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SATISFACTION: A MEASURE OF
ENVIRONMENTAL QUALITY

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ENVIRONMENTAL QUALITY

by

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PREFACE

There is a strong tendency for people to assume that others are similar to themselves. If one likes an intense social life, he tends to assume that other people like intense social life. If one likes to live in a high-rise building, he assumes that other people also like it. Using Freud's terminology, they project their own characteristics onto others.

When people are aware of some basic differences (such as color, religion, nationality, or age) between them and other population groups, they do not usually project all their characteristics onto the other groups. Instead, they tend to conceptualize them in the form of stereotypes. Regardless of their accuracy, stereotypes help people to put together, in simple images, the main characteristics of a group. This is a mechanism to conceptualize complexity, which comes naturally to most of us.

Architects are no different from other people. They project their own preferences and tastes onto others. They assume, when they do not know, what people like and how people behave. Since design decisions today are heavily based on assumptions of behavior, architects unconsciously project their way of life on others.

Not all projects that architects get involved in today affect people with the same intensity. They may have no effect on them at all. The degree of involvement with those spaces makes the difference. An

inadequate environment frequented once a week does not produce as much effect on people as one that is frequented every day and over long periods of time. People's home and work environments have more effect on them than a movie theater or a barber shop.

Highly frequented spaces also have different effects on users, depending on their personal characteristics. If they are not able to change or avoid an inadequate environment, they must adapt to it. Human adaptation has physiological and psychological limits which are different for every person. Breaking those limits usually causes dissatisfaction and affects people's well-being.

Unfortunately, many architects today substitute their lack of knowledge on a particular population sector with personal criteria gained from limited experience, hoping people will accept and adapt to it. The following examples illustrate that this is not always the case.

The incapability of the construction industry to cope with the increasing need for housing in many underdeveloped countries has forced government agencies to promote the development of huge housing projects. Many are designed to house people living in slums who are moved to these projects without real possibilities to refuse. Their low income and poor education make these population groups unable to find the environment which meets their life style. They have only two real alternatives, either to adapt to those housing developments or return to the tin-roofed, cardboard "house" they came from. Occasionally, architects have been surprised to find out that some of these people have chosen the second alternative. They preferred to return to their inhuman

living conditions rather than alter their life styles to suit the type of housing the government had provided. Their adaptation limits had been broken, their way of life ignored. Those who decided to stay had to change their life styles, causing dissatisfaction. This could have been avoided if the architects had had a better knowledge of the users' future needs.

In the slum, the mother used to look after her children playing outside the house while she was doing her housework. Now, 15 flights up from the playground, she is dissatisfied because both activities cannot be performed at the same time. The result is that she decides to keep the children in the house while she works. The children's life style has changed, and so has the mother's. Now playing in the house, children make more noise, upsetting the adults and at the same time not enjoying their games as much as before.

The old slum also allowed more casual contacts with neighbors. Just by sitting outside their homes, social contact with friends was intense. On the way home from work, people stopped by for a short chat almost daily. Now in the high-rise building, they are more isolated and more dissatisfied than ever. Their friends do not want to bother to go 15 flights up just to say "Hello."

What can be done? In spite of their good will, architects aware of these problems end up disregarding them. They do not have on hand the information needed to design according to the users' expectations and way of life.

This thesis proposes a way to gather such information: the use of measurements of the user's satisfaction to evaluate environmental quality and to help to formulate relevant design objectives.

Chapter 1 points out the pitfalls which keep current methods of gathering information from obtaining the objective data of users' expectations. The chapter concludes proposing a strategy to overcome these pitfalls.

Chapter 2 reviews the literature concerned with the measurement of satisfaction. Conclusions are drawn and specific recommendations are made on instruments, analysis techniques and strategy models.

Chapters 3 and 4 report research on college students' housing using the proposed method. This study illustrates the use of the method and give examples of the type of data this line of research can provide.

Chapter 1

SEARCHING FOR CAUSES OF ENVIRONMENTAL DISSATISFACTION

This chapter identifies several causes of society's increasing dissatisfaction with the built environment. It starts by identifying two causes of poor performance of architecture outcomes: (a) the unavoidable need for founding design decisions on behavioral criteria and (b) the architect's lack of knowledge of the life style of some sections of society. It continues with an analysis of the pitfalls of some methods currently used to overcome this problem, mainly the use of a design team, "participatory" design and research on environmental behavior. It ends by framing a strategy for obtaining the information required to define objective design criteria. The strategy is tested in the case study on student housing reported in the last chapters of this thesis.

Architecture and Human Expectations

Today more than ever, the built environment, particularly our cities and their buildings, is the subject of public criticism. People are not satisfied with their living environment. This dissatisfaction manifests itself by either public protests or by unexpected behaviors. Most big cities today are the scene of public protest about the environment, from protests about pollution or urban transportation to handicaps picketing for their right to have easy access to public

buildings. Others protest about the unsuitable characteristics of the environment by behaving unexpectedly: children that live in high-rise buildings play in hallways instead of in downstairs playgrounds, drivers park on sidewalks, etc.

What are the reasons for this dissatisfaction? Sociologists and some architects say that today's environment is not designed with man in mind. This is difficult to believe. Architecture has responded to the satisfaction of basic human needs (such as shelter) for centuries. In an endless process of improvement, architects are designing buildings that support better and for longer periods of time, that withstand the changeable weather and protect against other natural phenomena.

From the physiological point of view, improvement of the performance of buildings has been a main concern of practically all architects. For example, improvements in lighting, noise reduction, and temperature comfort by air-conditioning are part of the specifications of all projects today. The improvement of these environmental factors has made possible the execution of more and more activities in an efficient and comfortable manner. Sociologists and psychologists, however, claim that architecture should respond not only to physiological needs, but to sociological and psychological ones as well.

The real issue is that architects do not deal explicitly with human needs. The activity of design has been concerned with the transformation of the environment to make it suitable for the practice of human activities. If a particular group wants to be involved in an activity which requires specific environmental characteristics, the designer transforms the environment to provide them. Objectives of design have not been explicitly formulated in terms of human needs,

but rather in terms of human activities. Implicitly it is clear that human needs are considered. If people get involved in activities, it may be for satisfying their personal needs. Supporting activities with good environments makes it possible to execute activities efficiently, and consequently to satisfy the human needs related with those activities.

The fact that design problems are normally concerned with this matching between environmental characteristics and activities has forced architects to take a position on how those activities should be performed and in what sequence. This is the essence of design criteria today. Among others, standards of minimum effort, minimum time, and standard sequencing of activities are the basis of most design decisions. Designing a kitchen, for instance, involves decisions on equipment location which are usually taken in agreement with the criterion of minimum effort. The activity of cooking is usually preceded and followed by other complementary activities, such as preparing the food or washing the cookware. Having decided what is the most efficient sequence, the disposition of the equipment follows naturally. Without decisions on behavior, architects would not have foundations for their designs. Here is one key to explaining people's present dissatisfaction with the environment. Many of those decisions in behavior are based on the assumption that they are standard for all sectors of the population. The fact is that some sections of the population behave differently.

Architects aware of this situation have suggested that in order to fit a wide range of behaviors, our designs should be flexible. With a flexible environment, the user will be able to change and adapt it to

his preferred behaviors. Unfortunately, this is not always possible. Budget limitations always present (especially in housing projects) have forced architects to produce designs tied to "efficient behaviors" to such a degree that deviations from them make the environment completely inefficient. In designing the layout of a bedroom with minimum space, the architect makes assumptions on the type of furniture to be used and its most efficient arrangement. Windows, doors, closets and light fixtures are then located according to those assumptions in such a way that the use and arrangement of furniture in a different way than that planned are practically impossible.

Why, if architects base their decisions on behaviors which are not shared by some sections of the population, did people not complain before? In the author's opinion, this is mainly for two reasons: the user's low chances to express his point of view and the rather homogeneous characteristics of the populations for whom the architect designed.

Robbins (1975) wrote:

In the past, the designer with the task of designing public spaces was sponsored by few secular or religious patrons. The problem of keeping "man in mind" was minimized because values and norms of the elite patron were believed to be both morally superior and socially correct. In addition, the places where most people lived and worked were developed by designers who were generally a part of the community for which they designed . . .

With the concentration of capital, the increasing specialization of labor and the continual and rapid shift of large populations, designers can no longer assume that they are a part of the group for whom they design (p. 377)

Not being part of the group for whom architects design has an important consequence. Architects need to gather information each time they undertake a design. They need to know, for instance, what activities future users are usually involved in and to what degree, how those

activities are performed, and even the differences in behavior between the subsections of such a population.

In the past, architects have almost always dealt with historical building types. They knew somewhat intuitively which physical environment would suffice to meet the already well established patterns of activity of society. A bank was a bank, and a school a school.

Everyone knew what would take place in these institutions. A thorough and lengthy analysis of the institutional operation was not necessary prior to design. As society and technology changed and become more complicated, architects and owners had to look for new ways to determine the basis for environmental design . . . (Evans and Wheeler, 1969, p. 9)

As we shall see, the task of formulating new criteria for each group and each environmental setting is not only time- and money-consuming, but involves methodological problems as well.

The Search for Design Criteria

Architects' lack of knowledge on the needs of some sectors of the population is easily overcome when the designer knows the future user beforehand. For instance, criteria for designing a house for an individual with an unknown lifestyle can be easily obtained through inquiry or observation. A small family will be normally able to convey to the architect what spaces they need and what activities they will perform in such spaces. Furthermore, in case not all their requirements could be met, the future users can define priorities on their requirements which will help the designer to fit the new house to the expectations of his clients in the best possible way.

The task of finding design criteria for public buildings and large housing complexes is not so easy. The fact that the users are unknown, together with the heterogeneity of their needs and behavioral patterns, makes it difficult for the architect to decide which criteria should be applied.

The most common reaction to this difficult situation is to continue designing environments based on assumptions of user's needs and behavioral patterns with the hope that if the assumptions are erroneous, people will adapt to the new environment. Although adaptation is an undeniable fact, it has physiological and psychological limitations. To pretend that elderly people will adapt to high-rise buildings as easily as a young boy or will step onto an escalator at the same speed is shortsighted. Those aware of this reality have developed several strategies to overcome their lack of knowledge on these matters. One of them is the design team.

The Design Team

The early methods of design, still in use, have as the source of information and as participants in the decision process the client (usually the developer), the architect, or both. Experience plays an important part in this type of strategy for formulation of objectives. Since experience is always limited, ultimately design decisions rely on intuition.

Originally, the idea of a design team was implemented to overcome lack of knowledge on technological construction problems found in today's developments. For this purpose, the design team was an improvement on the design process. The incorporation of professionals with different backgrounds on a working team is, however, not easy. Usually these professionals use different criteria for design and, more importantly, are often not able to communicate them to others in an understandable manner. With the incorporation of social science professionals, the design team has not improved in performance. Those professionals use terminology that many of the technically-oriented

members of the team cannot understand. This fact results in either rejection of the specialists' ideas or blind acceptance of their recommendations, expecting them to generate the criteria the team needs to make decisions.

. . . the moral, political and intellectual self confidence which enabled architects in the past to prescribe specific utopian solutions to the problems of civic disorder, family life, industrial chaos and urban blight, has diminished They turn to the sociologist in the hope that his discipline has somehow been spared this form of demoralization. The architect expects the sociology teacher either to be able to prescribe the values which buildings should express or to provide him with an efficient and fool-proof method through which such prescription can be developed. (Gutman, 1968, pp. 69-83)

Unfortunately, although social science professionals have provided some insights into understanding ways of life of some sections of the population, their recommendations have not helped architects much in making decisions about physical form. Brill (1970) illustrates this fact. When he tried to get answers from some psychiatrists about therapeutic objectives they would like to see considered in a specific design problem, he received twelve different answers to the same question.

When dealing with decisions on no technical or aesthetical issues, such as how to use the built environment to support a user's life style, encourage a certain activity, define design priorities according to a user's preferences, etc., team members make decisions which are not far from being intuitive. Their opinions, values, and tastes are reflected not only in the decisions, but also on the selection of "relevant" information, no matter what method is used to arrive at the definition of objectives.

As Rapoport (1969) mentioned in his analysis of cultural context of models,

. . . the values which the design objectives represent are, at least partly, related to culture . . . design methods strive for objectivity but they are not objective—neither are they neutral. (p. 139)

"Participatory" Design

In gathering information, an alternative idea which many urban planners and architects struggle to apply is "participatory" design—give the future user the chance to establish the objectives, define the priorities and even evaluate the results. Theoretically, this approach has the advantage of overcoming much of the architect's lack of experience with some sectors of the population. A representative sample of future users is incorporated into the design team; they establish their expectations, major concerns, types of activities generally involved in, etc. Practice shows that two problems always emerge: first, users are not able to articulate their complete range of needs; second, users define priorities with no objectivity, over-emphasizing unsatisfied needs while satisfied needs are taken for granted and not expressed.

Susan Dumais (1975) mentioned some of the concerns for involving users in the design process:

- . . . the concern for the cost, time and effort involved in getting laymen knowledgeable enough to make responsible design decisions
- . . . the concern that conflicts arising from the many different values, interests and opinions will not be resolvable
- . . . the concern that compromises will result in inferior designs
- . . . the concern that the involvement process and answering dialogue will be endless with no means to reach a satisfactory conclusion
- . . . the concern that the user participation process will meet with failure and with frustrating changes of manipulation and betrayal

(pp. 370-376)

How can the required information be gathered with the active and direct participation of the user on the design process? Environmental behavior studies are a possible answer.

The Environmental Behavior Approach

Environmental behavior research has been mainly undertaken by environmental psychologists. Their studies are concerned with relationships between physical environment and human behavior. Wohlwill (1970) has distinguished among three forms of this relation: first, the environment as a key factor in the determination of the range of behaviors that can occur in it; second, the relation that certain environmental characteristics may have on the behavior and personality of the individual; third, the environment as a motivating force. He notes that the latter form has three important facets: (1) affective and attitudinal responses to environmental features, (2) approach and avoidance responses to various attributes of the environment, and (3) adaptation to environmental qualities.

Although an incipient discipline, environmental psychologists have been successful in correlating environments and several behavioral patterns. Research has supported the hypothesis that different colors of carpet and walls in a museum produced different responses in visitors (Srivastava and Peel, 1968) or that chair arrangement influenced the seating choices of two persons (Sommer, 1959, 1962). On a more complex level, significant differences have been found between the friendship patterns among residents as a result of distance between houses (Festinger et al., 1950) or as a function of a particular site plan (Yashioka and Athanasion, 1971). Caplow and Forman (1950) also conducted an experiment which showed that friendship patterns in university housing were affected by the orientation of the doors and the shared public spaces.

Particularly interesting are Newman's (1973) findings on the relation between building height and crime rates. Substantial differences were found between the crime rates of buildings six or fewer stories high and those of seven or more stories. On the city scale, Feldman (1968) and Zimbardo (1969) were successful in finding significant differences between the responses of inhabitants of three cities when helping a foreigner and a compatriot to find their way.

Are these studies helping the architect to develop better design criteria? Studies as those mentioned establish relations between certain environmental characteristics and specific behavioral patterns. Design decisions concerned with what environments or environmental characteristics should be provided or avoided to enhance or hinder some behaviors can be based on criteria created with studies of this type. At least at this stage of the design process, designers with criteria like these on hand can avoid basing their decisions on intuition.

Recent environmental behavior studies, however, seem to be centered more on illustrating the fact that environment makes a difference on behavior than on producing useful criteria which could make a significant difference in the quality of overall design outcomes. There are several areas where environmental studies are needed. How are recent environmental behavior studies helping architects to decide what behaviors should be hindered or enhanced? Designers must know the answer to this question even before they are confronted with the decisions of what environmental characteristics to provide or avoid. As it has been already mentioned, intuition or opinions about what is a better life style because it is "more effective," "more logical," or "more civilized" are not reliable criteria to make decisions on behavior.

Framing a Strategy: Conclusions

From the architectural point of view, several steps should be taken in the study of society groups in order to be effective in the formulation of objective design criteria. In the author's opinion, four basic types of information are required. First, architects must know the life style and activities of future users. Future behavioral studies should be concerned with identifying not only the types of activities in which the different sectors of the population are usually involved, but also their behavioral patterns and characteristics (e.g., intensity of involvement, sequence of subactivities).

Second, the levels of satisfaction with both the total environment and each of its components has to be known. An objective analysis of living conditions must be based on users' evaluations of their own environment. Without information of this kind, architects will probably concentrate on improving parts of the environment they believe are inadequate, and later discover that they have changed satisfactory aspects and overlooked those that were really unsatisfactory.

Satisfaction measures can also help to test the validity of researchers' analyses of users' life styles. Considering that an identified behavioral pattern can be the result of the lack of alternatives to perform an activity in other ways, there is the possibility that some of the conclusions of behavioral studies of the type mentioned above could not be valid. Users' low evaluations of some aspect of an environment can help to discriminate between behaviors resulting from environmental limitations and those resulting from user's preference.

Third, the influences that each environmental component (micro-environment or environmental characteristic) produces on the overall

satisfaction with the macroenvironment need to be known. People can be dissatisfied with a component of the environment, but such partial evaluations have no significant effect on their overall attitude about the environment. The influences of an inefficient microenvironment on the evaluation of its macroenvironment depend on the people's degree of involvement with such microenvironments, existence of alternative microenvironments in which the same activity can be performed, and even on the possibilities people have to change, avoid or adapt to the inefficient space. For example, although a driver can be dissatisfied with the condition of a particular street, his overall evaluation of the city will be affected by the feelings about the street depending on whether the city provides alternative roads to the same place or if he uses the street frequently.

The analysis of the influences of microenvironments and environmental attributes on overall environmental satisfaction will give the architect an estimation of priorities, of what components he should pay more attention to, and among them which should have priority in case a trade-off is required. In a few words, this information will permit maximization of overall satisfaction with the environment when limits in resources exist.

Finally, and only when the above information is available, architects need to know what environmental characteristics are more suitable for those behavioral patterns determined. This point is where the environmental behavior studies mentioned earlier can be useful. If the environment can enhance or hinder behavior, and architects need to fit their designs to those behaviors, then they must know what the best matches are between environment and behavior.

Thus, an objective design criterion has to be based on information about (a) society's preferred behavioral patterns, (b) the levels of satisfaction with the characteristics of the environment where such behaviors are observed, (c) the levels of influence of microenvironments on the overall evaluation of the environment, and (d) the environmental characteristics needed to enhance the identified behavioral patterns. Research concerned with obtaining information on satisfaction levels about the environment and levels of influence of microenvironment evaluations on overall satisfaction basically depends on obtaining reliable measures of people's satisfaction. This is the subject of the next chapter.

Before going into the analysis of the instruments available for this purpose and the proposal of a specific methodology to gather this information, a final question must be answered.

How about those architects who believe that architecture should not be concerned with satisfying people, but rather with "improving" people's life style regardless of their expectations? Should they get involved in this kind of research?

Anthony Ward (1969) wrote,

We see only our capacity to give society the forms it wants, and reject our ability to actually create a new order through physical organization. This results in what Laing has called "ontological insecurity," an overdependence upon others for one's own existence, an almost pathological tendency to be dependent upon others for one's sense of one's self. (p. 172)

Not all architects believe that to serve people is to design environments that support what users want.

I am becoming more and more confirmed in my opinion that these attempts to be objective, particularly in the human sphere, are nothing but very clever covers for attempts to evade moral responsibility for design decisions. My own view is that I must eventually decide what kind of people I would like my clients to become. (Ward, 1969, p. 174)

This role of architecture should not be overlooked or underestimated. Those architects familiar with the problems of designing for slum populations, for instance, know that this type of position toward reality eventually must be taken. In many instances, architects cannot be satisfied with just providing what the population expects. The fact that the inhabitants of some black slums could be satisfied with sleeping parents and children in the same room and be able in that way to sublease the other bedrooms must not be reason enough to decide to support such behavior. In these cases, the new environment should be designed to hinder that behavioral pattern and enhance a new one. However, this author cannot imagine how an architect can design an environment with the purpose of changing people's life style without knowing if such an environment is enforcing life styles which break the adaptation limits of the people. Understanding what can be changed and how much will help to design environments which could be successful in changing behavior. Having data on what parts of the environment (and the activities performed in them) are more important in people's overall satisfaction will help to formulate realistic plans for changing people's life style. Studies on environmental satisfaction will help to produce such data.

Chapter 2

MEASURING ENVIRONMENTAL SATISFACTION

This chapter sets the theoretical framework and proposes a methodology for the measure of environmental satisfaction, as well as a strategy for cross-study comparison. Such a proposal is preceded by a review of the literature concerning the measurement of satisfaction and an analysis of the problems to be overcome in such a task.

Feelings and Attitudes

Attitude has been defined several times (Allport, 1935; Doole, 1947), always containing slightly different conceptions of what it is or emphasizing a somewhat different aspect of it. A definition that most social psychologists have been moderately content with is: "An attitude toward any given object, idea or person in an enduring system with a cognitive component, an affective component and a behavioral tendency" (Freedman, 1978).

The cognitive component is a collection of thoughts, beliefs and knowledge of the object under consideration. Many of these cognitive components are thought to be connected to positive or negative feelings which determine people's affective state toward an object and are the major cause of behavioral tendency.

