This description suggests that practicality may be an aspect of environmental conceptualization.

For example, it could be argued that an emphasis on diverse aspects of the environment (i.e., physical and social or "other") are practical in the sense that a broader understanding of the environment is more useful in daily social interaction. From this point of view, an emphasis on limited aspects of the environment (i.e., only physical or only social) would be less useful in daily social interactions. This interpretation is based on the argument that the physical environment is a form of social communication as discussed in the Introduction to this paper. Thus, it can be suggested that the practical component of environmental conceptualizations involves awareness of the environment as a form of social communication.

This discussion of the effects of value orientations on environmental conceptualizations indicates that when considering the particular house shown in this study, people's

conceptualizations of that environment are influenced by their theoretical, aesthetic and economic values, but not by their social, religious or political values.³⁰ However, this particular pattern of relationships between value orientations and environmental conceptualizations might vary if a different housing type or a different environment were involved. It would be particularly interesting to know for example, the differences in value orientations and environmental conceptualizations that may be associated with different housing types and styles. Future research could investigate these variations in the context of marketing research in order to provide greater understanding of the basis for variations in housing preferences.

This investigation of the relationship between value orientations and environmental conceptualizations has produced several findings of interest to the concepts of this study. It has been shown that for a given environment, value orientations are differently related to the physical, social and "other" aspects of environmental conceptualization as identified in this study. The discussions of theo-

³⁰ Analysis of the questions measuring social values on the AVL indicate references to philanthropic interests rather than the home and family interactions that are part of this study. Similarly, questions measuring political and religious values refer to interests not related to the environmental issues of this study. However, this is not to say that these values are not likely to be associated with environmental conceptualizations if an environment different than a typical suburban house were being considered (i.e., church, museum, government building, or perhaps a house of unusual aesthetic appeal).

retical, aesthetic and economic values provide examples of these relationships.

As a result of these investigations, it was suggested that diversity and practicality may be important aspects of environmental conceptualizations. It was also suggested that cultural and formalistic aspects of aesthetic values may be useful in discussing differences between architects and non-architects. These issues will be discussed further in the following sections.

Creativity

The relationship between creativity and environmental conceptualization that was predicted in Hypothesis III of this study indicated that either physical or social aspects of environmental conceptualizations would be related to high levels of creativity. This prediction was based on the assumptions that average environmental conceptualizations would include both physical and social aspects; that creative people would not have average environmental conceptualizations; and that preference for visual complexity is an aspect of creativity that is related to environmental conceptualizations.

The results of this study, using Barron-Welsh as a measure of preference for visual complexity, indicate that people with high preferences for visual complexity are more likely to have environmental conceptualizations that emphasize physical and social aspects of the environment equally.

People with lower preferences for visual complexity are likely to have environmental conceptualizations that emphasize physical aspects of the environment more than social aspects. While these results are not those that were expected, it can be suggested that they are consistent with the interpretation of results for value orientations discussed above

In order to interpret these results and show the possible connections with previous results, it will be helpful to consider the content of the Barron-Welsh test. The Barron-Welsh measures preference for visual complexity which is assumed to be an aspect of creativity. Low Barron-Welsh scores indicate a preference for simple, clearly organized, geometric design; while high Barron-Welsh scores indicate a preference for visually complex designs. Mid-range scores on Barron-Welsh indicate an acceptance of both geometric and complex designs.

In view of the earlier argument that environmental conceptualizations including both physical and social terms are more diverse, the relationship between this aspect of creativity and environmental conceptualization can be interpreted to mean that people who prefer complexity in visual designs are likely to have more diverse environmental conceptualizations. This interpretation suggests that complexity and diversity are related aspects of environmental conceptualizations.³¹

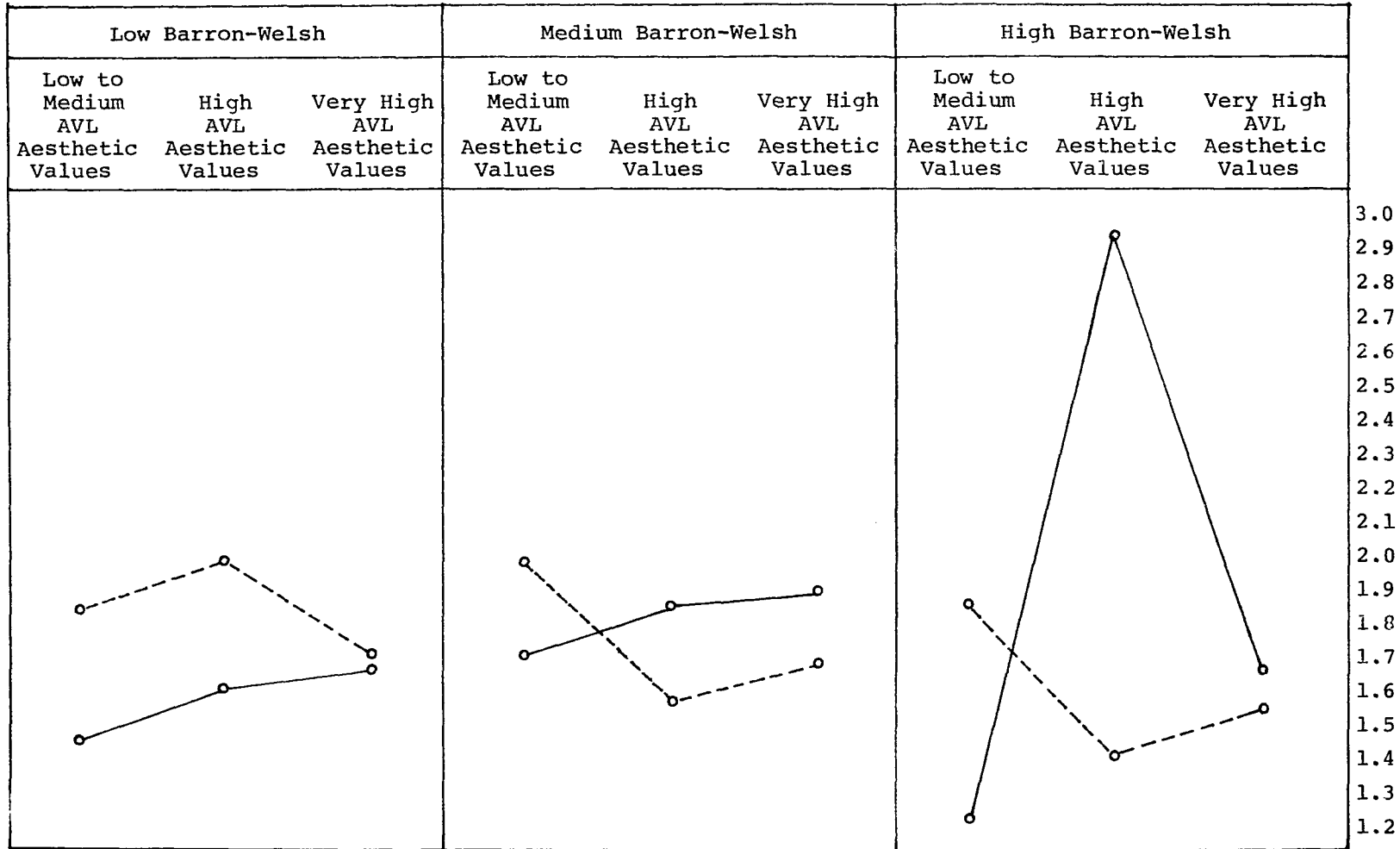
This description of the Barron-Welsh test as a measure of preference for complex visual designs, together with the earlier description of the cultural and formalistic aspects of aesthetic values, provides a basis for interpreting the interaction between preference for visual complexity as an aspect of creativity, aesthetic values and occupation. This interaction is illustrated in figure 8, which shows the effects of these variables on social environmental conceptualizations.

Figure 8 is organized to show changes in percentage of social terms included in housing descriptions for each category of Barron-Welsh and AVL aesthetic. Curves are plotted separately to indicate differences between architects and non-architects in each of the Barron-Welsh categories, and for each category of aesthetic values.

The results illustrated in figure 8 are clearly most significant where Barron-Welsh scores are high. At this level of high Barron-Welsh, the results of figure 8 are similar to figure 7. In other words, architects use fewer social

³¹It should be noted that since Barron-Welsh is a measure of visual complexity and environmental conceptualizations are measured in this study by verbal responses, this proposed relationship between complexity and diversity assumes compatibility between visual and verbal concepts. This compatibility is by no means clear, particularly in the area of creativity. Arnheim (1969) has made a distinction between visual and verbal aspects of creativity, pointing out that visual artists think differently than verbal artists. Arnheim argues that visual-verbal differences are more than just a difference in medium. This argument suggests that verbal creativity may be significantly different from visual creativity.

Barron-Welsh and AVL Aesthetic Categories



Social Environmental Conceptualizations
(Categorized Percentages of Social Terms
in Housing Descriptions: NPERSD)

Figure 8: Interactions of occupation with Barron-Welsh and AVL Aesthetic scores based on percentages of social terms in housing descriptions (NPERSD).

terms than non-architects when Barron-Welsh and aesthetic values are high. These results indicate that some aspect of high Barron-Welsh and high aesthetic values is associated with use of more social terms in the housing descriptions of non-architects. As in figure 7, this relationship changes when aesthetic values are very high.

The results illustrated in figure 8 can be interpreted to mean that non-architects with a preference for complex designs and cultural interests place significantly greater emphasis on the inhabitants of housing than all other groups. The effect of preferences for complex designs (high Barron-Welsh) does not detract from the relationship between cultural interests and emphasis on the inhabitants of housing; but clearly facilitates this relationship. This suggests that preferences for complex designs are associated with a more general tolerance for complexity; and for non-architects this complexity is associated with social aspects of housing.

Some support for this argument is demonstrated by reviewing the curves for non-architects at low and medium levels of Barron-Welsh in figure 8. These curves indicate a tendency for social terms in housing descriptions (i.e., emphasis on the inhabitants of housing) to increase for non-architects as Barron-Welsh increases through all levels of aesthetic values. These results can be interpreted to mean that for non-architects an increased preference for complex

designs is associated with social aspects of housing. Thus, for non-architects, social aspects of housing may be an aspect of complexity in housing environments.

Architects, on the other hand, demonstrate lower percentages of social terms in their housing descriptions when their Barron-Welsh scores and aesthetic values are high. In other words, architects with preferences for complex designs and with cultural interests place less emphasis on the social aspects of housing. These results can be interpreted to mean that for architects, complexity is associated with aspects of the environment other than social aspects (i.e., a larger context, a process, an interaction of physical and social, or an evaluative judgment).³²

In view of the results discussed above it can be suggested that for both architects and non-architects, preferences for complex patterns are not likely to be associated with physical aspects of the housing environment, but in-

³²Substantiation of the aspects of the environment possibly associated with visual complexity for architects is provided by comparing the results shown in figure 8 with table 18 in the RESULTS section of this paper. Table 18 indicates that people with low Barron-Welsh scores are likely to have greater interest in the physical aspects of housing; while people with high Barron-Welsh scores are likely to have greater interest in "other" aspects of housing.

Since non-architects with high Barron-Welsh scores clearly show an interest in social aspects of housing in figure 8, it can be concluded that architects with high Barron-Welsh scores are responsible for the interest in "other" aspects of housing indicated in table 18 for Barron-Welsh. This conclusion is supported by the greater interest in "other" aspects of housing that is demonstrated by architects in general when compared with non-architects independent of all other variables.

volve something beyond these physical aspects of housing. For non-architects, preference for complexity is associated with the inhabitants of the housing (i.e., social aspects); while for architects, preference for complexity is associated with a larger context, a process, an interaction between physical and social, or an evaluative judgment (i.e., other aspects).

Thus, social and "other" aspects of environmental conceptualization may be interpreted as aspects of the environment that are considered more complex than physical aspects. These more complex aspects of the environment (i.e., social and "other") are apparently of principal interest to people who also prefer complexity in visual designs. From this point of view, a preference for complexity in visual designs may indicate a preference for complexity in general. The results of this study suggest that this preference for complexity may be manifested in a variety of ways depending on personality and environmental factors.

Another important implication of this relationship between environmental conceptualization and preference for visual complexity is that people who are more creative may prefer more complex interactions of physical, social and "other" aspects of the environment. These preferences would not be limited to housing environments and inhabitants, but would indicate other building types and the environment as a whole.

An interesting extension of these findings would be an

investigation of differences in attitudes toward neighborhood and community among people with different levels of aesthetic values and creativity. For example, some groups of people (i.e., with low preference for complexity) may prefer housing and neighborhoods that are homogeneous in their physical and social characteristics. Other groups of people (i.e., with higher preferences for complexity and with cultural interests) may prefer housing and neighborhoods that are heterogeneous in their physical and social characteristics; or who prefer heterogeneity and complexity in the larger community beyond neighborhood. Further research on these issues could determine the validity of these suggestions and add significant personality dimensions to the present research on neighborhood and community.

These interpretations of the Barron-Welsh results have reinforced the argument that diversity is an important aspect of environmental conceptualization, and suggested that preference for complexity as an aspect of creativity has a relationship to environmental conceptualizations. From this point of view, it can be seen that differences in environmental conceptualization between architects and non-architects are not simply a matter of occupational distinction; but involve cultural and formalistic aspects of aesthetic values as well as preferences for complexity.

Environmental Experience

Another aspect of background and experience that

affects environmental conceptualization is environmental experience. In this study, environmental experience was limited to housing experience as measured by type of childhood house, prior house, present house and ideal house. The housing experience results of this study are not clear due to the limited range of housing experience in the sample of people who participated in this study (i.e., largely single family suburban). However, there was somewhat more variability in people's present house; and on the basis of these results it can be suggested that diversity of housing experience (or at least diversity in present house) may be related to diversity in environmental conceptualization.

For example, people who live in suburban apartments are likely to have physical conceptualizations of the environment while people who live in urban apartments are likely to have more diverse (i.e., "other") environmental conceptualizations. Similarly, people who live in single family suburban housing tend to have physical or social conceptualizations of the environment, while people who live in a variety of different housing types tend to have more diversity in their environmental conceptualizations (i.e., including both physical and social aspects).

These associations between diversity in environmental experience and diversity of environmental conceptualization are complimentary to the relationship between complexity and diversity discussed above in connection with Barron-Welsh

results. These associations also indicate that urban environments and variety of housing experiences may provide the complexity and diversity of housing experiences preferred by people with diverse conceptualizations of the environment. It would be useful for future research to explore which aspects of urban environments and which aspects of varied housing experiences are most related to diversity in environmental conceptualizations. Future research could also investigate relationships between diversity in environmental conceptualizations and diversity in other building types and in the environment as a whole.