Our knowledge of some characteristics of a particular car, such as its gas mileage rate, its exterior design, its market value, retail

price, and interior comfort, is complemented by our personal feelings about those characteristics—the car is expensive, it has a low gas mileage rate, is very comfortable, has a very low retail price. The combination of knowledge and feelings determines attitude and influences our behavioral tendency to buy it or not.

People's final evaluation of an object is the result of some combination of partial evaluations of its characteristics. When evaluating objects, people usually get mixed impressions—the house could be unfriendly, need painting, be large, have a large living room, or be in a bad neighborhood. Undoubtedly, in order to arrive at an overall evaluation, some weight needs to be assigned to the good and bad characteristics of the house. With regard to what type of combination results in the final evaluation, there is no agreement yet. Anderson (1959, 1965, 1968) presented data showing that people form an overall impression about something by averaging the partial evaluations of all its characteristics but giving more weight to those which receive polarized evaluations (highly positive or highly negative). However, others (Fishbein and Hunter, 1964) support the theory that partial evaluations are added.

Anderson's theory has an interesting implication. If people heavily weight some characteristics over others in order to arrive at a final evaluation, this could explain why people disregard some of the negative characteristics of an object. They do a trade-off, giving more weight to those things about which they feel more strongly. In spite of the fact that one could have rather negative information about a car, such as poor performance, low gas mileage and low retail price, he very often evaluates it on exterior appearance and/or driving comfort. It would also explain why in spite of the rather complex system of relations

existing in any expressed attitude, "one important part of it, the part consisting of affects or feelings, is often very simple [in structure]" (Freedman, 1978). In this respect, Osgood et al. (1957) showed that much of the variance in our conception of objects, people, and so on is accounted for by a simple evaluative factor. Since people's attitudes about the environment depend more on the affective states about its characteristics than on the knowledge of their quality, those attitudes could be determined by the measurement of their affective states.

The task of obtaining measurements of affective states is not easy. People do not usually express their feelings accurately. The results of studies on affective states can be altered by biases such as "Some Desirability," "Acquiescence," "Positive bias," and "Halo effect." "Social Desirability" has been identified as the tendency to reply "agree" to items that the respondent believes reflect socially desirable attitudes. "Acquiescence" is a social tendency to assent rather than dissent. "Positive bias" is a tendency to express positive evaluations more often than negative evaluations. "Halo effect" is the tendency to attribute all good qualities to something prelabeled "good" and all bad qualities if it has been prelabeled "bad." The influences that such bias could have on attitude research depend in part on the type of scale used. The following part is a review of the literature related to satisfaction scales, mainly those used in the measurement of life satisfaction.

Satisfaction Indices: Background

Psychological studies of happiness have been around for more than 50 years. Fellow (1966) reports a work as early as 1925 (Flügel).

The following literature review was arranged according to the type of instruments used, understanding that many of these studies have used several types of scales to measure satisfaction. Three broad groups of scales can be identified: (1) one-item scales, (2) multi-item scales, and (3) domain scales.

One-item Scales

Single questions on happiness have been included mainly in multi-purpose nationwide opinion surveys. The question usually emphasizes the overall consideration of present life, and the answers are scored on a closed-ended format.

Five major one-item scales have been extracted from the literature because of their demonstrated validity. These are (1) "happiness" item (Gurin et al., 1960), (2) a "satisfaction" question (Converse and Robinson, 1965), (3) the self-anchoring scale (Cantril, 1965), (4) the Elation-Depression scale (Wessman and Ricks, 1966), and (5) the Delighted-Terrible scale (Andrews and Withey, 1976). A brief look at these scales will give us a fair impression of the capabilities of these types of items to measure satisfaction.

The "happiness" question (Gurin et al., 1960; Bradburn and Caplovitz, 1965) is one of the earliest items of its kind to be included on a nationwide survey.¹ To score the answers to the question, "Taking all things together, how would you say things are these days?" Gurin et al. used a three-alternative response format "Would you say you're very happy, pretty happy, or not too happy these days?" Table 1 reports

¹This scale formed part of the 1958 survey of the National Opinion Research Center.

the coefficients of reliability and validity for this and the following scales.

The "satisfaction" question (Converse and Robinson, 1965; Arscott, 1969) is a three-point scale with emphasis on satisfaction rather than on happiness. "In general, how satisfying do you find the way you're spending your life these days? Would you call it completely satisfying, pretty satisfying, or not very satisfying?"²

The self-anchoring scale (Cantril, 1965) was used on a 13-nation sample involving 20,000 people. The subjects located the evaluation of their life on an 11-point ladder scale. Robinson (1973) noted that the correlation between this question and the other two ("happiness" and "satisfaction") was only .36.

The Elation-Depression scale (Wessman and Ricks, 1966) is one of the 16 personal feeling scales used in the authors' huge study on mood. Subjects responded to the question, "How elated or depressed, happy or unhappy do you feel today?" on a ten-point self-rating scale ranging from complete elation to utter depression and gloom. This scale was used to measure the average hedonic tone as well as a peak and lower value of two separate samples of college students tested during a period of six weeks. Wessman and Ricks (1966) conclude, based on the reliability and validity correlations obtained, that "for this group of college men, the mean level of average daily elation-depression over the six weeks reflected their relative subjective experience of happiness-unhappiness with what appears to be a fairly high degree of accuracy" (p. 104).

²Two nationwide studies use this item—the original work of Converse and Robinson (1965) with 1,244 subjects and the 1968 survey of the Survey Research Center (SRC) with 1,315 respondents (Arscott, 1968).

Table 1

Reliability and Validity Coefficients of Selected
One-item Scales of Life Satisfaction

Scale Name	Author(s)	Coefficients	
		Reliability	Validity
"Happiness" item	Gurin et al., 1960	.43 ^a	
"Satisfaction" item	Converse and Robinson, 1965	.59 ^b	.46 ^c
Self-anchoring	Cantril, 1965		.36 ^c .36 ^d
Elation-Depression	Wessman and Ricks, 1966	.66 ^e .67 ^f	.71 ^{e,h} .71 ^{f,h}
Delighted-Terrible	Andrews and Withey, 1976		.79 ⁱ
Faces	Andrews and Withey, 1976		.85 ⁱ
Circles	Andrews and Withey, 1976		.80 ⁱ

^aKendall's tau; test-retest of a small sample on 8 months' period

^bKendall's tau; 90 people, tested twice in a 6-month period

^cCorrelation with happiness question

^dCorrelation with satisfaction question

^eMean of daily peaks

^fMean of daily averages

^gMean of daily lows

^hCorrelation with independent rank orders of 6 psychologists

ⁱConstruct validity coefficients

Andrews and Crandall (1976), Bharadwaj and Wilkening (1977), and Wilkening and McGranahan (1978) utilized the Delighted-Terrible scale. The study, "The Validity of Measures of Self Reported Well-being" (Andrews and Crandall, 1976), supplies important data on the validity of several scales used to assess satisfaction. In one of the experiments reported in this study, satisfaction with life was measured with the question, "How do you feel about your life as a whole?"³ (p. 4), and with the following six scoring procedures:

(1) the Delighted-Terrible scale, a seven-category scale ranging from "delighted" to "terrible"; (2) a seven-point graphic scale using faces representing different degrees of happiness; (3) a modification of the Cantril's ladder scale above reported; (4) a nine-circle scale with different amounts of "positive" or "negative" in it; (5) a three-alternative scale where the evaluation of subject's life is judged by himself as "better than," "same as," or "worse than" six people known by the subject; (6) a non-self reported scale, based on the average of ratings by others whom the subjects believe know them well.

The validity coefficients found using a multi-trait, multi-method technique "provide evidence that perceptions of well-being can be measured with substantial validity" (Andrews and Crandall, 1976, p. 16). Andrews and Crandall inferred that "single-item measures using the D-T scale, faces or circles scales to assess any of a wide range of different aspects of perceived well-being contain approximately sixty-five percent valid variance" (p. 9).

³The question was answered by 222 adults who the authors considered were a fair representation of the U.S. population with respect to age, sex, race, marital status, and employment.

The authors concluded that some methods for assessing perceptions of well-being are much better than others. The Delighted-Terrible scale, the faces scale, and the circle scale showed the highest validity and a similar median method effect.

The Andrews and Withey question, "How do you feel about your life as a whole?" was slightly modified by Bharadwaj and Wilkening (1977). The new question has an emphasis on satisfaction rather than on "feeling" and is almost identical to one used by Campbell et al. (1976). The question's final form was, "Considering everything, how satisfied are you with your life as a whole?" It was included twice during the interview and answered on the D-T scale.⁴

Analysis. From the evidence presented so far, we could easily draw the conclusion that these types of scales have shown fair reliability and validity and can be used with some confidence to evaluate life satisfaction. However, validity and reliability numbers are only relevant if the criteria behind them are reliable. A look at these criteria is required at this point.

The validity of stability criterion to test reliability over long periods of time for life satisfaction measures is questionable. Significant correlations between two tests separated by several years do not prove the reliability of the instrument. Over such long periods of time, very important changes in the life of the nation can cause major differences in the population's life satisfaction. Test-retest correlation between two administrations of the same item in a short period of time are more convincing. The reliability of the Elation-

⁴Wilkening and McGranahan (1978) used Bharadwaj's question with a seven-point scale from completely satisfied to completely dissatisfied.

Depression scale is even more difficult to prove with the standard criteria of stability. Lower test-retest correlations would not prove anything against the instruments since the emphasis of this scale is on happiness today. Changes, even in short periods of time, must be expected.

With respect to validity, the "happiness" and "satisfaction" questions have not reached good levels of correlation with other measures of life satisfaction. (See Table 1.) Cantril's ladder scale, for instance, correlated only at a poor .36 with the above questions.

To support validity, the authors of the Elation-Depression scale report correlations between happiness ranked by a team of judges and the scale. This validity criterion is also questionable:

Attitude scales share this problem [validation] with other forms of mental measurement. The literature contains but a small number of attempts at direct validation against a criterion and we may as well ask whether the measures employed as criteria were themselves valid. Such attempts have included the use of essay-type questions, expert's judgments, membership in groups with known policies or interests, pictorial material interviews and case studies, judgments by friends or co-workers, self-ratings, political roles, and such overt behavior as church attendance. New scales are often correlated with older, well-known scales which, however, may themselves be of questionable validity. (Oppenheim, 1966, p. 149)

If anything, high validity coefficients based on such criteria will show the validity of the judges' estimates rather than that of the instrument.

The task of evaluating the reliability and validity of a scale designed to measure an unobservable variable such as the one we are dealing with cannot be handled using simple methods and questionable criteria. In this regard, Andrews and Crandall (1976) wrote: "The absence of suitable validity criteria requires an assessment of construct validity" (p. 3). As we have seen earlier in this chapter, the validity

coefficients of the Delighted-Terrible scale calculated using this methodology are very encouraging. There is evidence that the use of this scale can produce good estimates of satisfaction.

At this point we should ask, "Can we rely on an overall life satisfaction index to evaluate design outcomes and to detect which characteristics of such environments are responsible for the measured levels of satisfaction? This author's point of view is that life satisfaction may not be sensible to changes in environmental quality.

In many cases we should expect to find affective states about some environmental variables that do not correlate significantly with the overall criteria: "We need to be very humble in our expectations about the extent of potential effect a change in housing may have [on life satisfaction]" (Lawton and Cohen, 1974, p. 201).

Many "non-significant" variables can sometimes constitute a macro-variable (e.g., house satisfaction, city satisfaction) of relevant importance in the overall index. The way to evaluate the performance of those "non-significant" variables (e.g., life satisfaction) is not to compare them with the overall criterion, but with a subindex of it (e.g., house satisfaction). As we shall see later on, this concept of the subindex could be well fitted by the idea of domain satisfaction.

Independent of their influence on the overall index, some variables are more relevant than others for our studies because of their characteristic of controllability. Lawton and Cohen (1974), referring to one of their studies, wrote, "The task is not prediction but rather to identify conditions that can improve the life styles of individuals over and above the effects of other perhaps more potent influences" (p. 201). In the possibility that some variables with strong influence on

the overall index were very difficult to control or not controllable at all, less relevant variables should be considered to improve life or environmental satisfaction. Satisfaction indices of these variables must, therefore, be obtained and used as criteria to evaluate "non-significant" (at the life satisfaction level) independent variables. Any scale or combination of scales used in our studies should produce not only overall satisfaction indices but partial satisfaction indices as well. The scale examined so far can perform only part of this task.

Multi-item Scales

Psychiatrists and psychologists have been producing scales of this kind for more than 50 years. Many of them have been validated on several occasions and applied to multitudes of research (e.g., Bradburn, 1969). Others have few, if any, applications besides the original work (e.g., Jasper, 1930).

With the use of multi-item scales, researchers usually seek to determine independent dimensions of the construct under study. The questions or statements used are theoretically related to the construct and are concerned with subject's activity involvement or feelings about himself or others. The answer format used is multiple: "agree-disagree," rank-order, forced choice, etc.

Some of the earliest examples have been included in Wilson's (1967) review of the literature. Among others, he mentioned Watson (1930), Jasper (1930), Hoppock (1935), Washburne's social adjustment inventory (Washburne, 1941), the chart of happiness (Hart, 1940, 1945), Golding (1954), and the 16-item scale (Wilson, 1960).

Lawton (1975) has grouped recent efforts into four clusters, depending mainly on the parent well-being scales upon which they were

based. The main parent scales are the ten-item affect-balance scale (ABS) (Bradburn, 1969), the PGC mood scale (Lawton, 1972), and the Life Satisfaction Index (LSI) developed by Neugarten et al. (1961). The group left is formed by several independent validated scales or subscales used together by different researchers (e.g., Klemmack et al., 1974). An early scale, the Elation-Depression of Jasper (1930), and the three major scales mentioned by Lawton are covered in the next paragraphs.

The Jasper scale is a 40-item instrument, 20 "objective" questions (feelings about government, college education, the future, etc.) and 20 "subjective" questions (subjects' feelings about themselves—their lives, their attitudes, etc.). The subjects record answers on a closed-ended five alternative scale, in mixed order, different for each question. The final score is a simple summation of all items. This scale was validated for a college population. Table 2 reports the coefficients of reliability and validity for this and following scales.

The affect-balance scale (ABS) takes its name from perhaps the most important finding of Bradburn's study (1969), the positive identification of "positive" and "negative" affect as two independent dimensions of well-being. In a pilot study it was found that the positive items were interrelated among themselves. The same was true for the negative items. A very relevant finding was that "the items in one cluster . . . were not correlated with those in the others nor did the two clusters correlate negatively with one another" (Bradburn, 1969, p. 57). The subjects answer positively or negatively to ten items (five for each dimension). The final score is the result of subtracting the positive

Table 2

Reliability and Validity Coefficients of
Selected Multi-item and Domain Scales

Scale Name	Author(s)	Coefficients	
		Reliability	Validity
Depression-Elation	Jasper, 1930	.78PE .03 ^a	.95 ^d
		.58PE .03 ^b	
		.85PE .04 ^c	
PGC Moral	Lawton, 1972	.85 ^e	
		.81 ^e	
		.85 ^e	
Affect Balance	Bradburn, 1969	.90 ^f	.33 ^h
		.76 ^g	.51 ^h
LSI-Z	Wood et al., 1966	.79 ⁱ	
LSI-A	Newgarten et al., 1961		.55 ^j
LSI-B	Newgarten et al., 1961		.58 ^j
LSI-R	Newgarten et al., 1961		.64 ^k

^aSplit-half, even-odd

^bCorrelation between subjective and objective items

^cOne month test-retest correlation

^d34 seniors' (college) compared with six judges' evaluations

^eCrombach alpha

^fQ's coefficient of association

^gGamma

^hCorrelation with three overall questions in satisfaction

ⁱAlpha Kuder-Richardson

^jCorrelation with LSI-R

^kOne month test-retest correlation with two judges' evaluations

scale score (one for each "yes," zero for each "no") from the negative scale score. This scoring procedure results in nine different states of happiness. Among the multiple applications of this scale (e.g., Berkman, 1971; Gaitz and Scott, 1972; Maitlin, 1966; Phillips, 1967), Beiser's (1974) is the one which produces more substantial changes to it.⁵ This scale has also been validated for a college population. The validity and reliability coefficients are reported in Table 2.

The PGC morale scale (Philadelphia Geriatric Center) is a 22 dichotomous-item scale developed by Lawton (1972). In the original work, six factors were identified: attitude toward own aging, agitation, lonely dissatisfaction, acceptance of status quo, optimism, and surgency. Morris and Sherwood (1975) dropped five of the items because of their dubious relationship to morale. They included only three of the original factors: attitude toward own aging (nine items, five from Lawton's former scale), agitation (seven items, all from Lawton's), and lonely dissatisfaction. Lawton (1975) revised the scale again and concluded that three stable morale factors can be derived from a similar subset of the original PGC morale scale: agitation (six items), attitude toward own aging (five items), and lonely dissatisfaction (six items).

The Life Satisfaction Index (LSI) is the result of a large study of elderly Kansas City residents, conducted in the form of an interview with the aim of determining the Life Satisfaction Rating (LSR). Some

⁵In a six-year study, Beiser applied the ABS with three important modifications. The elimination of one of the items, the inclusion of three forced choice questions to measure an additional dimension (long-term satisfaction), and the addition of an additional alternative to the answer format ("yes", "?", "no"). The multiple regression analysis showed that 36% of the total variance could be accounted for by the simultaneous interaction of the three factors. This scale was also validated for gerontological applications.

items of the original interview were based on Kutner's et al. (1956) morale scale and were organized in five clusters: zest (vs. apathy), resolution and fortitude, congruence, self-concept, and mood tone. Since this was not a self-reported scale of life satisfaction, Neugarten et al. (1961) extracted 20 items which constitute the LSI-A. The subjects record their answers on a trichotomous score scale (agree-disagree-?). However, only the agree and disagree options were scored. The excellent analysis of the LSI-A scale performed by Adams (1969) proved, through factor analysis, that the 20 items are measuring at least four dimensions of life satisfaction: mood tone, zest for life, congruence (between desired and achieved goals), and resolution. Two of the original items were shown not to contribute significantly to the general scale and therefore are not recommended for use. In 1966, Wood et al. reduced the scale to 13 items (LSI-Z) and changed the scoring system to a three-point format. Other studies related with LSI can be found in Knapp (1976), Wolk et al. (1976), and Czaja (1975).⁶

Analysis. One of the most evident characteristics multi-item scales revealed on the review of the literature is the multitude of factors and concerns included on this scale. They reflect researchers' lack of agreement about what concerns are related to people's well-being.

Approaches to measurement of mental health are difficult enough to plan when the acknowledged experts disagree on what is to be measured. The difficulty is compounded when the search for measures produces a succession of instruments of questionable validity. (Klemmack et al., 1974, p. 270, quoting Sells, 1968)

⁶This last study is particularly relevant because of the use of Czaja's modification of LSI-A scale for application to groups of all ages.

The doubts of Klemmack et al. concerning the validity of multi-item scales are well justified. The scale items are more the product of researchers' intuition than reliable knowledge.

A number of cogent criticisms have been made of these attempts of definition and measurement largely because they are inextricably involved with value judgments explicit by the choice of his terms and criteria. . . . (Neugarten, 1961, 134)

Many value judgments the researcher makes are very difficult for him to detect since they are intrinsic to his society.

Many of the review multi-item scales include items concerned with levels of social interaction, levels of activity or individual achievement. Although at first glance it would not seem a biased decision to include such types of items on the scales, the fact is that by deciding how the items must be scored, the researcher has made value judgments. The final scores of well-being produced by these scales reflect such possibly biased decisions. Fellows' (1966) comments on American culture provide a good illustration of many of the concerns on which the researcher can make biased decisions:

The American conception [of happiness], they [Edel and Edel] suggest is heavily weighted in favor of physical comforts, individual achievement, mastery of obstacles, forward movement—tending to neglect contentment, contemplation, spiritual insight through suffering. . . . American culture has been impressionistically criticized at length for its "fun morality," its impulsive attitude towards play and pleasure, its fear of inactivity, contemplation, and individual isolation, its emphasis on the organizing and scheduling of what should be spontaneous, especially among children, and its obsession with certain types of behavior or rituals (drinking, smoking, sports) which are supposed somehow to produce pleasure. (pp. 17, 21, quoting from Edel and Edel, 1959)

The fact that most of the examined scales have been validated based on the same unreliable criteria used to validate some of the one-item scales reviewed, together with the value judgments researchers inevitably make when deciding on item content or scoring procedure,

casts doubt on Beiser's (1974) statement, ". . . a scale [multi-item] provides a more reliable index of the phenomenon being studied than a single item" (p. 825).

It is the writer's conclusion that, because of the above pitfalls, multi-item scales are not reliable instruments to measure people's satisfaction. Their use should be kept strictly experimental until they are validated by correlation with the one-item overall satisfaction scale which, because of its simplicity, avoids the incorporation of the researcher's value judgments.

Advantages of a simple self-rating over many adjustment measures would seem to be that it will (a) include less irrelevant factor complexity, (b) be easier to obtain, (c) have at least face validity as a measure of avowed happiness. (Wilson 1967, p. 304)

Domain Scales

Very recently, the task of measuring life satisfaction has been undertaken following a new and promising strategy: domain satisfaction. This strategy is centered on the concept that life satisfaction ". . . is dependent upon satisfaction in various life domains such as family, community, job, etc" (Bharadwaj and Wilkening, 1977, p. 422). Life satisfaction, therefore, could be the result of several overall domain satisfaction statements, and the answers are scored on similar types of scales.

The number of studies using this procedure is increasing (Abrams, 1973; Andrews and Withey, 1973; Campbell et al., 1976; Clemente and Saver, 1976; Andrews and Crandall, 1976; Bharadwaj and Wilkening, 1977).

The Campbell et al. study was the first systematic attempt to measure life satisfaction using a combination of overall assessment of satisfaction and domain satisfaction statements. Campbell et al. have

included a wide variety of questions of this kind in the NORC National Survey in 1971. The subjects assessed their satisfaction in 15 domains.⁷ The answers were recorded on a seven-point scale ranging from completely dissatisfied to completely satisfied.

In an attempt to determine the importance subjects assign to each of those domains in their relation with overall life satisfaction, Campbell et al. included several rank scales going from extremely important to not at all important. They were able to determine that for their national probability sample used in this study, 55% considered a happy marriage as one of the two most important domains, while 36% considered "a good country to live in" more important. Good health and strong religious faith were ranked as the most important domains by 30% and 23% of the sample, respectively.

The Andrews and Withey (1976) study reports the use of domain satisfaction statements in three national surveys conducted by the Institute for Social Research (University of Michigan) in the 1970s (May 1972,⁸ November 1972,⁹ April 1973). The respondents were asked to indicate their feelings about several "life concerns." Satisfaction about life as a whole was measured by the question, "How do you feel about your life as a whole?" asked twice, separated by 15 minutes of

⁷The domains included were marriage, family life, health, neighborhood, friendships, housework, job, life in the United States, city or county, nonwork activities, housing, usefulness of education, standard of living, amount of education, and savings.

⁸In the survey of May 1972 covering 1297 adult Americans, the life concerns included were health, cost of necessities, community, people nearby, local government, time to do things, spare-time activities, religious faith and fulfillment, and many others.

⁹The November 1972 survey covered 1072 adult Americans.

interview. The answers were recorded in the Delighted-Terrible scale described earlier in this chapter.

In their study, Andrews and Withey were able to define 12 selected concerns which could account for 50 to 60 percent of the variance of life-as-a-whole. They are self, family, money, fun, housing, family activities, leisure activities, national government, consumer services, health, job, and time to do things.

Bharadwaj and Wilkening (1977) used a scale of 14 domains and studied their relation to overall satisfaction measured with the Andrews and Withey (1976) question.¹⁰ The scale was able to predict from one- to two-fifths of the variance on overall life satisfaction.

Another group of surveys which use a domain satisfaction approach is the NORC national pools (1973, 1976). Life satisfaction was evaluated on five domains: city, nonwork activities, family life, friendships, and health and physical condition (Davis, 1973). The answers to the question, "How much satisfaction do you get from . . . ?" were recorded on a seven-alternative scale ranging from very great to none. This scale was also used by Clemente and Saver (1976) on a regression study to determine influences of several demographic variables on life satisfaction. Later, Wilkening and McGranahan (1978) used the same scale along with two questions on overall satisfaction for comparison purposes.

¹⁰ As it was reported early in this chapter, the overall satisfaction question was slightly modified to emphasize "satisfaction" instead of "feeling." The domains included were health, family life, work, community, housing, food, standard of living, education, income and money matters, spiritual life, spare-time activities, organizational involvement, national involvement, and national government.

Analysis. From the review of domain scales, it would be easy to incorrectly assume that all of them exemplify the same procedure—to determine life satisfaction based on domain satisfaction evaluations. The NORC studies (1973-1976) use domain satisfaction ratings to form an accumulative scale. The measure of life satisfaction is the result of the addition of particular domain scales. This procedure is not any different from the multi-item scale. Decisions to include a domain are based on the researcher's intuition. As was earlier stated, decisions on item content imply value judgments which cast doubt on the validity of the scale and the results obtained.

Studies such as Andrews and Withey (1976), on the other hand, use the domain satisfaction ratings along with an independent measure of overall life satisfaction as criteria. The scale items are overall satisfaction measures of specific domains of life satisfaction. Although some or all items can be integrated in clusters of domains, no previous judgments are made which rely on the combinations of domains or items to be the best predictors of life satisfaction. These clusters or single items (when a domain is covered by just one item) are tested using an overall measure of life satisfaction as criterion; the predictor value of the different groups of domains is then established. Since it is this overall scale which measures life satisfaction, the results depend only on its validity.

The researcher can in this way avoid value judgments on item content. He can decide, based on reliable criteria, which group of items (or cluster of items) to use in predicting life satisfaction and what percentage of its variance he should expect. In the author's opinion, this technique has fewer methodological problems than most of the other

scales. Additionally, this technique has an advantage of key importance for the analysis of environmental satisfaction—the use of overall measures of satisfaction, not only for the construct studied but also for its domains, makes possible the constructions of a network of satisfaction measures. As it was earlier stated (see one-item scales), the evaluation of environmental satisfaction requires a strategy that not only measures life satisfaction but also produces subindices of environmental satisfaction (e.g., house satisfaction, city satisfaction).

Conclusions

Based on the analysis of the characteristics of the three groups of satisfaction scales examined here, the author concludes that (a) one-item scales are more reliable measures of life satisfaction than are multi-item scales. Because of their simplicity, value judgments on item content and scoring procedure can be avoided. (b) Most of the one-item scales reviewed have been validated using criteria of questionable value, with the exception of the Andrews and Withey scales which were validated using construct validity criteria. (c) The D-T scale of seven categories is preferred to others with higher or lower numbers of categories because a seven-category scale covers all the possible discriminations an average person could make on any judgment (Miller, 1956) and is sufficient to capture all potential variance (Andrews and Withey, 1976).¹¹ (d) Domain scales combined with the above overall satisfaction scales, both complemented with the D-T scale, constitute a good strategy to study life satisfaction as well as to produce a network of indices and subindices of environmental satisfaction.

¹¹Also Cochran (1968), Conner (1972), Ramsay (1973).

Proposing a Methodology

Despite the fact that researchers have been studying life satisfaction for almost 50 years, the related literature does not show any substantial progress in the understanding of the dynamics of life satisfaction. Research in the field is not producing results which could be integrated in a major theory on life satisfaction. A review of the studies which have performed analyses of relations between life satisfaction and demographic variables is a good illustration of this situation.

Some researchers have found a positive, direct relationship between youth and life satisfaction.¹² Others have found direct relationships between age and life satisfaction.¹³ Still others found that age is related to satisfaction in a curvilinear pattern with peak frequency in middle age¹⁴ or in a variable manner depending on the life stage.¹⁵ Some, on the other hand, have found no relation at all.¹⁶

The analyses of findings about other variables show that this is not the only case. True variables, such as socioeconomic status¹⁷ and income,¹⁸ were found to be consistently related to life satisfaction

¹²Gurin et al. (1960), Wessman (1956), Campbell (1972), Cantril (1965).

¹³Clemente and Sauer (1976), Czaja (1975).

¹⁴Berkman (1971).

¹⁵Steward (1976).

¹⁶Makarczyk (1962), Beiser (1974), Neugarten and Tobin (1961).

¹⁷Spreitzer and Snyder (1974), Inkeles (1960), Wessman (1956), Phillips (1967), Edwards and Klemmack (1973).

¹⁸Campbell et al. (1976), Clemente and Sauer (1970), Berkman (1971).

across studies but with variable strength. Other variables, such as sex,¹⁹ education,²⁰ or marital status,²¹ present very diverse results.

No study was found which has undertaken the task of looking for an explanation for such differences. Usually they are attributed to differences in other characteristics of the sample. If they are in effect caused by differences in the sample, do all studies find the same relations when the other characteristics are controlled? Very few of the reviewed studies have applied techniques which could produce results to answer this question.

. . . research has generally found relationships between life satisfaction and health, activity, socioeconomic status and . . . age However, almost none of this research attempts to assess . . . the independent effects of these variables when the others are controlled. (Palmore and Luikart, quoted by Clemente and Saver, 1976, p. 621)

The common use of inappropriate techniques of analysis and the diversity of instruments used to measure satisfaction are the main causes of poor progress in building a theory on satisfaction. Most of the results obtained are not comparable with other studies' findings. In this author's opinion, in order to make possible a comparison and integration of findings on more comprehensive theories, a model of analysis is a must.

The analysis model must have the following characteristics.

(a) It should define a minimum of instruments and analysis techniques to assure comparability of results. (b) It should be flexible enough

¹⁹ Makarczyk (1962), Bradburn and Caplovitz (1965), Alston (1973), Gurin et al. (1960).

²⁰ Beiser (1974), Makarczyk (1962), Wilson (1960).

²¹ Campbell et al. (1976), Robinson and Shaver (1976), Veroff et al. (1962), Berkman (1971).

not only to provide the researcher with the possibility of experimenting with new instruments of measurement and using other analysis techniques, but must also be able to integrate studies on satisfaction into a comprehensive theory regardless of the population group involved or the life satisfaction domain (e.g., house satisfaction, job satisfaction) studied.

Instruments

Considering that not all researchers have the same areas of interest and that very few have enough resources to undertake comprehensive studies on satisfaction, the use of some shared measure of satisfaction is of key importance to accomplish comparability of findings. A study on house satisfaction can be integrated into other research at a more general level (e.g., city satisfaction) if both share an instrument to measure satisfaction, such as overall life satisfaction.

To make this possible, the shared measure should have validity, be easy to administer, and not substantially increase the time for data gathering and analysis. Researchers testing new scales should be able to include the recommended instruments without affecting the process of data gathering. Long questionnaires or interviews increase subjects' self selection and are more expensive to process and analyze. In the author's opinion, these requirements are well suited by one-item overall satisfaction measures, such as the Delighted-Terrible scale of Andrews and Withey. The inclusion of several overall satisfaction measures about life, house, city, family, etc. should not be difficult to include in any study on satisfaction.

Analysis Techniques

It has already been mentioned that the use of only bivariate analysis will not help researchers determine the independent relations

among variables. Therefore, differences in sample characteristics not only keep the researcher from finding the real value of the found relations among variables, but also keep other researchers from using the findings to go beyond in understanding of the mechanics of satisfaction.

Only with the use of multi-variable statistical analysis (such as multiple regression analysis) will researchers be able to differentiate between independent correlations between two variables and those originated by an outside common correlation with a third variable.

By specifying in Beta-coefficients the relation between the variables in the study and the shared overall satisfaction measures, the researcher will be able to (a) specify the priority of a domain or characteristic on the criterion he is studying (e.g., "noise level" over "beauty of design" in the evaluation of house) and (b) report the results in a way that other researchers, using different variables but the same overall satisfaction measures, could compare their own results with these and perhaps integrate the best variables in a new, more useful scale.

Finally, after covering the instruments and the analysis techniques of the analysis model, an important subject is left—the structure tying together all satisfaction studies.

A Conceptual Model for Environmental Analysis

The model for evaluation of well-being described by Andrews and Withey (1976) provides the theoretical ground for the formulation of the conceptual model for environmental analysis.

The framework of the complete research reported by the authors in their work Social Indicators of Well-Being is a conceptual model of

basically two dimensions—domains and criteria. "Domains of life are places, things, activities, people and role goals and—in general—ways of judging what the domains of life afford" (p. 12). Criteria are attributes of such domains (e.g., beauty, safety, independence, etc.).

Three levels of affective evaluations can be integrated in this two-dimensional matrix. First, a specific evaluation of a domain (e.g., house) with respect to a single criteria (e.g., beauty and attractiveness) is represented by individual cells on a matrix (E_{ij}). Second, the affective evaluation of any domain (E_i) is hypothesized to be the result of some combination of E_{ij} measures. The affective response to life-as-a-whole (the third level of measure) is hypothesized to be the result of some sort of combination of either E_j or E_i measures. Life-as-a-whole evaluation can be obtained either by evaluating domains (across criteria) or by evaluating criteria (across domains).

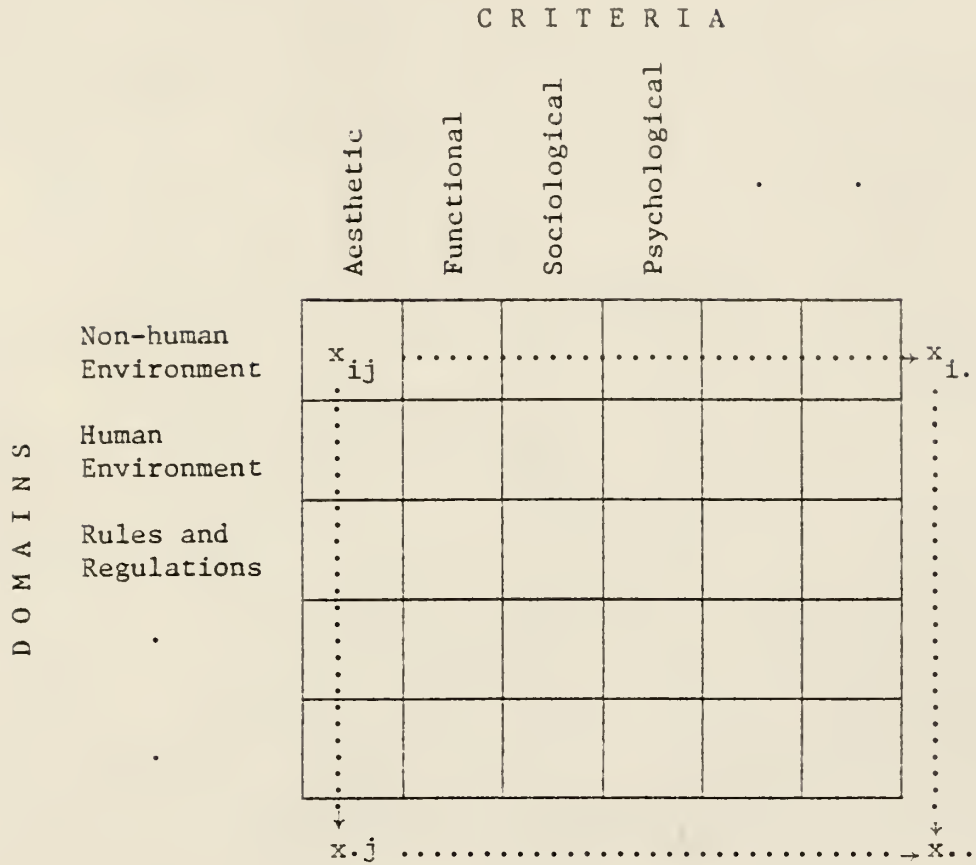
In the opinion of its authors, this conceptual model has possibilities of dimensional expansions. In their own words,

One may assume that people affectively evaluate their lives not only at the concern level (criteria or domain) but also at the subconcern level. For example, people take an interest not only in the domain of "house," but also in subdomains such as kitchen, heating system, furnishings and the like. Similarly the criterion type concern "beauty and attractiveness" may include such subcriteria as balance, color scheme, and complementary with surroundings. In principle, each of these subconcerns could themselves be subdivided practically ad infinitum In addition . . . each of the domain-by-criterion entries (e.g., E_{ij}) would become analogous to a "corner" entry ($E_{..}$) and be derived from its own matrix consisting of subdomains and subcriteria. (p. 15, emphasis added)

A model for analyzing environmental satisfaction can be easily drawn from this general model of life satisfaction. (See Figure 1.) If environment is defined in its more general concept—everything that surrounds us—evaluating such environment involves more than measuring satisfaction with the built surroundings; it involves measuring

Figure 1

A Model for the Evaluation
of Environmental Quality^a



x_{ij} = Satisfaction with a domain or cluster of domains with respect to a criterion (e.g., satisfaction with bedroom with respect to its comfort)

$x_{i.}$ = Satisfaction with a domain or cluster of domains across criteria (e.g., satisfaction with bedroom with respect to all criteria)

$x_{.j}$ = Satisfaction with a criterion across domains (e.g., satisfaction with all house spaces considering only their comfort)

$x_{..}$ = Satisfaction with environment (e.g., satisfaction with house, everything considered)

^aBased on the conceptual model for evaluation of well-being of Andrews and Withey (1976).

satisfaction with all domains or components—people, things, even regulations and norms which control relations of people among themselves and with their environment. In evaluating a bedroom in a residence hall, for instance, evaluations should be obtained not only of the physical elements of the room (e.g., furniture, room location, size, etc.), but of the roommates, other tenants, and residence hall regulations as well.

Any "behavioral setting" (borrowing Barker's term, 1968) can be conceptualized as being composed of three general clusters of domains (Non-human Environment, Human Environment, and Rules and Regulations). Criteria are practically unlimited, and like domains can be grouped in several clusters. The model in Figure 1 shows some of the groups from which criteria can be extracted—Aesthetical (e.g., beauty, proportion), Functional (e.g., flexibility, comfort), Sociological (e.g., friendliness), and Psychological (e.g., personality). Satisfaction with an environment (e.g., house, neighborhood, city, state, or country) can be measured by evaluations of partial concerns formulated according to such matrices, either by combination of domains across criteria ($x_i.$) or by criteria across domains ($x.j$).

The results of a group of studies on environmental satisfaction can be compared and eventually integrated into a more comprehensive study if (a) the environmental variables studied all generated according to the model; (b) they share some criterion variables at the level of either "corner" values ($x..$), domains ($x_i.$), or criteria ($x.j$); and (c) they express the result of analysis of relations between domains and the overall measures in Beta-coefficients.

Summary of Proposed Methodology

The methodology proposed in this work can be summarized in the following points.

1. Any instrument to measure environmental satisfaction should be complemented by an overall satisfaction statement about the same environment.
2. The satisfaction measures about environments or their domains or characteristics must be interconnected in a network of variables according to the matrix model.
3. Overall environmental satisfaction measures as well as measures of satisfaction with domains or characteristics should follow the general form, "How do you feel about . . . ?" and the answers should be scored on the Delighted-Terrible scale.
4. Overall satisfaction measures should be used as criteria variables in the study of their relation with domain satisfaction measures.
5. The study of relations among satisfaction measures should be obtained by multi-regression analysis and the relation with the criterion expressed as Beta-coefficients.

This methodology has been used by the writer in the analysis and evaluation of life, city, college, and house satisfaction for a group of college students, which is reported in the following chapters.

Chapter 3

DEFINING THE RESEARCH PROBLEM

This chapter reports the research design of a study concerned with users' evaluation of their environment. The affective feelings about city, college and house of users of three types of student housing are measured, compared and analyzed.

The first part describes the problem, hypothesis, and definitions of the variables used. The second part provides details on sample selection procedures, sample characteristics, and instruments. This chapter is complemented by Appendices A and B. Appendix A lists all the variables (objective and subjective) included in this study. Appendix B is the Environmental Satisfaction Survey used to gather the data.

The Problem

This research is an intent to evaluate three types of environmental settings—city, college, and house—according to indices based on people's feelings about the environment, and also to study their relation with life satisfaction. Three types of college student housing are compared and the relationships between the different environmental indices are explored.

Following are the issues raised in this research. What environmental characteristics do college students consider more relevant on the

overall evaluation of house, college, and city environments? Is that relevance constant for different sectors of the college population? What type of evaluating procedure is used to arrive at an overall evaluation? Is it an average of feelings about environmental characteristics or are they weighted according to their importance? Is their weight related to the level of satisfaction? Are environmental characteristics which are evaluated highly positive or highly negative the best predictors of overall satisfaction with that environment? How are feelings about house, college, and city environment connected? Can satisfaction with house, college, and city predict college students' life satisfaction?

Scope of the Study

This research has the following objectives: (1) to design and test multi-item domain scales for measuring college student satisfaction with house, college, and city; (2) to evaluate and compare the quality of three types of housing (residence hall, Greek house, and off campus) using students' overall evaluation; (3) to measure students' satisfaction with their city environment; (4) to analyze the relations between students' overall satisfaction with house, college, and city and their satisfaction with the characteristics of these environments; and (5) to obtain predictor equations for house, college, and city satisfaction for each of the three dwelling samples.

Hypotheses

The following hypotheses were formulated. (1) There are statistically significant differences in house satisfaction between students living in off campus housing, Greek houses, and residence halls.

(2) Among all the attributes considered in the evaluation of the environment, those which receive peak evaluations (highly positive or negative) are the best predictors of overall feelings about the environment (house, college, or city). (3) Life satisfaction significantly correlates with students' satisfaction with their house, college, and city environment.

Definition of Variables

Tables 3 and 4 describe the items and satisfaction indices used in this study. Appendix A lists all the variables. House, college, and city satisfaction have been measured by the following one-item and multi-item scales:

House Satisfaction Index 1 (H. S. Index 1) is an overall statement on students' feelings about their dwelling unit.

House Satisfaction Index 2 (H. S. Index 2) is a 16-item scale which, like the other multi-item scales used in this study, is based on the concept of domains. Overall satisfaction about an environment is measured by users' satisfaction statements on the micro-environments or characteristics of such environments. The index contains items dealing with room size, storage space, temperature, noise, parking facilities, etc.

House Satisfaction Index 3 (H. S. Index 3) is a variation of Index 2 including an extra item to measure satisfaction with the quality of food.