Interactions

It was argued in the Introduction to this study that environmental variables are interactive and that research results based on isolated variables would not provide an accurate indication of environmental behavior. In view of this argument, this study has employed statistical tests where variables were interactive (i.e., multivariate) as well as tests where variables are isolated (i.e., univariate). It is noteworthy that some of the variables that were significant in the interactive tests were also significant when tested individually. The discussion of variables above was based on results from interactions that were both relevant to the conceptual issues of this study and that were supported by individual tests.³³

³³A number of variables were related to some aspect of

Comparisons of the results from interactive (i.e., multivariate) tests and isolated (i.e., univariate) tests have been extremely important to this study. These comparisons have helped in identifying problems in measurements and sampling; have provided more information for interpretations of results; and have increased confidence in conclusions drawn from these results. This approach is strongly recommended for future research exploring environmental issues.

Interactions of variables indicated by these statistics have been supportive of several of the concepts discussed in the Introduction. For example, the interactions of family type and housing type in the housing preference measure helps support the basic concept that housing preferences are based on discrimination and matching qualities of people with qualities of the environment. Similarly, the patterns of variables associated with environmental conceptualization demonstrate that interactions of background and experience variables influence environmental conceptualizations. The interactions of occupation, AVL Aesthetic values and the Barron-Welsh measure of preferences for visual complexity

environmental conceptualization in multivariate tests but not on univariate tests (i.e., age, income, childhood house, prior house, ideal house and AVL Religious values). These results were not included in the discussion due to inconsistency in results from multivariate to univariate tests and/or low significance levels. Several interactions were excluded from discussion for similar reasons (i.e., age x present house x AVL Religious values and education x occupation).

Future research should include these variables in order to further explore their possible relationship to variations in environmental conceptualizations.

is a particularly interesting example. The results of this study have also supported the argument that environmental conceptualizations are not exclusively physical or social as implied by previous research, but are interactive and depend on context. Generally, the results of this study have supported the argument that research based on interactions of variables provides a more accurate basis than research based on single variables for explaining the complex relationships that are characteristic of environmental issues and behaviors.

Summary: Before discussing the variables associated with housing preferences, the effects of variables associated with environmental conceptualization can be summarized. It has been shown that theoretical values, aesthetic values and economic values are associated with variations in environmental conceptualizations. These results suggest that diversity may be a particularly important aspect of environmental conceptualization, and that social communication by way of the environment may be of practical importance for environmental conceptualizations.

It was also suggested that aesthetic values may have cultural and formalistic components that affect variation in environmental conceptualization more than an occupational distinction between architects and non-architects. The discussion of the effects of creativity on environmental conceptualization suggested that preference for complexity

may be an aspect of diversity in environmental conceptualizations. It was suggested that architects may prefer complexity in different aspects of the environment than non-architects, but that neither architects nor non-architects were likely to emphasize complexity in physical aspects of the environment.

The effects of the environmental experience on environmental conceptualization appears to reinforce this discussion of complexity and diversity. It was suggested that in various ways diversity of environmental experience may be related to diversity in environmental conceptualization. Future research could identify components of environmental experience that relate to complexity and diversity in environmental conceptualizations. The implications of these results for neighborhood and community design were also discussed.

A discussion of the hypotheses related to these results will follow the next section on housing preferences.

Housing Preferences

The measure of housing preferences used in this study involves discriminating and matching various family descriptions with projected photographs of various types of housing. It is assumed that people vary in their discriminating and matching families with photos, and it is expected that these variations are related to differences in environmental conceptualizations. The discussion which fol-

lows will focus on the relationship between environmental conceptualizations and this measure of housing preferences. The influence of other population variables, housing variables and family variables will also be discussed.

Generally, the results of this study indicate that people vary in their discriminating and matching families (i.e., qualities of people) with photos (i.e., qualities of the environment). Further, results indicate that variations in discriminating and matching families with photos are related to various aspects of environmental conceptualization, but that these results vary from one photo to another.

For example, the results indicate that the various aspects of environmental conceptualizations do affect the discrimination-matching task for the housing types shown in photos 2, 3, 4, 5 and 10 (respectively: suburban, single family, modern; suburban, single family, modern; suburban, multiple-family, traditional; suburban, multiple-family, modern; and urban, multiple-family, modern). Similarly, there is a tendency for aspects of environmental conceptualizations to affect the discrimination-matching task for the housing types shown in photos 6, 7 and 8 (respectively: urban, single family, traditional; urban, single family, modern; and urban, multiple-family, modern.³⁴ In other words,

³⁴It has been noted that the effects of environmental conceptualizations on housing preferences varies from one photo to another. This pattern of effects does not seem to be related to the variables used to select housing types for this study (i.e., suburban or urban; single family or multiple family; modern or traditional design style). However, these

the majority of photos (8 out of 10) show at least a marginal relationship between environmental conceptualizations and housing preferences as measured in this study. These results provide some support for the argument that environmental conceptualizations affect housing preferences.

However, Hypothesis IV predicted a more specific relationship between environmental conceptualizations and housing preferences than is discussed above. In that hypothesis it was expected that people with environmental conceptualizations which include social aspects would be different in their understanding of other people's housing preferences than people with environmental conceptualizations which do not include social aspects.

These specific relationships between housing preferences and social environmental conceptualizations are de-

differences in effects may be due to other aspects of environmental information that is conveyed through these photos. For example, there may be a greater clarity or consensus of social meanings conveyed in the photographs where there is no difference in effects (i.e., photos 1 and 9). In other words, for these two photos, there is no disagreement regarding which families are appropriate for these housing types and which families are not appropriate for these housing types.

Thus, the effects of environmental conceptualizations on the discrimination-matching task for housing types shown in photos 2, 3, 4, 5 and 10 indicate a disagreement between people with different environmental conceptualizations regarding the appropriateness of these housing types for various families. This disagreement may be based on differences in understanding of the social meanings conveyed in these photos. It would be extremely useful to the study of environmental conceptualizations and housing preferences if future research could identify specific social meanings conveyed in housing and the variables that affect clarity and consensus of these meanings.

Other variables with respect to housing types shown in the photos will be discussed later in this section.

monstrated in the results for photos 2, 3, 8 and 10 as illustrated in figures 1 through 4 in the RESULTS section. As expected, these results indicate that people with social environmental conceptualizations discriminate and match families with photos differently than people without social environmental conceptualizations.

Further analysis of the relationship between environmental conceptualizations and housing preferences indicates that people with social environmental conceptualizations appear to be taking more factors into consideration when discriminating and matching families with photos. For example, analysis of the results for photo 2 suggests that people without social environmental conceptualizations may be discriminating and matching families with photos on the basis of class differences in family types. People with social environmental conceptualizations on the other hand, appear to be discriminating and matching families with photos on the basis of children in the family as well as class differences.

An interesting extension of these results is found in the relationship between housing preferences and environmental conceptualizations categorized as "other". This relationship is demonstrated in the results for photos 5 and 10 as illustrated in figures 5 and 6 in the RESULTS section. These results suggest that people with "other" environmental conceptualizations appear to be discriminating and

matching families with photos on the basis of class differences and aesthetic interests of the family types.

In view of earlier discussions regarding diversity as a component of environmental conceptualization, it can be suggested that people with more diverse environmental conceptualizations are likely to take more factors into consideration when discriminating and matching families with photos. This interpretation is generally consistent with the relationships between social and "other" environmental conceptualizations and housing preferences as described above.

This discussion has shown that the relationship between environmental conceptualizations and housing preferences is different for people with social environmental conceptualizations as expected. It has also been shown that this relationship is different for people with "other" environmental conceptualizations; and it has been suggested that diversity in environmental conceptualizations may be a factor in these differences. Future research should explore this possible connection further to determine whether and in what ways diversity and preference for complexity may influence people's perceptions of and interactions with the physical and social environments.

The following discussion explores the housing preference results beyond the scope of Hypothesis IV in order to provide a better understanding of this measure and to suggest directions for future research. This discussion in-

cludes issues related to the housing types represented in the housing preference measure; interactions between family types and housing types; and population variables other than environmental conceptualization that are related to variations in discriminating and matching families with photos.

Housing Types: It will be recalled that the housing types represented in this study were selected on the basis of variation in location (urban or suburban); habitation (single family or multiple family) and design style (traditional or modern). The ten photos used in this test were selected to represent various combinations of these variables.

One of the most prominent patterns that emerges from analysis of these housing types is the overall preference for suburban environments. Regardless of which families were being considered, appropriateness scores were generally more favorable for suburban environments (photos 1-5) than for urban environments (photos 6-10). This preference for suburban environments may be due to the fact that most people who participated in this study have suburban housing experience (i.e., suburban childhood house, suburban prior house, suburban present house, and/or suburban ideal house). On the other hand, this preference for suburban environments may simply represent the general preference for suburban environments that has been indicated in previous research and demonstrated in recent demographic patterns for metropolitan areas.³⁵

³⁵The results of this study indicated no interactions

Another aspect of variation associated with housing type involves the effect of environmental conceptualization on appropriateness ratings. For example, regardless of the family type being considered, people who use mostly physical terms in their housing descriptions are likely to consider the suburban, multi-family, traditional design housing shown in photo 4 as generally more appropriate than people who use mostly social terms in their housing descriptions.

Similarly, regardless of family type being considered, people who use only "other" terms in their housing descriptions are likely to consider the urban, multi-family, modern design housing shown in photo 8 as generally more appropriate than people who use physical or social terms in their housing descriptions.

It is not clear why people who use mostly physical terms in their housing descriptions are more favorable toward photo 4 or why people who use "other" terms in their housing descriptions are more favorable toward photo 8. For example, the variables associated with physical and "other" components of environmental conceptualization (i.e., value orientations, creativity and occupation) in previous dis-

between location of housing (urban vs. suburban) and style of housing (modern vs. traditional) indicating that style of housing does not affect preferences differently than location. The housing shown in photos 2 and 3 is clearly modern, but also clearly suburban. Both photos received high overall average scores (for all families and all people participating in the study). Although these photos are not avant garde architectural designs in 1984, these findings may be sufficient cause to reevaluate architects' common assumption that people are prejudiced against modern design.

cussion have no apparent conceptual relationship to the housing types shown in either photo. Similarly, it does not appear that environmental background (i.e., housing experience) is associated with the variables of either of these housing types.

Further investigation of the relationship between environmental conceptualization and the housing types in photos 4 and 8 could perhaps be accomplished by re-defining and expanding the variables that differentiate these two photos and selecting a new set of photos that demonstrate these re-defined variables. These results would provide information regarding why certain types of housing are preferred by people with different environmental conceptualizations.

Perhaps the most important aspect of variation associated with housing types in this study involves the differences in appropriateness from one family to another for each housing type. It was indicated earlier in this discussion that significant differences in appropriateness from family to family had been demonstrated. While this is true for most housing types, there is one significant exception: photo 5.

The housing shown in photo 5 is suburban, multiple-family, modern style. It is the only type of housing in this study where differences in appropriateness from family to family were not statistically significant. These results may be interpreted to mean that for most people this parti-

cular type of housing is considered neither appropriate nor inappropriate for any of the family types described.

The average score for photo 5 across all families indicates that people could not decide how to rate this photo in terms of appropriateness. This suggests that photo 5 may not provide enough information for discriminating and matching with the various family types. It will be recalled that the discussion of environmental conceptualizations in the Introduction of this paper included the notion that consensus of social meanings in the environment may be an important aspect of environmental conceptualizations. In view of this argument, it can be suggested that the results of photo 5 may be due to a lack of clarity in consensus of social meanings associated with the housing shown in that photo.

Similarly, the differences in appropriateness from one family to another are slightly less significant on photos 7 and 8 than on other photos. Both of these photos represent urban, multiple-family, modern housing. While the statistical significance on these two photos is well within an acceptable range, these results may indicate that the discrimination-matching task is somewhat more difficult on these photos. It is not clear whether these results are related to the variables used as a basis for selecting housing types (i.e., location, habitation, and style), or whether these results are related to the particular example shown in the photo.³⁶

³⁶At the time that the data for this study was being

This analysis of housing variables has suggested that preferences for suburban environments, environmental conceptualizations, and the symbolic information evident in housing are qualities of the environment that may have an effect on housing preferences. This information might be particularly useful for determining housing variables in future research. For example, a future study of the types and amount of information necessary for people's discrimination of housing types could clarify the role of social meanings in environmental communication. In view of the arguments presented in the Introduction of this paper regarding learning of social meanings for the environment, it is feasible that social meanings in environmental communication are an important part of environmental conceptualizations.³⁷

In any case, it should be noted that most of the photos used in this study are associated with significant differences in appropriateness scores for all families. Perhaps this can be taken as an indication that these photos are clear in their communication of social meanings and that this environmental communication is a part of the discrimina-

collected, the type of housing shown in photo 8 was "in vogue" and seemed to have broad popular appeal. This may in some part explain the judgments by people with "other" terms in their housing descriptions that photo 8 is more appropriate for all types of families included in this study.

³⁷Such research should consider the possibility that people may understand symbolic meanings communicated through the environment, but refuse to use their understanding of these meanings due to other overriding factors. Determination of what these factors might be and how they affect environmental meanings could be a focus of future research.

tion-matching process.

Family Type-Housing Type Interactions: It will be recalled that the measure of housing preferences (entitled Sensitivity to Social Meaning) involved six different hypothetical families. Each of the families were matched with each of the ten photos of housing types used in this study. Each photo was scored as being more or less appropriate for each of the families. A composite summary of the families that were considered most and least appropriate for each of the photos is shown in table 46. For purposes of reference, table 46 also includes a summary of the variables which are the basis of the hypothetical family descriptions.

Table 46 indicates several interesting patterns of relationship between family types and housing types. For example, photos that represent urban environments (photos 6-10) are more likely to be associated with families without children (family B: white collar, some college, young married, no children, travel-sport activities, saves for housing; family C: professional, college educated, older, children grown, cultural-community activities, spends on family; and family D: management, no college, retired, children grown, home-travel activities, spends on family). This pattern follows the widely accepted notion that suburbs are better suited for raising children.³⁸ These re-

³⁸It should be noted that the urban housing shown in photos 6-10 do not represent examples of urban environments that have been consciously (and visibly) designed for child-rearing. Thus, it should not necessarily be concluded that all urban environments would be considered unsuitable for

TABLE 46

SUMMARY OF MANOVA RESULTS SHOWING FAMILIES CONSIDERED MOST APPROPRIATE (+) AND
FAMILIES CONSIDERED LEAST APPROPRIATE (-) FOR EACH HOUSING TYPE

Family Types		Photo 1	Photo 2	Photo 3	Photo 4	Photo 5	Photo 6	Photo 7	Photo 8	Photo 9	Photo 10	
		S u b u r b a n					U r b a n					
		Single Family			Multi-Family		Single Family		Multi-Family			
		Tradi- tional	Modern	Modern	Tradi- tional	Modern	Tradi- tional	Modern	Modern	Tradi- tional	Modern	
A	Blue Collar No Education Middle Age School Age Children Social Activities Spends on Amenities	+	-	-	+	+	-	-		-	-	
B	White Collar Some College Young Married No Children Travel/Sports Activities Spend Saves for Housing	-				+		+	+	+	+	
C	Professional College Educated Older Children Grown Cultural/Community Activities Spends on Family	-		+	-	-	+	-			+	
D	Management No College Retired Children Grown Home/Travel Activities Spends on Family		-		+			-				
E	Professional College Educated Young Married Young Children Home/Family Activities Saves for Housing	+	+	+	+	+		-	-	-	-	
F	Management No College Middle Age School Age Children Family/Social Activities Spends on Business	+		-	-					-	-	

These results also indicate that urban housing (as shown in these photos) is considered most appropriate for active young people or cultured elderly who are active in the community (i.e., family B: white collar, some college, young married, no children, travel-sports activities, saves for housing; and family C: professional, college educated, older children grown, cultural-community activities, spends on family).