College Satisfaction Index 1 is an overall statement on students' feelings about their college.

College Satisfaction Index 2 is a six-item scale dealing with satisfaction with education facilities, education quality,

Table 3

House, City, College, Job, and Life
Satisfaction Variables^a

Var. No.	Variable Name	Item Description
How do you feel about ...		
23	Life satisfaction	... your life as a whole?
24	House satisfaction	... the quality of life in your dwelling unit?
25	Room size	... the size of your room or apartment?
26	Storage	... the storage or closet space in your room or apartment?
27	Wall condition	... the condition of the paint on your room or apartment walls?
28	Furniture condition	... the condition of the furniture in your room or apartment?
29	Room temperature	... the temperature of your room/apartment in the winter?
30	Room noise	... the levels of noise perceived in your room/apartment produced by other tenants?
31	House parking	... the availability of parking to your house/building?
32	House exterior	... the beauty of the exterior design of your house/building?
33	House location 1	... the distance from your room/apartment to Aggieville?
34	House location 2	... the distance from your room/apartment to Farrell Library?
35	Food	... the quality of the food usually have here in Manhattan?
36	House access	... the maintenance of access to your room or apartment?
37	Recreation facilities	... your building/residence indoor recreational facilities?
38	Co-tenants	... the people living next to your room/apartment?
39	Roommates	... the people sharing your room/apartment?
40	House rent	... the rent you pay considering the size and quality of the place?
41	House regulations	... your residence regulations?
42	College	... KSU as a whole?
43	Education facilities	... KSU's educational facilities?
44	Education quality	... the education you receive at KSU?
45	Classmates	... your KSU classmates?
46	College parking	... parking facilities on campus?
47	Campus sidewalks	... the maintenance of sidewalks on campus?
48	University policy	... the university policy—freshmen have to live in residence halls or other type of organized housing?
49	City satisfaction	... the quality of life in Manhattan?
50	City recreational facilities	... Manhattan's recreational facilities?
51	City sidewalks	... Manhattan's sidewalk maintenance?
52	City streets	... Manhattan's street maintenance?
53	Job opportunities	... Manhattan's part-time job opportunities?
54	Urban transportation	... Manhattan's transportation services?
55	City police	... Manhattan's police protection?
55	Job satisfaction	... your job (everything considered)?

^aFor a complete list of objective and subjective variables used in this study, see Appendix A.

Table 4
House, College, City, and Life
Satisfaction Indices

Index Name	No. of Items	Item Content ^a
Life Satisfaction Index 1 ^b	1	23 (asked twice and averaged)
House Satisfaction Index 1	1	24
House Satisfaction Index 2	16	25 through 34, 36 through 41
House Satisfaction Index 3	17	25 through 41
College Satisfaction Index 1	1	42
College Satisfaction Index 2	6	43 through 48
Job Satisfaction Index 1	1	56
City Satisfaction Index 1	1	49
City Satisfaction Index 2	6	50 through 55
City Satisfaction Index 3	30	25 through 41, 43 through 48, 50 through 56
City Satisfaction Index 4	9	24, 35, 42, 50 through 55
City Satisfaction Index 5	10	24, 35, 42, 50 through 56

^aNumbers correspond to variable numbers on Table 3.

^bAndrews and Withey (1976) scale.

classmates, college parking, sidewalk maintenance, and university policies.

Job Satisfaction Index 1 is a one-item index used to measure the potential influence of job satisfaction on the other affective feelings.

City Satisfaction Index 1 is a one-item overall statement about quality of life in the city.

City Satisfaction Index 2 is a six-item scale concerned with feelings on street and sidewalk maintenance, police protection, job opportunities, and recreational facilities.

City Satisfaction Index 3 is a 30-item scale which results from combining all the items on H. S. Index 3, College Satisfaction Index 2, City Satisfaction Index 2, and Job Satisfaction Index 1.

City Satisfaction Index 4 uses three overall indices of satisfaction—H. S. Index 1, College Satisfaction Index 1, and City Satisfaction Index 2—plus an item on food quality.

City Satisfaction Index 5 is a variation of the fourth index, including one extra item on overall job satisfaction (Job Satisfaction Index 1).

The Method

Sampling Method

The sampling procedure was a combination of a simple random sampling of the section of the student population living in privately-managed off campus housing and a two-stage sampling of students living in Greek houses and university-managed residence halls.

This method was selected using two criteria. First, the cost per questionnaire unit had to be minimized. By dividing the total population on three samples (residence halls, Greek houses, and off campus housing), the cost could be reduced substantially, mainly in the distribution and collection expenses. Second, given the low proportion of students in residence halls and Greek houses as compared with those off campus and the number of expected returned questionnaires (260-325), there existed the possibility of not having representative samples of those accommodations with lower proportions if a simple random sampling of the total population was used instead.

To cover the students living in Greek houses, two fraternities and two sororities were sampled. The criteria for this selection were the various locations and facilities provided. The fraternities sampled were Delta Sigma Phi and Pi Kappa Alpha. Delta Sigma Phi is located to the south of campus, one block from Aggieville. It houses 41 students, although its capacity is 60. This is the fraternity with the second lowest occupation rate. Pi Kappa Alpha, located three blocks from the western campus border, houses 67 students with a 100% occupancy rate.

The sororities selected were Alpha Xi Delta, located one block from the southwestern part of campus, housing 59 students (the sorority with the lowest occupancy rate, 92%), and Gamma Phi Beta, located one block from the northwestern part of campus, housing 55 students in its 56 normal house capacity (98% occupancy rate).

Two residence halls were also sampled to represent the second type of accommodation—Haymaker Hall, a men's dorm housing 648 students, located in the eastern part of campus, and Goodnow Hall, a coed dorm located in the western part of campus and housing 635 students (437 women and 198 men).

Questionnaires were distributed to all the residents of the selected fraternities and sororities for a total of 222 students (108 males and 114 females), which represents approximately 12% and 56% of the population of fraternities and sororities, respectively. Forty-eight percent of them answered the questionnaire (N = 107).

One hundred ten questionnaires were also distributed to the residence halls involved. The subjects were randomly selected from the rosters of each hall, using a table of random numbers.¹ Fifty-seven percent answered the questionnaire (N = 125).

To sample the group of students living off campus, 200 subjects (2.5% of the population) were selected from the 1978-1979 Student Directory using a table of random numbers.² Fifty-three percent returned the questionnaire (N = 106).

Sample Characteristics

Five types of sample characteristics were covered by the Environmental Satisfaction Survey: demographic; housing; environmental background; economic; and intensity of involvement in study, work, and religious activities. They are summarized in Table 5.

¹The table of random numbers used was Table A on Snedecor and Cochran, "Statistical Methods." Three-digit figures were taken consecutively from the table, leaving out any figure over the total number of residents figure. A table of 9 columns and 50 rows was used, starting in the 50th row, 50th column and finishing in the 9th column and 59th row.

²Five-digit numbers were taken consecutively from one table. All numbers over the total student population at KSU were left out. Additionally, when a number corresponded to an address of a residence hall or Greek house, the following eligible name was taken instead. On this task, the first 2 tables of 50 rows by 50 columns plus 20 columns and 50 rows of the third table were used.

Table 5

Sample Characteristics by House
Group and Total Sample

Variable ^b	House Type			
	Off Campus	Residence	Greek	Total
	Housing N = 106	Hall N = 125	House N = 107	Sample ^c N = 338
<u>Demographic</u>				
Age (59)				
17-18	6.6	31.2	3.7	14.7
19-20	20.7	47.2	65.4	44.6
21-22	33.0	19.2	28.9	26.6
23-24	16.0	1.6	.0	5.6
25 or older	23.5	.8	.9	7.9
Race (60)				
White	95.2	95.2	95.3	95.2
Black	4.7	1.6	.9	2.3
Other	.0	1.6	2.8	1.4
Sex (61)				
Male	56.6	64.0	42.9	55.0
Female	43.4	36.0	56.0	44.6
Marital Status (20)				
Single	73.5	99.2	99.0	91.1
Married	24.5	.0	.9	7.9
Widowed	.0	.0	.0	.0
Separated	.0	.0	.0	.0
Divorced	1.8	.0	.0	.5
College Status (15)				
Freshman	12.2	40.8	11.2	20.4
Sophomore	7.5	25.6	40.1	24.5
Junior	20.7	18.4	33.6	23.9
Senior	30.1	9.6	13.0	17.1
Fifth-yr. student	13.2	5.6	.0	6.2
Graduate	14.1	.0	.0	4.4
<u>Housing</u>				
No. of Roommates (4)				
None	41.5	4.8	12.1	18.6
One	45.2	91.2	28.9	57.1
Two	9.4	3.2	22.4	11.2
Three	.0	.0	15.8	5.0
Four or more	2.8	.0	20.5	7.4

Table 5 (Continued)

Variable ^b	House Type			
	Off Campus Housing N = 106	Residence Hall N = 125	Greek House N = 107	Total Sample ^c N = 338
Bathroom Facilities (5)				
Private (or with family)	59.4	.0	.0	18.6
Shared (1-4 people)	31.1	2.4	9.3	13.6
Shared (5-10)	1.8	.0	.9	.8
Shared (more than 10)	6.6	95.2	89.7	65.6
Kitchen Facilities (6)				
Private	61.3	.0	.0	19.8
Shared (2 or less)	21.7	.0	.0	6.8
Shared (3-6)	6.6	.0	.0	2.0
Shared (6 or more)	1.8	100.0	100.0	68.4
Phone Location (12)				
No phone in building	.9	.0	1.8	.8
In hall (same floor)	6.6	.8	80.3	27.8
In room/apartment	86.7	99.2	16.8	69.2
Other part of building	5.6	.0	.9	2.0
Type of Roommates (10)				
Parents	12.2	.0	.0	3.8
Spouse	20.7	.0	.0	6.8
Students	45.2	100.0	100.0	82.5
Alone	16.0	.0	.0	5.0
Other	4.7	.0	.0	1.4
Unit Floor Location (9)				
Basement	15.0	4.8	1.8	7.1
First floor	38.6	12.8	13.0	21.0
Second floor	25.4	18.4	71.0	37.2
Third floor	6.6	12.8	9.3	9.7
Fourth or higher	.9	50.4	.0	18.9
Two or more level unit	11.3	.0	3.7	5.0
House Distance to College Hall (65)				
Less than 3 minutes' walk	3.7	4.8	.9	3.2
Four to six	14.1	26.4	7.4	16.5
Seven to nine	11.3	33.6	21.5	22.7
Ten to twelve	18.8	22.4	25.2	22.1
Thirteen to fifteen	12.2	10.4	28.9	16.8
Sixteen or more	33.9	.8	12.1	14.7

Table 5 (Continued)

Variable ^b	House Type			
	Off Campus Housing N = 106	Residence Hall N = 125	Greek House N = 107	Total Sample ^c N = 338
<u>Environmental</u>				
Time Living in the City (2)				
Less than one year	19.8	48.0	14.0	28.4
One to three	26.4	36.0	64.4	42.0
Three to five	31.1	12.0	16.8	19.5
Five to seven	11.1	.8	.7	19.5
More than seven	11.3	.8	1.8	4.4
Time Living in House (3)				
Less than one year	52.8	52.8	42.0	49.4
One to two	22.6	24.8	34.5	27.2
Two to three	5.6	12.8	16.8	11.8
Three to four	1.8	5.6	4.6	4.1
Five or more	13.2	.0	.0	4.1
Early Life Type House (17)				
Mobile home	.9	.8	.0	.5
Detached single family house	92.4	84.0	84.1	86.6
2-family house (duplex)	.0	2.4	.9	1.1
2-family house (one above other)	.0	4.0	4.6	2.9
Detached 3-4 family house	4.7	5.6	6.5	5.6
Apartment house	.9	.0	2.8	1.1
Other	.9	1.6	.9	1.1
Early Life Environment (18)				
Farm	21.7	18.4	22.4	20.7
Town (under 2500)	15.0	16.0	9.3	13.6
Town (2500-10,000)	13.2	10.4	9.3	10.9
City (10,000-100,000)	25.4	28.8	28.9	27.8
City (over 100,000)	22.6	24.8	29.9	28.7
Early Life Roommates (19)				
Parents	98.1	98.4	98.1	98.2
Other relative	.9	.0	.9	.5
Other nonrelative	.9	.8	.0	.5

Table 5 (Continued)

Variable ^b	House Type			
	Off Campus Housing N = 106	Residence Hall N = 125	Greek House N = 107	Total Sample ^c N = 338
<u>Economic</u>				
Source of Education Funds (66) ^d				
Type 1	23.5	29.6	47.6	33.4
Type 2	14.1	14.4	5.6	11.5
Type 3	10.3	15.2	10.2	12.1
Type 4	19.8	8.8	6.5	11.5
Type 5	1.8	4.0	.9	2.3
Type 6	14.1	9.6	16.8	13.3
Type 7	16.0	16.8	11.2	14.7
Source of Living Funds (67) ^d				
Type 1	17.9	20.0	42.9	26.6
Type 2	14.1	7.2	.9	7.4
Type 3	7.5	7.2	6.5	7.1
Type 4	30.1	32.8	21.5	28.4
Type 5	.9	.8	.0	.5
Type 6	17.9	26.4	22.4	22.4
Type 7	9.4	4.0	3.7	5.6
Monthly Expenses (71)				
Less than \$150	19.8	4.8	5.6	9.7
\$151-\$250	36.7	84.0	66.3	63.6
\$251-\$350	21.7	9.6	19.6	16.5
\$351-\$450	4.7	.0	3.7	2.6
More than \$450	11.3	.0	1.8	4.4
Number of Financial Dependents (21)				
None	79.2	92.8	96.2	89.6
One	12.2	4.0	2.8	6.2
Two	3.7	.8	.9	1.7
Three	2.8	.0	.0	.5
Four or more	1.8	.0	.0	.5
Financial Problems (62) (Cause for Dropping Out)				
Yes	11.3	3.2	3.7	5.9
No	88.6	96.0	95.3	93.4
Car Property (11)				
Yes	84.9	58.4	78.5	73.0
No	14.1	40.8	21.5	26.3

Table 5 (Continued)

Variable ^b	House Type			
	Off Campus Housing N = 106	Residence Hall N = 125	Greek House N = 107	Total Sample ^c N = 338
<u>Work, Study, and Religion</u>				
<u>Involvement</u>				
Work Involvement (58)				
Not working	42.4	55.2	69.1	55.6
1-10 hours/week	20.7	20.0	18.6	19.8
11-20	16.9	18.0	9.3	15.0
21-30	11.3	2.4	.9	4.7
31-40	4.7	1.6	.0	2.0
More than 40	2.8	2.4	.9	1.7
Study Involvement (16)				
Less than 7 credit hours	10.3	.0	.9	3.5
7-12	8.4	2.4	8.4	6.2
13-15	33.0	30.4	41.1	34.6
16-18	30.1	56.8	39.2	42.9
19 or more	16.9	9.6	9.3	11.8
Religion Involvement (63)				
One or more a day	16.0	15.2	8.4	13.3
Two or three/week	8.4	7.2	6.5	7.4
Once a week	15.0	20.8	27.1	21.0
Two or three/month	13.2	8.8	18.6	13.3
Once a month	6.6	7.2	6.5	6.8
Less than once/month	12.2	18.4	12.1	14.5
Not at all	26.4	20.0	19.6	21.8

^aFigures are percentages of sample size. They do not add to 100 because percentages of no response are not included.

^bNumbers in parentheses refer to variable number in Appendix A or question numbers in Appendix B.

^cTotal sample figures are provided as reference for those studies where the total sample was used. They should not be taken as representative proportions of the total student population.

^dTypes 1 through 7 are the most frequently observed groups of sources. 1—from family, relatives, or friends exclusively; 2—combination of sources from family and some type of job; 3—from family and scholarships or veterans' benefits; 4—exclusively from job or assistantships; 5—combination of scholarships or veterans benefits with jobs; 6—exclusively from scholarships or veterans benefits; 7—other combinations (university grants, loans or social security).

The distribution by age in the different types of housing reflects both the percentages of students at KSU in those age categories and the university policy which requires freshmen to live in residence halls or Greek houses. This requirement is the cause of the low percentage of students in the 17-18 year range living off campus and the high proportion of this age range living in residence halls.

The high proportion of males to females in residence halls is the result of the type of residences selected for this study, one being exclusively for male students and the other coed with a male/female ratio of two to one.

The distribution by college status gives some indication of preference for off campus housing over the other two types with the increase of status. The number of students in the sophomore year in Greek houses drops steadily from this point to the senior year. A similar pattern is observed in residence halls, while the off campus housing percentage increases with status.

Distribution, Recollection, and Instructions

Two distribution procedures were followed, one for residence halls and Greek houses, the other for off campus housing. KSU authorities were contacted in the first days of Spring Semester 1979. They authorized the survey of the residence halls and informed the directors of the two halls involved. Advisors for both fraternities and sororities and presidents of the four Greek houses involved were also contacted.

From February 4 to February 7, copies of the questionnaire³ addressed with the general term "Resident" and the name of the

³ See Appendix B for the final form of questionnaire and instructions.

corresponding fraternity or sorority were delivered to the aforementioned Greek house presidents for distribution. The same procedure was followed for the residence halls, although in this case the questionnaire was addressed to the subjects selected previously. Off campus subjects, on the other hand, were contacted by mail.

Accompanying the questionnaire was an introductory letter⁴ explaining the goal of the project, the general idea that motivated the study, the estimated time for answering the questionnaire, a statement assuring anonymity, and instructions for returning the questionnaires.

Subjects living in Greek houses and residence halls returned the questionnaires by depositing them in boxes located at the reception desks of each setting. Off campus subjects mailed the questionnaire in the stamped, self-addressed envelopes provided.

Under request of KSU's Committee on Research Involving Human Subjects, a statement was included assuming voluntary participation and confidentiality and also encouraging omission of any question which would be offensive or invade the subject's privacy. Since some questions were asked several times, an explanation was given following the above statement on privacy.

No further instructions were given except those required for the subject to understand clearly the scales and how to report his answers. At the end of the questionnaire, instructions for returning the questionnaire were repeated. Additionally, the subject was encouraged to comment freely on any topic not covered by the survey.⁵

⁴See first page of questionnaire.

⁵Appendix D reports the most relevant subject comments.

The Instruments

The Delighted-Terrible scale of Andrews and Withey (1976) was used to measure affective states about environmental domains, concerns which form the main body of the questionnaire. Life satisfaction was measured by the average of the Andrews and Withey (1976) item, "How do you feel about your life as a whole?" asked twice, and by the "Happiness" scale of Gurin et al. (1960). Subjects' mood was measured by the Elation-Depression scale of Wessman and Ricks (1966). Details on how these scales were used are given in Appendix C.

Chapter 4

ANALYZING THE FINDINGS

This chapter describes the findings in the case study on student housing defined in the last chapter. Details are given on the measured levels of satisfaction with the college, house, and city environment. This section also covers multi-regression analyses performed to define the priorities that some environmental characteristics have over others on the overall satisfaction. Sections reporting instruments and the pitfalls of the method in the results as well as conclusions and further recommended research are also included here.

Description of Findings

The findings of this study are structured in four sections, ordered in the way they were obtained and analyzed. The first section covers the measurement of users' satisfaction with their dwelling unit, college, and city environment. Frequency distributions, means, and standard deviations for the three house groups are commented on and compared.

The second section reports reliability and item validity of the multi-item scales to measure environmental satisfaction. The results of house, college, and city multi-item scales are also compared with their correspondent one-item scales (indices type I) used as criterion measures throughout the study. The third section analyzes the relationships among

house, college, and city concerns, item by item, with their correspondent criterion measures.

Finally, the fourth section reports the results of the multivariate analysis. The independent effect that feelings about each house, college, and city concern have on the respective overall environmental satisfaction measures are given in the form of Beta-Weights. The combined effect of several groups of selected concerns is analyzed and the results are shown in the form of multi-regression coefficients. This part of the study also reports the regression equations of environmental satisfaction for these groups of selected concerns.

Levels of Environmental Satisfaction

The distribution of answers to satisfaction questions on environmental characteristics was variable not only across concerns but across samples as well. In general, students feel mostly satisfied or pleased about most of the concerns covered in this study. The shape of the distributions was generally two-tailed, either normal or slightly skewed to the right, with the positive tail significantly higher than the negative. A few distributions, however, were one-tailed, mostly to the right of the spectrum. Tables 6 and 7 show students' evaluations of house, college, and city characteristics and the measure of their overall feelings about such environments. Table 8 reports the results of life satisfaction and other one-item scales for the three housing samples. Those tables are commented on in the following paragraphs.

Satisfaction with the house environment (Table 6). Overall, off campus students rated their feelings about housing between mostly satisfied and pleased. Their evaluations of some house characteristics are,

Table 6

Mean Satisfaction Levels on House
Concerns by House Group^a

Var. No.	Variable Name	Satisfaction Levels ^b					
		Off Campus		Residence Hall		Greek House	
		\bar{x}	s	\bar{x}	s	\bar{x}	s
		-- N = 106 --		-- N = 125 --		-- N = 107 --	
24	House satis. (index 1)	5.50y	1.13	4.80xz	1.31	5.62y	.94
25	Room size	5.34y	1.43	3.94xz	1.42	5.31y	1.15
26	Storage	4.94y	1.66	3.70xz	1.62	4.60y	1.53
27	Wall condition	4.98y	1.41	4.00xz	1.64	5.15y	1.41
28	Furniture condition	4.87	1.50	4.63z	1.28	5.24y	1.26
29	Room temperature	4.98y	1.66	5.80xz	1.13	5.05y	1.47
30	Room noise	4.71y	1.86	3.64xz	1.46	4.61y	1.33
31	House parking facil.	5.07y	1.95	2.53xz	2.00	3.69yx	2.11
32	House exterior	4.97y	1.51	4.33xz	1.33	5.31y	1.52
33	Location 1	4.87z	1.86	4.76z	1.52	5.44yx	1.36
34	Location 2	4.86y	1.52	5.38xz	1.00	4.96y	1.24
35	Food	5.31y	1.48	3.87xz	1.40	5.22y	1.22
36	Access maintenance	4.65y	2.23	5.38x	1.17	5.80x	.89
37	Indoor rec. facil.	1.44y	2.33	4.48x	1.44	4.05x	2.04
38	Co-tenants	4.58z	2.15	5.02z	1.36	5.86yx	1.33
39	Roommates	4.63y	2.75	5.60x	1.64	5.67x	2.21
40	House rent	4.35z	2.25	3.80z	1.55	5.09yx	1.42
41	House regulations	4.14z	2.62	4.72	1.52	5.01x	1.46

^aAll figures are mean scores of items measured on the 7-point Delighted-Terrible Scale of Andrews and Withey (1976).

^bSimple analyses of variance were performed for all the variables in the table. The Scheefe test for multiple comparisons was used to test the significance of the observed differences among the means of the three samples.

NOTES: \bar{x} = mean; s = standard deviation; x = significantly different from the off campus sample; y = significantly different from the Residence Hall sample; z = significantly different from the Greek House sample. x, y, and z indicate significant difference at $p < .01$.

however, somewhat lower. Thirteen of the seventeen housing concerns included in the questionnaire have means going from mixed (4) to mostly satisfied (5). Feelings about the size of their room/apartment, parking facilities and food quality go from mostly satisfied to pleased. One third of all the samples are pleased (31%) with the size of the room or mostly satisfied (25%). Feelings about parking facilities are distributed on a one-tailed shape, with the peak frequency on the positive side of the scale; 33% feel delighted about it. The quality of food was evaluated as mostly satisfying by 37%. The reader should realize that the mean value for indoor recreational facilities does not represent dissatisfaction, but rather a low percentage of responses to this question (65% did not answer or answered "does not apply to me"). This observation also applies to questions on satisfaction about roommates and house regulations which were not answered by 23% of the respondents.

Students in residence halls have significantly lower satisfaction with house than the other two groups¹ ($\bar{x}=4,8$). In the evaluation of housing concerns, residence hall students' ratings are not as uniform across concerns as are off-campus students'. Feelings about five of the concerns (room temperature, location with respect to Farrell Library, co-tenants, roommates, and maintenance of hallways) range from mostly satisfied to pleased. They have mixed feelings or are mostly satisfied with the condition of the room, wall paint, furniture, house exterior design, location with respect to Aggieville, indoor recreational facilities, and house regulations. On the negative side, they feel mostly

¹The significance of the observed differences in the satisfaction levels of overall satisfaction with house, college, city, and life as well as with each environmental concern were tested using the Sheefe test for multiple comparisons.

dissatisfied or have mixed feelings about the size of the room, storage space, noise perceived in the room, food, and rent. Finally, this group of students feels mostly dissatisfied or unhappy with their residence parking facilities. It is interesting to note that although 84% of the respondents answered this question, only 58% of the sample own cars.

Greek house residents are more uniform in their evaluations and significantly more satisfied than those in residence halls. Twelve of the seventeen house concerns were evaluated mostly satisfied or pleased, and all the items except parking facilities were evaluated in the positive side of the scale. Those students are mostly satisfied or have mixed feelings about storage space, room noise, location as related to Farrell Library, and indoor recreational facilities. Again, parking facilities are evaluated low ($\bar{x} = 3.69$).

Satisfaction with college (Table 7). Feelings about the environmental characteristics of the KSU campus and some of its facilities are uniform across the three samples. On the overall statement on college satisfaction, all three samples feel mostly satisfied or have mixed feelings, with no statistically significant differences. Similar levels of satisfaction were measured for KSU educational facilities, quality of education, and classmates. Students of the three housing groups either have mixed feelings or are mostly satisfied with the university policy requiring freshmen to live in residence halls or Greek houses.

On the negative side of the scale, all three samples feel mostly dissatisfied or have mixed feelings about the condition of campus sidewalks. KSU campus parking facilities cause the lowest level of satisfaction among all college concerns in this study. The distribution of responses in this environmental characteristic is one-tailed, with the

Table 7

Mean Satisfaction Levels on College
and City Concerns by House Group^a

		Satisfaction Levels ^b					
Var. No.	Variable Name	Off Campus		Residence Hall		Greek House	
		\bar{x}	s	\bar{x}	s	\bar{x}	s
		-- N = 106 --		-- N = 125 --		-- N = 107 --	
College							
42	College satis. (index 1)	5.57	1.17	5.82	1.08	5.59	1.19
43	Educ. facilities	5.39	1.08	5.60	1.05	5.41	1.17
44	Educ. quality	5.43	1.04	5.69	1.00	5.49	1.14
45	Classmates	5.54	1.16	5.64	1.01	5.45	1.16
46	Univ. parking	2.81	1.72	2.64	1.53	2.60	1.63
47	Univ. sidewalks	3.64	1.61	3.72	1.60	3.86	1.82
48	Univ. policy	4.19z	2.08	4.42	1.80	4.92x	1.82
City							
49	City satis. (index 1)	5.25	1.33	4.95	1.30	5.34	1.17
50	City rec. facilities	4.76	1.42	4.74	1.51	5.02	1.49
51	City sidewalks	4.14	1.56	4.32	1.42	4.29	1.51
52	City streets	3.41	1.60	3.78	1.56	3.30	1.74
53	Job opportunities	3.63	1.67	3.71	1.81	3.59	1.81
54	Urban transportation	3.32yz	1.61	4.06x	1.67	4.34x	1.46
55	City police	4.14	1.58	4.26	1.67	4.18	1.54

^aAll figures are mean scores of items measured on the 7-point Delighted-Terrible Scale of Andrews and Withey (1976).

^bSimple analyses of variance were performed for all the variables in the table. The Scheefe test for multiple comparisons was used to test the significance of the observed differences among the means of the three samples.

NOTES: \bar{x} = mean; s = standard deviation; x = significantly different from the off campus sample; y = significantly different from the Residence Hall sample; z = significantly different from the Greek House sample. x, y, and z indicate significant differences at $p < .01$.

peak in "feeling terrible about it"; 62% of the sample have negative feelings in this regard. Again, in spite of the fact that just 73% of the sample do in fact own cars, 96% of all sampled answered this question.

Satisfaction with the city environment (Table 7). Overall, the three samples are "mostly satisfied" with the city environment. No significant differences were found in this item. The shapes of the distribution of answers to the individual city concerns were exclusively two-tailed. Students have mixed feelings about their satisfaction with city recreational facilities, sidewalk maintenance, and police protection. On the other hand, they either have mixed feelings or feel mostly dissatisfied about the condition of the streets, job opportunities, and urban transportation.

Life satisfaction (Table 8). This variable was measured with the average of two equal items which constitute the Life 3 Andrews and Withey (1976) instrument. Students in the three samples generally are mostly satisfied or pleased with their lives, with no statistically significant difference between groups. Also, no significant differences were found for college, city, and job satisfaction. The results of this last concern need some clarification. The low value of the mean on feelings about job does not necessarily mean low satisfaction. Forty percent (off campus) and 47% (Greek house) did not answer this question or else considered it did not apply to them. A closer look at the distribution of those who did answer shows that the peak frequency is located either on pleased or on mostly satisfied for the three samples.

Table 8

Mean Satisfaction Levels on One-item
Scales by House Group^a

Var. No.	Variable Name	Satisfaction Levels ^b					
		Off Campus		Residence Hall		Greek House	
		\bar{x}	s	\bar{x}	s	\bar{x}	s
		-- N = 106 --		-- N = 125 --		-- N = 107 --	
23	Life satis. (index 1)	5.89	1.02	5.77	1.09	5.81	.91
24	House satis. (index 1)	5.50	1.13	4.80	1.31	5.62	.94
42	College satis. (index 1)	5.57	1.17	5.82	1.08	5.59	1.19
49	City satis. (index 1)	5.24	1.33	4.95	1.30	5.33	1.17
56	Job satis. (index 1)	3.36	2.93	2.96	2.80	2.46	2.60

^aAll figures are mean scores of items measured on the 7-point Delighted-Terrible Scale of Andrews and Withey (1976).

^bSimple analyses of variance were performed for all the variables in the table. The Scheefe test for multiple comparisons was used to test the significance of the observed differences among the means of the three samples.

NOTES: \bar{x} = mean; s = standard deviation; x = significantly different from the off campus sample; y = significantly different from the Residence Hall sample; z = significantly different from the Greek House sample. x, y, and z indicate significant differences at the $p < .01$ level.

House, College, and City Multi-item Scales: Reliability and Validity

Seven multi-item scales were tested for reliability and item validity. They are house satisfaction indices 2 and 3, college satisfaction index 2, and city satisfaction indices 2, 3, 4, and 5. In general, those analyses show that all the scales have high validity coefficients going from .71 to .89 on all samples. Furthermore, all items correlated ($p < .01$) with the totals of the correspondent scales. Results of this analysis are reported in full on Tables 9, 10, and 11 and are briefly commented on in the following paragraphs.

House satisfaction indices (Table 9). With only one exception, the 16 items on House Satisfaction Index 2 (H. S. Index 2) as well as the additional item (food) included on H. S. Index 3 correlated with the total scale (.27 to .57) at $p < .01$ level on three housing groups. Feelings about indoor recreational facilities correlated at the $p < .05$ level for those of the sample living off campus. The low number of respondents to this question shows that this item was not applicable to 67% of those sampled. However, the reader should notice that this item has correlations of .55 and .40, respectively, at $p < .01$ with the other two groups where no data was missing. The scores obtained with this scale were found to significantly correlate with the overall House Satisfaction Index 1 ($r = .54$, $p < .01$).

College Satisfaction Index 1 (Table 10). The analysis of the seven-item scale to measure satisfaction with college shows that this index has a reliability of .76 and that all its items correlate significantly with the total scale (.61 to .70, $p < .01$). Additionally, the total scale was found to correlate significantly with the one-item College Index 1 ($r = .51$, $p < .01$).

City satisfaction indices (Table 10). City Satisfaction Index 2 was found to have .84 corrected odd-even reliability, and all items significantly correlated with the total scale score (.63 to .74 at $p < .01$). City Satisfaction Indices 4 and 5 are only variations of Index 2. Index 4 uses the six items of Index 2 plus three additional items: H. S. Index 1, College Satisfaction Index 1, and an item on food quality. Although these items correlate ($p < .01$) with the total scale, they do not seem to improve the reliability of the index. City

Table 9

Reliability of House Satisfaction
Indices 2 and 3 by House Group^a

Var. No.	Variable Name	House Satisfaction					
		Index 2			Index 3		
		Off Campus	Residence	Greek House	Off Campus	Residence	Greek House
25	Room size	.52	.67	.51	.52	.68	.48
26	Storage	.47	.56	.47	.47	.57	.47
27	Wall condition	.44	.42	.62	.45	.42	.59
28	Furn. cond.	.45	.63	.62	.46	.64	.60
29	Room temp.	.49	.40	.55	.49	.38	.53
30	Room noise	.57	.46	.45	.57	.44	.43
31	H. park. facil.	.42	.51	.22	.43	.50	.25
32	House exterior	.32	.54	.35	.33	.54	.38
33	Location 1	.27	.35	.37	.28	.35	.35
34	Location 2	.38	.50	.32	.39	.50	.33
35	Food				.40	.53	.36
36	Access maint.	.42	.63	.56	.42	.64	.57
37	Ind. rec. facil.	.21*	.55	.40	.21*	.54	.38
38	Co-tenants	.40	.60	.48	.38	.60	.49
39	Roommates	.29	.35	.31	.28	.32	.32
40	House rent	.42	.58	.71	.40	.59	.71
41	House reg.	.45	.61	.65	.43	.60	.65
Reliability							
	Uncorrected O-E	.58	.76	.69	.55	.71	.67
	Corrected ^b O-E	.74	.86	.81	.71	.83	.80

^aAll figures are coefficients of correlation with scale total score.

^bUsing Spearman-Brown prophecy formula.

NOTES: * $p < .05$. All correlations are significant at $p < .01$ unless otherwise stated. Off Campus N = 106; Residence Hall N = 125; Greek House N = 107.

Table 10

Reliability of College and City Satisfaction
Indices^a 2, 4, and 5

Var. No.	Variable Name	College	City		
		Index 2	Index 2	Index 4	Index 5
24	House satis. (index 1)			.45	.44
35	Food			.40	.36
42	Coll. satis. (index 1)			.46	.40
43	Educ. facil.	.68			
44	Education quality	.70			
45	Classmates	.63			
46	University parking	.61			
47	University sidewalks	.69			
48	University policy	.61			
50	City rec. facil.		.65	.66	.63
51	City sidewalks		.74	.72	.67
52	City streets		.72	.67	.62
53	Job opportunities		.74	.68	.67
54	Urban transportation		.74	.69	.65
55	City police		.63	.59	.61
56	Job satisfaction				.43
Reliability					
	Uncorrected O-E	.61	.73	.73	.68
	Corrected ^b O-E	.76	.84	.84	.81

^aAll figures are coefficients of correlation with scale total score.

^bUsing Spearman-Brown prophecy formula.

NOTES: All correlations are significant at $p < .01$ unless otherwise stated. * $p < .05$. Sample size $N = 338$.

Index 5, on the other hand, uses all the items of Index 4 plus an overall statement on job satisfaction. Because of the low response to this item, its inclusion on the scale reduced the reliability from .84 to .81, despite the fact that it significantly correlated with the total scale score ($p < .01$).

City Satisfaction Index 3 (Table 11) is the most comprehensive scale of them all. All items on the house Index 3 and college and city indices form the 30-item scale on city satisfaction. As in the others, all the items correlated significantly with the final score (.26 to .55 at $p < .01$). The obtained reliability for the total scale was .89 (corrected odd-even). As was done with the other scale, the index was tested for correlation with the one-item city index. The data showed correlation of $r = .51$ at $p < .01$.

Relations between Environmental Concerns and Environmental Satisfaction

Although of importance for the test of reliability, the study reported above was not useful for testing the environmental concerns included in the scales. For this purpose, a correlation test was performed between every item on the scales and the overall house, college, and city satisfaction indices. The results of this study are reviewed in Tables 12 and 13.

House concerns and house satisfaction (Table 12). As was expected, this analysis showed more discriminatory power in finding the contribution of each item to the formation of affective states on environmental concerns. Even more important, its stability across samples was established. House Satisfaction Index 1 correlates

Table 11

Reliability of City Satisfaction Index 3^a

Var. No.	Variable Name	City Satisfaction Index 3
25	Room size	.50
26	Storage	.43
27	Wall condition	.42
28	Furniture condition	.50
29	Room temperature	.34
30	Room noise	.43
31	House parking facilities	.30
32	House exterior	.41
33	Location 1	.27
34	Location 2	.33
35	Food	.41
36	Access maintenance	.39
37	Indoor recreational facil.	.26
38	Co-tenants	.39
39	Roommates	.28
40	House rent	.52
41	House regulations	.47
43	Education facilities	.48
44	Education quality	.47
45	Classmates	.47
46	University parking	.50
47	University sidewalks	.49
48	University policy	.41
50	City recreational facilities	.53
51	City sidewalks	.55
52	City streets	.46
53	Job opportunities	.44
54	Urban transportation	.54
55	City police	.50
56	Job satisfaction	.22
Reliability		
	Uncorrected	.81
	Corrected ^b	.89

^aAll figures are coefficients of correlation with scale total score.

^bUsing Spearman-Brown prophecy formula.

NOTES: All correlations are significant at $p < .01$ level. Sample size = 338.

Table 12

Correlation among House, College, and City Concerns
and Satisfaction Indices by House Group^a

Var. No.	Variable Name	Off Campus	Residence	Greek House
House Satisfaction Index 1				
25	Room size	.61**	.64**	.39**
26	Storage	.48**	.41**	.11
27	Wall condition	.42**	.21*	.41**
28	Furniture condition	.27**	.50**	.22*
29	Room temperature	.36**	.25**	.15
30	Room noise	.26**	.35**	.39**
31	House parking facilities	.14	.23**	.03
32	House exterior	.42**	.25**	.24*
33	Location 1	.02	.04	.12
34	Location 2	.02	.04	.12
35	Food	.16	.39**	-.02
36	Access maintenance	.08	.38**	.22*
37	Indoor recreational facil.	-.01	.22**	.22*
38	Co-tenants	.07	.36**	.36**
39	Roommates	.02	.17	.23*
40	House rent	.13	.38**	.32*
41	House regulations	.02	.42**	.34**
College Satisfaction Index 1				
43	Education facilities	.63**	.57**	.68**
44	Education quality	.53*	.47**	.73**
45	Classmates	.52**	.51**	.67**
46	University parking	.11	.24**	.03
47	University sidewalks	.16	.27**	.14
48	University policy	.19**	.15	.22
City Satisfaction Index 1				
				Total Sample
50	City recreational facil.			.51**
51	City sidewalks			.30*
52	City streets			.20**
53	Job opportunities			.29**
54	Urban transportation			.27**
55	City police			.31**

^aAll figures are Pearson's r.

NOTES: ** $p < .01$. * $p < .05$. Sample size $N = 338$.

significantly with only seven of the 17 characteristics included when tested with the Off Campus sample. Those concerns were room size, storage, wall condition, furniture condition, room temperature, room noise, and the beauty of the exterior design.

In the Residence Hall sample, however, most of the concerns (15 of 17) correlated with House Satisfaction Index 1 ($p < .01$). Only feelings about roommates and location in relation to Aggieville did not correlate.

On the other hand, in Greek houses, 11 out of 17 concerns correlated with H. S. Index 1, although only five of those (room size, wall condition, room noise, co-tenants, and house regulations) did correlate at $p < .01$. Feelings about storage space, room temperature, parking facilities, location and food seemed to have no relation with overall affective states about housing.

Some significant changes in correlation levels are observed across the three housing groups. Feelings about storage space and room temperature, which had relation with H. S. Index 1 in Off Campus and Residence Halls, did not have relevance in the Greek House sample. Feelings about roommates did correlate in this sample, although the issue seems not to be relevant to off campus and residence hall students. Only six out of the 17 concerns remained significant either at $p < .01$ or $p < .05$ across the three samples. They are room size, wall condition, furniture condition, room noise, and beauty of house exterior design.

College environmental concerns and college satisfaction (Table 12). Three of the six college environmental concerns were found to relate significantly to College Satisfaction Index 1 in all three samples.

These concerns were educational facilities, education quality, and feelings about classmates. All other college concerns were significantly correlated with College Satisfaction Index 1, but not on all three samples.

City environmental concerns and city satisfaction (Table 12).

Only one correlation study using the total sample was performed with these items. The results show that all six environmental concerns significantly relate ($p < .01$) to the overall assessment on satisfaction.

City, college, and house concerns and city satisfaction

(Table 13). The correlation study reported above complemented with some multi-variate analyses to be covered later were used as criteria for selecting the house and college concerns which could affect the levels of city satisfaction.

Only house and college environmental characteristics which correlated with house and college satisfaction entered this last correlation analysis. This decision was based on the assumption that an environmental concern which is not relevant at its more specific level (e.g., room temperature in house satisfaction) will not be relevant to city satisfaction. On the Off Campus sample, feelings about room size, storage, wall condition, furniture, and room noise were significantly related to the user's perception of the quality of life in the city. Only one house characteristic--room size--was related to city satisfaction for the Residence Hall sample; two house characteristics--furniture and co-tenants--were related to the Greek House sample.

Table 13

Correlations among Some House, College, and City
Concerns and City Satisfaction Index 1
by House Group^a

Var. No.	Variable Name ^b	City Satisfaction Index 1		
		Off Campus	Residence	Greek House
		--N = 106--	- N = 125 -	-- N = 107 --
25	Room size	.34**	.37**	-.01
26	Storage	.34**	.13	nc
27	Wall condition	.30**	nc	.18
28	Furniture condition	.28**	.18	.27**
29	Room temperature	.14	nc	nc
30	Room noise	.24*	nc	.04
32	House exterior	.19	nc	nc
38	Co-tenants	nc	nc	.26**
41	House regulations	nc	.18	nc
43	Education facility	.27**	.40**	.50**
44	Education quality	.23*	.37**	.51**
45	Classmates	.33**	.33**	.43**
50	City rec. facil.	.58**	.46**	.50**
55	City police	.26**	.25**	.48**

^aAll figures are Pearson's r.

^bCorrelations with other variables not on this table were not calculated. Selection of these variables was based on regression calculations reported elsewhere in this study.