Another pattern of relationship between family variables and photo variables is indicated by comparing the general socio-economic class level of the families. For example, families with professional occupations and college education (family C: professional, college educated, older, children grown, cultural-community activities, spends on family; and family E: professional, college educated, young married, young children, home-family activities, saves for housing) are considered most appropriate for one of the most modern designs in the photos shown (photo 3); while families associated with blue collar occupations and without college education (family A: blue collar, no education, middle age, school age children, social activities, spends on amenities; and family F: management, no college, middle age, school-age children, family-social activities, spends on business) are considered least appropriate for this modern suburban

children. It is possible that the results of this study would be affected if photos of urban housing designed for children were included.

house. Apparently, some aspect of class (perhaps education) is associated with appreciation for modern design.³⁹

It is interesting to note that the influence of class differences in family descriptions is overshadowed by the association between childrearing and suburban environments. For example, family A (blue collar, no education, middle age, school age children, social activities, spends on amenities) and family C (professional, college educated, older, children grown, cultural-community activities, spends on family) represent two different socio-economic class levels and are generally given opposite scores on the appropriateness scale for most housing types. In other words, whatever housing type is considered appropriate for family A is considered inappropriate for family C and vice versa. Family E (professional, college educated, young married, young children, home-family activities, saves for housing) is similar in socio-economic class to family C except that family E is younger and has young children while family C is older and their children are grown. Note that family E is consistently considered appropriate for suburban housing (photos 1-5)

³⁹Michelson (1976) has argued that "there is no evidence to show that rich people and poor people differ in their preference for many aspects of the environment." (p. 129) His argument suggests that environmental preferences do not vary with class, but are principally restricted by financial exigencies. Other studies by Michelson (reported in the same reference) have shown that preferences are not necessarily related to an individual's attitudes and values; but may be influenced by the qualities of the environment being judged. In other words, values and meanings associated with a specific environment may be independent of an individual's general values.

even though that type of housing may also be considered appropriate for families of different socio-economic class (family A and family F) and not appropriate for families of similar socio-economic class (family B and family C). Apparently, a single family suburban house of traditional design (photo 1) is considered most appropriate for families with children regardless of other differences in those families.

Another example of relationships between family description variables and housing types variables shown in table 46 is indicated by the pattern of housing types associated with elderly families (families C and D). Note that housing types considered more appropriate for family C (professional, college educated, older, children grown, cultural-community activities, spends on family) than for family D (management, no college, retired, children grown, home-travel activities, spends on family) are modern designs in various locations and of various habitation types (photos 3, 6 and 10); while the housing considered more appropriate for family D than for family C is a traditional design (photo 4 with tendencies in this direction for photos 1 and 5). The appropriateness of other housing types (photos 2, 7, 8 and 9) for these two elderly families are considered similar.

These results suggest that a family's background and interests (such as cultural tastes) may be considered more important than age in determining appropriateness of housing for the elderly. This argument is consistent with the

approach in recent research that housing for the elderly must be designed to accommodate variations in background and interests of elderly inhabitants.

This analysis of table 46 has suggested that child-rearing, class, education, age and cultural interests are qualities of people that may be particularly important in determining housing preferences. While it is not the purpose of this study to investigate these variables, it can be suggested that these areas would be appropriate for future research.

Population Variables: The results from the measure of housing preferences used in this study indicate that various population variables are related to discrimination and matching families with photos. This section of the discussion will focus on these population variables that have been discussed in previous discussions of environmental conceptualizations and that are of interest to the conceptual issues of this study.

For example, AVL theoretical values were significantly related to variations in environmental conceptualization, and are also related to variation in housing preferences. Results from the discriminating-matching of families with photos indicate that people with high theoretical values consider photo 6 most appropriate for family C (professional, college educated, older, children grown, cultural-community activities, spends on family) and next most appropriate for family E (professional, college educated, young married,

young children, home-family activities, saves for housing). The higher socio-economic class represented by these two families may be important to people with high theoretical values when associating these families with this particular housing type. Note that families C and E differ in age and age of children, but these factors appear to be less important to the discriminating and matching task for people with high theoretical values.

Photo 6 is classified in this study as an urban, single family, traditional house type. This particular photo may communicate connotations or symbolic meanings that are associated with a particular life style. Thus, people with high theoretical values may be associating the qualities of the housing environment shown in photo 6 with their ideas of a high socio-economic class life style. People with lower theoretical values on the other hand, consider photo 6 most appropriate for family B (white collar, some college, young married, no children, travel-sport activities, saves for housing) who are of a somewhat lower socio-economic class and a somewhat different lifestyle than families C and E.

Apparently, photo 6 is interpreted differently depending on variations in theoretical values. These differences could be interpreted to mean that people with high theoretical values may be more likely to associate qualities of the environment with qualities of people on the basis of the most evident general classifications (such as socio-economic class); while people with lower theoretical values may

be more likely to consider factors other than evident general classifications.

This interpretation is consistent with the definition of theoretical values by the authors of the AVL test. An aspect of that definition is that people with high theoretical values "look for identities and differences," and that their "chief aim in life is to order and systemize (their) knowledge." Thus, it is reasonable that people with high theoretical values would be more likely to associate qualities of the environment with qualities of people on the basis of evident general classifications as suggested above.

A similar example of how population variables affect variation in housing preferences is provided by aesthetic value orientations. According to the results of this study, people with high aesthetic values are likely to consider family C (professional, college educated, older, children grown, cultural-community activities, spends on family) and family E (professional, college educated, young married, young children, home-family activities, saves for housing) most appropriate for photo 6. People with lower aesthetic values are inclined to see family B (white collar, some college, young married, no children, travel-sport activities, saves for housing) more appropriate for photo 6.

These results suggest that photo 6 may communicate an aesthetic quality that is associated with higher socioeconomic class. People with high aesthetic values may be influenced by this association more than people with lower

aesthetic values. Further, this association apparently has more influences than other factors (such as suitability for children) for people with high aesthetic values. Other variations between people with high and low aesthetic values are demonstrated on other photos, however, these will not be discussed in this brief analysis.

It should be noted from the discussion above that people with high aesthetic values are similar to people with high theoretical values in that both groups consider photo 6 most appropriate for families of higher socio-economic class (i.e., family types C and E). These combined results suggest that at least two different factors (evident classifications and aesthetic qualities) may be contributing to the associations between qualities of the environment and qualities of people in this particular situation.

On the other hand, it may be that a single overriding factor shared by people with high aesthetic values and high theoretical values (such as educated tastes) is the basis of this similarity in associations. While the influence of educated tastes (or other factors) is not unlikely, it is the conceptual position of this writer that a pattern of factors is involved in these associations, not a single factor. Since the factors suggested above may represent only part of this pattern, future research could provide further information on the larger pattern of factors involved in these associations between qualities of the environment and qualities of people.

Another population variable that affects variation in housing preferences is occupation (i.e., architect vs. non-architect). For example, results indicate that architects are more likely to consider photo 9 appropriate for family C (professional, college educated, older, children grown, cultural-community activities, spends on family) and inappropriate for family D (management, no college, retired, children grown, home-travel activities, spends on family). Non-architects are more likely to consider photo 9 appropriate for family D and inappropriate for family C. In other words, architects and non-architects disagree regarding the suitability of urban, high-rise apartment housing of traditional design for elderly families.

It appears that this particular photo is interpreted differently by architects than it is by non-architects. Architects may see aesthetic qualities in this photo that they associate with higher socio-economic class. Thus, for architects, this particular housing would be appropriate for cultured elderly, but not appropriate for elderly in general. Non-architects on the other hand, may be more influenced by considerations of life style and do not consider this particular example of high-rise housing appropriate for cultured elderly. However, non-architects may consider this particular housing as appropriate for the elderly in general. It should be noted that both groups also consider this type of housing appropriate for family B (white collar, some college, young married, no children,

travel-sport activities, saves for housing) who are different in age, class and life style than either family C or D.

Similar disagreements between architects and non-architects regarding suitability of housing for children is indicated by the results for photo 3. While these results are not statistically significant, there is a tendency for architects to consider photo 3 more appropriate for family E (professional, college educated, young married, young children, home-family activities, saves for housing) than for family C (professional, college educated, older, children grown, cultural-community activities, spends on family). Non-architects on the other hand, are more likely to consider photo 3 appropriate for family C and inappropriate for family E. Apparently, both architects and non-architects associate the aesthetic qualities of this house with higher socio-economic class, but disagree regarding suitability of this house for elderly.

Other differences between architects and non-architects are indicated on other photos. As with most of the population variables discussed above, associations between aesthetic qualities of the environment and levels of socio-economic class may be influencing results.

Since the present study does not include an investigation of participants' reasons for discriminating and matching families with photos as they did, the interpretations above must be taken as suggestions for future research directions. Such research could investigate the ex-

planations people offer for their choices, and the extent to which differences in families' socio-economic class, cultural interests, age, children, life style, etc. influence the discrimination-matching task.

It should also be noted that different housing types appear to be interpreted differently by different population groups (i.e., architects vs. non-architects; high theoretical or aesthetic values vs. low theoretical or aesthetic values, etc.). Apparently, different interpretations of various aspects of the photos used in this study are important to people's judgments of housing preferences. Identification of these aspects of housing in future research would provide a substantial basis for extending the results of this study.

Finally, further research could also extend the investigations of this study regarding population variables that affect housing preferences. This study has shown that environmental conceptualizations, occupation and value orientations affect the discrimination-matching tasks that is assumed to underlie housing preferences. It is likely that other population variables reflecting variation in background and experience would also affect differences in housing preferences.⁴⁰

⁴⁰When this study first started, my daughter Stacy (then age 4) look at photo 1 and asked "where are the people?" Five years later, she again looked at photo 1 and gave a lengthy, unprompted description of who lived in the house; why they bought the house; how the house was built; and where it was located. These incidents illustrate the potential of research that explores the development of environmental conceptualizations in children.

6. DISCUSSION OF HYPOTHESES AND CONCLUSIONS

Hypothesis I

One of the principal assumptions of this study is that environmental conceptualizations are affected by background and experience. This assumption was tested by hypothesis I which predicted that average value orientations would be associated with average environmental conceptualizations (i.e., no significant relationship between value orientations and environmental conceptualizations). When all variables included in this study were tested together, results supported the null prediction of hypothesis I.

When fewer variables were tested together, however, some significant relationships between value orientations and environmental conceptualizations resulted. Although these latter results were not consistent with hypothesis I or with the multi-variate approach of this paper, they were analyzed and discussed in an effort to investigate the relationship between value orientations and environmental conceptualizations in greater detail than was possible at the beginning of this study.

For example, people with environmental conceptualizations that include both physical and social aspects or that include "other" aspects are likely to have low theoretical values, and may have a greater tolerance for diversity. Further research could investigate whether diversity is an aspect of environmental conceptualizations; and if so, why

this aspect of environmental conceptualization is masked when demographic, personality and environmental experience variables are tested together. Such research would require a measure of tolerance for diversity and/or a measure of diversity as a value orientation.

This study has also indicated that variations in environmental conceptualizations are related to other measures of background and experience; and that these relationships between environmental conceptualization and background and experience may vary in the context of environments other than the housing included in this study. Future research should investigate the patterns of relationship between background and experience variables and environmental conceptualization for a variety of different architectural environments.

In addition to confirming the relationship between environmental conceptualization and background and experience, these results for hypothesis I demonstrate the importance of holistic research models for environmental issues. In this respect, it should be noted that the results and subsequent conclusions of this study would be significantly different had fewer variables been included in an effort to achieve more research control or clarity. In view of the variations that are characteristic of environmental conceptualization, future research should be based on analysis designs that include comparisons of multivariate and univariate results as in the present study.

Hypothesis II

Hypothesis II predicted a specific relationship between value orientations and environmental conceptualizations that was based on MacKinnon's research with creative architects. This hypothesis was intended to test relationships between environmental conceptualization and background and experience variables assumed to be unique to architects. However, the number of people with this particular pattern of values in the population surveyed was not large enough to provide an adequate test of this hypothesis or its basic assumptions. Although 570 questionnaires were analyzed for this study, only six (i.e., approximately 1% of the population) demonstrated the pattern of value orientations specified in hypothesis II. Three of these six were architects and three were non-architects.

In view of these results it cannot be suggested that hypothesis II is confirmed or rejected. However, it can be noted for the benefit of future research that highly specific patterns of value orientations (such as the pattern specified in hypothesis II) are likely to be characteristic of only a small segment of the general population. Since MacKinnon's research was based on a small and carefully selected sample of creative architects, the small group of people who demonstrated the pattern of values predicted by hypothesis II in this study may be similar to the architects in MacKinnon's sample. In view of the results of

this study, it can be suggested that MacKinnon's definition of creativity in architects may be incomplete. Future research could compare the personal and social characteristics of architects in MacKinnon's research with those of people (including both architects and non-architects) who measure highly in other aspects of creativity.

Hypothesis III

The issues of architects vs. non-architects raised in hypothesis II were carried further in hypothesis III which predicted that creativity is an aspect of background and experience related to environmental conceptualization regardless of differences between architects and non-architects. Hypothesis III predicted that more creative people would have different environmental conceptualizations than less creative people whether architects or non-architects.

The results of this study indicate that preference for visual complexity as an aspect of creativity is related to combined physical and social environmental conceptualizations and not related separately to only physical or only social environmental conceptualizations. These results confirm the prediction of hypothesis III as stated.

However, it should be recalled that hypothesis III was based on the assumption that creative people were more likely to have non-average environmental conceptualizations (i.e., either physical only or social only). Since the results for hypothesis III indicate that people with pre-

ferences for visual complexity are more likely to have average environmental conceptualizations, the assumptions behind hypothesis III require further investigation. Future research should investigate whether preference for visual complexity is an adequate measure of creativity, or whether combined physical and social environmental conceptualizations are truly average or typical of the population as a whole. A possible outcome of this future research is that people who are average in their environmental conceptualizations may also be creative.