NOTES: ** $p < .01$. * $p < .05$. nc = not calculated

The three college characteristics selected were found to be significantly correlated with the perception of life quality in the city on the three samples (see City Satisfaction Index 1).

Predicting Environmental Satisfaction

The correlation analysis reported before gave evidence of the relation existing between overall environmental satisfaction and its specific characteristics. It also gave evidence of the multiple relations which exist among affective evaluations of the environment. A multi-variate analysis was required to isolate these effects and determine the real relevance of each concern in the overall evaluation.

Multiple regression analysis was used for the three types of environment (house, college, and city) on each of the three sample groups. The results of such studies are fully reported in Tables 14 through 16.

House satisfaction regression equations (Table 14). Overall house satisfaction (as measured by the House Satisfaction Index 1) was the criterion variable for this analysis. The regression equation obtained for off campus students using all the house concerns was able to predict 51% of the variance of house satisfaction (see Table 14). Several combinations of variables were used and introduced in different orders. These analyses show that the number of variables in such equations could be reduced to just three (room size, house exterior, and room temperature) with no significant loss in the percentage of variance explained (from 51% to 45%).

On the Residence Hall sample (see Table 14), the percentage of variance explained is even higher (58%) with all the concerns in the

Table 14

House Satisfaction Regression Equations and Multiple Regression Coefficients by House Group^a

Var. No.	Variable Name	Olf Campus ^b (N = 106)										Residence Hall ^c (N = 125)					Greek House ^d (N = 107)												
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	1	2	3	4	5	6	7	8	9				
25	Room size	.34	.38	.37	.37	.41	.34	.38	.41	.36	.36	.51	.51	.56	.44	.48	.32	.30	.33	.33	.32	.30	.33	.20	.16	.18	.20	.20	
26	Storage	.00	.02	.06	.03		.03					-.15	-.16	-.17			-.11	-.12	.16		-.11	-.12	.16			.14			
27	Wall condition	.11			.06	.11	.07			.06	.11	-.09					.29				.29			.29	.26	.13	.28	.16	
28	Furniture	.00	.06	.08	.02		-.02					-.30	.22	.27	.25	.29	-.15	.09	.07		-.15	.09	.07	-.10	-.20		.16		
29	Room temperature	.15	.12		.12		.13	.14		.12		.03	.06				-.19	-.11			-.19	-.11		-.10					
30	Room noise	-.01	.02		.01	.05	-.02					.11	.11				.17	.18			.17	.18		.16	.13	.13	.11	.14	.16
31	House park, facill.	-.10										-.02					-.02				-.02								
32	House exterior	.21					.15	.14	.16	.13	.15	-.06					.12				.12			.09					
33	Location 1	.06										-.06					.03				.03								
34	Location 2	-.06										.09					.03				.03								
35	Food	.00	.00	.01								.09	.08	.07			-.02	-.04	-.04		-.02	-.04	-.04						
36	Access maint.	.01	.00									.04	.03				-.01	.01			-.01	.01		-.02					
37	Ind. rec. facill.	.01										-.02					.07				.07			.06					
38	Co-tenants	.09	.06									.03	.01				.07	.14			.07	.14		.09	.14	.17			
39	Roommates	.00										.05					.09				.09			.09					
40	House rent	.04	.02	.03								.00	.00	.01			.00	.05	.12		.00	.05	.12	.00	.02				
41	House regulations	-.04	-.05	.02								.10	.10	.14	.14		.06	.08	.10		.06	.08	.10	.02	.05				
Constant		1.53	2.07	2.58	2.19	2.46	1.91	2.00	2.46	1.92	2.22	.33	.37	1.06	1.17	1.50	1.94	2.40	3.27	3.25	1.78	2.17	2.24	3.38	3.02				
Multi-regress. coeff.		.71	.66	.62	.65	.63	.67	.67	.64	.67	.65	.76	.74	.73	.71	.69	.72	.61	.52	.59	.67	.59	.58	.55	.53				
R ² (% variance expl.)		51	44	39	43	40	46	45	41	45	43	58	55	53	51	48	53	37	27	35	45	35	34	30	28				

^a All figures are Beta-Weights unless otherwise stated. Regression equations were calculated with only those variables whose B-Weights are specified.^b F statistics show significant differences between equations 1-3 (F = 1.9, p < .05) and 7-8 (F = 7.6, p < .01).^c F statistics do not show significant differences among equation 1 and the others.^d F statistics show significant differences between equations 1-2 (F = 4.13, p < .01), 1-3 (F = 4.09, p < .01), 6-7 (F = 3.17, p < .01), 6-9 (F = 3.6, p < .01), 6-10 (F = 3.6, p < .01).

NOTE: Criterion variable: House Satisfaction Index 1.

equation. Furthermore, the number of environmental variables could be reduced to three and still explain 51% of the variance.

The use of all house concerns on a regression equation of Greek house resident satisfaction (see Table 14) could predict 53% of the variance of overall house satisfaction. In this group, however, the study was not successful in isolating the few concerns which could account for such prediction value. The drop from the equation of concerns with even low Beta-Weights seems to cause significant differences in the regression values. In spite of this, six concerns explained 35% of the variance. These were room size, storage, wall condition, furniture condition, room temperature, and room noise.

College satisfaction regression equations (Table 15). The use of the six college concerns considered in this study was able to predict 48% of the variance of college satisfaction as measured by the overall College Satisfaction Index. No differences have been found in the regression value when three of the characteristics were dropped. Forty-seven percent of the variance could be explained merely by feelings about educational facilities, educational quality, and classmates.

City satisfaction regression equations (Tables 15 and 16). Feelings about city police protection, city sidewalks, and city recreational facilities could predict 29% of the variance of the City Satisfaction Index 1, which was not significantly different from the results obtained using all six city concerns (see Table 15).

The Beta-Weights of all the multiple regression analyses, above commented, were the criteria used to select the most relevant house, college, and city concerns to be used on an additional multiple

Table 15

College and City Satisfaction Regression Equations and
Multiple Regression Coefficients for Total Sample^a

College Satisfaction Index 1 ^b					City Satisfaction Index 1 ^b						
Var.	No.	Variable Name	Regression Equations			Var.	No.	Variable Name	Regression Equations		
			1	2	3				1	2	3
43		Educ. facil.	.42	.41	.41	50		City rec. facil.	.36	.36	.37
44		Educ. quality	.10	.10	.10	51		City sidewalks	.07	.04	.05
45		Classmates	.30	.29	.29	52		City streets	.04		
46		Univ. parking	-.03			53		Job opportunities	.03	.02	
47		Univ. sidewalks	-.03			54		Urban trans.	.00		
48		Univ. policy	.03	.02		55		City police	.13	.13	.13
Constant			1.10	1.10	1.10				2.53	2.53	2.53
Multi-regress. coeff.			.69	.69	.69				.54	.54	.54
R ² (% variance expl.)			48	47	47				30	29	29

^a All figures are Beta-Weights unless otherwise stated. These Regression Equations were calculated with only those variables whose Beta-Weights are specified.

^b F statistics do not show any statistical significant difference between 1-2 and 1-3.

NOTES: Sample size N = 338.

regression study of city satisfaction. As Table 16 shows, the use of 12 environmental characteristics in the three environments were able to explain 42% of the variance of city satisfaction, 13% more than could be explained with only the six city concerns. Furthermore, the twelve concerns in the regression equation can be reduced to only three variables (room size, classmates, and city recreational facilities) with no significant loss of variance explained.

The study of the Residence Hall and Greek House samples shows other results. Thirty-eight percent of the variance could be explained with the nine characteristics introduced on the regression equation of the Residence Hall sample (see Table 16). Room size, college educational facilities, and city recreational facilities seem to be the best predictors of city satisfaction. These last two concerns were able to explain 30% of the variance with no significant loss in relation to that explained by all the nine concerns together.

Finally, in the case of Greek houses, 52% of the variance of city satisfaction could be explained with ten concerns. Room size, educational facilities, and quality of education seem to be responsible for most of the variance explained with all ten concerns. However, a very few of the house concerns could be dropped from the equation without producing significant differences in the results.

Life satisfaction and the environmental indices (Tables 17 and 18). Twenty-three percent of the variance in life satisfaction for off campus students (as measured by Life 3) could be explained with the overall satisfaction statements on house, college, city, and job. It was found that only the last two could be dropped with no significant difference in the results (see Table 16).

Table 16

City Satisfaction Regression Equations and Multiple Regression Coefficients
Using Selected House, College and City Concerns by House Group^a

Var. No.	Variable Name	Regression Equations												
		Off Campus ^b (N = 106)					Residence Hall ^b (N = 125)				Greek House ^b (N = 107)			
		1	2	3	4	5	1	2	3	4	1	2	3	4
25	Room size	.08	-.06	-.06	.06	.15	.34	.18	.19		-.19			
26	Storage	.16	.14	.14	.16		-.19							
27	Wall condition	.07	.03	.03							.00			
28	Furniture cond.	.04	.05	.05	.07		.10				.21	.24		
29	Room temp.	-.08												
30	Room noise	-.02									.00			
32	House exterior	.00												
38	Co-tenants										.00	-.01		
41	House reg.						-.07							
43	Educ. facil.	.12	.09	.09	.02		.30	.30	.30	.38	-.02	.08	.09	.18
44	Educ. quality	-.09	-.08	-.08			.04	.00	.02		.38	.27	.27	.23
45	Classmates	.17	.16	.16	.16	.20	-.02	.01			-.03	.00	.00	
50	City rec. facil.	.43	.43	.43	.44	.43	.26	.27	.29	.33	.23	.24	.22	.28
55	City police	.09	.06	.06			.05	.05			.18	.18	.23	
Constant		1.15	1.14	1.13	1.16	1.27	.88	.85	.96	1.24	1.25	.71	1.26	1.65
Multi-regress. coeff.		.64	.64	.64	.63	.62	.61	.59	.58	.55	.72	.70	.68	.62
R ² (% variance expl.)		.42	.41	.41	.40	.39	.38	.34	.34	.30	.52	.49	.47	.38

^aAll figures are Beta-Weights unless otherwise stated. These regression equations were calculated with only those variables whose Beta-Weights are specified.

^bF statistics do not show statistically significant differences between equations 1-2, 1-3, 1-4, 1-5 on Off Campus sample nor between equations 1-2, 1-3, and 1-4 on Residence Hall sample. F statistics do show significant differences between equations 1-3 (F = 3.9, p < .01) and 3-4 (F = 8.1, p < .01) on Greek House.

NOTE: Criterion Variable: City Satisfaction Index 1.

Table 17

Life Satisfaction Regression Equations and Multiple Regression Coefficients
for Off Campus and Residence Hall Housing Samples^a

Var. No.	Variable Name ^a	Regression Equations													
		Off Campus ^b (N = 106)							Residence Hall ^c (N = 125)						
		1	2	3	4	5	6	7	1	2	3	4	5	6	7
24	House satis. index 1	.13	.15	.15	.22				.12	.12	.14	.20			
42	College satis. index 1	.33	.31	.31		.34			.15	.16	.23		.28		
49	City satis. index 1	-.02	.00				.16		.11	.11				.23	
56	Job satis. index 1	.07						.07	.00						.00
<hr/>															
	Constant	3.16	3.25	3.25	4.6	3.94	5.02	5.63	3.67	3.65	3.73	4.78	4.09	4.62	5.7
	Multi-Regress. Coeff.	.47	.43	.43	.25	.40	.21	.21	.34	.34	.32	.24	.28	.27	.01
	R ² (% variance explained)	23	19	19	06	16	04	04	12	12	10	06	08	07	00

^aAll figures are Beta-Weights unless otherwise stated. These regression equations were calculated with only those variables whose Beta-Weights are specified.

^bF statistics show that all equations except 3 are significantly different from equation 1 ($p < .01$).

^cF statistics show that all equations except 7 are not significantly different from equation 1 ($p < .01$).

NOTE: Criterion variable: Life Satisfaction Index 1.

Table 18

Life Satisfaction Regression Equations and Multiple Regression Coefficients
for Greek House and Total Sample^a

Var. No.	Variable Name	Regression Equations													
		Greek House ^b (N = 107)							Total Sample ^c (N = 338)						
		1	2	3	4	5	6	7	1	2	3	4	5	6	7
24	House satis. index 1	.20	.20	.16	.22				.15	.15	.15	.20			
42	College satis. index 1	.46	.46	.36		.37			.31	.31	.30		.33		
49	City satis. index 1	-.22	-.22				.02		-.02	-.02				.15	
56	Job satis. index 1	.00						-.03	.01						.02
Constant		3.26	3.25	2.85	4.57	3.7	5.65	5.8	3.29	3.33	3.31	4.74	3.94	5.02	5.76
Multi-Regress. Coeff.		.58	.58	.52	.22	.49	.03	.09	.41	.41	.41	.24	.37	.19	.05
R ² (% variance explained)		33	33	27	05	24	00	00	17	17	17	05	12	03	00

^a All figures are Beta-Weights unless otherwise stated. These regression equations were calculated with only those variables where Beta-Weights are specified.

^b F statistics show that all equations except 2 are significantly different from equation 1 ($p < .01$).

^c F statistics show that all equations, except 2 and 3, are significantly different from equation 1 ($p < .01$).

NOTE: Criterion variable: Life Satisfaction Index 1.

Analysis of the other two samples and the total sample population produced similar results (Tables 17 and 18), although these items were able to explain a higher percentage of variance in Greek houses (33%) than in residence halls (12%). In the total sample, house, college, and city satisfaction could explain 17% of the variance of life satisfaction.

Interpretation of Results

Findings and Hypotheses

Hypothesis No. 1. There are significant differences in house satisfaction between students living in off campus housing, Greek houses, and residence halls.

In view of the findings reported, this hypothesis is only partially supported. House satisfaction measured by House Satisfaction Index 1 shows that students in residence halls are less satisfied ($\bar{x} = 4.80$) than those living off campus ($\bar{x} = 5.50$), and both groups are less satisfied than students living in Greek houses ($\bar{x} = 5.62$). However, the test of significance² showed that only two out of the three possible comparisons were significant. House satisfaction in residence halls is significantly lower than in the other two settings. No differences, however, were found between the results of Greek house and off campus housing.

The reasons for the lower satisfaction in residence halls seems to be centered (a) on the rather negative feelings about room size, storage space, quality of food, noise perceived in the room, rent, and parking facilities, and (b) on the high weights that three of those concerns

²Scheefe test for multiple comparisons.

(room size, storage space, and perceived noise) have on the overall satisfaction.

The fact that the overall house satisfaction for residence hall students falls on the positive side of the scale seems to be explained by the high weights of those concerns (e.g., house regulations) about which students feel mostly satisfied and the lower weights of those concerns evaluated very low.

Off campus and Greek house residents were found not to have negative feelings about house characteristics. The only exception to this was that of parking facilities, which did not have a high weight on overall house satisfaction.

Hypothesis No. 2. Among all the attributes considered in the evaluation of the environment, those which receive peak evaluations (highly positive or negative) are the best predictors of overall feelings about the environment (house or city).

This hypothesis was not fully supported or rejected by this study. The reason is the lack of such polarized evaluations (as Anderson, 1968, called them) on all aspects of the evaluation obtained of the environment.

A comparison between means and Beta-Weights of the house environmental concerns (Table 19 and Figure 2) for residence halls shows that despite the fact that this group presents the most varied evaluations of all samples (the range of the means for all concerns is from 2.53 to 5.80), both "peak evaluations" have lower Beta-Weights than many other concerns with intermediate mean values. This evidence does not, in the author's opinion, support the null hypothesis either. Considering that the environmental characteristics included in this study explained 58% of the

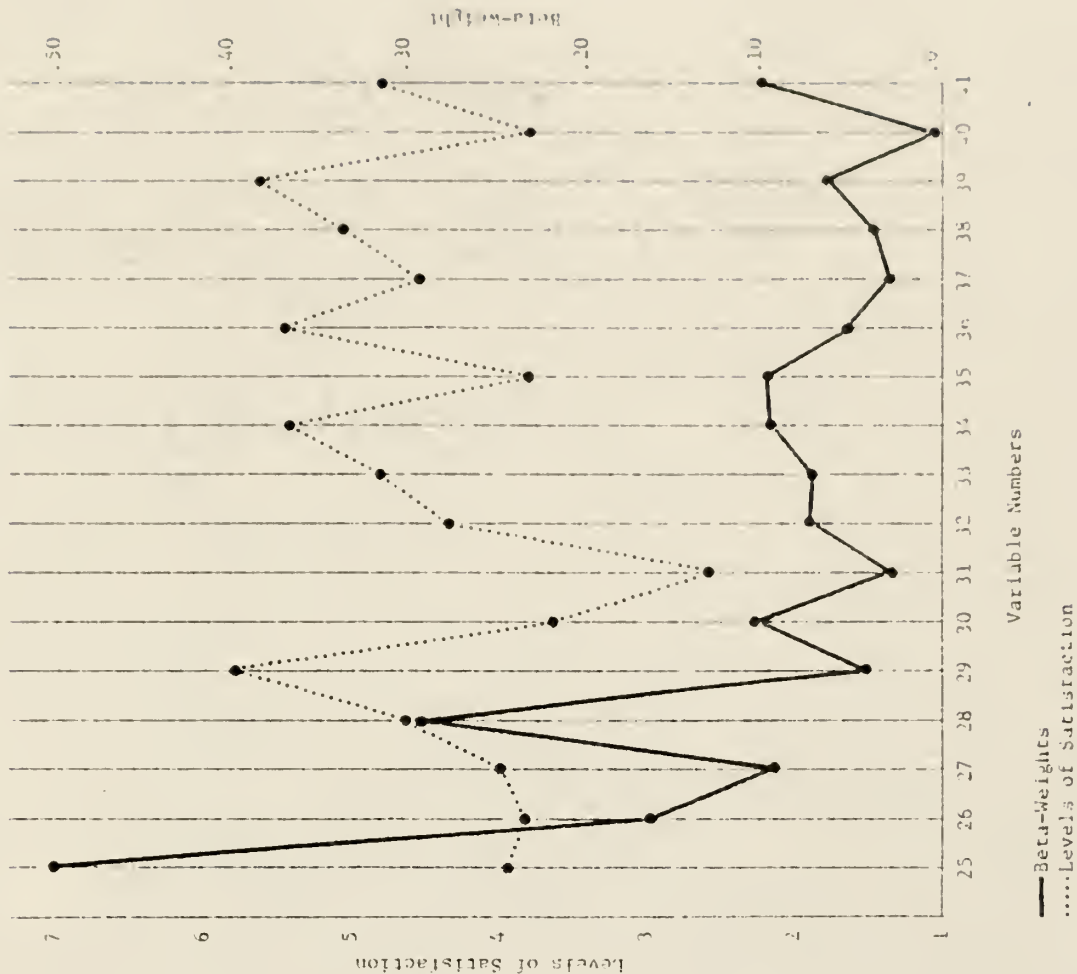
Table 19

Comparisons between Means and Beta-Weights
of House Concerns for Residence
Hall Sample

Var. No.	Variable Name	Mean	B-Weights
25	Room size	3.94	.51
26	Storage	3.70	-.15
27	Wall condition	4.00	-.09
28	Furniture condition	4.63	-.30
29	Room temperature	5.30	.03
30	Room noise	3.64	.11
31	House parking facilities	2.53	.02
32	House exterior	4.33	-.06
33	Location 1	4.76	-.06
34	Location 2	5.38	.09
35	Food	5.87	.09
36	Access maintenance	5.38	.04
37	Indoor rec. facilities	4.48	-.02
38	Co-tenants	5.02	.03
39	Roommates	5.60	.05
40	House rent	3.80	.00
41	House regulations	4.72	.10

Figure 2

Multiple Regression Beta-Weights and
Levels of Satisfaction of House
Variables in Residence Halls



variance, there exists the possibility that some concerns which could be responsible for overall satisfaction were not included in this study. The analyses of the other environments (college and city) do not provide evidence to support the hypothesis either.

Hypothesis No. 3. Life satisfaction significantly correlates with students' satisfaction with their house, college, and city environment.

This hypothesis was supported. Home and college satisfaction (indices type I) were found to significantly correlate with Life Satisfaction Index 1 (Life 3).

Although city satisfaction correlated with life satisfaction in the Residence Hall ($r = .27$, $p < .01$) and Off Campus samples ($r = .21$, $p < .05$), it was not found to be related to life satisfaction in the Greek House sample. The regression analysis showed that city satisfaction did not have as much effect on overall life satisfaction as did college and house satisfaction.

Other Findings

To study the effects that environmental and personal characteristics could have on the above findings, general objective questions included in the survey were checked for correlation with the four criteria satisfaction variables in this study.

The House Satisfaction Index 1 was found to increase with amount of time spent living in the city (Q.2) for the Off Campus sample ($r = .25$, $p < .05$) and the Residence Hall sample ($r = .21$, $p < .05$). Additionally, in the Off Campus sample, student's house satisfaction seemed to increase with increased time spent living in the house (Q.3) ($r = .28$, $p < .01$).

The author hypothesized that house satisfaction significantly changes with the type of roommates³ (Q.10) students have, ranging from most satisfied when living with parents to most dissatisfied when living alone. This hypothesis was supported ($\underline{r} = .24$, $p < .05$). The reader is warned, however, that this finding does not necessarily indicate the actual rank for all categories considered. Difference in the satisfaction levels among groups classified according to type of roommate needs additional testing using more proper techniques. The reader should notice also that the lack of significant correlation in the other two samples does not cast doubt on this finding; a closer look at the distribution of responses shows that students in residence halls or Greek houses live exclusively with other students and therefore correlation is not possible.

The quality of bathroom facilities (Q.5) was ranked according to the number of people sharing them. It was hypothesized that increasing the number of people would decrease house satisfaction. This hypothesis was also supported ($\underline{r} = -.30$, $p < .01$).

College satisfaction, on the other hand, was found to positively correlate with increasing involvement in study (Q.16). In other words, college satisfaction increases with the number of credit hours in which the student is enrolled ($\underline{r} = .20$, $p < .05$). Also college satisfaction positively correlated with an increase in the population size of student's early life city (Q.18). Students who lived in a large city in their early life seem to be more satisfied with college than those who came from farms or small towns ($r = .21$, $p < .05$).

³The most frequent types of roommates found on the survey were classified into four categories and ranked. Parents were ranked 1, followed by wife/husband 2, other students 3, and living alone 4.

City satisfaction seems to increase with the amount of time spent living in the city (Q.2) ($\underline{r} = .22$, $p < .05$) or in the house (Q.3) ($\underline{r} = .25$, $p < .01$). It also increases with the lack of financial problems (Q.62) ($\underline{r} = .20$, $p < .05$ for off campus housing; $\underline{r} = .26$, $p < .01$ for Greek houses). On the other hand, city satisfaction negatively correlates with the hypothesized ranks in type of roommates ($\underline{r} = -.22$, $p < .05$) (Q.10) and the source of education funds (Q.66). The second correlation deserves some clarification. The most frequent sources of funds for education were ranked in a hypothesized order.⁴ This rank was based on the author's belief that satisfaction should increase as independence from parents increased. When this is totally accomplished, satisfaction should also increase when the funds come from sources which do not require services in exchange (e.g., scholarships over jobs). This hypothesis was not supported. City satisfaction seems to increase inversely ($\underline{r} = -.25$, $p < .05$). Again, this finding needs further consideration and a more proper analysis.

Finally, life satisfaction has been found to increase with study involvement (Q.16) ($\underline{r} = .28$, $p < .01$), lack of financial problems causing departure from school (Q.62) ($\underline{r} = .19$, $p < .05$), and an increase in the importance of religious beliefs (Q.64) ($\underline{r} = .19$, $p < .05$), although not with an increase in involvement in religion-related activities (Q.63). It was surprising to find among Greek house residents that females were more satisfied than males (Q.61) ($\underline{r} = .26$, $p < .01$). No relation was found in the other two samples. The rest of the objective variables in this study were found not to correlate with satisfaction measures.

⁴ Rank: exclusively from parents/family = 1; from family and part-time jobs = 2; from family and scholarships = 3; exclusively from jobs = 4; from jobs and scholarships = 5; exclusively from scholarships = 6.

The study of the relations between the three measures of life satisfaction used in this study has produced the following results.

(a) Life satisfaction for this group of college students ($N = 338$), as measured by the Delighted-Terrible scale of Andrews and Withey (1976), significantly correlates with the three-point happiness scale of Gurin *et al.* (1966) ($r = .47$, $p < .01$) and the ten-point Elation-Depression scale of Wessman and Ricks (1966) ($r = .46$, $p < .01$). (b) The Elation-Depression scale and the happiness question significantly correlate ($r = .31$, $p < .01$), and their mean values were not found to be significantly different. (c) The mean life satisfaction as measured by the D-T scale was found to be significantly higher than the other two scales and its distribution of answers more skewed to the positive side of the scale than those of the Elation-Depression scale.

Pitfalls of Methods and Instruments

This study has some limitations which in the author's opinion could have some influence on the results. In the matter of sample selection, although the subjects were randomly selected, no provisions were made to compensate for the self-selection always present in mail-out surveys.

One possibility to avoid this problem could have been the selection of a second set of matching subjects as substitutes. However, this approach was not followed because of its pitfalls. First, the matching technique is always limited to a number of "relevant" variables which may not be those more important in the study. Second, in order to implement this technique, anonymity of subjects cannot be maintained. In order to select matching samples, the subjects must be contacted.

This personal contact always increases the "social desirability" effect of survey responses.

The multi-regression analysis used here also has computational limitations. First, the selection of variables in each step of the analysis was based on the Beta-Weights of the former regression. Although this approach accelerates the process of finding those more relevant variables, it does not cover all the possible sets of combinations. For this reason, the reader should consider with some reservation the equations with two or three variables before deeming them the best regression equations for the criterion variable. Second, the multiple regression statistical package used did not compensate for missing data. The Beta-Weights of some variables (as job or indoor recreational facilities) with a low proportion of responses could be reduced for this situation. However, since few questions had low response, their influence could be easily detected.

Conclusions

Two major groups of conclusions have been drawn from this study. The first is concerned with the dynamics of formation of affective states about the environment and life. The second is concerned with the levels of satisfaction of the K-State student population and mainly what environmental characteristics should have priority over others on future improvements in order to maximize environmental satisfaction

Dynamics of Affective States

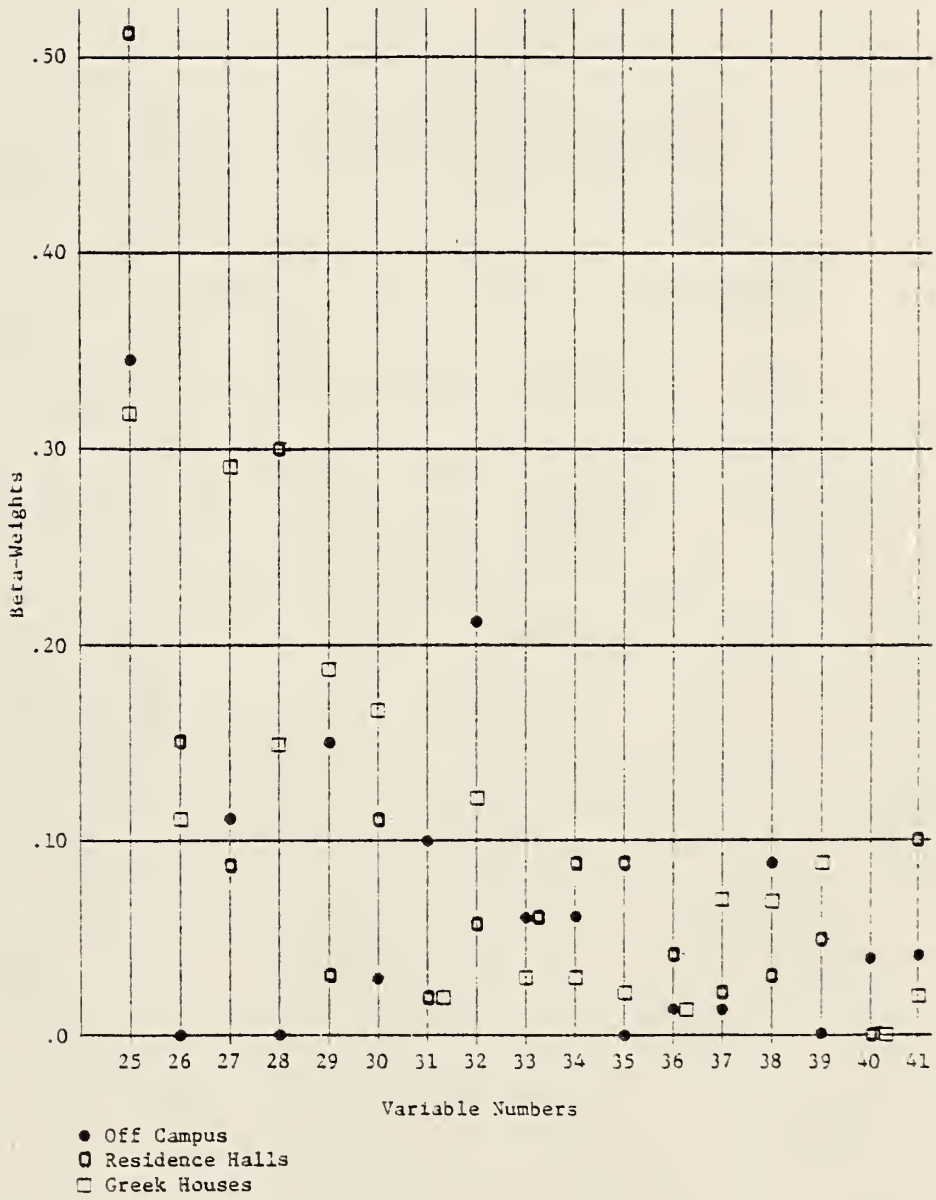
Five major conclusions can be drawn from the data presented in this study. First, it was found that students in residence halls,

although having significantly lower house satisfaction than the other two samples (off campus housing and Greek houses), do not present significant differences in college, city, and life satisfaction. These findings suggest that neither measures of life satisfaction nor measures of city satisfaction are sensible enough to register changes in dwelling unit quality.

Second, affective states about the environment seem to be formed by weighted affective evaluations of its characteristics. However, the study failed to reveal a defined pattern of priorities of influence that environmental characteristics have on overall environmental satisfaction. Figure 3 shows that, with the exception of "size of the room," all environmental characteristics have different degrees of effect on the overall environmental satisfaction of the three samples. The Beta-Weights could be very high on one sample and practically zero on another (e.g., furniture condition, storage space).

Third, contrary to that which the author expected, the study shows that the fact that a population group is highly satisfied or dissatisfied does not necessarily have any relation with the level of influence (Beta-Weight) on the overall environmental satisfaction. The comparison between Beta-Weights and mean satisfaction levels on the Residence Hall sample (see Figure 2) shows that an environmental concern (room temperature, for instance) could receive a very high positive evaluation ($\bar{x} = 5.8$) and yet have a very low influence on the overall house satisfaction (Beta-Weight = .03). On the other hand, an environmental characteristic evaluated neutral (mixed feelings), furniture condition, for instance ($\bar{x} = 4.67$), does have a high influence on overall house satisfaction (Beta-Weight = .30).

Figure 3
Multiple Regression Beta-Weights of House
Satisfaction Variables by House Group



Fourth, the results of the multi-regression analysis seem to support Osgood's theory stating that people's attitudes about something can be mainly explained by their attitudes toward a few of its attributes. The findings here reported show that satisfaction about house, city, and college can be explained by two or three of their environmental characteristics. Fifty-one percent of the variance of house satisfaction on the Off Campus sample could be explained by the 17 house characteristics studied (Equation 1, Table 14). The percentage of variance explained dropped only to 41% when just two of their characteristics were considered: room size and house exterior (Equation 8). The analyses of house, college, and city satisfaction show similar results with only one exception: the Greek House sample. All attempts to reduce the number of variables in the regression equation of house and city satisfaction have resulted in significant drops in variance explained. The 53% of variance of house satisfaction which could be explained considering all housing characteristics significantly dropped to 34% and 28% when the number of variables on the regression equation was reduced to four (Equation 7) and three (Equation 9), respectively. This finding suggests that for groups with uniform positive feelings about all environmental characteristics, the overall attitudes rest on a wider spectrum of attributes with no predominant roles.

Finally, it can be concluded that college students' life satisfaction cannot be successfully predicted merely with measures of environmental satisfaction. The study shows that by using overall house, city, college, and job satisfaction, only 33% of the variance of life satisfaction could be explained. The analysis of the other two samples produces even lower results (23% for Off Campus Housing and 12% for the

Residence Hall sample). Furthermore, the multi-regression analysis shows that for college students, life satisfaction depends more on college satisfaction than on house satisfaction. On the analysis of the Greek house sample, for instance (Table 18), the percentage of variance explained drops from 27% when house and college satisfaction were used as predictors (Equation 3) to 5% (a 22% drop) when college satisfaction was deleted, as opposed to a 3% drop (from 27% to 24%) when house satisfaction was not included. Although the drops in variance explained in the other two samples are not as drastic, the same tendency exists in them as that detected on the Greek House sample.

Students' Environmental Satisfaction

It has been stated that this study has shown that students in residence halls at K-State are significantly less satisfied with their dwelling units than either off campus students or Greek house residents. In the Residence Hall sample, the evaluations of five house characteristics fell on the negative side of the scale, four of them significantly lower than the other two samples and one significantly lower than the Greek House sample (see Table 6). House parking facilities have the lowest satisfaction level, followed by the level of room noise, the storage space, rent, quality of food, and room size. According to the multiple regression analysis (Table 14), it can be concluded that efforts to improve the K-State residence hall environment should be centered on improvement of satisfaction with room size, storage space, and the level of noise perceived in the rooms. On the other hand, no significant improvement on satisfaction with the dwelling unit should be expected from improvements on satisfaction with the rent or the parking facilities.

Students in the Off Campus sample evaluated all of their house characteristics on the positive side of the scale, with the exception of indoor recreational facilities. However, as has already been explained, this does not reflect the low satisfaction level but rather a low percentage of responses. Four environmental characteristics were evaluated significantly lower than in residence halls, and five significantly lower than on the Greek House sample. House regulations was the environmental characteristic to be evaluated the lowest, followed by rent, co-tenants, roommates, and access maintenance. According to the multi-regression analysis, only satisfaction with co-tenants has some relevance to the improvement of house quality for this sample. No improvement on overall house satisfaction should be expected from improvements on the other house characteristics mentioned above.

Students living in Greek houses evaluated only two house characteristics significantly lower than the Residence Hall sample and one lower than the Off Campus sample. The concern evaluated lowest was house parking facilities, followed by location (as relating to Farrell Library) and room temperature. According to the multi-regression analysis, only from the improvement of satisfaction with room temperature will a significant improvement on house satisfaction result. For this sample, house parking facilities and location do not contribute much to the overall house satisfaction.

With the exception of university policy, which was significantly lower in the Off Campus sample than in the Greek House sample, all three samples have evaluated college concerns with no significant differences. University parking facilities and the condition of university sidewalks were the only two college environmental characteristics to be evaluated

negatively. However, no significant increase in college satisfaction should be expected from any improvement of these two characteristics. This statement is supported by the multiple regression analysis.

The study to measure students' satisfaction with the city environment shows that the three samples have the same feelings about the city environmental characteristics included in this study, with only one exception—urban transportation. This characteristic was evaluated lower for off campus students than for the other two samples. Three city characteristics were found to fall on the negative side of the scale—urban transportation, city streets, and job opportunities. However, none of these three characteristics has significant influence on overall satisfaction with the city environment.

In the author's opinion, the findings reported in this chapter and in the aforementioned final conclusions are a good illustration of the kind of data this type of methodology can provide. This type of research can help not only to measure environmental satisfaction, but also to decide which environmental characteristics on any case study should receive first attention in order to maximize environmental satisfaction.

Further Recommended Research

This study leaves several questions without satisfactory answers and provides answers to others which should be corroborated. Further research should be concerned with the dynamics of attitude formation about the environment. Why is there not a direct relation between polarized feelings and degrees of influence on overall satisfaction? Is this true in other contexts and populations or are there specific

patterns of relation? What are these patterns? What are the mechanics used to arrive at an overall satisfaction level? Is such a level an average of all satisfaction levels, or is it rather a weighted addition? Are the personal characteristics of the population good predictors of such satisfaction? Should they be introduced in the predictor equations as another variable or should they be used as coefficients to increase or decrease the weight of some environmental concerns? Answers to these and other related questions will be useful for the task of measurement and better prediction of satisfaction with future designs.

The findings on student housing above reported also need further corroboration. Research in other settings and with other groups of college students is needed.

The data seem to indicate that some personal variables (such as time in the city or house, or the type of city the subjects come from) have a relation to the level of environmental satisfaction. Further multi-regression analyses with the same population, divided into groups according to such variables, could also bring light to their role in the final evaluation of environment. This could be accomplished by revealing the change to be expected in the satisfaction levels as well as in priority patterns.

At a more specific level, further research could be undertaken in those environmental characteristics which have proven to be more important in this study as predictors of satisfaction. New lists of attributes must be developed to study the most important characteristics considered to evaluate the size of a room. This type of research could provide answers to questions such as the following. What is the size of the room in which students are more satisfied? Is it substantially

larger than what they now have? Does it depend more on flexibility of furniture arrangement than on physical area? Is the personal perception of size more important than the size of the room itself? What are the physical characteristics that make a student judge a room as large or small? Is it the color of the wall, the shape of the room, or the number of roommates?

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Appendix A

LIST OF VARIABLES

Appendix A

LIST OF VARIABLES^a

Var. No.	Variable Name	Var. No.	Variable Name
1	Life satisfaction—faces scales	39	Roommates
2	Time living in the city	40	House rent
3	Time living in the house	41	House regulations
4	Number of roommates	42	College satisfaction
5	Bathroom facilities	43	Educational facilities
6	Kitchen facilities	44	Education quality
7	Present house type 1	45	Classmates
8	Present house type 2	46	University parking
9	Dwelling height	47	University sidewalks
10	Present roommates	48	University police
11	Car property	49	City satisfaction
12	Phone location	50	City recreational facilities
13	Place for lunch	51	City sidewalks
14	Place for supper	52	City streets
15	College status	53	Job opportunities
16	Study involvement	54	Urban transportation
17	Early life house type 1	55	City police
18	Early life environment	56	Job satisfaction
19	Early life roommates	57	Life satisfaction—D-T scale
20	Marital status	58	Work involvement
21	Financial dependents	59	Age
22	Happiness	60	Race
23	Life satisfaction—D-T scale	61	Sex
24	House satisfaction	62	College continuity
25	Room size	63	Religion involvement
26	Storage	64	Religion values
27	Wall condition	65	Distance to college hall
28	Furniture	66	Source of education funds
29	Room temperature	67	Source of living funds
30	Room noise	68	Room size 2
31	House parking facilities	69	Room noise 2
32	House exterior	70	House location 3
33	House location 1	71	Monthly expenses 2
34	House location 2	72	Room temperature 2
35	Food	73	Mood 2
36	Access maintenance	74	Co-tenants 2
37	Indoor recreational facilities	75	Regulations 2
38	Co-tenants	76	Life satisfaction—faces scale

^aVariable numbers match with question numbers on Environmental Satisfaction Survey (see Appendix B).

Appendix B

ENVIRONMENTAL SATISFACTION SURVEY

E.S.S. Environmental Satisfaction Survey

Kansas State University
Department of Architecture
Seaton Hall, E-211
Manhattan, Kansas 66506

February 1, 1979

Dear Participant:

In recent years, architects have realized the importance of students' perceptions of their living environment. There are many environmental factors in this university and in the city of Manhattan that enhance or hinder your daily activities. How you perceive several of these factors is the main concern of this study, which is part of my master's thesis.

The goal of this project is to better understand the quality of student life here at KSU and how it can be improved. To meet this goal, I need your cooperation. I have selected you and a few of your fellow students to assist me with this task. You can help me by answering the enclosed questionnaire.

It will take you no more than 20 minutes to fill it out. Just circle the answer of your preference. Please feel free to answer the questions truthfully. Your answers will remain anonymous. Once you finish, please seal the questionnaire in the enclosed envelope and mail it (if you are living in a residence hall, fraternity or sorority, deposit it in the box located on your residence's reception desk).

If you can take the time to give me your opinions, I will take the time to convey the results of this study to you and to the university housing authorities.

Sincerely,



J.R. Rua, Architect

Environmental Satisfaction Survey

This survey is being conducted under guidelines established by Kansas State University. By cooperating, you will help provide answers to important questions; however, your participation is strictly voluntary. You should omit any questions which you feel unduly invade your privacy or which are otherwise offensive to you. Confidentiality is guaranteed; your name will not be associated with your answers in any public or private report of the results.

You will find that a few topics are covered several times with just a difference in wording. I am trying to find the best way to ask questions. You don't have to have your answers all agree with each other. When you start, work at your own pace, but as fast as you can.

1. Here are some faces expressing various feelings. Next is a number. Which face comes closest to expressing how you feel about your life as a whole? (CIRCLE ONE NUMBER ONLY)



Now, I am interested in a few facts about your life, some things you have and some things you do. Please remember that your answers will remain anonymous.