This study has focused on preference for visual complexity as an aspect of creativity which is most likely to be involved in environmental conceptualizations, housing preferences, and comparisons of architects with non-architects. However, other aspects of creativity (such as need for order and disorder, intelligence, non-conformance, sex differences, etc.) may also be related to the various conceptual interests of this study, as well as to other areas of environmental psychology. Further research on the relation of various aspects of creativity to environmental issues would be a logical extension of this study into a relatively unexplored area.

Another aspect of hypothesis III involves differences between architects and non-architects in environmental conceptualizations and measures of creativity. The results of this study have shown that differences in environmental

conceptualization between architects and non-architects only occur when the interactive effects of occupation, preference for visual complexity and aesthetic values are considered. Differences in cultural and formalistic aspects of aesthetic values and differences in preferences for complexity appear to be particularly important aspects of variations in environmental conceptualizations between architects and non-architects.

Architects are not significantly different from non-architects in other measures included in this study. These findings suggest that architects as a group do not see or value the environment differently than non-architects as a group. Research which characterizes architects as different from non-architects in their attitudes toward the environment should be re-evaluated to determine whether results apply only to specific subgroups of architects and non-architects such as those with different aesthetic values or different preferences for complexity.

It should also be noted that physical environmental conceptualizations are not characteristic of architects nor are social environmental conceptualizations more characteristic of non-architects as suggested by Jacobs and other researchers. This study has shown that the physical and social aspects of environmental conceptualizations are not dichotomous, but are interactive and may include aspects of the environment other than physical and social.

The results of this study indicate that research based on the architect vs. non-architect distinction alone may be overgeneralized, and should include, for example, measures of aesthetic values and preference for visual complexity for more accurate determination of differences between architects and non-architects. Further research in this area could provide architects with greater understanding of similarities and differences in various client groups, and perhaps provide a basis for designing towns and buildings that are more relevant to public perceptions of the environment. Specific areas of research might investigate how various types of buildings, neighborhoods and communities are interpreted by people with different levels of aesthetic values and preference for visual complexity.

The results of comparisons between architects and non-architects in the present study may also have implications for architectural education. Since architects are not a homogeneous group, then perhaps architectural education should be designed to accommodate a range of differences in abilities and interests (i.e., differences in creativity, environmental conceptualizations, background and experience, etc.).

Hypothesis IV

Another principal issue of this study involves the relationships between environmental conceptualization and housing preferences. It was assumed that housing prefer-

ences vary from one person to another and from one environment to another. These variations were expected to be related to environmental conceptualizations and to the background and experience variables associated with environmental conceptualizations. A complex measure was developed for housing preferences in order to investigate the network of social and environmental variables assumed to be involved in the relation between housing preferences and environmental conceptualizations. Hypothesis IV predicted that differences in environmental conceptualization would be related to differences in this measure of housing preferences.

Results confirm the hypothesized relation between environmental conceptualization and housing preferences and indicate that various social and environmental characteristics are part of this relationship. For example, socioeconomic class, age of children, cultural interests, aesthetics, suburban location, and childrearing environments are characteristics that have variable influence on housing preferences depending on differences in environmental conceptualizations.

These results demonstrate that people readily discriminate and match qualities of people with qualities of the environment as assumed in the Introduction to this paper. Further, these results demonstrate that people can make judgments regarding the housing preferences of others. It is likely that these judgments of others' housing preferences are based on symbolic meanings in the physical environ-

ment, and that this process is similar to the process that underlies housing preferences for oneself.

This study has provided only a preliminary exploration of the interactions of these variables. Further research on symbolic information in the physical environment; relationships between social and environmental characteristics related to housing preferences; and differences among people in their perceptions of social and environmental characteristics is important to the continuation of housing preference research.

Conclusion

Perhaps the most important conclusion that can be drawn from this study is that the architect vs. the non-architect distinction is an overgeneralization, and that differences in environmental conceptualization and creativity do not follow occupational classifications. This study has shown that differences in tolerance for diversity, preference for complexity and aesthetic values are more likely to influence differences in environmental conceptualizations than occupational differences.

The implications of these results for architectural education is particularly important as discussed above. A greater understanding and accommodation of the range of differences in environmental conceptualization demonstrated in this study may help provide designs for buildings, neighborhoods and cities that are more responsive to the needs

of people who use these environments.

Another interesting conclusion that can be drawn from this study is that definitive groups of people have a consensus of meanings associated with specific environments; and that a lack of clarity of meanings in the environment will affect people's judgments regarding those environments. This study has indicated that this consensus of symbolic meanings may be involved in processes that underlie housing preferences. There is no indication in this study that these meanings are substantially different for architects as a group when compared with non-architects as a group.

The concept that housing preferences involve a consensus of associations between people and housing can be of significance to housing producers, governmental agencies responsible for housing policies and architectural educators. It is important to note, however, that the model of housing preferences developed for this study assumes that a consensus of associations between people and environments can include a range of variations within that consensus. This study also notes that a consensus of associations between people and environments may vary from one group to another. The approach to housing preferences used in this study is appropriate for assessing these variations in associations between people and environments. It would not be appropriate to use this approach to housing preferences to develop stereotypical associations between specific types of people and specific types of environments. Such

stereotypes would be unrealistic and may limit individual choice or freedom.

While investigating the various issues discussed above, this study has dealt with concepts from architecture and social science that are basically incompatible. For example, symbolic meanings in the physical environment suggests an image of housing which is difficult to accommodate with conceptual categories and research models in social science. On the other hand, measures and statistical analysis models provided by social science seem inadequate to the complexities of architectural concepts and environmental issues. This study has made an effort to bridge conceptually divergent aspects of architecture and social science with minimum compromise. However, it is clear that future interdisciplinary research is likely to test these divergencies further and provide a healthy challenge to the conceptual positions of both fields. It is intended that this study contribute to that challenge and ultimately to more effective interactions between architecture and the social sciences.

APPENDIX A:
RE-ORGANIZATION OF
CATEGORIES FOR ALL
VARIABLES

RE-ORGANIZATION OF CATEGORIES FOR ALL VARIABLES

Variable* (Question Number)	Code Name	New Categories	Number of Responses In Category****
Age (1)	NEWAGE	1 = under 30 2 = 30-40 3 = 40-50 4 = over 50	208 225 71 66
Sex (2)	SEX	1 = female 2 = male	141 429
Income (3)	NEWINC	1 = under \$10,000 2 = \$10,000-\$20,000 3 = \$20,000-\$30,000 4 = over \$30,000	118 246 129 76
Education (4)	NEWED	1 = some college or less 2 = bachelor's degree 3 = advanced degree	127 287 154
Occupation (7)	NEWOCC	1 = architects 2 = non-architects	314 252
Suboccupation (7)	NSUBOCC	1 = professional 2 = non-professional	340 211
Work House (8)	NWORKHOU	1 = design 2 = all others	179 89
House Kind (10)	NHOUK**	1 = single family de- tached or suburban garden apartment 2 = urban row house, urban high rise apt. or other	109 152
Childhood House (11)	NHOUG**	1 = single family de- tached or suburban garden apartment 2 = urban row house, urban high rise apt. or other	442 116

RE-ORGANIZATION OF CATEGORIES FOR ALL VARIABLES - Continued

Variable * (Question Number)	Code Name	New Categories	Number of Responses In Category****
Prior House (12)	NPRIH**	1 = single family de- tached or suburban garden apartment	443
		2 = urban row house, urban high rise apt. or other	118
Present House (13)	NPRESH**	1 = single family de- tached or suburban garden apartment	340
		2 = urban row house, urban high rise apt. or other	216
Ideal House (14)	NIDEALH**	1 = single family de- tached or suburban garden apartment	391
		2 = urban row house, urban high rise apt. or other	163
Environmental Conceptualiza- tion (15)	NEWCHERR	1 = P = 0 and S = 0	74
		2 = P = 0 and S > 0	41
		3 = P > 0 and S = 0	284
		4 = P = S	74
		5 = P > S	37
		6 = P < S	20
Environmental Conceptualiza- tion (15)	NCHERR 1	1 = P = 0, S = 0 or P > S or P < S	456
		2 = P = S	74
	NCHERR 2	1 = P > 0 and S = 0 or P < S or P = S	493
		2 = P > S	37
	NCHERR 3	1 = P = S or P > S or P < S	456
		2 = P = 0 and S = 0	74

RE-ORGANIZATION OF CATEGORIES FOR ALL VARIABLES - Continued

Variable* (Question Number)	Code Name	New Categories	Number of Responses In Category****	
Environmental Conceptuali- zation (15)	NCHERR 4	1 = P = S, P > S or P < S 2 = P > 0 and S = 0	246 284	
	NCHERR 5	1 = P = S, P > S, P < S 2 = P = 0 and S > 0	489 41	
	NCHERR 6	1 = P = 0 and S > 0 or P = S or P > S 2 = P < S	510 20	
	NPERPD	1 = 18% physical or less 2 = 19-39% physical 3 = 40-58% physical 4 = 59-79% physical 5 = 80-100% physical	152 138 119 59 62	
	NPERSD	1 = 0% social 2 = 18% social or less 3 = 19-38% social 4 = 39-100% social	358 35 95 42	
	NPEROD	1 = 19% other or less 2 = 20-39% other 3 = 40-58% other 4 = 59-78% other 5 = 79-100% other	77 100 131 116 106	
	Preferred House	NHSPREF 1	1 = Photo 1 2 = Photos 2-9***	61 488
		NHSPREF 2	1 = Photo 2 2 = Photo 1, Photos 3-9	210 331
		NHSPREF 3	1 = Photo 3 2 = Photos 1-2, Photos 4-9	122 419
		NHSPREF 4	1 = Photo 4 2 = Photos 1-3, Photos 5-9	1 540
		NHSPREF 5	1 = Photo 5 2 = Photos 1-4, Photos 6-9	6 535

RE-ORGANIZATION OF CATEGORIES FOR ALL VARIABLES - Continued

Variable* (Question Number)	Code Name	New Categories	Number of Responses In Category****	
AVL Theoretical	NHSPREF 6	1 - Photo 6	129	
		2 = Photos 1-5, Photos 7-9	142	
	NHSPREF 7	1 = Photo 7	8	
		2 = Photos 1-6, Photos 8-9	533	
	NHSPREF 8	1 = Photo 8	4	
		2 = Photos 1-7, Photo 9	537	
	NHSPREF 9	1 = Photo 9	8	
		2 = Photos 1-8	533	
	NAVLT	1 = all scores below 82% and all scores below 50% of national scores		97
			2 = all scores within 50% of national scores	321
			3 = all scores above 50% and all scores above 82% of national scores	152
	AVL Economic	NAVLE	1 = all scores below 82% and all scores below 50% of national scores	162
2 = all scores within 50% of national scores			309	
3 = all scores above 50% and all scores above 80% of national scores			99	
AVL Aesthetic	NAVLA	1 = all scores below 82% all scores below 50% and all scores within 50% of national scores	168	
		2 = all scores above 50% of national scores	134	
		3 = all scores above 82% of national scores	268	

RE-ORGANIZATION OF CATEGORIES FOR ALL VARIABLES - Continued

Variable* (Question Number)	Code Name	New Categories	Number of Responses in Category****
AVL Social	NAVLS	1 = all scores below 82% and all scores below 50% of national scores	190
		2 = all scores within 50% of national scores	293
		3 = all scores above 50% and all scores above 82% of national scores	87
AVL Political	NAVLP	1 = all scores below 82% and all scores below 50% of national scores	149
		2 = all scores within 50% of national scores	324
		3 = all scores above 50% and all scores above 82% of national scores	97
AVL Religious	NAVLR	1 = all scores below 82% and all scores below 50% of national scores	299
		2 = all scores within 50% of national scores	208
		3 = all scores above 50% and all scores above 82% of national scores	63
Barron-Welsh	NBW	1 = scores of 28 or less	126
		2 = scores of 29 to 42	261
		3 = scores of 43 or more	138

Notes: * - The following variables were not included in analysis and were therefore not re-categorized: architectural education; percent house; easy design; difficult design.

** - Several variables were re-categorized and analyzed in two different formats. These variables are house kind, childhood house, present house and ideal house. Only the first re-categorization format is shown in this table. The second was not included in the results of this study.

*** - Photo 10 was not included as a category in the preferred house variable because no one indicated this photo as their preferred type of housing.

**** - The total number of responses for each variable may not be 570 (i.e., the total number of people who participated in the study) because of the 0 responses on that variable or disqualified data.

APPENDIX B:
ENVIRONMENTAL
CONCEPTUALIZATION
ANALYSIS
FORMS AND EXAMPLES

PREVIEW OF ENVIRONMENTAL CONCEPTUALIZATION ANALYSIS

The format for content analysis of question #15 was as follows:

1. Categorization of the whole text based on judges' general impression of first reading. The complete text for each subject will be judged independently (by 3 judges) as physical, social or physical-social, and as positive, negative or neutral.
2. Designation and categorization of descriptive words based on specific instructions and definitions provided judges (see attached sheets). Words and phrases will be designated by underlining a copy of the original text. Words or phrases designated will be categorized as physical, social or other. Words and phrases categorized as "other" will be listed on the data sheet for further analysis.
3. All descriptive words and phrases will be further categorized as expressing positive, negative, or neutral attitudes of the person who has written the description.
4. Quantification of data requires summation of all words and phrases underlined as well as those in each category. The numerical index for each categorization will be based on a ratio between the number of words and phrases in that category and the total number of words and phrases in the whole text.
5. Reliability of the analysis will be based on a comparison of two independent judges who both follow the above format. A third judge will be compared with the other two judges on the categorization of the whole text only (step 1 above).

INSTRUCTIONS FOR JUDGES

1. Read over entire text of question #15 once, and record your general impression of the text as either physical (P), social (S), or combined Physical-social (P/S). Also record your general impression of the text as positive (+), negative (-), or neutral (0). (See definitions of terms for further explanation of categories.)
2. Go back over the entire text and underline in red all words or phrases which you think are physical descriptors (see definitions).
3. Go back over the entire text and underline in blue all the words and phrases which you think are social descriptors (see definitions).
4. Go back over the entire text and see if any words or phrases which you have not yet underlined could fit into the physical or social category. If so, underline them with the appropriate color (red for physical, blue for social). If you find important descriptive words or phrases which are neither physical or social, underline them in yellow and designate them as "other" descriptors.
5. Go back over the entire text and check every underlined word or phrase to confirm your categorization. Re-mark any words or phrases which you think should be categorized differently.
6. Go back over the entire text and designate each underlined word or phrase as either positive (+), negative (-), or neutral (0) (see definitions). Mark your designation for each word or phrase using the same color used for underlining that word or phrase: red for physical, blue for social, yellow for "other".
7. Add up the total number of words and phrases underlined and the total number of words and phrases in each category. Record the totals in the appropriate place on the data sheet. Check to see that the sum of categories equals the total number of words and phrases in the text.

DEFINITIONS

1. Words or short phrases: units of analysis which are particularly pertinent to the explicit or implicit description of the house. Single words should be the unit of analysis whenever possible, but short phrases may be used when appropriate. Short phrases should be checked to assure that only one category of descriptor (physical, social or other) is included in the phrase.
2. Physical descriptors: words or short phrases which refer to explicit physical aspects of the house or its surroundings which are visually present in the picture (such as form, color, materials, or size). Any descriptions which are implied from the physical appearance of the house should not be in this category (such as location, number of rooms, cost of house, aesthetics, type of family).
3. Social descriptors: words or phrases which refer to implied characteristics of the people living in the house described (such as size of family, income, activities, interests). Any descriptions which do not refer specifically to the people likely to live in the house should not be included in this category.
4. Other descriptors: words or short phrases which are not included in physical or social descriptor definitions above, but which are important to the house description (such as location, cost of house, number of rooms, aesthetics). Each of these descriptors will be recorded on the data sheet.
5. Physical category: (P) a description of the house and its surroundings which includes predominantly words or phrases referring to the explicit visual appearance of the house (such as small, brick, white, fence, etc.).
6. Social category: (S) a description of the house and its surroundings which includes predominantly words or phrases referring to the people living in the house (such as two children, junior executive, enjoys watching TV, commuter).
7. Physical-social category: (P/S) a description of the house and its surroundings which includes both physical and social descriptors, with no clear predominance of physical or social words or phrases.
8. Positive category: (+) a description, word or phrase which expresses a supportive attitude on the part of the person writing the description. This category does not necessarily include positive attitudes attributed to inhabitants of the house, unless it is clear that the writer also feels positive about these attitudes.

DEFINITIONS - Continued

9. Negative category: (-) a description, word or phrase which expresses a critical attitude on the part of the person writing the description. This category does not include attitudes attributed to the inhabitants of the house unless it is clear the writer also feels these attitudes.
10. Neutral category: (0) a description, word or phrase which cannot clearly be categorized as expressing positive or negative attitudes of the writer.

CONTENT ANALYSIS (Question 15)

Subject #

1. GENERAL IMPRESSION OF ENTIRE TEXT (first reading)

- a. Record physical (p), social (s), or physical-social (ps)
- b. Record positive (+), negative (-), or neutral (0)

2. PHYSICAL DESCRIPTORS (red)

- a. Record number of words or phrases underlined
- b. Record number of + indications
- c. Record number of - indications
- d. Record number of 0 indications
- e. Subtotal of b, c, d
- f. Compare a with e, check when correct
- g. indicate sign of larger entry from b, c, d
(if none, enter x)

3. SOCIAL DESCRIPTORS (blue)

- a. Record number of words or phrases underlined
- b. Record number of + indications
- c. Record number of - indications
- d. Record number of 0 indications
- e. Subtotal of b, c, d
- f. Compare a with e, check when correct
- g. Indicate sign of larger entry from b, c, d
(if none, enter x)

4. OTHER DESCRIPTORS (yellow)

- a. Record number of words or phrases underlined
- b. Record number of + indications
- c. Record number of - indications
- e. Subtotal of b, c, d
- f. Compare a with e, check when correct
- g. Indicate sign of larger entry from b, c, d
(if none, enter x)

5. TOTALS

- a. Record total number of words or phrases underlined
- b. Record summation of 2a, 3a, 4a above
- c. Compare a with b, check when correct

EXAMPLES OF PHYSICAL TERMS

Garage under Bedroom
Two Car Garage
Boring Facade
Small Front Yard
Fake Louvre Shutters
Driveway in Front Lawn
Brick Facade
Frame House with Brick Veneer
Two Story
Colonial Style
Medium Size
Well Maintained
Tract House
Rustic Fence
Small Windows
Two Fireplaces
Peaceful Setting
New England Area
Pleasant Proportions
Detached
Unpleasant Materials
Salt Box Form
Landscaping looks great
Low density land use
Minimum setback from street

EXAMPLES OF SOCIAL TERMS

\$25,000-\$40,000 Annual Income
White Middle Class Family
Family of three
Owners take pride in their house
Single Family
Upwardly Mobile Family
Typical Midwest Family
Typical House Owner
Commuters
Housewife
College Bound Children
Middle Age Parents
Family likes to live indoors
Young Executive
Trapped in a traditional don't make waves lifestyle
Average Family
Conservative Family
Families with children, not infants

EXAMPLES OF OTHER TERMS

(Sub-categories of "Other" terms indicated in parentheses)

Suburban (Other)
Mass produced (Other)
Outer City (Physical)
Attractive (Physical)
Liveable (Social)
Neat Neighborhood (Physical)
Nice place to live (Physical)
Adequate for small family (Social)
Part of development project (Physical)
Nice (Physical)
A starter house (Social)
Requires a lot of time for cleaning and maintenance
(Social)
Modest (Other)
No Distinction (Other)
Ugly (Physical or Other)
Pleasant (Physical or Other)
Poorly designed (Physical or Other)
Regimented (Social or Other)
4 Bedrooms + 2 Baths (Physical)
Run of the mill (Social or Other)
Middle class neighborhood (Social)
Well liked type (Physical)
Real Estate standard (Social or Other)

CHARACTERISTICS OF "OTHER" TERMS

Refers to a larger context than is shown in the photograph. The larger context could be primarily physical ("part of a development project"), social ("middle class neighborhood"); or an interaction of social and physical ("suburban").

Refers to interactions between physical and social aspects of the house itself ("adequate for a small family"; "a starter house"; "requires a lot of time for cleaning and maintenance").

Refers to judgments regarding physical or social aspects of the house ("liveable"; "nice"; "modest"; "ugly"; "regimented").

Refers to processes involved in the design or construction of the house ("mass produced", "poorly designed"). This category can be included in the first category above since these processes are part of a "larger context" for the house.

APPENDIX C:
PHOTOGRAPHS OF
HOUSING TYPES

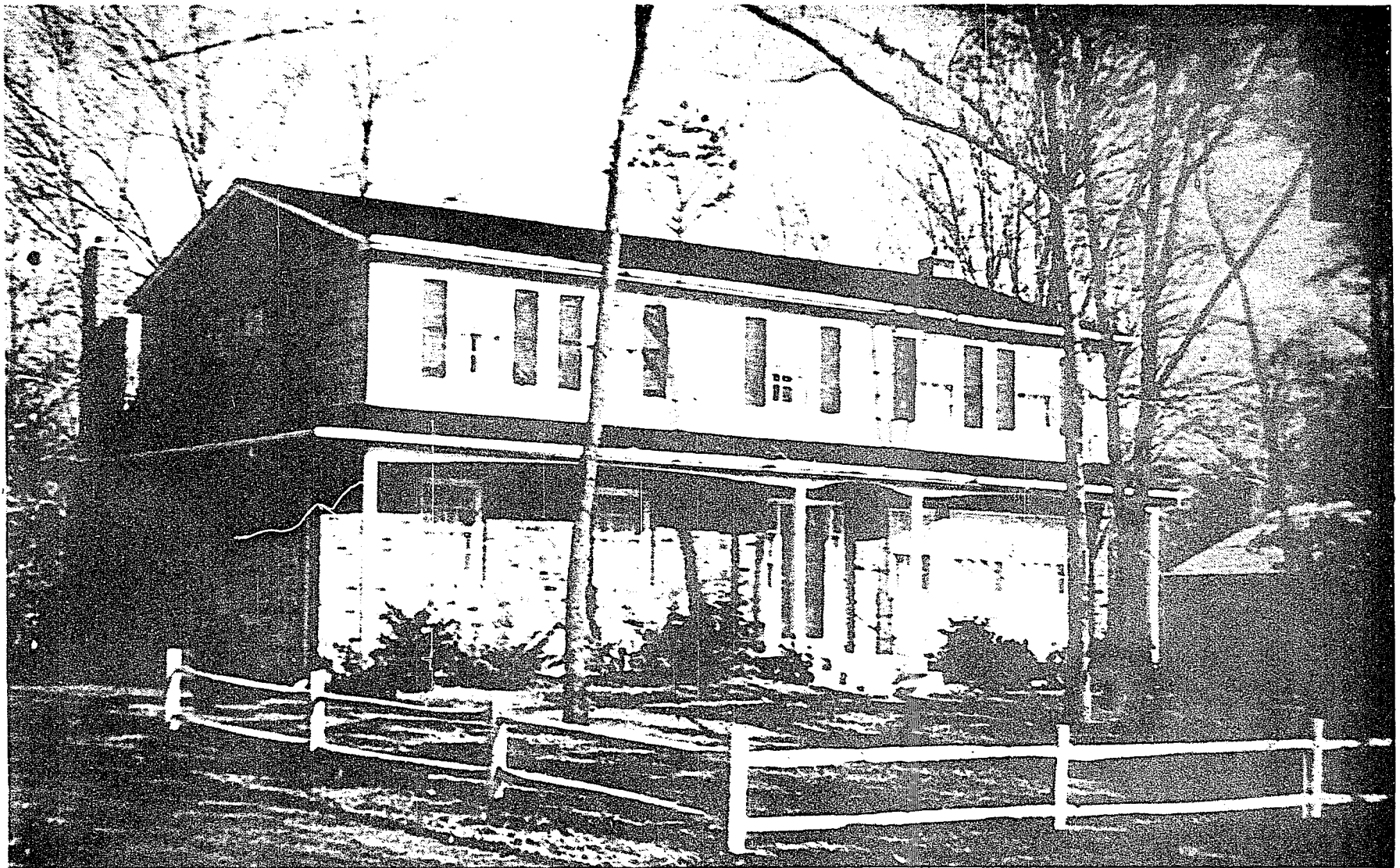


Figure 9: Photo 1: suburban, single family, traditional housing type.

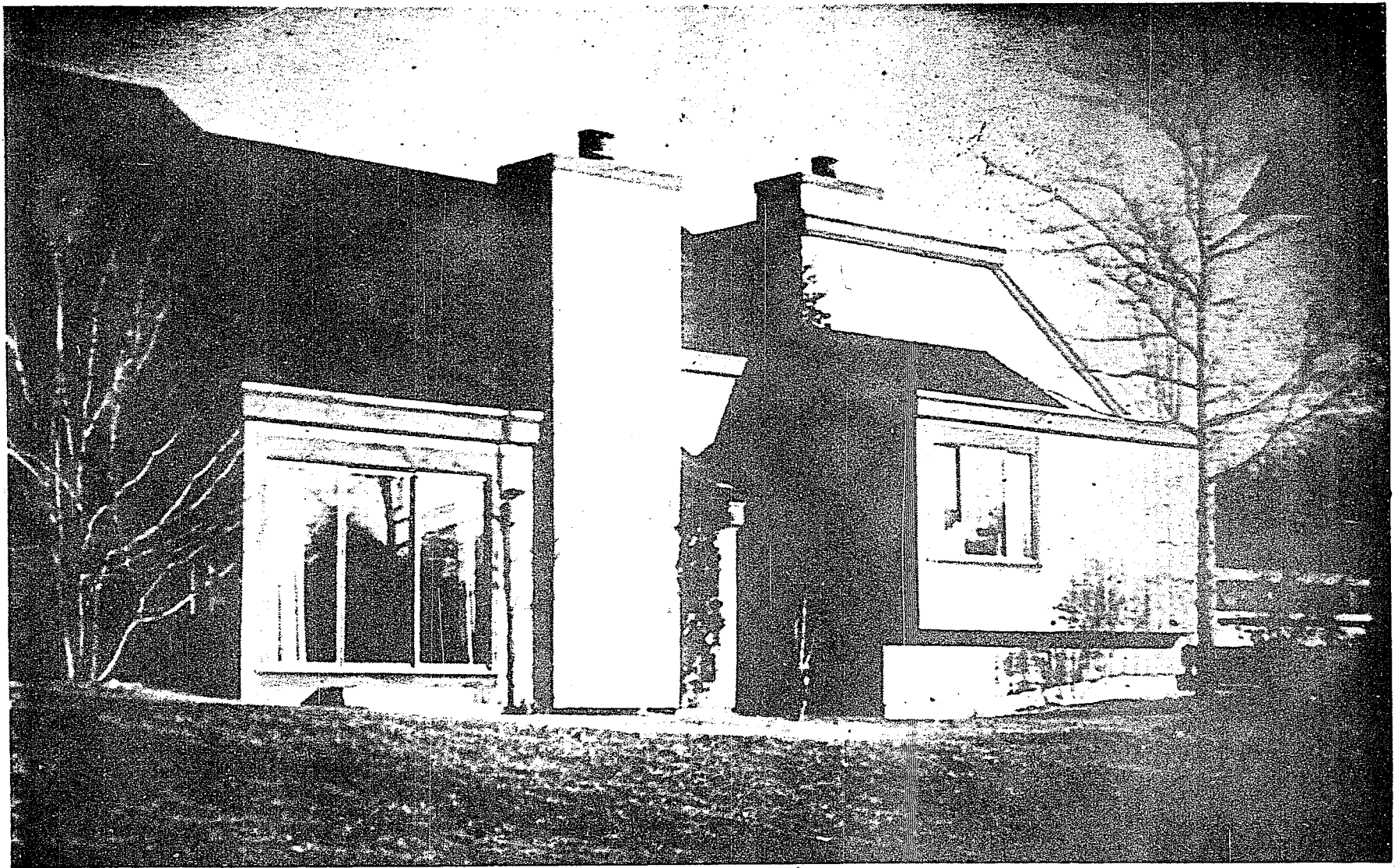


Figure 10: Photo 2: suburban, single family, modern housing type.