2. How long have you lived in Manhattan?
 1. Less than one year
 2. More than one year but less than 3
 3. More than 3 but less than 5
 4. More than 5 but less than 7
 5. More than 7 years
3. How long have you lived in the house you are living in now in Manhattan?
 1. Less than one year
 2. One to two years
 3. More than two but less than 3
 4. More than 3 but less than 4
 5. More than 4 but less than 5
 6. Five or more years
4. How many persons, not counting yourself, share your bedroom now?
 1. None
 2. One
 3. Two
 4. Three
 5. Four or more
5. What kind of bathroom facilities do you have in your house here in Manhattan?
 1. Private (used only by you and your family, if any)
 2. Shared with one to 4 people (no family)
 3. Shared with 5 to 10 people (no family)
 4. Shared with more than 10 people
6. What kind of kitchen facilities do you have now?
 1. Private kitchen (only you and your family, if any)
 2. Shared with 2 or less persons (no family)
 3. Shared with 3 to 6 persons (no family)
 4. Shared with more than 6 persons
 5. No kitchen facilities
7. In what type of structure is your house/apartment/room in Manhattan located?
 1. Mobile home
 2. Single unit detached house
 3. Two-unit house (side by side) duplex
 4. Two-unit house (one above the other)
 5. Three to four-unit house
 6. Five to 20-unit house
 7. 21 or more unit house
 8. Other (specify) _____
8. In what type of housing do you live?
 1. Men's/Women's Residence Hall
 2. Co-educational Residence Hall
 3. Fraternity/Sorority
 4. Apartment
 5. Other (specify) _____

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9. On which floor is your unit located?
1. Basement
 2. First floor (do not count basement)
 3. Second floor
 4. Third floor
 5. Fourth or higher
 6. two or more level unit
10. With whom do you live here in Manhattan?
(CIRCLE ALL THAT APPLY)
1. Father
 2. Mother
 3. Brother(s)/Sister(s)
 4. Wife
 5. Your children
 6. Other relative
 7. Other students
 8. Other non-relative (specify) _____
 9. Alone
11. Do you own a car?
1. Yes
 2. No
12. Where is the phone located that you use at home here in Manhattan?
1. There is no phone in the building
 2. In the hallway (same floor as room)
 3. In the room/apartment
 4. Other part of the building (specify) _____
13. Where do you usually have your lunch?
1. Kansas State Union
 2. Your residence (hall, house, etc.)
 3. Off-campus fast food places
 4. Restaurants
 5. Other (specify) _____
14. Where do you usually have your supper?
1. Kansas State Union
 2. Your residence
 3. Off-campus fast food places
 4. Restaurants
 5. Other (specify) _____
- 15.. What is your current status in college?
1. Freshman (less than 30 credits)
 2. Sophomore (31-59 credit-hours)
 3. Junior (60-89 credit-hours)
 4. Senior (90-119 credit-hours)
 5. Fifth-year student (120 or more)
 6. Graduate Student
16. How many credit-hours are you now taking?
1. Less than 7
 2. 7 to 12
 3. 13 to 15
 4. 16 to 18
 5. 19 or more
17. What type of house did you live in most of the time until you were 16 years old?
1. Mobile Home
 2. Detached single family house
 3. 2-family house (side by side units)
 4. 2-family house (one unit above the other)
 5. Detached 3-4 family house
 6. Apartment house (5 or more units)
 7. Other (specify) _____
18. Where did you live most of the time until you were 16 years old?
1. Farm (at no walking distance from any town)
 2. Town of less than 2500 persons
 3. Town of more than 2500 but less than 10,000
 4. City of more than 10,000 but less than 100,000
 5. City larger than 100,000
19. With whom did you live most of the time until you were 16 years old
(CIRCLE ALL THAT APPLY)
1. Father
 2. Mother
 3. Brother(s)/Sister(s)
 4. Other relative
 5. Non-relative (specify) _____
20. What is your present marital status?
1. Single
 2. Married
 3. Widowed
 4. Separated
 5. Divorced
21. How many people are financially dependent on you.
1. None
 2. One
 3. Two
 4. Three
 5. Four or more
22. Taking all things together, how would you say you are these days, are you...
1. Very happy
 2. Pretty Happy
 3. Not too happy

Now I have some questions of a different kind. I am going to ask you about a list of things: just tell me what number on the scale below gives the best summary of how you feel "7" for Delighted, "6" for Pleased and so forth on to "1" for you feel terrible about it.

7	6	5	4	3	2	1
Delighted	Pleased	Mostly Satisfied	Mixed (about equally satisfied & dissatisfied)	Mostly dissatisfied	Unhappy	Terrible
<input type="checkbox"/> = does not apply to me						

PLEASE CIRCLE ONE NUMBER ON THE SCALE TO THE RIGHT OF EACH QUESTION. Some questions have an alternative answer "A". If you find a question which doesn't apply to you, as for instance, "How do you feel about your job?", when you don't have a job, PLEASE ANSWER "A".

HOW DO YOU FEEL ABOUT . . .

. . . 23. <u>Your life as a whole</u>	7	6	5	4	3	2	1	
. . . 24. The <u>quality of life</u> in your dwelling unit (e.g. room, apartment, house).	7	6	5	4	3	2	1	
. . . 25. The <u>size</u> of your room or apartment	7	6	5	4	3	2	1	
. . . 26. The <u>storage</u> or closet space in your room or apartment	7	6	5	4	3	2	1	
. . . 27. The condition of the <u>paint</u> on your room or apartment walls	7	6	5	4	3	2	1	
. . . 28. The condition of the <u>furniture</u> in your room or apartment.	7	6	5	4	3	2	1	
. . . 29. The <u>temperature</u> of your room/apartment in the winter.	7	6	5	4	3	2	1	
. . . 30. The levels of <u>noise</u> perceived in your room/apartment produced by other tenants	7	6	5	4	3	2	1	
. . . 31. The availability of <u>parking</u> to your house/building.	7	6	5	4	3	2	1	<input type="checkbox"/> A
. . . 32. The <u>beauty</u> of the exterior design of your house/building.	7	6	5	4	3	2	1	
. . . 33. The <u>distance</u> from your room/apartment to Aggieville.	7	6	5	4	3	2	1	
. . . 34. The <u>distance</u> from your house/apartment to Farrel Library.	7	6	5	4	3	2	1	
. . . 35. The quality of the <u>food</u> you usually have here in Manhattan.	7	6	5	4	3	2	1	
. . . 36. The <u>maintenance of access</u> to your room or apartment (e.g. hallways, stairways)	7	6	5	4	3	2	1	<input type="checkbox"/> A
. . . 37. Your building/residence indoor <u>recreational facilities</u>	7	6	5	4	3	2	1	<input type="checkbox"/> A

7	6	5	4	3	2	1
Delighted	Pleased	Mostly Satisfied	Mixed (about equally satisfied & dissatisfied)	Mostly dissatisfied	Unhappy	Terrible
<input type="checkbox"/> = does not apply to me						

PLEASE CIRCLE ONE NUMBER ON THE SCALE TO THE RIGHT OF EACH QUESTION.

HOW DO YOU FEEL ABOUT . . .

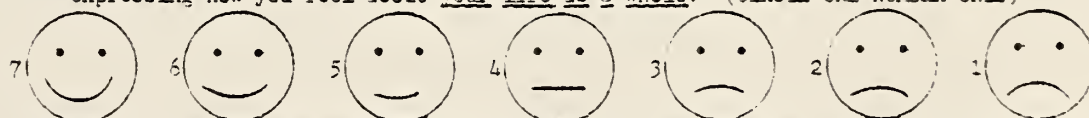
. . . 38. The <u>people</u> living next to your room/apartment (other tenants, residents, etc) .	7	6	5	4	3	2	1	<input type="checkbox"/>
. . . 39. The people sharing your room/apartment (e.g. roommates, family, etc)	7	6	5	4	3	2	1	<input type="checkbox"/>
. . . 40. The <u>rent</u> you pay considering the size and quality of the place you have	7	6	5	4	3	2	1	<input type="checkbox"/>
. . . 41. Your <u>residence regulations</u> (e.g. visits, pets, noise, etc)	7	6	5	4	3	2	1	<input type="checkbox"/>
. . . 42. KSU <u>as a whole</u>	7	6	5	4	3	2	1	
. . . 43. KSU's <u>educational facilities</u>	7	6	5	4	3	2	1	
. . . 44. The <u>education</u> you receive at KSU. .	7	6	5	4	3	2	1	
. . . 45. Your KSU <u>classmates</u>	7	6	5	4	3	2	1	
. . . 46. <u>Parking</u> facilities on campus. . . .	7	6	5	4	3	2	1	
. . . 47. The maintenance of <u>sidewalks</u> on campus	7	6	5	4	3	2	1	
. . . 48. The <u>university policy</u> —freshmen have to live in residence halls or other type of organized housing (e.g. Fraternities).	7	6	5	4	3	2	1	
. . . 49. The <u>quality of life</u> in Manhattan. .	7	6	5	4	3	2	1	
. . . 50. Manhattan's <u>recreational facilities</u>	7	6	5	4	3	2	1	
. . . 51. Manhattan's <u>sidewalk maintenance</u> . .	7	6	5	4	3	2	1	
. . . 52. Manhattan's <u>street maintenance</u> . . .	7	6	5	4	3	2	1	
. . . 53. Manhattan's <u>part-time job opportunities</u>	7	6	5	4	3	2	1	
. . . 54. Manhattan's <u>transportation services</u>	7	6	5	4	3	2	1	
. . . 55. Manhattan's <u>police protection</u> . . .	7	6	5	4	3	2	1	
. . . 56. Your <u>job</u> (everything considered). .	7	6	5	4	3	2	1	<input type="checkbox"/>
. . . 57. Your <u>life as a whole</u>	7	6	5	4	3	2	1	

58. How many hours a week do you work?
(Please take into account all services rendered for money, or lower cost in room and board (e.g. assistantships, jobs, etc.)
1. None
 2. 1 to 10 hours per week
 3. 11 to 20
 4. 21 to 30
 5. 31 to 40
 6. more than 40
59. How old are you?
1. 17-18 years old
 2. 19-20
 3. 21-22
 4. 23-24
 5. 25 or older
60. What is your race?
1. White
 2. Black
 3. Other (specify) _____
61. What is your sex?
1. Male
 2. Female
62. Have you ever dropped out or failed to register any semester because of financial problems since starting college?
1. Yes
 2. No
63. How often are you involved in religion related activities, individually or in groups (e.g. reading religious books, group meetings, services, etc.)
1. One or more times a day
 2. Two or three times a week
 3. Once a week
 4. Two or three times a month
 5. Once a month
 6. Less than once a month
 7. Not at all
64. Would you say that for you religious beliefs are...
1. Very important
 2. Fairly important
 3. Not very important
 4. Not important at all
65. How far is it from where you live to the hall where most of your classes are held.
1. Less than 3 minutes walk
 2. 4 to 6 minutes walk
 3. 7 to 9 minutes walk
 4. 10 to 12 minutes walk
 5. 13 to 15 minutes walk
 6. 16 or more minutes walk
66. How are you mainly financing your education this semester. CIRCLE THE MOST IMPORTANT SOURCES
1. Scholarships (service free)
 2. Veterans' benefits
 3. Family, relatives or friends
 4. Part time or full time jobs
 5. Assistantships (services rendered)
 6. Your own savings
 7. Other (specify) _____
67. How are you mainly earning the funds for your average monthly expenses. Please don't take into account University tuition and fees.
1. Scholarships (service free)
 2. Veterans' benefits
 3. Family, relatives or friends
 4. Part time or full time jobs
 5. Assistantships (service rendered)
 6. Your own savings
 7. Other (specify) _____
68. Would you say that your room/apartment is...
1. too big
 2. just about right
 3. too small

GO TO NEXT PAGE

69. Would you say that your building/house is...
1. too noisy
 2. just about right
 3. too silent
70. Would you say that the distance from your room/apartment to Aggieville is..
1. too far
 2. just about right
 3. too near
71. How much would you say you (and those depending on you, if any) spend monthly on room and board and other every-month expenses. Please do not count university tuition and fees.
1. Less than \$150.00
 2. Between \$151 and \$250
 3. Between \$251 and \$350
 4. Between \$351 and \$450
 5. More than \$450
72. Would you say that the temperature in your room in winter is usually...
1. too warm
 2. just about right
 3. too cold
73. How elated or depressed, happy or unhappy do you feel at this very moment?
1. Complete elation
 2. In very high spirits
 3. In high spirits
 4. Very good and cheerful
 5. Feeling pretty good
 6. Feeling a little low, just so-so
 7. Spirits low and somewhat "blue"
 8. Depressed and feeling very low
 9. Tremendously depressed
 10. Utter depression and gloom
74. Would you say that other tenants or residents in your building/house are...
1. too sociable
 2. just about right
 3. too unsociable
75. Would you say that your residence regulations are...
1. too many
 2. just about right
 3. too few
 4. no regulations (your own house)
 5. Other (specify) _____

76. Here again are some faces expressing various feelings. Which face comes closest to expressing how you feel about your life as a whole? (CIRCLE ONE NUMBER ONLY)



THANK YOU FOR YOUR COOPERATION. Please seal this questionnaire in the enclosed envelope and mail it (If you are living in a residence Hall, fraternity or sorority, please deposit it in the box located in your residence reception desk.)

IF YOU THINK THAT THERE ARE OTHER TOPICS RELATED WITH HOUSING OR THE CITY NOT COVERED HERE WHICH ARE IMPORTANT OR JUST BOTHER YOU, PLEASE WRITE THEM ON THE BACK OF THIS PAGE.

Appendix C

THE INSTRUMENTS

Appendix C

THE INSTRUMENTS

The Delighted-Terrible Scale (D-T)

The D-T scale designed by Andrews and Withey (1976) was used as the principal instrument to measure affective evaluations about the environment and life satisfaction. The original D-T scale has seven one-scale alternatives: "Delighted", "Pleased", "Mostly Satisfied", "Mixed—about equally satisfied and dissatisfied", "Mostly Dissatisfied", "Unhappy", and "Terrible". The scale additionally included three off-scale alternatives: "Neutral—neither satisfied nor dissatisfied", "Does not apply to me" and "I never thought about it."

The scale was used exactly as the aforementioned authors used it, with the following exceptions:

1. The standard introduction,

In the next section of this interview/questionnaire, we want to find out how you feel about various parts of your life, and life in this country as you see it. Please tell me the feeling you have now—taking into account what has happened in the last year and what you expect in the near future.

was substituted in this study by the following introduction:

Now I have some questions of a different kind. I am going to ask you about a list of things. Just tell me what number on the scale below gives the best summary of how you feel, as "7" for Delighted, "6" for Pleased and so forth on to "1" for you feel terrible about it.

The reason for this change was the last sentence of the original statement. The assumption that life as a whole and feelings about other concerns depend only on the time-span of ". . . last year and what you

expect in the near future" has not yet been proved to the best of this writer's knowledge.

2. Two out of the three off-scale alternatives were eliminated. The answer "Neutral—neither satisfied nor dissatisfied" can basically be assimilated and probably reflects the same evaluation as "Mixed—about equally satisfied and dissatisfied."

The alternative "I never thought about it" was also discarded under the assumption that those unaffected by the domain under consideration would tend to answer "Mixed" on the scale. Furthermore, the elimination of this answer could produce more response on issues not considered by the subjects before (which does not necessarily mean they have no opinion on it). The alternative "Does not apply to me" was maintained since some of the domain could easily not be applicable to some sections of the population.

3. Instead of asking the subject to write the number or letter of his preference next to the question, individual scales for each question were provided in order to speed up the answering process and permit the possibility of providing an answer or not, depending on the domain under consideration.¹ In the survey conducted by Andrews and Withey, this possibility was covered by instructing the interviewer not to accept "Does not apply to me" as an answer.

The Faces Scale

This scale, also designed by Andrews and Withey, was used as an alternative scale to measure satisfaction with life as a whole.²

¹See questions 23 to 57 in questionnaire (Appendix B).

²See questions 1 and 76 on questionnaire (Appendix B).

The "Happiness" Scale

The three-point happiness scale used several times in national surveys (Gurin et al., 1960; Bradburn and Caplovitz, 1965; Bradburn, 1969) and also covered in the second chapter was included.

Taking all things together, how would you say you are these days, are you . . . very happy, pretty happy or not too happy?

The purpose of including this question was to check the possible difference that subjects could make between feelings about life-as-a-whole as measured by the Andrews and Withey D-T scale and feelings about life "these days" on the happiness scale.³

The Elation-Depression Scale

Wessman and Ricks' (1966) ten-point scale, also covered in the second chapter, was included.

How elated or depressed, happy or unhappy do you feel today?

1. Complete elation
2. In very high spirits
3. In high spirits
4. Very good and cheerful
5. Feeling pretty good
6. Feeling a little low, just so-so
7. Spirits low and somewhat "blue"
8. Depressed and feeling very low
9. Tremendously depressed
10. Utter depression and gloom

It was added to measure mood at the moment of answering the questionnaire. To avoid the interpretation of the word "today" (used on the original scale) as a short period of time before and after the day the subject answered the questionnaire, the phrase "at this very moment" was used instead.

³The reader must remember that the sentence emphasizing the idea of near past and future time span on the Andrews and Withey question was eliminated in this study.

Appendix D

RESPONDENTS' COMMENTS ABOUT THEIR ENVIRONMENT

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Respondents to the Environmental Satisfaction Survey were asked to freely express their opinions about their environment once the closed-ended questions on the survey were completed. The following are some of the most relevant answers to this request.

About Landlords

[Landlord's name] is a terrible but very powerful landlord. I think something should be done about the way they refuse to maintain their complexes.

(An off campus resident)

For the population of Manhattan, I feel their rents are fairly high. When you pay this rent in a larger city you are paying for location near all the things. [Here] you have to drive to Kansas City to get them.

(An off campus resident)

If certain facilities such as our bathroom are inadequate or done very poorly, the landlord should have to improve them whether he wants to or not. Our landlord will not improve anything for us.

(An off campus resident)

About Noise in Residence Halls

The most frequent complaint I hear about dorm living from other students is the noise which keeps them from sleeping (not to mention studying!) until well after midnight, which makes getting up for breakfast and 8:30 classes a greater chore than it should be.

(An off campus resident)

About Food-related Concerns

One thing that bothers me is the meals. You pay for almost more food than you eat.

(A residence hall student)

Other College-related Concerns

I think the bicycle paths are the most ridiculous thing that the university has ever come up with.

(A residence hall student)

I walk to classes daily and have to cross Anderson Ave. to get there. The crosswalks in general are fair, but the one southeast of the Student Union is terrible. Crossing at this crosswalk is extremely dangerous.

(An off campus resident)

We definitely need to improve the looks of our campus. . . . Some areas (behind Lafene, around the Union and Fieldhouse) look terrible. We need trees there, and sidewalks where people make tracks.

(A Greek house resident)

. . . in order to save gas and time, I like to have all my classes together not spread. . . . the only way to do this is drop-add.

(An off campus resident)

About Some City-related Concerns

This city needs to use common sense and planning in the maintenance of the city.

(An off campus resident)

I do feel that the city needs a bus system. I live near Westloop and do not drive or have a car, and if I need to go downtown, I have to have someone bring me and sometimes they are busy. So I have to stay here. If there was a bus system I would be able to go to more places in town, and I think that is true for others too.

(An off campus resident)

The police force here should spend less time worrying about whether or not someone is carrying open beer or blasting underage buyers of liquor in jail, and worry about rape prevention, murder, theft prevention, etc. I have not been personally harassed but I have seen many others tagged by our parental P. D.

(A residence hall student)

Manhattan does an absolutely terrible job [taking care of the snow on the streets].

(A residence hall student)

There are no really nice restaurants in Manhattan. The environment—even in private clubs—is lacking terribly.

(An off campus resident)

Dorm food is too limited. There should be more variety and less rationing. Derby is a good example. . . . I don't want to get ripped off on skimpy meals.

(A residence hall student)

Meal hours in residence halls should be extended.

(A residence hall student)

. . . the university wants to make other changes, such as terminating food service in the small dorms. This would drastically affect Derby Complex and Derby is already in bad shape. . . . To me, housing can't afford to go downhill anymore.

(A residence hall student)

About Housing

I feel like the housing facilities at K-State are at a low as far as suitability for the fees we pay.

(A residence hall student)

The quality of leadership (director, staff) could stand some improvement.

(A residence hall student)

I feel that Manhattan or KSU should provide more cooperative houses for students interested in cutting living expenses and learning to live and work with other people.

(An off campus resident)

They don't let a person mature. . . . I think residence halls are great for one or two years; after that, it's time to grow up and get out on your own.

(A residence hall student)

About Parking Facilities

I . . . feel, as a freshman, I should be eligible for a parking permit. I'm depending upon it.

(A residence hall student)

The parking at K-State is the biggest problem I face. I leave from class a good 15-20 minutes for my class—and still have problems parking. K-State does need more parking for students! It is beginning to be a real pain!

(An off campus resident)

The school seems to worry more about "storage parking" than for those that have to drive every day just to get to class.

(An off campus resident)

SATISFACTION: A MEASURE OF
ENVIRONMENTAL QUALITY

by

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AN ABSTRACT OF A MASTER'S THESIS

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ABSTRACT

This thesis proposes the use of measurements of people's satisfaction with the environment as an index of its quality.

Guidelines for the use of such measurement in the search for design criteria are developed. Scales to measure college students' satisfaction with house, college, and city are developed and used to measure the environmental quality of a college population randomly sampled ($N = 338$) and divided into three groups according to housing type. Correlations and multi-regression coefficients and Beta-Weights are calculated to determine the relation between satisfaction with an environment and its characteristics.

It was found that (a) house and college satisfaction is positively associated with life satisfaction; (b) Greek house and off campus students are significantly more satisfied with housing than those in residence halls, although no differences were found in college, city, and life satisfaction; (c) satisfaction with an environmental characteristic has no relation to its influence on overall environmental satisfaction; (d) the influence of a characteristic on overall environmental satisfaction is not constant across the three groups; (e) house and city satisfacton increases with the increase in time living in these environments; (f) students who lived in big cities in their early life are satisfied with college more than those from small towns; (g) college satisfaction is associated with increased study involvement and the person's assigned importance to religious beliefs, but not with his involvement in religious activities.