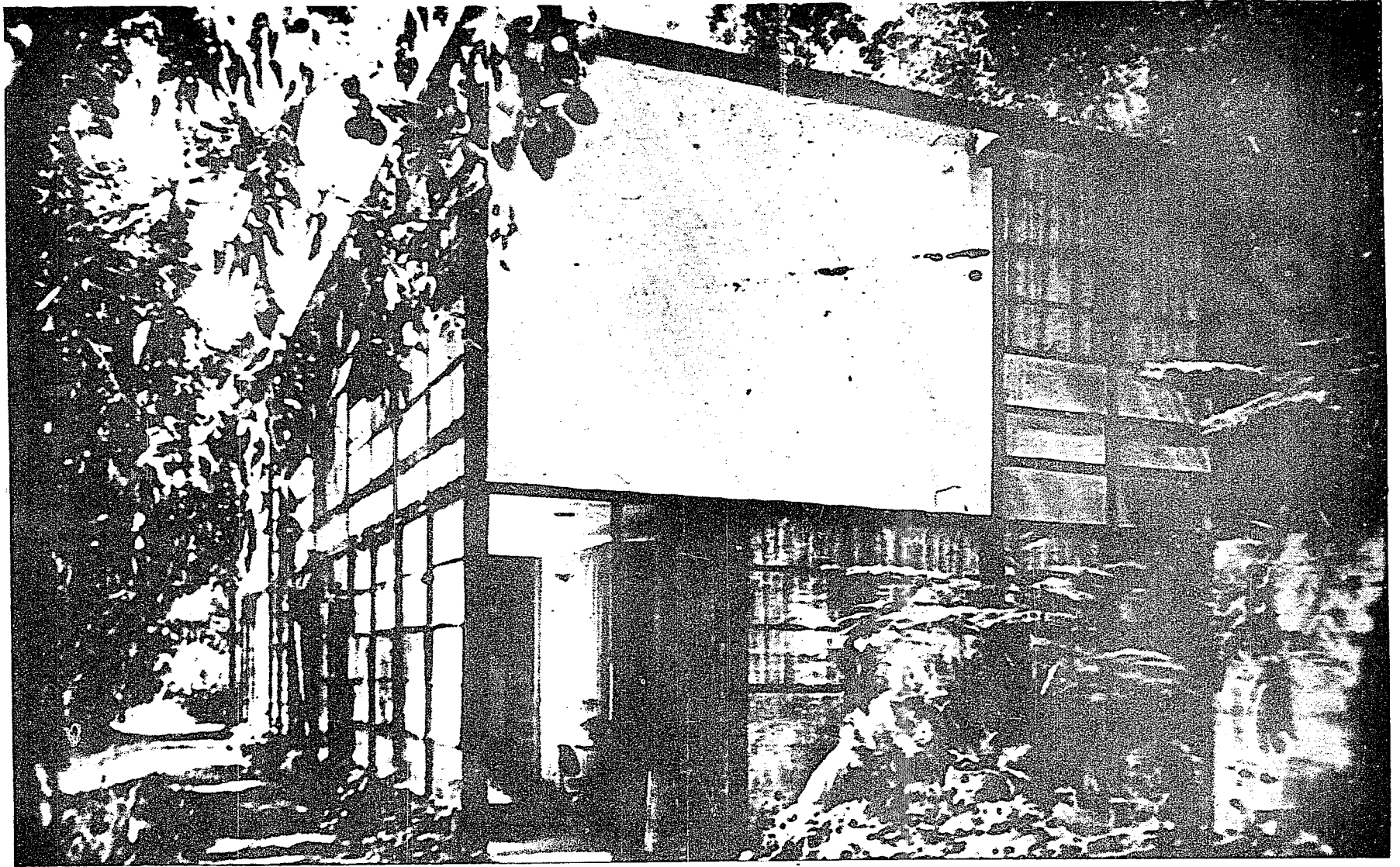


Figure 11: Photo 3: suburban, single family, modern housing type.



Figure 12: Photo 4: suburban, multiple family, traditional housing type.

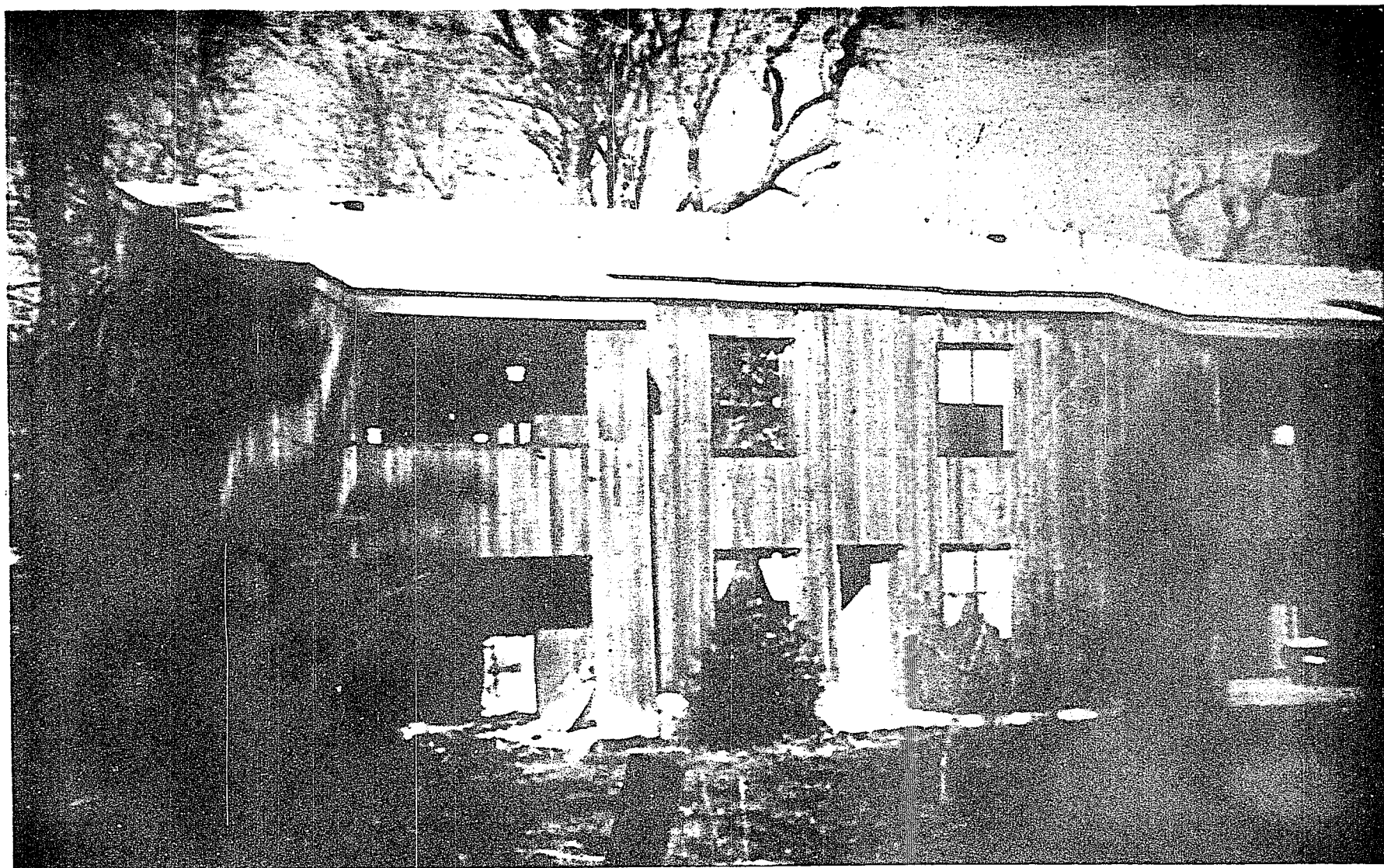


Figure 13: Photo 5: suburban, multiple family, modern housing type.



Figure 14: Photo 6: urban, single family, traditional housing type.

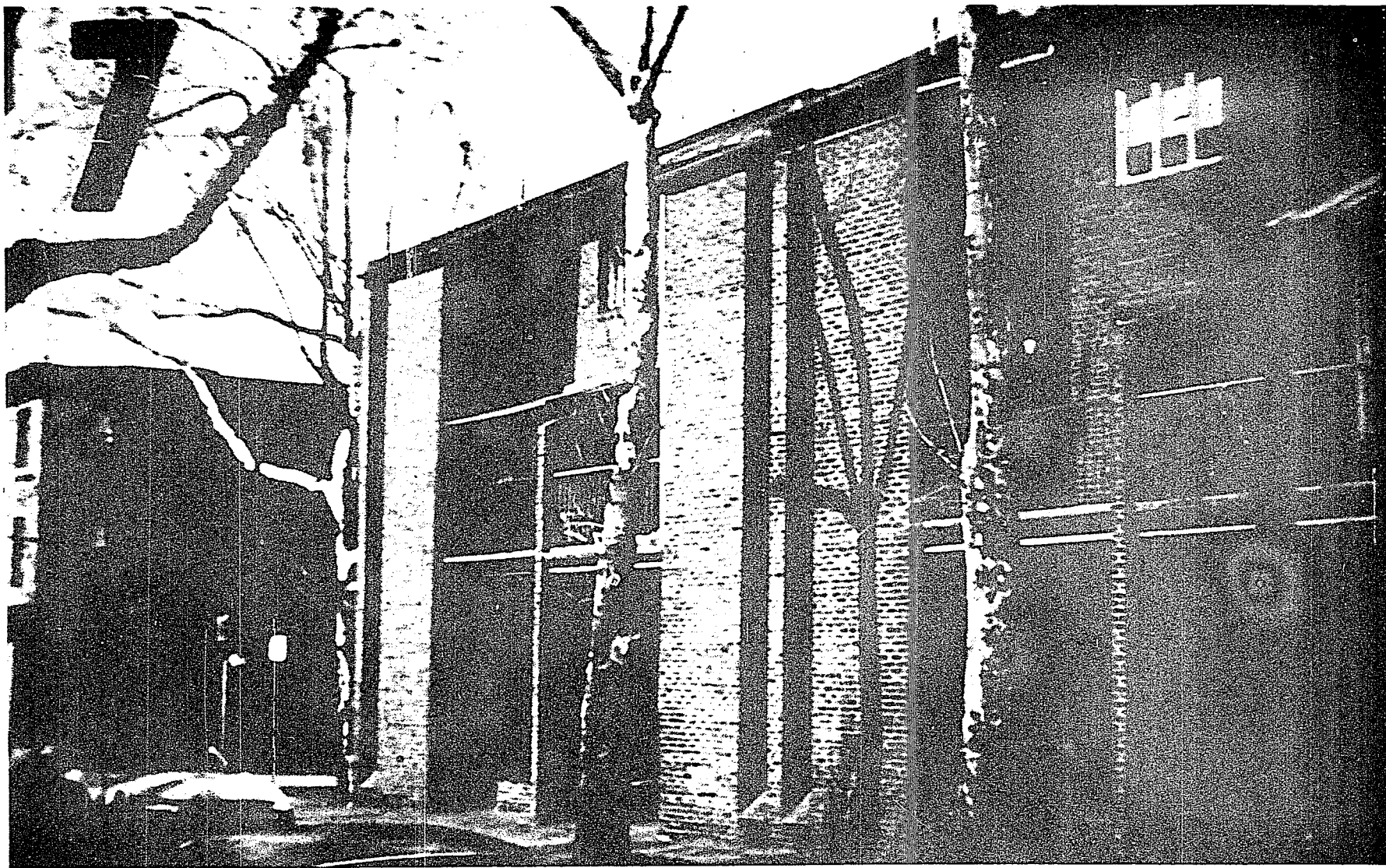
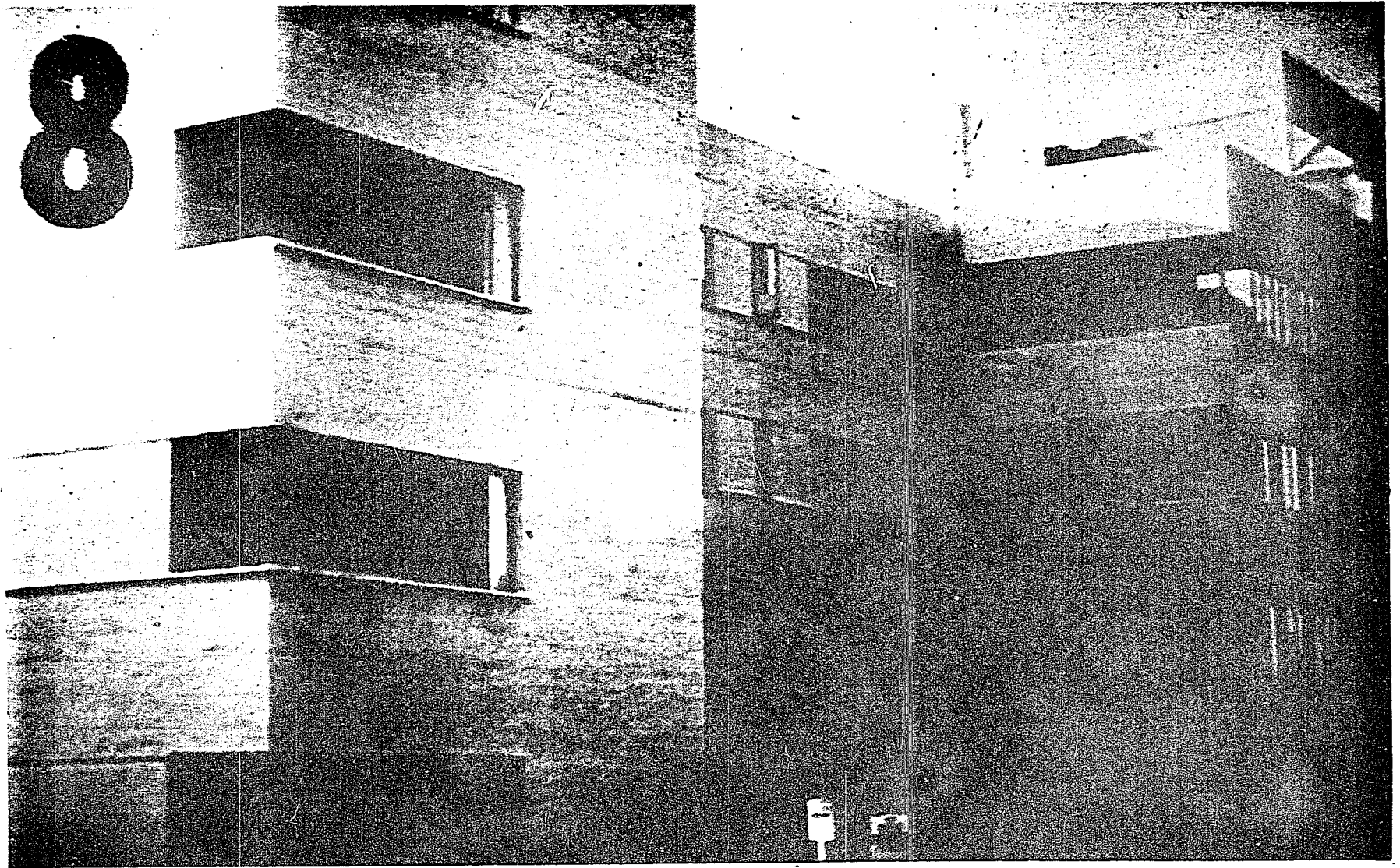


Figure 15: Photo 7: urban, single family, modern housing type.

8



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Figure 16: Photo 8: urban, multiple family, modern housing type.

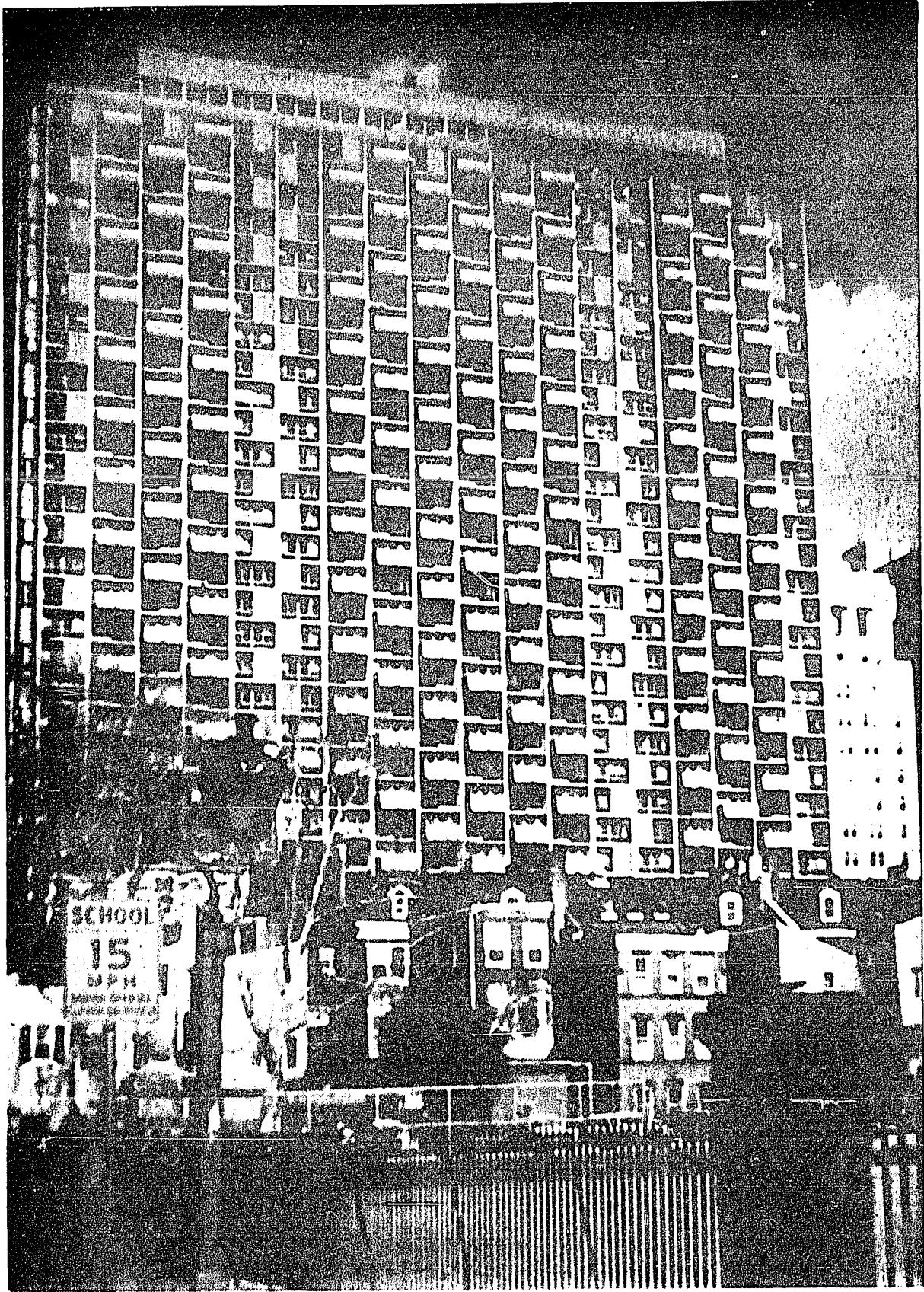


Figure 17: Photo 9: urban, multiple family, traditional housing type.

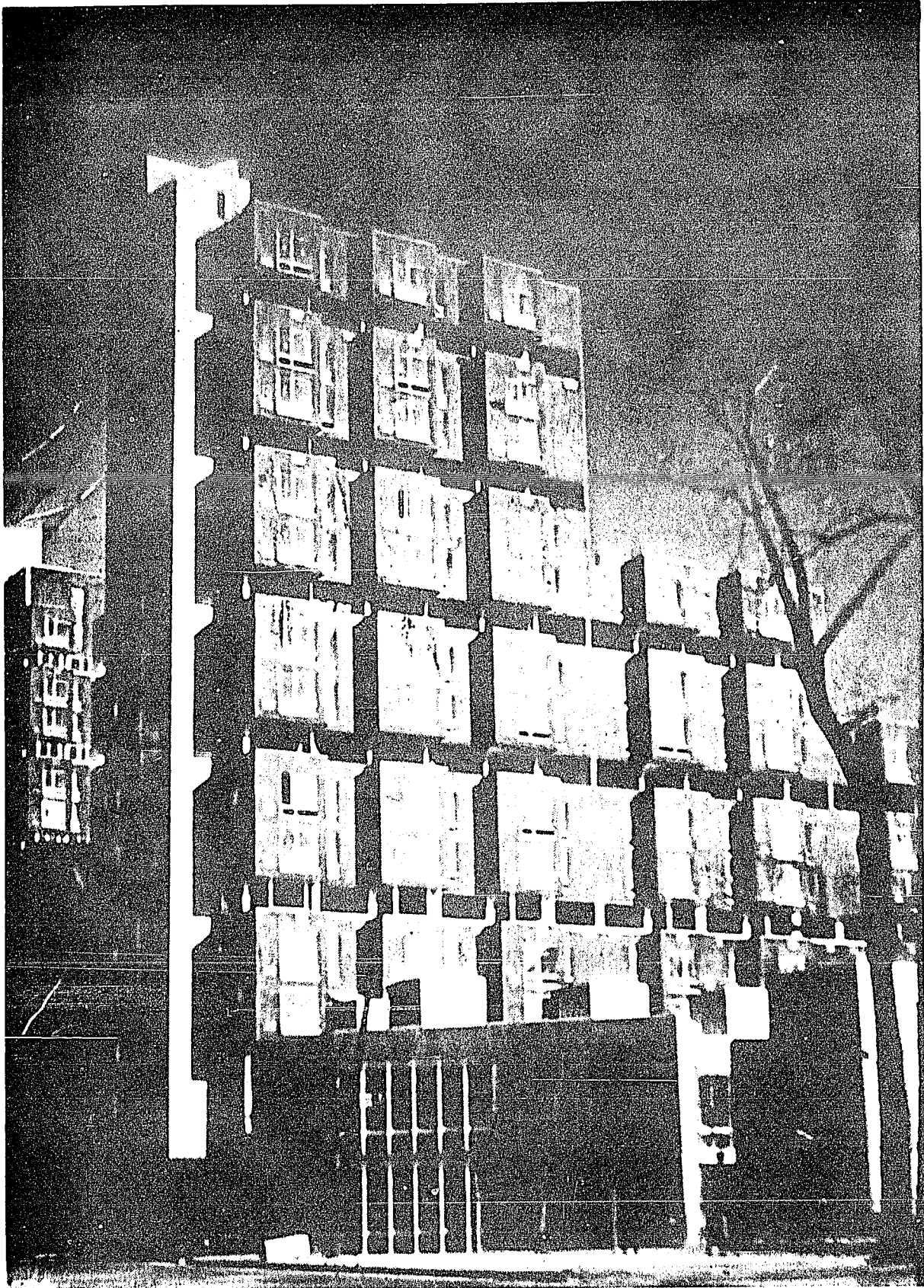


Figure 18: Photo 10: urban, multiple family, modern housing type.

APPENDIX D:
HYPOTHETICAL
FAMILY
DESCRIPTIONS

DESCRIPTION OF HYPOTHETICAL FAMILY A

Blue Collar
No Education
Middle Age
School Age Children
Social/Religious Activities
Spends on Material Amenities

Family A is comprised of a husband, wife, and six children, Mr. & Mrs. A are both around 40 years of age, and their children are all school age, ranging from six to sixteen. Mr. A dropped out of high school after tenth grade in order to start working. He learned the welding trade and is presently working for a large construction company which specializes in high-rise buildings. Mr. A spends much of his spare time watching television, particularly during football season. He often attends home games of his favorite football team, and has helped to organize a football league for boys in the neighborhood. Mr. A occasionally goes out in the evening for a drink with his friends, or to play poker at his friend's place. He sometimes has poker parties at his place. Mr. A regularly attends evening meetings of his labor union, as well as local chapter meetings of the Loyal Order of Elks.

Mrs. A has a high school education. She devotes most of her time to raising children and housekeeping. She attends religious services regularly, and participates in several religious organizations which involve volunteer work and some teaching. Almost every day, Mrs. A spends some of her time socializing with friends and neighbors who drop in for a chat. The A family celebrates most major holidays with special social events or excursions which always include the whole family, and often include other relatives who live nearby.

Mr. A's salary is ample to provide the family with the material amenities which are important to them (clothes, color TV, air conditioning, a new car every three years, etc.). In addition, some money is saved for future expenses such as wedding and education expenses for children, retirement, additional material amenities, etc. They sometimes think about a different place to live, and do have an ideal place in mind; but generally feel that other needs must be satisfied first.

However, Mr. A's employer is planning to close his business due to lack of construction work in the area. Mr. A has been offered good paying jobs in other parts of the country, and he will soon be moving to another city. Try to imagine the place which you think the A family will live in next.

DESCRIPTION OF HYPOTHETICAL FAMILY B

White Collar
Some College
Young
No Children
Travel/Sports Activities
Saves for Housing

Family B is comprised of a husband and wife. Mr. & Mrs. B are in their 20's. They both attended college for two years, then dropped out to get married and start working. Mr. B is a claims adjustor for a large insurance company, and hopes eventually to move up to a management position in the company. Mrs. B does clerical work for a large legal firm, but would someday like to be a legal secretary in a smaller law office. On weekends, they often travel to see special sights or events. They like to go skiing in winter and swimming in summer, and enjoy finding new places for both these activities. Summer vacations often involve long distance trips to places they have never been to before; and considerable time is spent planning these trips.

When not traveling, Mr. & Mrs. B like to get together with people who have similar interests, and usually spend two or three nights a week with various friends. They often invite friends to their place, and have small informal parties several times each month.

Since Mr. & Mrs. B are both working, they can afford entertainment and traveling, and still have a portion of their income for future needs. They consider an ideal place to live as a very important part of their future, and most of their savings are set aside for that purpose. For several years now, they have been collecting photographs from magazines, and have even done some drawings of their own ideas. They often discuss with friends what they would most like in a place and have developed very definite ideas what their next place will be like.

Recently, Mr. B was given a promotion which entailed some increase in salary. Mr. & Mrs. B see this as a good sign that Mr. B will be successful in the company, and have decided that they should move to a different place. Try to imagine the place which you think the B family will live in next.

DESCRIPTION OF HYPOTHETICAL FAMILY C

Professional
College Educated
Older
Children Grown
Cultural/Community Interests
Spends on Family Education

Family C is comprised of a husband and wife with two grown children: one in their third year of college; the other recently graduated from college and soon to be married. Mr. & Mrs. C are around 50 years old, and are both college graduates. Mr. C has a Masters degree in Sociology, and works for a well-known marketing research firm. Mrs. C has a degree in Art, and does free lance commercial art work for several publishing companies.

Mr. & Mrs. C are both involved in several political and community service organizations. They attend meetings of these organizations regularly, and frequently volunteer for fund-raising and other special projects. They often direct these special projects, and the place they live becomes a center for meetings, work sessions, etc.

Mr. & Mrs. C also enjoy art and theater, and try to visit art galleries or see a new play every week. For exercise, they regularly play tennis at a local tennis club, and occasionally play golf. They enjoy entertaining, and have rather large cocktail parties or formal dinners at least once a month. They are particularly fond of reading, and always find time to keep up with the latest novels and professional journals. At least once a year, they take a few days vacation to "get away from it all." They usually go to a favorite place in the Caribbean Islands where they can be sure of a quiet place to relax.

Mr. & Mrs. C have for several years been talking about a different place to live, but had decided not to move as long as their children were in high school. Although the cost of college education for two children has cut into their savings quite a bit, they can still afford to look for a place which will be more appropriate for them. Try to imagine the place which you think the C family will live in next.

DESCRIPTION OF HYPOTHETICAL FAMILY D

Management
No College
Retired
Children Grown
Home/Travel Activities
Spends on Family

Family D is a man and wife in their 60's. They have four grown children, all of whom are married and have children of their own. Mr. & Mrs. D both finished high school, but neither attended college. When he was in his late twenties, Mr. D began working for a small manufacturing company, and has been with them ever since. Over the years, he has worked his way up to Vice President in charge of Plant Operations; a position he has held for the past fifteen years.

Mrs. D is an excellent cook and seamstress, and takes a great deal of pleasure in her home-making skills. She also enjoys home decorating and gardening, and has a very fine collection of house plants. Mr. D has learned a lot about electronics, and enjoys tinkering with radios, televisions, etc. He occasionally repairs appliances for neighbors or friends, and sometimes thinks about opening his own radio/TV repair shop - just for the fun of it.

Mr. & Mrs. D are not affiliated with any religious, political, or social organizations, but they have many friends whom they have known for years, and will usually have some friends or neighbors over for dinner or cards several times every week. On vacations, Mr. & Mrs. D like to travel to different parts of the United States to see sights and meet new people. They often visit their children and grandchildren while on vacation trips, but prefer to keep their visits short, and usually stay only a few days. Although they have their own camping trailer, and enjoy traveling, they are always glad to get back home, and like staying in a permanent place most of the year.

In the past, Mr. D has always been able to provide enough money for all his family's needs, but never felt the need to spend much on housing. Recently, Mr. & Mrs. D have been thinking about how much they would enjoy a different living situation for their retirement years. Mr. D will soon be retiring with a good pension and this, together with their investments and savings, will be more than enough for their needs. They have been thinking about several different places to live, and have a pretty good idea what kind of place they would like. Try to imagine the place which you think the D family will live in next.

DESCRIPTION OF HYPOTHETICAL FAMILY E

Professional
College Educated
Young
Young Children
Home/Family Activities
Saves for Housing

Family E consists of a husband, a wife, and two children. The husband and wife are around 30 years of age, and the children are both pre-school age. Mr. & Mrs. E both have college educations. He has a degree in accounting; her degree is in education. Mr. E recently started working for a large international bank in the hope of getting assigned to an overseas branch for a few years. This would be good for his career, and he feels the experience would be good for the children.

Mrs. E did some public school teaching after graduating from college, but since the children have been born, she prefers giving full time to their needs. She is particularly interested in providing appropriate places and materials for the children's interests and activities, and has fixed up a room where they can do just about anything they want.

Mr. & Mrs. E enjoy spending their weekends doing odd jobs at home, or taking the children for a special trip or activity, such as a museum, concert or children's play. Vacations are always spent at a mountain lake, a few hours drive from home, where the family enjoys camping, swimming and boating. The E family attends religious services almost every weekend, but they are not involved in any religious organizations or activities. Mr. & Mrs. E usually go out together once a week; either to a movie or to visit friends. Occasionally they go to a special play or ballet. They frequently have friends over for dinner, and usually have a large party at their place once or twice a year.

Mr. & Mrs. E have been saving money ever since they graduated from college and would like to invest their money in a new place to live. They are looking for a place that will be suitable for their present needs, and also be easily and profitably sold when they need to move on. They have spent considerable time looking at different possibilities for a new place to live, and have found a place which they think will be ideal for them and their children, at least for the present time. Try to imagine the place which you think the E family will live in next.

DESCRIPTION OF HYPOTHETICAL FAMILY F

Management
No College
Middle Age
School Age Children
Family/Social Activities
Spends on Business

The F family consists of a husband, a wife, and four children. Mr. & Mrs. F are both in their 40's and the children's ages range from 6 to 14. Mrs. F has a high school education, but Mr. F quit high school when he was 16 to take a truck driving job. A few years later, he and a friend bought a truck and started their own trucking company, which has since grown into a successful business. Mr. F earns a good income from the business, and has no trouble providing the things his family needs. But for years, they have postponed major family expenses, such as housing, education, travel, etc. so that Mr. F could put most of his earnings back into the company. He enjoys building up the business more than anything else, and often spends evenings and weekends at his office.

Mr. & Mrs. F both grew up in the neighborhood where they are now living, and like being close to relatives and old friends. When he is not working, Mr. F enjoys talking with friends and relatives in the neighborhood and often brings someone home to eat with the family. He frequently takes his sons to sporting events, and always invites friends to go along at his expense.

Mrs. F keeps busy around the house with children and housekeeping. She also enjoys talking with different friends and relatives who stop by to say hello throughout the day and evening. She takes the children to religious services every week and regularly attends parent meetings at the children's school. Mr. F attends whenever he can.

Recently, Mr. & Mrs. F have been thinking about a larger and more comfortable place to live, and they have been talking about several different ideas. If possible, they would like to stay close to friends and relatives, but they also want a place which will reflect Mr. F's business success. They have seen several places which they think will be suitable, and expect to be moving soon. Try to imagine the place which you think the F family will live in next.

APPENDIX E:
TYPICAL
QUESTIONNAIRE

A Study of Housing Preferences

This questionnaire is part of a study of attitudes toward housing which is being conducted by John Maddocks of the City University of New York for a doctoral dissertation in Environmental Psychology. This research is being supported by a grant from the United States Department of Housing and Urban Development.

The questionnaire will take about an hour, although some of you may wish to take longer. Answer the questions at your own pace, but try to avoid spending too much time on any one question.

There are three separate parts to this questionnaire:

Part I is a series of questions about different kinds of housing and the kinds of people likely to live in these houses. I will be showing a series of photographs of houses for questions 15-18. The photos will be shown several times so don't feel rushed if the photos are shown before you get to question 15. Continue answering all questions in Part I, then move on to Part II.

Part II is a printed booklet called "Study of Values." This is a series of questions on your attitudes toward things other than housing. The instructions for this part of the questionnaire are printed in the booklet. After you have answered all the questions in the "Study of Values," do not take time to score your answers, but move right on to Part III.

Part III is another printed booklet called "Barron-Welsh Figure Preference Test" or Art Scale. The instructions for this test are on the cover of the book. A separate answer sheet is included, so please do not mark in the test booklet for Part III.

My interest is in making comparisons among these three parts of the test, so it is important that you answer all questions in all parts. There are no right or wrong answers, and all of you will have your own opinion about each of these questions. It is these differences in opinion that I am most interested in.

If you have any questions about the instructions, or the test itself, feel free to ask for help. When you are finished with all three parts, please clip them securely together and turn them in to me,

Thanks for your help.

A Study of Housing Preferences

The following personal information is necessary so that group comparisons based on age, sex, income, etc. can be made a part of the study. This information must be completely anonymous, so please do not put your name anywhere on the test forms; even where printed forms provide a place for name. Thanks for your cooperation.

1. What is your age? (check one)

_____ under 20	_____ 20-30
_____ 30-40	_____ 40-50
_____ 50-60	_____ over 60

2. What is your sex? (check one)

_____ female	_____ male
--------------	------------

3. What is your approximate annual income? (check one)

_____ under \$10,000	_____ \$10,000-\$20,000
_____ \$20,000-\$30,000	_____ \$30,000-\$40,000
_____ \$40,000-\$50,000	_____ over \$50,000

4. How much formal education have you completed? (check one)

_____ none	_____ elementary school
_____ high school	_____ some college
_____ Bachelors degree	_____ advanced degree

5. Did you ever attend an accredited college of architecture?

_____ yes	_____ no
-----------	----------

5. If you answer yes to question #5 above, please specify which college of architecture you attended, and year of graduation (if applicable).

College _____

Year of graduation _____

(go on to next page)

7. What is your principal occupation? (Fill in type of work done, position, or profession.)

Note: If your principal occupation is in any way related to housing, please answer questions 8 through 10. All others should skip to question 11.

8. What kind of work do you do in housing? (check all that apply)

design construction financing
 management sales maintenance
 other

9. How much of your work involves housing? (check one)

less than 25% 25% to 50%
 50% to 75% 75% to 100%

10. What kind of housing do you most work with? (check one)

single family detached urban row housing
 suburban garden apts. urban high rise apts.
 other (please specify): _____

11. What kind of house did you grow up in? (check one)

single family detached urban row house
 suburban garden apt. urban high rise apt.
 other (please specify): _____

12. What kind of house have you lived in most of your life? (check one)

single family detached urban row house
 suburban garden apt. urban high rise apt.
 other (please specify): _____

(go on to next page)

13. What kind of house do you live in now? (check one)
- | | | | |
|--------------------------|-------------------------------|--------------------------|----------------------|
| <input type="checkbox"/> | single family detached | <input type="checkbox"/> | urban row house |
| <input type="checkbox"/> | suburban garden apt. | <input type="checkbox"/> | urban high rise apt. |
| <input type="checkbox"/> | other (please specify): _____ | | |

14. What kind of house is your ideal house? (check one)
- | | | | |
|--------------------------|-------------------------------|--------------------------|----------------------|
| <input type="checkbox"/> | single family detached | <input type="checkbox"/> | urban row house |
| <input type="checkbox"/> | suburban garden apt. | <input type="checkbox"/> | urban high rise apt. |
| <input type="checkbox"/> | other (please specify): _____ | | |

For questions 15 and 16, you will be shown a photograph of a specific place to live. Try to imagine that you are looking at a real place to live in a real setting, not just a picture. As you answer each of the questions, don't hesitate to write anything that comes to your mind whether it involves several different ideas or details of a single idea. If you need more writing space, use the back of this page.

The photograph will be projected on the screen (photo number 1). Other photographs will be projected later, but your answers to questions 15 and 16 should refer only to photo number 1.

15. How would you describe the place shown in photo number 1?

(Note: Photographic color slides of ten different housing types were shown at this point in the questionnaire and repeatedly throughout the remainder of the questionnaire session.)

(go on to next page)

16. What kind of people do you expect would live in the place shown in photo number 1?

For questions 17 and 18 you will be shown ten photographs of specific places to live, (including photo 1 which you've already seen). As you view each photo, remember to imagine that you are looking at a real place to live in a real setting, not just a photo.

17. Which of the ten places shown would you most like to live in yourself? (circle one)

1 2 3 4 5 6 7 8 9 10

18. How would you describe the place you selected in question 17 above?

(go on to next page)

19. The following is a description of a hypothetical family. Please read the description carefully and try to imagine the kind of place the family will live in. After reading the description, look again at the ten photos being projected on the screen. Then, using the form on the next page, rate how appropriate or inappropriate each photo is for the family described. There are three family descriptions with a rating scale for each family.

DESCRIPTION OF HYPOTHETICAL FAMILY (F)

The F family consists of a husband, a wife, and four children. Mr. & Mrs. F are both in their 40's and the children's ages range from 6 to 14. Mrs. F has a high school education, but Mr. F quit high school when he was 16 to take a truck driving job. A few years later, he and a friend bought a truck and started their own trucking company, which has since grown into a successful business. Mr. F earns a good income from the business, and has no trouble providing the things his family needs. But for years, they have postponed major family expenses, such as housing, education, travel, etc. so that Mr. F could put most of his earnings back into the company. He enjoys building up the business more than anything else, and often spends evenings and weekends at his office.

Mr. & Mrs. F both grew up in the neighborhood where they are now living, and like being close to relatives and friends. When he is not working, Mr. F enjoys talking with friends and relatives in the neighborhood and often brings someone home to eat with his family. He frequently takes his sons to sporting events, and always invites friends to go along at his expense.

Mrs. F keeps busy around the house with children and housekeeping. She also enjoys talking with different friends and relatives who stop by to say hello throughout the day and evening. She takes the children to religious services every week and regularly attends parent meetings at the children's school. Mr. F attends whenever he can.

Recently, Mr. & Mrs. F have been thinking about a larger and more comfortable place to live, and they have been talking about several different ideas. If possible, they would like to stay close to friends and relatives, but they also want a place which will reflect Mr. F's business success. They have seen several places which they think will be suitable, and expect to be moving soon. Try to imagine the place which you think the F family will live in next.

19. (con't.)
Please circle which family was described on the previous page

A B C D E F

For each of the ten photos shown, rate how appropriate or inappropriate you think the place shown would be for this hypothetical family's next place to live.

A rating scale is shown in the example.

	very appropriate	mostly appropriate	somewhat appropriate	can't decide	somewhat inappropriate	mostly inappropriate	very inappropriate
Example:							
photo X:	1 _____	2 _____	3 <u>X</u>	4 _____	5 _____	6 _____	7 _____
photo 1:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 2:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 3:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 4:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 5:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 6:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 7:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 8:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 9:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 10:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____

(go on to next page)

19. The following is a description of a hypothetical family. Please read the description carefully and try to imagine the kind of place the family will live in. After reading the description, look again at the ten photos being projected on the screen. Then, using the form on the next page, rate how appropriate or inappropriate each photo is for the family described. There are three family descriptions with a rating scale for each family.

DESCRIPTION OF HYPOTHETICAL FAMILY (E)

Family E consists of a husband, a wife, and two children. The husband and wife are around 30 years of age, and the children are both pre-school age. Mr. & Mrs. E both have college educations. He has a degree in accounting; her degree is in education. Mr. E recently started working for a large international bank in the hope of getting assigned to an overseas branch for a few years. This would be good for his career, and he feels the experience would be good for the children.

Mrs. E did some public school teaching after graduating from college, but since the children have been born, she prefers giving full time to their needs. She is particularly interested in providing appropriate places and materials for the children's interests and activities, and has fixed up a room where they can do just about anything they want.

Mr. & Mrs. E enjoy spending their weekends doing odd jobs at home, or taking the children for a special trip or activity, such as a museum, concert or children's play. Vacations are always spent at a mountain lake, a few hours drive from home, where the family enjoys camping, swimming, and boating. The E family attends religious services almost every weekend, but they are not involved in any religious organizations or activities. Mr. & Mrs. E usually go out together once a week; either to a movie or to visit friends. Occasionally they go to a special play or ballet. They frequently have friends over for dinner, and usually have a large party at their place once or twice a year.

Mr. & Mrs. E have been saving money ever since they graduated from college and would like to invest their money in a new place to live. They are looking for a place that will be suitable for their present needs, and also be easily and profitably sold when they need to move on. They have spent considerable time looking at different possibilities for a new place to live, and have found a place which they think will be ideal for them and their children, at least for the present time. Try to imagine the place which you think the E family will live in next.

19. (con't.)
Please circle which family was described on the previous page

A B C D E F

For each of the ten photos shown, rate how appropriate or inappropriate you think the place shown would be for this hypothetical family's next place to live.

A rating scale is shown in the example,

	very appropriate	mostly appropriate	somewhat appropriate	can't decide	somewhat inappropriate	mostly inappropriate	very inappropriate
Example:							
photo X:	1 _____	2 _____	3 <u> X </u>	4 _____	5 _____	6 _____	7 _____
photo 1:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 2:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 3:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 4:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 5:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 6:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 7:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 8:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 9:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 10:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____

(go on to next page)

19. The following is a description of a hypothetical family. Please read the description carefully and try to imagine the kind of place the family will live in. After reading the description, look again at the ten photos being projected on the screen. Then, using the form on the next page, rate how appropriate or inappropriate each photo is for the family described. There are three family descriptions with a rating scale for each family.

DESCRIPTION OF HYPOTHETICAL FAMILY (C)

Family C is comprised of a husband and wife with two grown children: one in their third year of college; the other recently graduated from college and soon to be married. Mr. & Mrs. C are around 50 years old, and are both college graduates. Mr. C has a Masters degree in Sociology, and works for a well known marketing research firm. Mrs. C has a degree in Art, and does free lance commercial art work for several publishing companies.

Mr. & Mrs. C are both involved in several political and community service organizations. They attend meetings of these organizations regularly, and frequently volunteer for fund-raising and other special projects. They often direct these special projects, and the place they live in becomes a center for meetings, work session, etc.

Mr. & Mrs. C also enjoy art and theater, and try to visit art galleries or see a new play every week. For exercise, they regularly play tennis at a local tennis club, and occasionally play golf. They enjoy entertaining, and have rather large cocktail parties or formal dinners at least once a month. They are particularly fond of reading, and always find time to keep up the the latest novels and professional journals. At least once a year, they take a few days vacation to "get away from it all." They usually go to a favorite place in the Caribbean Islands where they can be sure of a quiet place to relax.

Mr. & Mrs. C have for several years been talking about a different place to live, but had decided not to move as long as their children were in high school. Although the cost of college education for two children has cut into their savings quite a bit, they can still afford to look for a place which will be more appropriate for them. Try to imagine the place which you think the C family will live in next.

19. (con't.)
Please circle which family was described on the previous page

A B C D E F

For each of the ten photos shown, rate how appropriate or inappropriate you think the place shown would be for this hypothetical family's next place to live.

A rating scale is shown in the example.

	very appropriate	mostly appropriate	somewhat appropriate	can't decide	somewhat inappropriate	mostly inappropriate	very inappropriate
Example:							
photo X:	1 _____	2 _____	3 <u>X</u> _____	4 _____	5 _____	6 _____	7 _____
photo 1:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 2:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 3:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 4:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 5:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 6:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 7:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 8:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 9:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____
photo 10:	1 _____	2 _____	3 _____	4 _____	5 _____	6 _____	7 _____

(go on to next page)

Questions 20 and 21 should be answered by ARCHITECTS only. All others skip to item 22.

20. Which of the hypothetical families described would be easiest for you to design housing for? (fill in letter-name of family selected)

Family _____

21. Which of the hypothetical families described would be most difficult for you to design housing for? (fill in letter-name of family selected)

Family _____

22. THIS IS THE END OF THIS PROTION OF THE QUESTIONNAIRE. PLEASE START WORKING ON THE SECOND PART OF THE QUESTIONNAIRE ("STUDY OF VALUES"). WHEN THAT IS COMPLETED, START WORKING ON THE THIRD PART OF THE QUESTIONNAIRE ("BARRON-WELSH FIGURE PREFERENCE TEST").

(Note: The Allport-Vernon-Lindsay "Study of Values" and the Barron-Welsh Figure Preference tests which were included in each questionnaire could not be included in this paper due to copyright restrictions.)

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